

|                                           |  |                                  |  |                                                          |  |                                                                                                                        |  |                                                                                                                        |  |                              |  |
|-------------------------------------------|--|----------------------------------|--|----------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------|--|------------------------------|--|
| <b>AIR LIQUIDE</b>                        |  |                                  |  | <b>Durchstrahlungsprüfung - Radiographic Examination</b> |  |                                                                                                                        |  | Bericht/ Report: <b>302</b>                                                                                            |  | Prüfdatum: <b>03.12.2005</b> |  |
| Kennwort:                                 |  | Auftragsnummer:                  |  | Zeichnungsnummer/ISO-Nr.:                                |  | Seite: <b>1</b> von <b>1</b>                                                                                           |  | Bauteil Nr.:                                                                                                           |  | xxx                          |  |
| Job Name: <b>ASU No.9 Kosice</b>          |  | Serial/Order No.: <b>K 70101</b> |  | Drawing No./ISO No.:                                     |  | Sheet: <b>141</b> of <b>470</b>                                                                                        |  | Constr area No.:                                                                                                       |  |                              |  |
| Benennung: <b>Coldbox</b>                 |  | Bauteil/Verbindung: <b>pipe</b>  |  | Schweißverfahren DIN 24063:                              |  | Schweißer:                                                                                                             |  | Nahtform BW                                                                                                            |  |                              |  |
| Discription: <b>ohne/ without</b>         |  | Part/Joint:                      |  | Welding process to DIN 24063:                            |  | Welder:                                                                                                                |  | Weld type:                                                                                                             |  |                              |  |
| Wärmebehandlung: <input type="checkbox"/> |  | Schweißnahtnummer: <b>7</b>      |  | Werkstoff/ Material A: <b>Al Mg 4,5Mn</b>                |  | Bewertung n. DIN EN 5817 <input type="checkbox"/> DIN EN 30042 <input type="checkbox"/>                                |  | Quality level acc. to DIN EN 12517(1) <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C |  |                              |  |
| Heat treatment: <input type="checkbox"/>  |  | Weld- No.: <b>7</b>              |  | Werkstoff/ Material B:                                   |  | Quality level acc. to DIN EN 12517(1) <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C |  |                                                                                                                        |  |                              |  |
| Oberflächenzustand <b>Clean</b>           |  | Prüfumfang: <b>25 %</b>          |  | Abmessung/Dimension A: <b>114x6</b>                      |  | Abmessung/Dimension B:                                                                                                 |  |                                                                                                                        |  | mm                           |  |
| Surface quality:                          |  | Extent of examination:           |  |                                                          |  |                                                                                                                        |  |                                                                                                                        |  |                              |  |

**Angaben zur Prüfung/ Data of examination**

|                                                                                              |                                                                                                                          |                                                |                                 |
|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|---------------------------------|
| Prüfklasse gem. DIN EN 1435 <input type="checkbox"/> A <input checked="" type="checkbox"/> B | Zulässigkeitsgrenzen gem. DIN EN 12 517 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 | Aufnahmeanordnung nach DIN EN 1435 : <b>11</b> |                                 |
| Test class acc. to EN 1435 <input type="checkbox"/> A <input checked="" type="checkbox"/> B  | Acceptance level acc. to EN 12 517                                                                                       | Test arrangement acc. EN 1435                  |                                 |
| Strahlungsquelle: <b>Selen 75</b>                                                            | Brennfleckgr./Strahlenquellengr.: <b>3x3</b>                                                                             | Filmsorte: <b>Kodak Mx 100</b>                 | Filmklasse: <b>C 2</b>          |
| Source of radiation:                                                                         | Focal Spot/Source Size:                                                                                                  | Film type:                                     | Film system class:              |
| Aktivität: <b>40 ci</b>                                                                      | Röhreneinstellung:                                                                                                       | Folienart: <b>Pb</b>                           | Belichtungszeit: <b>10 x 20</b> |
| Activity:                                                                                    | Tube voltage/current: <b>(KV)</b>                                                                                        | Screen type: <b>(mA)</b>                       | Exposure time: <b>45 s</b>      |
| Folienart: <b>Pb</b>                                                                         |                                                                                                                          | Folienstärke: <b>0,02 mm</b>                   | Filmgröße: <b>10 x 20</b>       |
| Screen type: <b>(mA)</b>                                                                     |                                                                                                                          | Screen thickness: <b>0,02 mm</b>               | Film size:                      |

**Prüfergebnisse/ Test data**

| Bildgüteprüfkörper/ Image quality indicator ( IQ 10AIEN461-2 | Auswertbare Filmlänge<br>Evaluated length of film<br>in cm / from ÷ to | Lage/ Position: <input checked="" type="checkbox"/> X <input type="checkbox"/> |      |      |     |     |     |      |     |     |     |     |           | Filmtiefen/ close to film           |  |                                      |  |                       |  |                  |  |  |  |  |  | Filmtiefen/ far from film |  | Bemerkung<br>Comments<br>(from - to) |
|--------------------------------------------------------------|------------------------------------------------------------------------|--------------------------------------------------------------------------------|------|------|-----|-----|-----|------|-----|-----|-----|-----|-----------|-------------------------------------|--|--------------------------------------|--|-----------------------|--|------------------|--|--|--|--|--|---------------------------|--|--------------------------------------|
|                                                              |                                                                        | Imperfektionen ( EN 26520 )                                                    |      |      |     |     |     |      |     |     |     |     |           | Filmfehler<br>Film defect<br>( FF ) |  | Bildgüte<br>Image quality<br>( IQI ) |  | Schwärzung<br>Density |  | Befund/ Findings |  |  |  |  |  |                           |  |                                      |
| Schweißnahtnummer<br>Weld No. ☆                              | Film-nr.<br>Film No.                                                   | 2011                                                                           | 2016 | 2013 | 301 | 401 | 402 | 5013 | 515 | 504 | 100 | 304 | 5011/5012 |                                     |  |                                      |  |                       |  |                  |  |  |  |  |  |                           |  |                                      |
|                                                              |                                                                        | Aa                                                                             | Ab   | Ad   | Ba  | C   | D   | Da   | Db  | Dc  | E   | H   | F         |                                     |  |                                      |  |                       |  |                  |  |  |  |  |  |                           |  |                                      |
| 7                                                            | 1                                                                      |                                                                                |      |      |     |     |     |      |     |     |     |     |           |                                     |  |                                      |  |                       |  |                  |  |  |  |  |  |                           |  |                                      |
|                                                              | 2                                                                      |                                                                                |      |      |     |     |     |      |     |     |     |     |           |                                     |  |                                      |  |                       |  |                  |  |  |  |  |  |                           |  |                                      |
|                                                              | 3                                                                      |                                                                                |      |      |     |     |     |      |     |     |     |     |           |                                     |  |                                      |  |                       |  |                  |  |  |  |  |  |                           |  |                                      |
|                                                              |                                                                        |                                                                                |      |      |     |     |     |      |     |     |     |     |           |                                     |  |                                      |  |                       |  |                  |  |  |  |  |  |                           |  |                                      |

**Definition- Erklärung der Bewertung/ Definition- Legend**

Aa = Pore/ Gas pore      Ab = Schlauchpore/Wurmhole      Ad = Porennetz/ Porosity      Ba = Schlackeneinschl./ Slag inclusion      C = Bindefehler/Lack of fusion  
 D = ung. Durchschw./ Lack of penetration      Da = Wurzelkerbe/ Root notch      Db = Wurzelrückfall/ Root reinforcement      Dc = Wurzeldurchhang/ Excessive penetration      E = Riß/ Crack  
 H = metallischer Einschluss/ Metallic inclusion      F = Einbrand/ Undercut

☒ Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled

☐ Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled

☐ toleriert/ tolerated

## ☆ Additional Marking

R1; R2      erste und zweite Rep./ first and second Rep.  
 N      neu nach Rep./ cut and reweld  
 F      Folgeprüfung/ Tracer shot  
 G      Garantienaht/ RT instead of Pressure Test  
 K      Kontrollschuß/ Control Shot  
 I      I - Stöße/ I - Joint

Testing Contractor/Name of Examiner

Air Liquide

E.H.R.

12.12.05 Kielholz

EHR 02

TÜV

Date

Name

Signature

Date

Name

Signature

Date

Signature

Date

Name

Signature





|                                                                                                                                                                                      |                                                     |                                                                 |                                                              |                                                                                                   |                                                                                             |                             |                                                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-----------------------------|------------------------------------------------------|
|                                                                                                   |                                                     | <b>Durchstrahlungsprüfung - Radiographic Examination</b>        |                                                              |                                                                                                   |                                                                                             | Bericht/ Report: <b>304</b> | Prüfdatum:<br>Date of Exam.: <b>07.12.2005</b>       |
| Kennwort:<br>Job Name: <b>ASU No.9 Kosice</b>                                                                                                                                        | Auftragsnummer:<br>Serial/Order No.: <b>K 70101</b> | Zeichnungsnummer/ISO-Nr.: <b>NL 21017</b>                       |                                                              | Seite: <b>3</b> von <b>xxx</b>                                                                    | Baufeld Nr.: <b>xxx</b>                                                                     | Constr area No.:            |                                                      |
| Benennung:<br>Discription: <b>Coldbox</b>                                                                                                                                            | Bauteil/Verbindung: <b>pipe</b>                     | Drawing No./ISO No.: <b>488</b>                                 | Schweißverfahren DIN 24063:<br>Welding process to DIN 24063: | Sheet: <b>141</b>                                                                                 | Schweißer:<br>Welder:                                                                       | Nahtform BW<br>Weld type:   | Bewertung n.DIN EN 5817<br>Quality level acc. to -/- |
| Wärmebehandlung: <input checked="" type="checkbox"/> <b>ohne/ without</b><br>Heat treatment: <input type="checkbox"/> <b>vor/ before</b> <input type="checkbox"/> <b>nach/ after</b> | Schweißnahtnummer:<br>Weld- No.: <b>13</b>          | Werkstoff/ Material A: <b>Al Mg 4,5Mn</b>                       | Werkstoff/ Material B:                                       | <input type="checkbox"/> DIN EN 30042 <input checked="" type="checkbox"/> <b>(DIN EN 12517/1)</b> | <input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C |                             |                                                      |
| Oberflächenzustand <b>Clean</b><br>Surface quality:                                                                                                                                  | Prüfmfang:<br>Extent of examination: <b>10 %</b>    | Abmessung/Dimension A: <b>219x6,4</b><br>Abmessung/Dimension B: |                                                              | mm                                                                                                |                                                                                             |                             |                                                      |

**Angaben zur Prüfung/ Data of examination**

|                                                        |  |                                                                                  |  |                               |  |
|--------------------------------------------------------|--|----------------------------------------------------------------------------------|--|-------------------------------|--|
| Prüfungszert. 1. Aufl. 5<br>Zulassungszert. 1. Aufl. 5 |  | 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> |  | 14                            |  |
| Prüfungszert. 1. Aufl. 5<br>Zulassungszert. 1. Aufl. 5 |  | A <input type="checkbox"/> B <input checked="" type="checkbox"/>                 |  | Test arrangement acc. EN 1435 |  |
| Test class acc. to EN 1435                             |  | Acceptance level acc. to EN 12 517                                               |  | Filmklasse: C 2               |  |
| Strahlungsquelle: <b>Selen 75</b>                      |  | Brennfleckgr./Strahlenquellengr.: <b>3x3</b>                                     |  | Agfa                          |  |
| Source of radiation:                                   |  | Focal Spot/Source Size:                                                          |  | Film type:                    |  |
| Aktivität: 40 ci                                       |  | Foliendicke: 220                                                                 |  | Film system class:            |  |
| Activity:                                              |  | Screen type:                                                                     |  | Filmgröße: <b>10 x 24</b>     |  |
| Röhreinrichtung:                                       |  | Foliendicke: 0,02 mm                                                             |  | Belichtungszeit:              |  |
| Tube voltage/current:                                  |  | Screen type:                                                                     |  | Exposure time: <b>60 s</b>    |  |
| Tube voltage/current:                                  |  | Screen type:                                                                     |  | Film size:                    |  |

### **Prüfergebnis/ Test data**

[illegible]

Definition Erklärung der Bewertung/ Definition-Legend

| Definition- Erklärung der Bewertung/ Definition- Legend |                                    |                                               |                                                   |
|---------------------------------------------------------|------------------------------------|-----------------------------------------------|---------------------------------------------------|
| <b>Aa</b> = Pore/ Gas pore                              | <b>Ab</b> = Schlauchpore/Wurmhole  | <b>Ad</b> = Porennest/Porosity                | <b>Ba</b> = Schlackeneinschl./ Slag inclusion     |
| <b>B</b> = ung. Durchschw./Lack of penetration          | <b>Da</b> = Wurzelkerbe/Root notch | <b>Db</b> = Wurzelrückfall/Root reinforcement | <b>Dc</b> = Wurzeldurchhang/Excessive penetration |
| <b>D</b> = metallischer Einschluss/Metallic inclusion   | <b>F</b> = Einbrand/Undercut       |                                               | <b>C</b> = Bindefehler/Lack of fusion             |
|                                                         |                                    |                                               | <b>E</b> = Riß/Crack                              |

|                                     | Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled             | Additional Marking    |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------|-----------------------|
| <input checked="" type="checkbox"/> | Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled | R1: R2                |
| <input type="checkbox"/>            | toleriert/ tolerated                                                                                           | N<br>F<br>G<br>K<br>I |

**Testing Contractor/Name of Examiner**

## Air Liquide

E.H.R.  
12 12 05 Kielholz  
E4F 02

Tiv

Date \_\_\_\_\_ Name \_\_\_\_\_

Date Name Signature

Signature

Date \_\_\_\_\_ Name \_\_\_\_\_

Date \_\_\_\_\_ Name \_\_\_\_\_ Signature \_\_\_\_\_



|                                                       |  |                                  |  |                                                          |  |                                 |  |                             |  |                                       |  |
|-------------------------------------------------------|--|----------------------------------|--|----------------------------------------------------------|--|---------------------------------|--|-----------------------------|--|---------------------------------------|--|
| <b>AIR LIQUIDE</b>                                    |  |                                  |  | <b>Durchstrahlungsprüfung - Radiographic Examination</b> |  |                                 |  | Bericht/ Report: <b>305</b> |  | Prüfdatum: <b>03.12.2005</b>          |  |
| Kennwort:                                             |  | Auftragsnummer:                  |  | Zeichnungsnummer/ISO-Nr.:                                |  | Seite: <b>2</b> von <b>2</b>    |  | Bauteil Nr.:                |  | Date of Exam.:                        |  |
| Job Name: <b>ASU No.9 Kosice</b>                      |  | Serial/Order No.: <b>K 70101</b> |  | Drawing No./ISO No.:                                     |  | Sheet: <b>141</b> of <b>488</b> |  | Nahtform BW                 |  | xxx                                   |  |
| Benennung: <b>Coldbox</b>                             |  | Bauteil/Verbindung: <b>pipe</b>  |  | Schweißverfahren DIN 24063:                              |  | Schweißer:                      |  | Weld type:                  |  |                                       |  |
| Description: <b>ohne/ without</b>                     |  | Part/Joint:                      |  | Welding process to DIN 24063:                            |  | Welder:                         |  | Bewertung n.DIN EN 5817     |  | <input type="checkbox"/> A            |  |
| Wärmebehandlung: <input type="checkbox"/> vor/ before |  | Schweißnahtnummer:               |  | Werkstoff/ Material A:                                   |  | Welding process to DIN 24063:   |  | Quality level acc. to -/-   |  | <input checked="" type="checkbox"/> B |  |
| Heat treatment: <input type="checkbox"/> nach/ after  |  | Weld- No.: <b>14</b>             |  | Werkstoff/ Material B:                                   |  | Welding process to DIN 24063:   |  |                             |  | <input type="checkbox"/> C            |  |
| Oberflächenzustand <b>Clean</b>                       |  | Prüfumfang: <b>25 %</b>          |  | Abmessung/Dimension A:                                   |  | Abmessung/Dimension B:          |  |                             |  | mm                                    |  |
| Surface quality:                                      |  | Extent of examination:           |  | Abmessung/Dimension A:                                   |  | Abmessung/Dimension B:          |  |                             |  |                                       |  |

**Angaben zur Prüfung/ Data of examination**

|                                                                                              |  |                                                                                                                          |  |                                                |  |
|----------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------|--|
| Prüfklasse gem. DIN EN 1435 <input type="checkbox"/> A <input checked="" type="checkbox"/> B |  | Zulässigkeitsgrenzen gem. DIN EN 12 517 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 |  | Aufnahmeanordnung nach DIN EN 1435 : <b>14</b> |  |
| Test class acc. to EN 1435                                                                   |  | Acceptance level acc. to EN 12 517                                                                                       |  | Test arrangement acc. EN 1435                  |  |
| Strahlungsquelle: <b>Selen 75</b>                                                            |  | Brennfleckgr./Strahlenquellengr.: <b>3x3</b>                                                                             |  | Filmsorte: <b>Agfa D3</b>                      |  |
| Source of radiation:                                                                         |  | Focal Spot/Source Size:                                                                                                  |  | Film type:                                     |  |
| Röhreneinstellung:                                                                           |  | Foliendicke: <b>f 168</b>                                                                                                |  | Film system class: <b>C2</b>                   |  |
| Tub voltage/current:                                                                         |  | Screen type:                                                                                                             |  | Belichtungszeit: <b>0,02 mm</b>                |  |
| Activity: <b>40 ci</b>                                                                       |  | (KV)                                                                                                                     |  | Exposure time: <b>45 s</b>                     |  |
| Filmgröße: <b>10 x 24</b>                                                                    |  | Film size:                                                                                                               |  |                                                |  |

**Prüfergebnis/ Test data**

| Bildgüteprüfkörper/ Image quality indicator ( IQ 10A/EN461-2 ) | Schweißnahtnummer/ Weld No. | Film-nr. / Film No. | Auswertbare Filmlänge / Evaluated length of film in cm / from - to | Lage/ Position: |      |      |     |     |     |      |     |     |     |     |           | Filmfehler / Film defect (FF) | Bildgüte / Image quality (IQ) | Schwärzung / Density | Befund/ Findings |         | Bemerkung / Comments (from - to) |
|----------------------------------------------------------------|-----------------------------|---------------------|--------------------------------------------------------------------|-----------------|------|------|-----|-----|-----|------|-----|-----|-----|-----|-----------|-------------------------------|-------------------------------|----------------------|------------------|---------|----------------------------------|
|                                                                |                             |                     |                                                                    | 2011            | 2016 | 2013 | 301 | 401 | 402 | 5013 | 515 | 504 | 100 | 304 | 5011/5012 |                               |                               |                      | a (e)            | na (ne) |                                  |
| <b>14</b>                                                      | 1                           |                     |                                                                    |                 |      |      |     |     |     |      |     |     |     |     |           |                               | <b>15</b>                     | <b>2,4</b>           | <b>x</b>         |         |                                  |
|                                                                | 2                           |                     |                                                                    |                 |      |      |     |     |     |      |     |     |     |     |           |                               | <b>15</b>                     | <b>2,4</b>           | <b>x</b>         |         |                                  |
|                                                                | 3                           |                     |                                                                    |                 |      |      |     |     |     |      |     |     |     |     |           |                               | <b>15</b>                     | <b>2,4</b>           | <b>x</b>         |         |                                  |
|                                                                | 4                           |                     |                                                                    |                 |      |      |     |     |     |      |     |     |     |     |           |                               | <b>15</b>                     | <b>2,4</b>           | <b>x</b>         |         |                                  |
|                                                                | 5                           |                     |                                                                    |                 |      |      |     |     |     |      |     |     |     |     |           |                               | <b>15</b>                     | <b>2,4</b>           | <b>x</b>         |         |                                  |

**Definition- Erklärung der Bewertung/ Definition- Legend**

Aa = Pore/ Gas pore      Ab = Schlauchpore/Wurmhole      Ad = Porenneht/Porosity      Ba = Schlackeneinschl./ Slag inclusion      C = Bindefehler/Lack of fusion  
D = ung. Durchschw./Lack of penetration      Da = Wurzelkerbe/Root notch      Db = Wurzelrückfall/Root reinforcement      Dc = Wurzeldurchhang/Excessive penetration      E = Riß/Crack  
H = metallischer Einschluss/Metallic inclusion      F = Einbrand/Undercut

☒ Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled

☐ Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled

☐ toleriert/ tolerated

## ★ Additional Marking

R1; R2      erste und zweite Rep./first and second Rep.  
N      neu nach Rep./ cut and reweld  
F      Folgeprüfung/ Tracer shot  
G      Garantienah/ RT instead of Pressure Test  
K      Kontrollschuß/ Control Shot  
I      I- Stols/ I- Joint

Testing Contractor/Name of Examiner

Air Liquide

E.H.R.

12.12.05

Kielholz

Date

Name

Signature

Date

Name

Signature

Date

Name

Signature

TÜV

Date

Name

Signature





# Durchstrahlungsprüfung- Radiographic Examination

|                                                                                                                                                                                                |                                                                                                                                                    |                                                                                                                                                                                                         |                                                                                                                   |                                                                          |                                                                                                   |                                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|------------------------------------------------|
|                                                                                                             |                                                                                                                                                    | <b>Durchstrahlungsprüfung- Radiographic Examination</b>                                                                                                                                                 |                                                                                                                   |                                                                          | Bericht/ Report: <b>306</b>                                                                       | Prüfdatum:<br>Date of Exam.: <b>03.12.2005</b> |
| Kennwort:<br>Job Name: <b>ASU No.9 Kosice</b><br>Benennung:<br>Discription: <b>Coldbox</b><br>Wärmebehandlung: <input checked="" type="checkbox"/><br>Heat treatment: <input type="checkbox"/> | Auftragsnummer:<br>Serial/Order No.: <b>K 70101</b><br>Bauteil/Verbindung: <b>pipe</b><br>Part/Joint:<br>Schweißnahtnummer:<br>Weld- No.: <b>6</b> | Zeichnungsnummer/ISO-Nr.: <b>R 43005</b><br>Drawing No./ISO No.:<br>Schweißverfahren DIN 24063:<br>Welding process to DIN 24063:<br>Werkstoff/ Material A: <b>Al Mg 4,5Mn</b><br>Werkstoff/ Material B: | Seite: <b>1</b> von<br>Sheet: of<br>Schweißer:<br>Welder:<br>Bewertung n.DIN EN 5817<br>Quality level acc. to -/- | Baufeld Nr.: <b>xxx</b><br>Constr area No.:<br>Nahtform BW<br>Weld type: | <input type="checkbox"/> A<br><input checked="" type="checkbox"/> B<br><input type="checkbox"/> C | mm                                             |
| Oberflächenzustand <b>Clean</b><br>Surface quality:                                                                                                                                            | Prüfumfang:<br>Extent of examination: <b>10 %</b>                                                                                                  | Abmessung/Dimension A: <b>88x5,5</b><br>Abmessung/Dimension B:                                                                                                                                          |                                                                                                                   |                                                                          |                                                                                                   |                                                |

**Angaben zur Prüfung/ Data of examination**

|                                                                                                                               |  |                                                                                                                                                                |  |                                                                       |  |                                    |  |                                    |  |
|-------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------|--|------------------------------------|--|------------------------------------|--|
| <b>Angaben zur Prüfung/ Data of examination</b>                                                                               |  |                                                                                                                                                                |  |                                                                       |  |                                    |  |                                    |  |
| Prüfkategorie gem. DIN EN 1435 <input type="checkbox"/> A <input checked="" type="checkbox"/> B<br>Test class acc. to EN 1435 |  | Zulässigkeitsgrenzen gem. DIN EN 12 517 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3<br>Acceptance level acc. to EN 12 517 |  | Aufnahmeanordnung nach DIN EN 1435 :<br>Test arrangement acc. EN 1435 |  |                                    |  |                                    |  |
| Strahlungsquelle:                                                                                                             |  | Brennfleckgr./Strahlenquellengr.: <b>3x3</b>                                                                                                                   |  | Filmsorte:<br>Film type:                                              |  | Filmklasse:<br>Film system class:  |  | C 2                                |  |
| Source of radiation:                                                                                                          |  | Focal Spot/Source Size:                                                                                                                                        |  | b (mm)<br>Pb                                                          |  | f 200<br>Folienart:                |  | Belichtungszeit:<br>Exposure time: |  |
| Röhreneinstellung:                                                                                                            |  | (KV)                                                                                                                                                           |  | (mA)<br>Screen type:                                                  |  | Folienstärke:<br>Screen thickness: |  | Filmgröße:<br>Film size:           |  |
| Aktivität:                                                                                                                    |  | 40 ci                                                                                                                                                          |  |                                                                       |  |                                    |  | 10 x 20                            |  |
| Activity:                                                                                                                     |  |                                                                                                                                                                |  |                                                                       |  |                                    |  |                                    |  |

**Prüfergebnis/ Test data**

[illegible]

**Definition- Erklärung der Bewertung/ Definition- Legend**

Definition- Erklärung der Bewertung/ Definition- Legend

|                                                      |                                      |                                                |                                                    |                                        |
|------------------------------------------------------|--------------------------------------|------------------------------------------------|----------------------------------------------------|----------------------------------------|
| <b>Aa</b> = Pore/ Gas pore                           | <b>Ab</b> = Schlauchpore/Wurmhole    | <b>Ad</b> = Porennest/ Porosity                | <b>Ba</b> = Schlackeneinschl./ Slag inclusion      | <b>C</b> = Bindefehler/ Lack of fusion |
| <b>D</b> = ung. Durchschw./ Lack of penetration      | <b>Da</b> = Wurzelkeiber/ Root notch | <b>Db</b> = Wurzelrückfall/ Root reinforcement | <b>Dc</b> = Wurzeldurchhang/ Excessive penetration | <b>E</b> = Riß/ Crack                  |
| <b>H</b> = metallischer Einschuß/ Metallic inclusion |                                      | <b>F</b> = Einbrand/ Undercut                  |                                                    |                                        |

**Anforderung nach Bräunefärbung erfüllt/ Requirements according to test specification fulfilled**

☐ **Die Anforderungen nach Differenzifikation nicht erfüllt/ Requirements according to test specification not fulfilled**

☐ tolerant/ tolerated

☆ Additional Marking

|        |                                             |
|--------|---------------------------------------------|
| R1; R2 | erste und zweite Rep./first and second Rep. |
| N      | neu nach Rep./ cut and reweld               |
| N      | Folgeprüfung/ Tracer shot                   |
| G      | Garantienah/ RT instead of Pressure Test    |
| G      | Kontrollschuls/ Control Shot                |
| K      | 1 - Stols/ 1 - Joint                        |

| Testing Contractor/Name of Examiner |
|-------------------------------------|
|                                     |

### Air Liquide

**E.H.R**



SONNET

**TÜV**

Date \_\_\_\_\_ Name \_\_\_\_\_ Signature \_\_\_\_\_

Name

Signature \_\_\_\_\_

Name \_\_\_\_\_

**Signature**

III

signature

2020

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14.12.2006 Z6A

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# Durchstrahlungsprüfung- Radiographic Examination

|                                                                                                                                          |                                                     |                                                              |  |                                                                                                                    |                                                                                                   |                             |                                                |
|------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|--------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------|------------------------------------------------|
|                                                       |                                                     | <b>Durchstrahlungsprüfung- Radiographic Examination</b>      |  |                                                                                                                    |                                                                                                   | Bericht/ Report: <b>307</b> | Prüfdatum: <b>05.12.2005</b><br>Date of Exam.: |
| Kennwort:<br>Job Name: <b>ASU No.9 Kosice</b>                                                                                            | Auftragsnummer:<br>Serial/Order No.: <b>K 70101</b> | Zeichnungsnummer/ISO-Nr.:<br>Drawing No./ISO No.:            |  | Seite: <b>1</b> von<br>Sheet: of                                                                                   | Baufeld Nr.: <b>xxx</b><br>Constr area No.:                                                       |                             |                                                |
| Benennung:<br>Discription: <b>Coldbox</b>                                                                                                | Bauteil/Verbindung:<br>Part/Joint: <b>pipe</b>      | Schweißverfahren DIN 24063:<br>Welding process to DIN 24063: |  | 141 Schweißer:<br>Welder:                                                                                          | Nahtform BW<br>Weld type:                                                                         |                             |                                                |
| Wärmebehandlung: <input checked="" type="checkbox"/> <b>ohne/ without</b><br>Heat treatment: <input type="checkbox"/> <b>vor/ before</b> | Schweißnahtnummer:<br>Weld- No.: <b>4</b>           | Werkstoff/ Material A:<br>Werkstoff/ Material B:             |  | Bewertung n.DIN EN 5817 <input type="checkbox"/> <b>DIN EN 30042</b><br>Quality level acc. to -/- (DIN EN 12517/1) | A <input type="checkbox"/><br>B <input checked="" type="checkbox"/><br>C <input type="checkbox"/> |                             |                                                |
| Oberflächenzustand <b>Clean</b><br>Surface quality:                                                                                      | Prüfungsfang:<br>Extent of examination: <b>10 %</b> | Abmessung/Dimension A:<br>Abmessung/Dimension B:             |  | <b>60x3,9</b>                                                                                                      | mm                                                                                                |                             |                                                |

**Angaben zur Prüfung/ Data of examination**

|                                                                                              |  |                                             |  |                                                         |  |                                                |  |                    |  |
|----------------------------------------------------------------------------------------------|--|---------------------------------------------|--|---------------------------------------------------------|--|------------------------------------------------|--|--------------------|--|
| <b>Angaben zur Prüfung/ Data of examination</b>                                              |  |                                             |  |                                                         |  |                                                |  |                    |  |
| Prüfklasse gem. DIN EN 1435 <input type="checkbox"/> A <input checked="" type="checkbox"/> B |  | Zulässigkeitsgrenzen gem. DIN EN 12 517     |  | 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 |  | Aufnahmeanordnung nach DIN EN 1435 : <b>11</b> |  |                    |  |
| Test class acc. to EN 1435                                                                   |  | Acceptance level acc. to EN 12 517          |  |                                                         |  | Test arrangement acc. EN 1435                  |  |                    |  |
| Strahlungsquelle:                                                                            |  | Brennleckgr./Strahlenquellengr.: <b>3x3</b> |  | b (mm)                                                  |  | Filmsorte:                                     |  | Filmklasse:        |  |
| Source of radiation:                                                                         |  | Focal Spot/Source Size:                     |  | f 200                                                   |  | Film type:                                     |  | Film system class: |  |
| Röhreneinstellung:                                                                           |  |                                             |  | b (mA)                                                  |  | Folienart:                                     |  | Filmgröße:         |  |
| Tube voltage/current:                                                                        |  | (KV)                                        |  | (mA)                                                    |  | Screen type:                                   |  | Film size.         |  |
| Aktivität:                                                                                   |  |                                             |  |                                                         |  | Belichtungszeit:                               |  | Filmgröße:         |  |
| Activity:                                                                                    |  | 40 ci                                       |  |                                                         |  | Exposure time:                                 |  | Film size.         |  |
|                                                                                              |  |                                             |  |                                                         |  | 45 s                                           |  | 10 x 20            |  |

### Prüfergebnis/ Test data

[illegible]

| Definition | Erklärung der Bewertung/ Definition- Legend |
|------------|---------------------------------------------|
|------------|---------------------------------------------|

| Definition- Erklärung der Bewertung/ Definition- Legend |                                                   |                                               |
|---------------------------------------------------------|---------------------------------------------------|-----------------------------------------------|
| <b>Aa</b> = Pore/ Gas pore                              | <b>Ab</b> = Schlauchpore/Wurmhole                 | <b>Ad</b> = Porennest/Porosity                |
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| <b>H</b> = metallischer Einschluß/Metallic inclusion    |                                                   | <b>F</b> = Einbrand/Undercut                  |
|                                                         | <b>Ba</b> = Schlackeneinschl./ Slag inclusion     | <b>C</b> = Bindefehler/Lack of fusion         |
|                                                         | <b>Dc</b> = Wurzeldurchhang/Excessive penetration | <b>E</b> = Riß/Crack                          |

|                                                                                                                                         | Additional Marking |
|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| <input checked="" type="checkbox"/> Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled  | R1; R2             |
| <input type="checkbox"/> Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled | N                  |
| <input type="checkbox"/> toleriert/ tolerated                                                                                           | F                  |
|                                                                                                                                         | G                  |
|                                                                                                                                         | K                  |
|                                                                                                                                         | I                  |

Testing Contractor/Name of Examiner

## Air Liquide

Date \_\_\_\_\_ Name \_\_\_\_\_ Signature \_\_\_\_\_

Date \_\_\_\_\_ Name \_\_\_\_\_ Signature \_\_\_\_\_

Date \_\_\_\_\_  
Name \_\_\_\_\_

**Signature**

Date \_\_\_\_\_

Signature

TÜV



|                                                         |  |                                                          |  |                                                                                                           |  |                                                                                                   |  |
|---------------------------------------------------------|--|----------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------|--|
| <b>AIR LIQUIDE</b>                                      |  | <b>Durchstrahlungsprüfung - Radiographic Examination</b> |  | Bericht/ Report: <b>308</b>                                                                               |  | Prüfdatum: <b>04.12.2005</b>                                                                      |  |
| Kennwort:                                               |  | Zeichnungsnummer/ISO-Nr.: <b>O 22002</b>                 |  | Seite: <b>2</b> von <b>488</b>                                                                            |  | Baufeld Nr.: xxx                                                                                  |  |
| Job Name: <b>ASU No.9 Kosice</b>                        |  | Drawing No./ISO No.: <b>K 70101</b>                      |  | Sheet: <b>141</b> of <b>488</b>                                                                           |  | Constr area No.:                                                                                  |  |
| Benennung: <b>Coldbox</b>                               |  | Bauteil/Verbindung: <b>pipe</b>                          |  | Schweißverfahren: <b>488</b>                                                                              |  | Nahtform BW                                                                                       |  |
| Discription: <b>Coldbox</b>                             |  | Part/Joint:                                              |  | Welder:                                                                                                   |  | Weld type:                                                                                        |  |
| Wärmebehandlung: <input type="checkbox"/> ohne/ without |  | Schweißnahtnummer: <b>12.1</b>                           |  | Bewertung n. DIN EN 5817: <input type="checkbox"/> DIN EN 30042 <input type="checkbox"/> (DIN EN 12517/1) |  | <input type="checkbox"/> A<br><input checked="" type="checkbox"/> B<br><input type="checkbox"/> C |  |
| Heat treatment: <input type="checkbox"/> vor/ before    |  | Weld- No.:                                               |  | Quality level acc. to -//                                                                                 |  |                                                                                                   |  |
| Oberflächenzustand <b>Clean</b>                         |  | Prüfumfang: <b>25 %</b>                                  |  | Abmessung/Dimension A: <b>168x7,1</b>                                                                     |  | mm                                                                                                |  |
| Surface quality:                                        |  | Extent of examination:                                   |  | Abmessung/Dimension B:                                                                                    |  |                                                                                                   |  |

**Angaben zur Prüfung/ Data of examination**

|                                                                                               |                                                                                                                           |                                               |                                   |
|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-----------------------------------|
| Prüfklasse gem. DIN EN 1435: <input type="checkbox"/> A <input checked="" type="checkbox"/> B | Zulässigkeitsgrenzen gem. DIN EN 12 517: <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 | Aufnahmeanordnung nach DIN EN 1435: <b>14</b> |                                   |
| Test class acc. to EN 1435: <input type="checkbox"/> A <input checked="" type="checkbox"/> B  | Acceptance level acc. to EN 12 517: <b>3x3</b>                                                                            | Test arrangement acc. EN 1435: <b>C 2</b>     |                                   |
| Strahlungsquelle: <b>Selen 75</b>                                                             | Brennfleckgr./Strahlenquellengr.: <b>3x3</b>                                                                              | Filmsorte: <b>Agfa D3</b>                     | Filmklasse: <b>C 2</b>            |
| Source of radiation: <b>Selen 75</b>                                                          | Focal Spot/Source Size:                                                                                                   | Film type: <b>f 168</b>                       | Film system class: <b>10 x 24</b> |
| Aktivität: <b>40 ci</b>                                                                       | Röhreneinstellung: <b>(KV)</b>                                                                                            | Folienart: <b>Pb</b>                          | Filmgröße: <b>10 x 24</b>         |
| Activity: <b>40 ci</b>                                                                        | Tube voltage/current: <b>(mA)</b>                                                                                         | Screen type: <b>0,02 mm</b>                   | Film size: <b>10 x 24</b>         |

**Prüfergebnis/ Test data**

| Bildgüteprüfkörper/ Image quality indicator ( IQ 10A/EN461-2 ) | Schweißnahtnummer<br>Weld No. ☆ | Auswertbare Filmlänge<br>Evaluated length of film<br>in cm / from + to | Lage/ Position: <input checked="" type="checkbox"/> Filmnah/ close to film <input type="checkbox"/> Filmfern/ far from film |      |     |     |     |     |   |   |    |     | Bemerkung<br>Comments<br>( from - to ) |     |           |                                     |                                      |                       |                                          |  |
|----------------------------------------------------------------|---------------------------------|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|------|-----|-----|-----|-----|---|---|----|-----|----------------------------------------|-----|-----------|-------------------------------------|--------------------------------------|-----------------------|------------------------------------------|--|
|                                                                |                                 |                                                                        | Imperfektions ( EN 26520 )                                                                                                  |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
| Film-nr.<br>Film No.                                           |                                 | 2011                                                                   | 2016                                                                                                                        | 2013 | 301 | 401 | 402 | 501 | 3 | 5 | 15 | 504 | 100                                    | 304 | 5011/5012 | Filmfehler<br>Film defect<br>( FF ) | Bildgüte<br>Image quality<br>( IQL ) | Schwärzung<br>Density | Befund/ Findings<br>a ( e )<br>na ( ne ) |  |
|                                                                | 1                               |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     | 15                                   | 2,4                   | x                                        |  |
|                                                                | 2                               |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     | 15                                   | 2,4                   | x                                        |  |
|                                                                | 3                               |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     | 15                                   | 2,4                   | x                                        |  |
|                                                                | 4                               |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     | 15                                   | 2,4                   | x                                        |  |
|                                                                | 5                               |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     | 15                                   | 2,4                   | x                                        |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |
|                                                                |                                 |                                                                        |                                                                                                                             |      |     |     |     |     |   |   |    |     |                                        |     |           |                                     |                                      |                       |                                          |  |

**Definition- Erklärung der Bewertung/ Definition- Legend**

**Aa** = Pore/ Gas pore  
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**F** = Einbrand/Undercut

☒ Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled

☐ Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled

☐ toleriert/ tolerated

## ★ Additional Marking

R1; R2  
 N  
 F  
 G  
 K  
 I

erste und zweite Rep./first and second Rep.  
 neu nach Rep./ cut and reweld  
 Folgeprüfung/ Tracer shot  
 Garantienaht/ RT instead of Pressure Test  
 Kontrollschuß/ Control Shot  
 I - Stöße/ I - Joint

Testing Contractor/Name of Examiner

Date

Name

Signature

Signature

Date

Name

Signature

Signature

Date

Name

Signature

Date

Name

Signature

Air Liquide

E.H.R.

12.12.05

Kielholz

TÜV

EHR 02

Kielholz

Kielholz

|                                                         |  |                                                          |  |                                           |  |                                                                                             |  |
|---------------------------------------------------------|--|----------------------------------------------------------|--|-------------------------------------------|--|---------------------------------------------------------------------------------------------|--|
| <b>AIR LIQUIDE</b>                                      |  | <b>Durchstrahlungsprüfung - Radiographic Examination</b> |  | Bericht/ Report: <b>309</b>               |  | Prüfdatum: <b>03.12.2005</b>                                                                |  |
| Kennwort:                                               |  | Auftragsnummer:                                          |  | Zeichnungsnummer/ISO-Nr.: <b>N 22001</b>  |  | Seite: <b>1</b> von <b>1</b>                                                                |  |
| Job Name: <b>ASU No.9 Kosice</b>                        |  | Serial/Order No.: <b>K 70101</b>                         |  | Drawing No./ISO No.:                      |  | Baufeld Nr.: xxx                                                                            |  |
| Benennung:                                              |  | Bauteil/Verbindung: pipe                                 |  | Schweißverfahren DIN 24063: <b>470</b>    |  | Nahtform BW                                                                                 |  |
| Description: <b>Coldbox</b>                             |  | Part/Joint:                                              |  | Welding process to DIN 24063:             |  | Weld type: <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C |  |
| Wärmebehandlung: <input type="checkbox"/> ohne/ without |  | Schweißnahtnummer:                                       |  | Werkstoff/ Material A: <b>Al Mg 4,5Mn</b> |  | Bewertung n.DIN EN 5817 <input type="checkbox"/> DIN EN 30042 <input type="checkbox"/>      |  |
| Heat treatment: <input type="checkbox"/> vor/ before    |  | Weld- No.: <b>3</b>                                      |  | Werkstoff/ Material B:                    |  | Quality level acc. to -// (DIN EN 12517/1)                                                  |  |
| Oberflächenzustand Clean                                |  | Prüfumfang: <b>10 %</b>                                  |  | Abmessung/Dimension A: <b>406x6</b>       |  | mm                                                                                          |  |
| Surface quality:                                        |  | Extent of examination:                                   |  | Abmessung/Dimension B:                    |  | mm                                                                                          |  |

**Angaben zur Prüfung/ Data of examination**

|                                                                                   |                                                                                                                          |                                                |                           |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|---------------------------|
| Prüfklasse gem. DIN EN 1435 <input type="checkbox"/> A <input type="checkbox"/> B | Zulässigkeitsgrenzen gem. DIN EN 12 517 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 | Aufnahmeanordnung nach DIN EN 1435 : <b>14</b> |                           |
| Test class acc. to EN 1435                                                        | Acceptance level acc. to EN 12 517                                                                                       | Test arrangement acc. EN 1435                  |                           |
| Strahlungsquelle: <b>Selen 75</b>                                                 | Brennflächgr./Strahlenquellengr.: <b>3x3</b>                                                                             | Filmsorte: <b>Kodak Mx 125</b>                 | Filmklasse: <b>C 3</b>    |
| Source of radiation:                                                              | Focal Spot/Source Size:                                                                                                  | Film type:                                     | Film system class:        |
| Aktivität: <b>40 ci</b>                                                           | Röhreneinstellung:                                                                                                       | Folienart: <b>Pb</b>                           | Filmgröße: <b>10 x 48</b> |
| Activity:                                                                         | Tube voltage/current:                                                                                                    | Screen type:                                   | Film size:                |
|                                                                                   | (KV)                                                                                                                     | (mA)                                           |                           |
|                                                                                   |                                                                                                                          | Screen thickness:                              |                           |
|                                                                                   |                                                                                                                          | 0,02 mm                                        |                           |

**Prüfergebnisse/ Test data**

| Weld No. | ☆    | Film No. | Auswertbare Filmlänge<br>Evaluated length of film<br>in cm / from ÷ to | Lage/ Position:          |     |      |     |     |     |     |           |  |  |  |  | Filmnah/ close to film            |                                    |                       |                  | Filmfern/ far from film |  |  |  | Bemerkung<br>Comments<br>(from - to) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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|          |      |          |                                                                        | Imperfektions (EN 26520) |     |      |     |     |     |     |           |  |  |  |  | Filmfehler<br>Film defect<br>(FF) | Bildgüte<br>Image quality<br>(IQL) | Schwärzung<br>Density | Befund/ Findings |                         |  |  |  |                                      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2011     | 2016 | 2013     | 301                                                                    | 401                      | 402 | 5013 | 515 | 504 | 100 | 304 | 5011/5012 |  |  |  |  |                                   |                                    |                       |                  |                         |  |  |  |                                      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**Definition- Erklärung der Bewertung/ Definition- Legend**

Aa = Pore/ Gas pore      Ab = Schlauchpore/Wurmhole      Ad = Porenneht/ Porosity      Ba = Schlackeneinschl./ Slag inclusion      C = Bindefehler/Lack of fusion  
 D = ung. Durchschw./ Lack of penetration      Da = Wurzelkerbe/ Root notch      Db = Wurzelrückfall/ Root reinforcement      Dc = Wurzeldurchhang/ Excessive penetration      E = Riß/ Crack  
 H = metallischer Einschluss/ Metallic inclusion      F = Einbrand/ Undercut

☐ Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled

☐ Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled

☐ toleriert/ tolerated

☆ Additional Marking

R1; R2      erste und zweite Rep./ first and second Rep.  
 N      neu nach Rep./ cut and reweld  
 F      Folgeprüfung/ Tracer shot  
 G      Garantienahme/ RT instead of Pressure Test  
 K      Kontrollschuß/ Control Shot  
 I      1- Stöße/ 1- Joint

Testing Contractor/Name of Examiner

Air Liquide

E.H.R.

12.12.05

Kielholz

EHR 02

TÜV

Date

Name

Signature

Date

Name

Signature

Date

Name

Signature

Date

Signature



|                                                                                                                                                                                         |                                                     |                                                                                                      |                                  |                                                                                                                                                        |                                                                                                                        |                             |                                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|------------------------------------------------------------------------------------------------------|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|-----------------------------|------------------------------------------------|
|                                                                                                      |                                                     | <b>Durchstrahlungsprüfung- Radiographic Examination</b>                                              |                                  |                                                                                                                                                        |                                                                                                                        | Bericht/ Report: <b>311</b> | Prüfdatum: <b>05.12.2005</b><br>Date of Exam.: |
| Kennwort:<br>Job Name: <b>ASU No.9 Kosice</b>                                                                                                                                           | Auftragsnummer:<br>Serial/Order No.: <b>K 70101</b> | Zeichnungsnummer/ISO-Nr.: <b>RL 40004</b>                                                            | Seite: <b>3</b> von<br>Sheet: of | Baufeld Nr.: <b>xxx</b><br>Constr area No.:                                                                                                            |                                                                                                                        |                             |                                                |
| Benennung:<br>Discription: <b>Coldbox</b>                                                                                                                                               | Bauteil/Verbindung:<br>Part/Joint: <b>pipe</b>      | Drawing No./ISO No.: <b>195</b>                                                                      | Schweißer:<br>Welder:            | Nahtform BW<br>Weld type:                                                                                                                              |                                                                                                                        |                             |                                                |
| Wärmebehandlung: <input checked="" type="checkbox"/> <b>ohne/ without</b><br>Heat treatment: <input type="checkbox"/> <b>vor/ before</b><br><input type="checkbox"/> <b>nach/ after</b> | Schweißnahtnummer:<br>Weld- No.: <b>20</b>          | Welding process to DIN 24063:<br>Werkstoff/ Material A: <b>Al Mg 4,5Mn</b><br>Werkstoff/ Material B: | 141                              | Bewertung n.DIN EN 5817 <input type="checkbox"/> <b>DIN EN 30042</b> <input checked="" type="checkbox"/><br>Quality level acc. to -// (DIN EN 12517/1) | <input type="checkbox"/> <b>A</b><br><input checked="" type="checkbox"/> <b>B</b><br><input type="checkbox"/> <b>C</b> |                             |                                                |
| Oberflächenzustand <b>Clean</b><br>Surface quality:                                                                                                                                     | Prüfmfang:<br>Extent of examination: <b>10 %</b>    | Abmessung/Dimension A: <b>60x3,9</b><br>Abmessung/Dimension B:                                       | mm                               |                                                                                                                                                        |                                                                                                                        |                             |                                                |

**Angaben zur Prüfung/ Data of examination**

|                                                                               |  |                        |  |
|-------------------------------------------------------------------------------|--|------------------------|--|
| Aufnahmeanordnung nach DIN EN 1435 :<br>Test arrangement acc. EN 1435         |  | 11                     |  |
| Zulässigkeitsgrenzen gem. DIN EN 12 517<br>Acceptance level acc. to EN 12 517 |  | 3                      |  |
| Test class acc. to EN 1435                                                    |  | 1 2                    |  |
| Strahlungsquelle:                                                             |  | Filmklasse:            |  |
| Brennflckgr./Strahlungsquellengr.: 3x3                                        |  | Filmgröße:             |  |
| Source of radiation: Selen 75                                                 |  | Film system class: C 2 |  |
| Focal Spot/Source Size:                                                       |  | Film type:             |  |
| b (mm)                                                                        |  | f 200                  |  |
| Folienart: Pb                                                                 |  | Belichtungszeit:       |  |
| Röhreneinstellung:                                                            |  | Filmgröße: 10 x 20     |  |
| Tube voltage/current: 40 ci                                                   |  | Exposure time: 45 s    |  |
| Activity:                                                                     |  | Screen type:           |  |
| (mA)                                                                          |  | Screen thickness:      |  |
| (KV)                                                                          |  | Film size:             |  |

### Prüfergebnis/ Test data

| Bildgüteprüfkörper / Image quality indicator ( IQ 10A IEN 461-2 |               |                                                                        |                             |    |    | Lage/ Position: |   |   |    |    |    |   |                                     | Filmmnah/ close to film              |                       |                  |    |                                        |         |           | Filmfern/ far from film |  |  |  |  |
|-----------------------------------------------------------------|---------------|------------------------------------------------------------------------|-----------------------------|----|----|-----------------|---|---|----|----|----|---|-------------------------------------|--------------------------------------|-----------------------|------------------|----|----------------------------------------|---------|-----------|-------------------------|--|--|--|--|
| Schweißnahtnummer<br>Weld No.                                   | ☆<br>Film No. | Auswertbare Filmlänge<br>Evaluated length of film<br>in cm / from ÷ to | Imperfektionen ( EN 26520 ) |    |    |                 |   |   |    |    |    |   | Filmfehler<br>Film defect<br>( FF ) | Bildgüte<br>Image quality<br>( IQI ) | Schwärzung<br>Density | Befund/ Findings |    | Bemerkung<br>Comments<br>( from - to ) |         |           |                         |  |  |  |  |
|                                                                 |               |                                                                        | Aa                          | Ab | Ad | Ba              | C | D | Da | Db | Dc | E |                                     |                                      |                       | H                | F  |                                        | a ( e ) | na ( ne ) |                         |  |  |  |  |
| 20                                                              | A             |                                                                        |                             |    |    |                 |   |   |    |    |    |   |                                     |                                      |                       |                  | 14 | 2,4                                    | x       |           |                         |  |  |  |  |
|                                                                 | B             |                                                                        |                             |    |    |                 |   |   |    |    |    |   |                                     |                                      |                       |                  | 14 | 2,4                                    | x       |           |                         |  |  |  |  |
|                                                                 |               |                                                                        |                             |    |    |                 |   |   |    |    |    |   |                                     |                                      |                       |                  |    |                                        |         |           |                         |  |  |  |  |
|                                                                 |               |                                                                        |                             |    |    |                 |   |   |    |    |    |   |                                     |                                      |                       |                  |    |                                        |         |           |                         |  |  |  |  |
|                                                                 |               |                                                                        |                             |    |    |                 |   |   |    |    |    |   |                                     |                                      |                       |                  |    |                                        |         |           |                         |  |  |  |  |
|                                                                 |               |                                                                        |                             |    |    |                 |   |   |    |    |    |   |                                     |                                      |                       |                  |    |                                        |         |           |                         |  |  |  |  |

## Definition- Erklärung der Bewertung/ Definition- Legend

|                                                      |                                    |                                               |                                                   |                                       |
|------------------------------------------------------|------------------------------------|-----------------------------------------------|---------------------------------------------------|---------------------------------------|
| <b>Aa</b> = Pore/ Gas pore                           | <b>Ab</b> = Schlauchpore/Wurmhole  | <b>Ad</b> = Porennest/Porosity                | <b>Ba</b> = Schlackeinschl./ Slag inclusion       | <b>C</b> = Bindefehler/Lack of fusion |
| <b>D</b> = ung. Durchschw./Lack of penetration       | <b>Da</b> = Wurzelkerbe/Root notch | <b>Db</b> = Wurzelrückfall/Root reinforcement | <b>Dc</b> = Wurzeldurchhang/Excessive penetration | <b>E</b> = Riß/Crack                  |
| <b>H</b> = metallischer Einschluß/Metallic inclusion | <b>F</b> = Einbrand/Undercut       |                                               |                                                   |                                       |

|                                                                                                                                            | ☆ Additional Marking                                                         |
|--------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> Anforderung nach Prüfungspezifikation erfüllt/ Requirements according to test specification fulfilled  | R1; R2<br>N                                                                  |
| <input type="checkbox"/> Anforderungen nach Prüfungspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled | erste und zweite Rep./first and second Rep.<br>neu nach Rep./ cut and reweld |
| <input type="checkbox"/> toleriert/ tolerated                                                                                              | F<br>G<br>K<br>I                                                             |

**Testing Contractor/Name of Examiner**

## Air Liquide

**E.H.R**



**TÜV**

Date \_\_\_\_\_ Name \_\_\_\_\_

Name

**Signature**

Date \_\_\_\_\_

Name

**Signature**

Name

Signature

Date \_\_\_\_\_

**Signature**

**Signature**

|                                                                                           |  |                                  |  |                                                         |  |                                                                                                   |  |                                            |  |                                                                                             |  |
|-------------------------------------------------------------------------------------------|--|----------------------------------|--|---------------------------------------------------------|--|---------------------------------------------------------------------------------------------------|--|--------------------------------------------|--|---------------------------------------------------------------------------------------------|--|
| <b>AIR LIQUIDE</b>                                                                        |  |                                  |  | <b>Durchstrahlungsprüfung- Radiographic Examination</b> |  |                                                                                                   |  | Bericht/ Report: <b>312</b>                |  | Prüfdatum: <b>06.12.2005</b>                                                                |  |
| Kenwort:                                                                                  |  | Auftragsnummer:                  |  | Zeichnungsnummer/ISO-Nr.: <b>AL 43007</b>               |  | Seite: <b>1</b> von <b>xxx</b>                                                                    |  | Baufeld Nr.: <b>xxx</b>                    |  | Date of Exam.:                                                                              |  |
| Job Name: <b>ASU No.9 Kosice</b>                                                          |  | Serial/Order No.: <b>K 70101</b> |  | Drawing No./ISO No.:                                    |  | Sheet: <b>195</b>                                                                                 |  | Constr area No.:                           |  |                                                                                             |  |
| Benennung: <b>Coldbox</b>                                                                 |  | Bauteil/Verbindung: <b>pipe</b>  |  | Schweißverfahren DIN 24063:                             |  | Schweißer: <b>141</b>                                                                             |  | Nahtform BW                                |  |                                                                                             |  |
| Discription: <b>Coldbox</b>                                                               |  | Part/Joint:                      |  | Welding process to DIN 24063:                           |  | Weider:                                                                                           |  | Weld type:                                 |  |                                                                                             |  |
| Wärmebehandlung: <input checked="" type="checkbox"/> ohne/ without                        |  | Schweißnahtnummer:               |  | Werkstoff/ Material A: <b>Al Mg 4,5Mn</b>               |  | Bewertung n.DIN EN 5817 <input type="checkbox"/> DIN EN 30042 <input checked="" type="checkbox"/> |  | Quality level acc. to -/- (DIN EN 12517/1) |  | <input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C |  |
| Heat treatment: <input type="checkbox"/> vor/ before <input type="checkbox"/> nach/ after |  | Weld- No.: <b>5</b>              |  | Werkstoff/ Material B:                                  |  |                                                                                                   |  |                                            |  |                                                                                             |  |
| Oberflächenzustand <b>Clean</b>                                                           |  | Prüfumfang: <b>10 %</b>          |  | Abmessung/Dimension A: <b>60x3,9</b>                    |  |                                                                                                   |  |                                            |  | mm                                                                                          |  |
| Surface quality:                                                                          |  | Extent of examination:           |  | Abmessung/Dimension B:                                  |  |                                                                                                   |  |                                            |  |                                                                                             |  |

**Angaben zur Prüfung/ Data of examination**

|                                                                                              |                                                                                                                                     |                                                |                           |
|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|---------------------------|
| Prüfklasse gem. DIN EN 1435 <input type="checkbox"/> A <input checked="" type="checkbox"/> B | Zulässigkeitsgrenzen gem. DIN EN 12 517 <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 | Aufnahmeanordnung nach DIN EN 1435 : <b>11</b> |                           |
| Test class acc. to EN 1435                                                                   | Acceptance level acc. to EN 12 517                                                                                                  | Test arrangement acc. EN 1435                  |                           |
| Strahlungsquelle: <b>Selen 75</b>                                                            | Brennfleckgr./Strahlenquellenlgr.: <b>3x3</b>                                                                                       | Filmsorte: <b>Kodak Mx 100</b>                 | Filmklasse: <b>C 2</b>    |
| Source of radiation:                                                                         | Focal Spot/Source Size:                                                                                                             | Film type:                                     | Film system class:        |
| Aktivität: <b>40 ci</b>                                                                      | Röhreneinstellung: <b>(KV)</b>                                                                                                      | Folienart: <b>f 200</b>                        | Filmgröße: <b>10 x 20</b> |
| Activity:                                                                                    | Tube voltage/current: <b>(mA)</b>                                                                                                   | Screen type: <b>0.02 mm</b>                    | Film size:                |

**Prüfergebnis/ Test data**

| Bildgüteprüfkörper/ Image quality indicator ( I Q 10A EN461-2 |   | Lage/ Position:       |  | Filmmah/ close to film     |  |      |  |      |  |      |  |     |  |     |  | Filmfern/ far from film |  | Bemerkung  |  |            |  |           |  |     |  |     |  |           |  |               |  |         |  |         |  |           |  |               |  |
|---------------------------------------------------------------|---|-----------------------|--|----------------------------|--|------|--|------|--|------|--|-----|--|-----|--|-------------------------|--|------------|--|------------|--|-----------|--|-----|--|-----|--|-----------|--|---------------|--|---------|--|---------|--|-----------|--|---------------|--|
| Schweißnahtnummer                                             |   | Auswertbare Filmlänge |  | Imperfektions ( EN 26520 ) |  |      |  |      |  |      |  |     |  |     |  |                         |  | Filmfehler |  | Schwärzung |  | Bemerkung |  |     |  |     |  |           |  |               |  |         |  |         |  |           |  |               |  |
| Weld No.                                                      |   | Film No.              |  | Evaluated length of film   |  | 2011 |  | 2016 |  | 2013 |  | 301 |  | 401 |  | 402                     |  | 5013       |  | 515        |  | 504       |  | 100 |  | 304 |  | 5011/5012 |  | Image quality |  | Density |  | a ( e ) |  | na ( ne ) |  | ( from - to ) |  |
|                                                               |   |                       |  | in cm / from ÷ to          |  | Aa   |  | Ab   |  | Ad   |  | Ba  |  | C   |  | D                       |  | Da         |  | Db         |  | Dc        |  | E   |  | H   |  | F         |  | ( IQL )       |  |         |  |         |  |           |  |               |  |
| 5                                                             | A |                       |  |                            |  |      |  |      |  |      |  |     |  |     |  |                         |  |            |  |            |  |           |  |     |  |     |  |           |  |               |  |         |  |         |  |           |  |               |  |
|                                                               | B |                       |  |                            |  |      |  |      |  |      |  |     |  |     |  |                         |  |            |  |            |  |           |  |     |  |     |  |           |  |               |  |         |  |         |  |           |  |               |  |
|                                                               |   |                       |  |                            |  |      |  |      |  |      |  |     |  |     |  |                         |  |            |  |            |  |           |  |     |  |     |  |           |  |               |  |         |  |         |  |           |  |               |  |
|                                                               |   |                       |  |                            |  |      |  |      |  |      |  |     |  |     |  |                         |  |            |  |            |  |           |  |     |  |     |  |           |  |               |  |         |  |         |  |           |  |               |  |
|                                                               |   |                       |  |                            |  |      |  |      |  |      |  |     |  |     |  |                         |  |            |  |            |  |           |  |     |  |     |  |           |  |               |  |         |  |         |  |           |  |               |  |

**Definition- Erklärung der Bewertung/ Definition- Legend**

**Aa** = Pore/ Gas pore **Ab** = Schlauchpore/Wurmhole **Ad** = Porennes/Porosity **Ba** = Schlackeneinschl./ Slag inclusion **C** = Bindefehler/Lack of fusion  
**D** = ung. Durchschw./Lack of penetration **Da** = Wurzelkerbe/Root notch **Db** = Wurzelrückfall/Root reinforcement **Dc** = Wurzeldurchhang/Excessive penetration **E** = Riß/Crack  
**H** = metallischer Einschluss/Metallic inclusion **F** = Einbrand/Undercut

☒ Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled

☐ Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled

☐ toleriert/ tolerated

**☆ Additional Marking**

R1; R2 erste und zweite Rep./first and second Rep.  
N neu nach Rep./ cut and reweld  
F Folgeprüfung/ Tracer shot  
G Garantenah/ RT instead of Pressure Test  
K Kontrollschuß/ Control Shot  
I 1- Stos/ 1- Joint

Testing Contractor/Name of Examiner

Air Liquide

E.H.R.

12.12.05 Kielholz

Date Name Signature

16.1.06

Name Signature

Name Signature

Date

Name

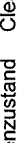
Signature

TÜV

Date

Name

Signature

|                                                                                     |  |                                                  |  |                                           |                             |                                                                                                   |                                                |                  |  |
|-------------------------------------------------------------------------------------|--|--------------------------------------------------|--|-------------------------------------------|-----------------------------|---------------------------------------------------------------------------------------------------|------------------------------------------------|------------------|--|
|  |  | Durchstrahlungsprüfung- Radiographic Examination |  |                                           | Bericht/ Report: <b>313</b> |                                                                                                   | Prüfdatum: <b>06.12.2005</b><br>Date of Exam.: |                  |  |
| Kennwort:                                                                           |  | Auftragsnummer:                                  |  | Zeichnungsnummer/ISO-Nr.: <b>NL 23007</b> |                             | Sheet: <b>3</b> of                                                                                |                                                | Baufeld Nr.: xxx |  |
| Job Name: <b>ASU No.9 Kosice</b>                                                    |  | Serial/Order No.: <b>K 70101</b>                 |  | Drawing No./ISO No.:                      |                             | 141                                                                                               |                                                | Constr area No.: |  |
| Benennung:                                                                          |  | Bauteil/Verbindung: pipe                         |  | Schweißverfahren DIN 24063:               |                             | 470                                                                                               |                                                | Nahtform BW      |  |
| Discription: <b>Coldbox</b>                                                         |  | Part/Joint:                                      |  | Welding process to DIN 24063:             |                             | Welder:                                                                                           |                                                | Weld type:       |  |
| Wärmebehandlung: <input checked="" type="checkbox"/>                                |  | Schweißnahtnummer:                               |  | Werkstoff/ Material A: <b>Al Mg 4,5Mn</b> |                             | Bewertung n.DIN EN 5817 <input type="checkbox"/> DIN EN 30042 <input checked="" type="checkbox"/> |                                                | A                |  |
| Heat treatment: <input type="checkbox"/>                                            |  | Weld- No.: <b>3</b>                              |  | Werkstoff/ Material B:                    |                             | Quality level acc. to -/- (DIN EN 12517/1)                                                        |                                                | B                |  |
| Oberflächenzustand Clean                                                            |  | Prüfumfang: <b>10 %</b>                          |  | Abmessung/Dimension A:                    |                             | 168x7,1                                                                                           |                                                | C                |  |
| Surface quality:                                                                    |  | Extent of examination:                           |  | Abmessung/Dimension B:                    |                             | mm                                                                                                |                                                |                  |  |

**Angaben zur Prüfung/ Data of examination**

|                                                                                   |  |                                              |  |                                                         |  |                                                                       |     |
|-----------------------------------------------------------------------------------|--|----------------------------------------------|--|---------------------------------------------------------|--|-----------------------------------------------------------------------|-----|
| Prüfklasse gem. DIN EN 1435 <input type="checkbox"/> A <input type="checkbox"/> B |  | Zulässigkeitsgrenzen gem. DIN EN 12 517      |  | 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 |  | Aufnahmeanordnung nach DIN EN 1435 :<br>Test arrangement acc. EN 1435 | 14  |
| Test class acc. to EN 1435                                                        |  | Acceptance level acc. to EN 12 517           |  |                                                         |  |                                                                       |     |
| Strahlungsquelle:                                                                 |  | Brennfleckgr./Strahlenquellengr.: <b>3x3</b> |  | b (mm)                                                  |  | Filmsorte:                                                            | C 2 |
| Source of radiation:                                                              |  | Focal Spot/Source Size:                      |  |                                                         |  | Film type:                                                            |     |
| Aktivität:                                                                        |  | Röhreinstellung:                             |  | Folienart: Pb                                           |  | Belichtungszeit:                                                      |     |
| Activity: 40 ci                                                                   |  | Tube voltage/current:                        |  | Screen type:                                            |  | Exposure time: <b>45 s</b>                                            |     |
|                                                                                   |  | (KV)                                         |  | (mA)                                                    |  | Filmgröße:                                                            |     |
|                                                                                   |  |                                              |  | Screen thickness:                                       |  | Film size.                                                            |     |
|                                                                                   |  |                                              |  |                                                         |  | 10 x 20                                                               |     |

## Prüfergebnis/ Test data

[illegible]

## Definition- Erklärung der Bewertung/ Definition- Legend

**Aa** = Pore/ Gas pore      **Ab** = Schlauchpore/Wurmhole      **Ad** = Porennetz/Porosity      **Ba** = Schlackeneinschl./ Slag inclusion      **C** = Bindefehler/Lack of fusion  
**D** = ung. Durchschw./Lack of penetration      **Da** = Wurzelkerbe/Root notch      **Db** = Wurzelfuckfall/Root reinforcement      **Dc** = Wurzeldurchhang/Excessive penetration      **E** = Riß/Crack  
**H** = metallischer Einschuß/Metallic inclusion      **F** = Einbrand/Undercut

|                                                                                                                                         | ☆ Additional Marking                                                                                                                                                                                                          |
|-----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled  | R1; R2 erste und zweite Rep./first and second Rep.<br>N neu nach Rep./ cut and reweld<br>F Folgeprüfung/ Tracer shot<br>G Garantienahmt/ RT instead of Pressure Test<br>K Kontrollschuß/ Control Shot<br>I I- Stols/ I- Joint |
| <input type="checkbox"/> Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled |                                                                                                                                                                                                                               |
| <input type="checkbox"/> toleriert/ tolerated                                                                                           |                                                                                                                                                                                                                               |

**Testing Contractor/Name of Examiner**

## Air Liquide

**E.H.R.**

**E.H.R**  
12.12.05 Kielholz

**TÜV**

Date \_\_\_\_\_  
Name \_\_\_\_\_

Name \_\_\_\_\_ Signature \_\_\_\_\_

Date \_\_\_\_\_

**Signature**

Name

**Signature**

Name

**Signature**

8-12-2005 ZED JWD 16.1.06 Yauzev Babin Babin



|                                                 |  |                                              |  |  |                                         |                                       |                            |                            |                                      |                                                                     |               |                |
|-------------------------------------------------|--|----------------------------------------------|--|--|-----------------------------------------|---------------------------------------|----------------------------|----------------------------|--------------------------------------|---------------------------------------------------------------------|---------------|----------------|
| <b>Angaben zur Prüfung/ Data of examination</b> |  |                                              |  |  |                                         |                                       |                            |                            |                                      |                                                                     |               |                |
| Prüfkasse gem. DIN EN 1435                      |  | <input type="checkbox"/> A                   |  |  | Zulässigkeitsgrenzen gem. DIN EN 12 517 | <input checked="" type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | Aufnahmeanordnung nach DIN EN 1435 : | <div style="border: 1px solid black; padding: 2px;"><b>11</b></div> |               |                |
| Test class acc. to EN 1435                      |  | <input checked="" type="checkbox"/> B        |  |  | Acceptance level acc. to EN 12 517      |                                       |                            |                            | Test arrangement acc. EN 1435        |                                                                     |               |                |
| Strahlungsquelle:                               |  | Brennfleckgr./Strahlenquellengr.: <b>3x3</b> |  |  |                                         |                                       |                            |                            |                                      |                                                                     |               |                |
| Source of radiation:                            |  | <b>Selen 75</b>                              |  |  | Focal Spot/Source Size:                 |                                       |                            |                            |                                      |                                                                     |               |                |
| Aktivität:                                      |  | Röhreneinstellung:                           |  |  | b                                       | (mm)                                  | f                          | 200                        | Filmsorte:                           | Kodak Mx 100                                                        | Filmklasse:   | C 2            |
| Activity:                                       |  | 40 ci                                        |  |  | Tube voltage/current:                   | (kV)                                  | (mA)                       |                            | Folienart:                           | Pb                                                                  | Folienstärke: | 0,02 mm        |
|                                                 |  |                                              |  |  | Screen type:                            |                                       |                            |                            | Exposure time:                       | <b>45 s</b>                                                         | Filmgröße:    | <b>10 x 20</b> |
| Bildzusammenhang/ Total field                   |  |                                              |  |  |                                         |                                       |                            |                            |                                      |                                                                     |               |                |

| Testing Contractor/Name of Examiner |      |             | Air Liquide |          |             | E.H.R.   |          |             | TÜV     |             |             |
|-------------------------------------|------|-------------|-------------|----------|-------------|----------|----------|-------------|---------|-------------|-------------|
| Date                                | Name | Signature   | Date        | Name     | Signature   | Date     | Name     | Signature   | Date    | Name        | Signature   |
| 12.12.05                            | ZeA  | [Signature] | 16.1.06     | Foucazes | [Signature] | 12.12.05 | Kielholz | [Signature] | 8.12.05 | [Signature] | [Signature] |



## Durchstrahlungsprüfung - Radiographic Examination

Bericht/ Report: **315**Prüfdatum: **05.12.2005**

Kennwort: **ASU No.9 Kosice** Auftragsnummer: **K 70101** Zeichnungsnummer/SO-Nr.: **OL 40007** Seite: **1** von **1** Baufeld Nr.: **xxx**

Benennung: **Coldbox** Bauteil/Verbindung: **pipe** Schweißverfahren DIN 24063: **141** Schweißer: **Naftom BW** Weld type: **A**

Wärmebehandlung: ☐ ohne/ without Schweißnahtnummer: **AI Mg 4,5Mn** Werkstoff/ Material A: **Werkstoff/ Material B:** **Welding process to DIN 24063:** **Welder:** **Quality level acc. to -/-(DIN EN 12517/1)** **A** **B** **C**

Heat treatment: ☐ vor/ before **4** ☐ nach/ after **25 %** Abmessung/Dimension A: **114x6** Abmessung/Dimension B: **mm**

## Angaben zur Prüfung/ Data of examination

Prüfkategorie gem. DIN EN 1435 **A** Zulässigkeitsgrenzen gem. DIN EN 12 517 **1** **2** **3** Aufnahmeanordnung nach DIN EN 1435: **11**

Test class acc. to EN 1435 **B** Acceptance level acc. to EN 12 517 **3x3** b **(mm)** f **200** Test arrangement acc. EN 1435 **C 2**

Strahlungsquelle: **Selen 75** Brennfleckgr./Strahlenquellenlängr.: **3x3** b **(mm)** f **200** Filmsorte: **Kodak Mx 100** Filmklasse: **C 2**

Source of radiation: **Selen 75** Focal Spot/Source Size: **3x3** b **(mm)** f **200** Film type: **Belichtungszeit:** **10 x 20**

Aktivität: **40 ci** Röhreneinstellung: **(KV)** (mA) **Screen type:** **Screen thickness:** **0,02 mm** Exposure time **45 s**

Activity: **40 ci** Tube voltage/current: **(KV)** (mA) **Screen type:** **Screen thickness:** **0,02 mm** Exposure time **45 s**

## Prüfergebnis/ Test data

| Bildgrößeprüfkörper/ Image quality indicator ( IQ 10A)EN461-2 |  |  | Lage/ Position: <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input 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## Definition- Erklärung der Bewertung/ Definition- Legend

Aa = Pore/ Gas pore

Ab = Schraubbore/Murmhole

Ad = Porennes/Porosity

Ba = Schackeneinschl./ Slag inclusion

C = Bindefehler/Lack of fusion

D = ung. Durchschw./lack of penetration

Da = Wurzelkerbe/Root notch

Db = Wurzelrückfall/Root reinforcement

Dc = Wurzeldurchhang/Excessive penetration

E = Riß/Crack

H = metallischer Einschluss/Metallic inclusion

F = Einbrand/Undercut

G = Einbrand/Undercut

I = Einbrand/Undercut

J = Einbrand/Undercut

K = Einbrand/Undercut

Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled

Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled

toleriert/ tolerated

Toleriert/ tolerated

Testing Contractor/Name of Examiner

Air Liquide

E.H.R

EHR 02

TÜV

Date Name Signature

Date

Name

Signature

Date

Name

Signature

Date

Name

Signature

3.12.2005 EHR

16.1.06

J. J. J. J.

R. R. R. R.

Date

Name

Signature

Date

Name

Signature

| Durchstrahlungsprüfung - Radiographic Examination                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                |                                        |                                                                           |                                                                               |                |                                                                                                                      |                                 |                                                                              |  | Bericht/ Report: <b>316</b> |  | Prüfdatum: 07.12.2005<br>Date of Exam.:                                                           |  |                                                                                                    |                 |                        |  |                                     |                                                                                                                |                  |                                                                           |                          |                      |                 |                           |                          |  |   |                                          |                          |     |   |                             |                          |  |   |                    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |
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| Kennwort: <b>AIR LIQUIDE</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                | Auftragsnummer: <b>ASU No.9 Kosice</b> |                                                                           | Zeichnungsnummer/ISO-Nr.: <b>NL 23007</b>                                     |                | Seite: <b>4</b> von <b>4</b>                                                                                         |                                 | Sheet: <b>4</b> of <b>4</b>                                                  |  | Baufeld Nr.: xxx            |  | Constr area No.:                                                                                  |  |                                                                                                    |                 |                        |  |                                     |                                                                                                                |                  |                                                                           |                          |                      |                 |                           |                          |  |   |                                          |                          |     |   |                             |                          |  |   |                    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |
| Benennung: <b>Coldbox</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                | Bauteil/Verbindung: <b>pipe</b>        |                                                                           | Schweißverfahren DIN 24063: <b>141</b>                                        |                | Schweißer: <b>82</b>                                                                                                 |                                 | Nahtform BW                                                                  |  | Weld type:                  |  | <input type="checkbox"/> A<br><input checked="" type="checkbox"/> B<br><input type="checkbox"/> C |  |                                                                                                    |                 |                        |  |                                     |                                                                                                                |                  |                                                                           |                          |                      |                 |                           |                          |  |   |                                          |                          |     |   |                             |                          |  |   |                    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |
| Discription: <b>ohne/ without</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                | Schweißnahtnummer: <b>25</b>           |                                                                           | Welding process to DIN 24063: <b>AI Mg 4,5Mn</b>                              |                | Bewertung n. DIN EN 5817: <input type="checkbox"/> DIN EN 30042 <input checked="" type="checkbox"/> (DIN EN 12517/1) |                                 |                                                                              |  |                             |  |                                                                                                   |  |                                                                                                    |                 |                        |  |                                     |                                                                                                                |                  |                                                                           |                          |                      |                 |                           |                          |  |   |                                          |                          |     |   |                             |                          |  |   |                    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |
| Wärmebehandlung: <input type="checkbox"/> vor/ before                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                | Weld- No.: <b>25</b>                   |                                                                           | Werkstoff/ Material A:                                                        |                | Quality level acc. to -/-                                                                                            |                                 |                                                                              |  |                             |  |                                                                                                   |  |                                                                                                    |                 |                        |  |                                     |                                                                                                                |                  |                                                                           |                          |                      |                 |                           |                          |  |   |                                          |                          |     |   |                             |                          |  |   |                    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |
| Heat treatment: <input type="checkbox"/> nach/ after                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                |                                        |                                                                           | Werkstoff/ Material B:                                                        |                |                                                                                                                      |                                 |                                                                              |  |                             |  |                                                                                                   |  |                                                                                                    |                 |                        |  |                                     |                                                                                                                |                  |                                                                           |                          |                      |                 |                           |                          |  |   |                                          |                          |     |   |                             |                          |  |   |                    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |
| Oberflächenzustand: <b>Clean</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                | Prüfumfang: <b>10 %</b>                |                                                                           | Abmessung/Dimension A: <b>168x7,1</b>                                         |                |                                                                                                                      |                                 |                                                                              |  |                             |  | mm                                                                                                |  |                                                                                                    |                 |                        |  |                                     |                                                                                                                |                  |                                                                           |                          |                      |                 |                           |                          |  |   |                                          |                          |     |   |                             |                          |  |   |                    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |
| Surface quality:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                | Extent of examination:                 |                                                                           | Abmessung/Dimension B:                                                        |                |                                                                                                                      |                                 |                                                                              |  |                             |  |                                                                                                   |  |                                                                                                    |                 |                        |  |                                     |                                                                                                                |                  |                                                                           |                          |                      |                 |                           |                          |  |   |                                          |                          |     |   |                             |                          |  |   |                    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |
| <b>Angaben zur Prüfung/ Data of examination</b><br>Prüfklasse gem. DIN EN 1435 <input type="checkbox"/> A <input checked="" type="checkbox"/> B<br>Test class acc. to EN 1435<br>Strahlungsquelle: <b>Selen 75</b><br>Source of radiation:<br>Aktivität: <b>40 ci</b><br>Activity:<br>Röhreneinstellung: (KV) (mA) (mm) (mm) (mm) (mm)<br>Tube voltage/current: (KV) (mA) (mm) (mm) (mm) (mm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                |                                        |                                                                           |                                                                               |                |                                                                                                                      |                                 |                                                                              |  |                             |  |                                                                                                   |  |                                                                                                    |                 |                        |  |                                     |                                                                                                                |                  |                                                                           |                          |                      |                 |                           |                          |  |   |                                          |                          |     |   |                             |                          |  |   |                    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |
| <b>Prüfergebnisse/ Test data</b><br>Aufnahmeanordnung nach DIN EN 1435: <b>14</b><br>Test arrangement acc. EN 1435<br>Filmklasse: <b>C 2</b><br>Filmsorte: <b>Kodak Mx 100</b><br>Film type:<br>Belichtungszeit: <b>45 s</b><br>Exposure time: <b>45 s</b><br>Filmgröße: <b>10 x 20</b><br>Film size:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                |                                        |                                                                           |                                                                               |                |                                                                                                                      |                                 |                                                                              |  |                             |  |                                                                                                   |  |                                                                                                    |                 |                        |  |                                     |                                                                                                                |                  |                                                                           |                          |                      |                 |                           |                          |  |   |                                          |                          |     |   |                             |                          |  |   |                    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |
| <table border="1"> <thead> <tr> <th rowspan="2">Bildgüteprüfkörper/ Image quality indicator (IQ 10A1EN461-2)</th> <th rowspan="2">Lage/ Position:</th> <th colspan="2">Filmnah/ close to film</th> <th colspan="2">Filmfern/ far from film</th> <th rowspan="2">Befund/ Findings</th> <th rowspan="2">Bemerkung/ Comments (from - to)</th> </tr> <tr> <th>Filmfehler (FF)</th> <th>Bildgüte (IQI)</th> <th>Filmfehler (FF)</th> <th>Bildgüte (IQI)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td></td> <td></td> <td>15</td> <td></td> <td>2,4</td> <td>x</td> <td></td> </tr> <tr> <td>2</td> <td></td> <td></td> <td>15</td> <td></td> <td>2,4</td> <td>x</td> <td></td> </tr> <tr> <td>3</td> <td></td> <td></td> <td>15</td> <td></td> <td>2,4</td> <td>x</td> <td></td> </tr> <tr> <td>4</td> <td></td> <td></td> <td>15</td> <td></td> <td>2,4</td> <td>x</td> <td></td> </tr> <tr> <td>5</td> <td></td> <td></td> <td>15</td> <td></td> <td>2,4</td> <td>x</td> <td></td> </tr> </tbody> </table> |                                                                                                                |                                        |                                                                           |                                                                               |                |                                                                                                                      |                                 |                                                                              |  |                             |  |                                                                                                   |  | Bildgüteprüfkörper/ Image quality indicator (IQ 10A1EN461-2)                                       | Lage/ Position: | Filmnah/ close to film |  | Filmfern/ far from film             |                                                                                                                | Befund/ Findings | Bemerkung/ Comments (from - to)                                           | Filmfehler (FF)          | Bildgüte (IQI)       | Filmfehler (FF) | Bildgüte (IQI)            | 1                        |  |   | 15                                       |                          | 2,4 | x |                             | 2                        |  |   | 15                 |  | 2,4 | x |  | 3 |  |  | 15 |  | 2,4 | x |  | 4 |  |  | 15 |  | 2,4 | x |  | 5 |  |  | 15 |  | 2,4 | x |  |
| Bildgüteprüfkörper/ Image quality indicator (IQ 10A1EN461-2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Lage/ Position:                                                                                                | Filmnah/ close to film                 |                                                                           | Filmfern/ far from film                                                       |                | Befund/ Findings                                                                                                     | Bemerkung/ Comments (from - to) |                                                                              |  |                             |  |                                                                                                   |  |                                                                                                    |                 |                        |  |                                     |                                                                                                                |                  |                                                                           |                          |                      |                 |                           |                          |  |   |                                          |                          |     |   |                             |                          |  |   |                    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                | Filmfehler (FF)                        | Bildgüte (IQI)                                                            | Filmfehler (FF)                                                               | Bildgüte (IQI) |                                                                                                                      |                                 |                                                                              |  |                             |  |                                                                                                   |  |                                                                                                    |                 |                        |  |                                     |                                                                                                                |                  |                                                                           |                          |                      |                 |                           |                          |  |   |                                          |                          |     |   |                             |                          |  |   |                    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                |                                        | 15                                                                        |                                                                               | 2,4            | x                                                                                                                    |                                 |                                                                              |  |                             |  |                                                                                                   |  |                                                                                                    |                 |                        |  |                                     |                                                                                                                |                  |                                                                           |                          |                      |                 |                           |                          |  |   |                                          |                          |     |   |                             |                          |  |   |                    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                |                                        | 15                                                                        |                                                                               | 2,4            | x                                                                                                                    |                                 |                                                                              |  |                             |  |                                                                                                   |  |                                                                                                    |                 |                        |  |                                     |                                                                                                                |                  |                                                                           |                          |                      |                 |                           |                          |  |   |                                          |                          |     |   |                             |                          |  |   |                    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                |                                        | 15                                                                        |                                                                               | 2,4            | x                                                                                                                    |                                 |                                                                              |  |                             |  |                                                                                                   |  |                                                                                                    |                 |                        |  |                                     |                                                                                                                |                  |                                                                           |                          |                      |                 |                           |                          |  |   |                                          |                          |     |   |                             |                          |  |   |                    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |
| 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                |                                        | 15                                                                        |                                                                               | 2,4            | x                                                                                                                    |                                 |                                                                              |  |                             |  |                                                                                                   |  |                                                                                                    |                 |                        |  |                                     |                                                                                                                |                  |                                                                           |                          |                      |                 |                           |                          |  |   |                                          |                          |     |   |                             |                          |  |   |                    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |
| 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                |                                        | 15                                                                        |                                                                               | 2,4            | x                                                                                                                    |                                 |                                                                              |  |                             |  |                                                                                                   |  |                                                                                                    |                 |                        |  |                                     |                                                                                                                |                  |                                                                           |                          |                      |                 |                           |                          |  |   |                                          |                          |     |   |                             |                          |  |   |                    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |
| Definition- Erklärung der Bewertung/ Definition- Legend<br>Aa = Pore/ Gas pore      Ab = Schlauchpore/Wurmhole      Ba = Schlackeneinschl./ Slag inclusion      C = Bindefehler/Lack of fusion<br>D = ung. Durchschw./Lack of penetration      Da = Wurzelkerbe/Root notch      Db = Wurzelrückfall/Root reinforcement      Dc = Wurzeldurchhang/Excessive penetration      E = Riß/Crack<br>H = metallischer Einschluss/Metallic inclusion      F = Einbrand/Undercut                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                |                                        |                                                                           |                                                                               |                |                                                                                                                      |                                 |                                                                              |  |                             |  |                                                                                                   |  |                                                                                                    |                 |                        |  |                                     |                                                                                                                |                  |                                                                           |                          |                      |                 |                           |                          |  |   |                                          |                          |     |   |                             |                          |  |   |                    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |
| <table border="1"> <thead> <tr> <th colspan="2">Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled</th> <th colspan="2">Additional Marking</th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/></td> <td>Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled</td> <td>R1; R2</td> <td>erste und zweite Rep./first and second Rep. neu nach Rep./ cut and reweld</td> </tr> <tr> <td><input type="checkbox"/></td> <td>toleriert/ tolerated</td> <td>F</td> <td>Folgeprüfung/ Tracer shot</td> </tr> <tr> <td><input type="checkbox"/></td> <td></td> <td>G</td> <td>Garantienah/ RT instead of Pressure Test</td> </tr> <tr> <td><input type="checkbox"/></td> <td></td> <td>K</td> <td>Kontrollschuß/ Control Shot</td> </tr> <tr> <td><input type="checkbox"/></td> <td></td> <td>I</td> <td>I- Stöße/ I- Joint</td> </tr> </tbody> </table>                              |                                                                                                                |                                        |                                                                           |                                                                               |                |                                                                                                                      |                                 |                                                                              |  |                             |  |                                                                                                   |  | Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled |                 | Additional Marking     |  | <input checked="" type="checkbox"/> | Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled | R1; R2           | erste und zweite Rep./first and second Rep. neu nach Rep./ cut and reweld | <input type="checkbox"/> | toleriert/ tolerated | F               | Folgeprüfung/ Tracer shot | <input type="checkbox"/> |  | G | Garantienah/ RT instead of Pressure Test | <input type="checkbox"/> |     | K | Kontrollschuß/ Control Shot | <input type="checkbox"/> |  | I | I- Stöße/ I- Joint |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |
| Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                | Additional Marking                     |                                                                           |                                                                               |                |                                                                                                                      |                                 |                                                                              |  |                             |  |                                                                                                   |  |                                                                                                    |                 |                        |  |                                     |                                                                                                                |                  |                                                                           |                          |                      |                 |                           |                          |  |   |                                          |                          |     |   |                             |                          |  |   |                    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |
| <input checked="" type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled | R1; R2                                 | erste und zweite Rep./first and second Rep. neu nach Rep./ cut and reweld |                                                                               |                |                                                                                                                      |                                 |                                                                              |  |                             |  |                                                                                                   |  |                                                                                                    |                 |                        |  |                                     |                                                                                                                |                  |                                                                           |                          |                      |                 |                           |                          |  |   |                                          |                          |     |   |                             |                          |  |   |                    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |
| <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | toleriert/ tolerated                                                                                           | F                                      | Folgeprüfung/ Tracer shot                                                 |                                                                               |                |                                                                                                                      |                                 |                                                                              |  |                             |  |                                                                                                   |  |                                                                                                    |                 |                        |  |                                     |                                                                                                                |                  |                                                                           |                          |                      |                 |                           |                          |  |   |                                          |                          |     |   |                             |                          |  |   |                    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |
| <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                | G                                      | Garantienah/ RT instead of Pressure Test                                  |                                                                               |                |                                                                                                                      |                                 |                                                                              |  |                             |  |                                                                                                   |  |                                                                                                    |                 |                        |  |                                     |                                                                                                                |                  |                                                                           |                          |                      |                 |                           |                          |  |   |                                          |                          |     |   |                             |                          |  |   |                    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |
| <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                | K                                      | Kontrollschuß/ Control Shot                                               |                                                                               |                |                                                                                                                      |                                 |                                                                              |  |                             |  |                                                                                                   |  |                                                                                                    |                 |                        |  |                                     |                                                                                                                |                  |                                                                           |                          |                      |                 |                           |                          |  |   |                                          |                          |     |   |                             |                          |  |   |                    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |
| <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                | I                                      | I- Stöße/ I- Joint                                                        |                                                                               |                |                                                                                                                      |                                 |                                                                              |  |                             |  |                                                                                                   |  |                                                                                                    |                 |                        |  |                                     |                                                                                                                |                  |                                                                           |                          |                      |                 |                           |                          |  |   |                                          |                          |     |   |                             |                          |  |   |                    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |
| Testing Contractor/Name of Examiner: <b>Air Liquide</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                |                                        |                                                                           | E.H.R. 12.12.05 Kielholz                                                      |                |                                                                                                                      |                                 | TÜV                                                                          |  |                             |  |                                                                                                   |  |                                                                                                    |                 |                        |  |                                     |                                                                                                                |                  |                                                                           |                          |                      |                 |                           |                          |  |   |                                          |                          |     |   |                             |                          |  |   |                    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |
| Date: <b>8.12.2005</b> Name: <b>Stok</b> Signature: <b>[Signature]</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                |                                        |                                                                           | Date: <b>16-1-06</b> Name: <b>Jaworek Bahri</b> Signature: <b>[Signature]</b> |                |                                                                                                                      |                                 | Date: <b>07.12.05</b> Name: <b>[Signature]</b> Signature: <b>[Signature]</b> |  |                             |  |                                                                                                   |  |                                                                                                    |                 |                        |  |                                     |                                                                                                                |                  |                                                                           |                          |                      |                 |                           |                          |  |   |                                          |                          |     |   |                             |                          |  |   |                    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |   |  |  |    |  |     |   |  |

| Durchstrahlungsprüfung - Radiographic Examination                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |                                                                            |  |                                                                                                                           |  |                                               |  |                                                                                                                       |  | Bericht/ Report: <b>317</b>                                                                                           |  | Prüfdatum: 06.12.2005<br>Date of Exam.:                                                                |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------|--|
| Kennwort: <b>AIR LIQUIDE</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | Auftragsnummer: <b>ASU No.9 Kosice</b>                                     |  | Zeichnungsnummer/ISO-Nr.: <b>K 70101</b>                                                                                  |  | Drawing No./ISO No.: <b>OL 23004</b>          |  | Sheet: <b>1</b> of <b>xxx</b>                                                                                         |  | Baufeld Nr.: <b>xxx</b>                                                                                               |  | Constr area No.:                                                                                       |  |
| Benennung: <b>Coldbox</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  | Bauteil/Verbindung: <b>pipe</b>                                            |  | Schweißverfahren DIN 24063: <b>141</b>                                                                                    |  | Schweißer: <b>Welder:</b>                     |  | Nahtform BW: <b>Weld type:</b>                                                                                        |  | Bewertung n. DIN EN 5817: <input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C |  | Weld type: <input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C |  |
| Wärmebehandlung: <input type="checkbox"/> ohne/ without                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  | Schweißnahtnummer: <b>3</b>                                                |  | Werkstoff/ Material A: <b>Al Mg 4.5Mn</b>                                                                                 |  | Werkstoff/ Material B:                        |  | Bewertung n. DIN EN 5817: <input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C |  | Quality level acc. to -/I- (DIN EN 12517/1)                                                                           |  |                                                                                                        |  |
| Heat treatment: <input type="checkbox"/> vor/ before                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  | Weld- No.: <b>3</b>                                                        |  | Prüfmessung: <b>25 %</b>                                                                                                  |  | Abmessung/Dimension A: <b>219x6,4</b>         |  | Abmessung/Dimension B:                                                                                                |  | mm                                                                                                                    |  |                                                                                                        |  |
| Oberflächenzustand <b>Clean</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  | Extent of examination:                                                     |  | Zulässigkeitsgrenzen gem. DIN EN 12 517: <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 |  | Aufnahmeanordnung nach DIN EN 1435: <b>14</b> |  | Test arrangement acc. EN 1435                                                                                         |  |                                                                                                                       |  |                                                                                                        |  |
| Surface quality:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  | Brennfleckgr./Strahlenquellengr.: <b>3x3</b>                               |  | Folienart: <b>220</b>                                                                                                     |  | Filmsorte: <b>Agfa D3</b>                     |  | Filmklasse: <b>C 2</b>                                                                                                |  |                                                                                                                       |  |                                                                                                        |  |
| Strahlungsquelle: <b>Selen 75</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  | Focal Spot/Source Size: <b>b</b> (mm) <b>Pb</b>                            |  | Folienart: <b>220</b>                                                                                                     |  | Film type: <b>220</b>                         |  | Film system class: <b>10 x 24</b>                                                                                     |  |                                                                                                                       |  |                                                                                                        |  |
| Source of radiation: <b>Selen 75</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  | Röhreneinstellung: <b>40 ci</b>                                            |  | Screen type: <b>0,02 mm</b>                                                                                               |  | Belichtungszeit: <b>60 s</b>                  |  | Exposure time: <b>60 s</b>                                                                                            |  |                                                                                                                       |  |                                                                                                        |  |
| Aktivität: <b>40 ci</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  | Tube voltage/current: <b>(KV)</b> (mA)                                     |  | Screen type: <b>0,02 mm</b>                                                                                               |  | Exposure time: <b>60 s</b>                    |  | Film size: <b>10 x 24</b>                                                                                             |  |                                                                                                                       |  |                                                                                                        |  |
| <b>Prüfergebnisse/ Test data</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |                                                                            |  |                                                                                                                           |  |                                               |  |                                                                                                                       |  |                                                                                                                       |  |                                                                                                        |  |
| Bildgüteprüfkörper/ Image quality indicator (IQ 10A/EN461-2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | Lage/ Position: <input checked="" type="checkbox"/> Filmnah/ close to film |  | Filmfern/ far from film                                                                                                   |  | Bildgüte Image quality (IQI)                  |  | Schwärzung Density                                                                                                    |  | Befund/ Findings                                                                                                      |  | Bemerkung Comments (from - to)                                                                         |  |
| Schweißnahtnummer Film-nr. <b>☆</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  | Auswertbare Filmlänge Evaluated length of film in cm / from - to           |  | 2011 2016 2013 301 401 402 5013 515 504 100 304 5011/5012                                                                 |  | Filmfehler Film defect (FF)                   |  | a (e)                                                                                                                 |  | na (ne)                                                                                                               |  |                                                                                                        |  |
| Weld No. <b>3</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  | 1                                                                          |  | 2                                                                                                                         |  | 3                                             |  | 4                                                                                                                     |  | 5                                                                                                                     |  |                                                                                                        |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  | x                                                                          |  |                                                                                                                           |  |                                               |  | 15                                                                                                                    |  | 2,4                                                                                                                   |  | x                                                                                                      |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                                                            |  |                                                                                                                           |  |                                               |  | 15                                                                                                                    |  | 2,4                                                                                                                   |  | x                                                                                                      |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                                                            |  |                                                                                                                           |  |                                               |  | 15                                                                                                                    |  | 2,4                                                                                                                   |  | x                                                                                                      |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                                                            |  |                                                                                                                           |  |                                               |  | 15                                                                                                                    |  | 2,4                                                                                                                   |  | x                                                                                                      |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                                                            |  |                                                                                                                           |  |                                               |  | 15                                                                                                                    |  | 2,4                                                                                                                   |  | x                                                                                                      |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                                                            |  |                                                                                                                           |  |                                               |  | 15                                                                                                                    |  | 2,4                                                                                                                   |  | x                                                                                                      |  |
| Definition- Erklärung der Bewertung/ Definition- Legend<br><b>Aa</b> = Pore/ Gas pore <b>Ab</b> = Schlauchpore/Wurmhole <b>Ad</b> = Porennesst/Porosity <b>Ba</b> = Schlackeneinschl./ Slag inclusion <b>C</b> = Bindefehler/Lack of fusion<br><b>D</b> = ung. Durchschw./Lack of penetration <b>Da</b> = Wurzelkerbe/Root notch <b>Db</b> = Wurzelrückfall/Root reinforcement <b>Dc</b> = Wurzeldurchhang/Excessive penetration <b>E</b> = Riß/Crack<br><b>H</b> = metallischer Einschluss/Metallic inclusion <b>F</b> = Einbrand/Undercut |  |                                                                            |  |                                                                                                                           |  |                                               |  |                                                                                                                       |  |                                                                                                                       |  |                                                                                                        |  |
| Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled<br>Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled<br>toleriert/ tolerated                                                                                                                                                                                                                                                                                                |  |                                                                            |  |                                                                                                                           |  |                                               |  |                                                                                                                       |  |                                                                                                                       |  |                                                                                                        |  |
| Testing Contractor/Name of Examiner: <b>E.H.R.</b> 12.12.05 Kielholz<br>Air Liquide: <b>16-1-06</b><br>Name: <b>Javutay</b> Signature: <b>Bahri</b><br>Date: <b>16-1-06</b><br>TÜV: <b>01.10.05</b> Date: <b>01.10.05</b> Signature: <b>01.10.05</b>                                                                                                                                                                                                                                                                                        |  |                                                                            |  |                                                                                                                           |  |                                               |  |                                                                                                                       |  |                                                                                                                       |  |                                                                                                        |  |

| Durchstrahlungsprüfung - Radiographic Examination                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |                                  |  |                                           |  |                           |  |                  |  | Bericht/ Report: <b>318</b> |  | Prüfdatum: 06.12.2005<br>Date of Exam.: |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------|--|-------------------------------------------|--|---------------------------|--|------------------|--|-----------------------------|--|-----------------------------------------|--|
| Kennwort:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  | Auftragsnummer:                  |  | Zeichnungsnummer/ISO-Nr.: <b>OL 23004</b> |  | Sheet: 1 of               |  | Baufeld Nr.: xxx |  | Constr area No.:            |  |                                         |  |
| Job Name: <b>ASU No.9 Kosice</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  | Serial/Order No.: <b>K 70101</b> |  | Drawing No./ISO No.:                      |  | 141                       |  | Schweißer:       |  | Nahtform BW                 |  |                                         |  |
| Benennung:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  | Bauteil/Verbindung: pipe         |  | Schweißverfahren DIN 24063:               |  | Welder:                   |  | Weld type:       |  | Weld type:                  |  |                                         |  |
| Discription: <b>Coldbox</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | Part/Joint:                      |  | Welding process to DIN 24063:             |  | Bewertung n. DIN EN 5817  |  | DIN EN 30042     |  | A                           |  |                                         |  |
| Wärmebehandlung: <input type="checkbox"/> ohne/ without                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  | Schweißnahtnummer:               |  | Werkstoff/ Material A: <b>Al Mg 4,5Mn</b> |  | Quality level acc. to -/- |  | (DIN EN 12517/1) |  | B                           |  |                                         |  |
| Heat treatment: <input type="checkbox"/> vor/ before                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  | Weld- No.: <b>7</b>              |  | Werkstoff/ Material B:                    |  |                           |  |                  |  | C                           |  |                                         |  |
| <input type="checkbox"/> nach/ after                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |                                  |  |                                           |  |                           |  |                  |  |                             |  |                                         |  |
| Oberflächenzustand Clean                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  | Prüfumfang: <b>25 %</b>          |  | Abmessung/Dimension A: <b>219x6,4</b>     |  |                           |  |                  |  | mm                          |  |                                         |  |
| Surface quality:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  | Extent of examination:           |  | Abmessung/Dimension B:                    |  |                           |  |                  |  |                             |  |                                         |  |
| <b>Angebaben zur Prüfung/ Data of examination</b><br>Prüfklasse gem. DIN EN 1435 <input type="checkbox"/> A <input checked="" type="checkbox"/> B<br>Test class acc. to EN 1435<br>Strahlungsquelle: <b>Selen 75</b><br>Source of radiation:<br>Aktivität: 40 ci<br>Activity:<br>Röhreneinstellung:<br>Tube voltage/current:<br>Brennfleckgr./Strahlenquellengr.: <b>3x3</b><br>Focal Spot/Source Size:<br>Folienart: <b>Pb</b><br>Screen type:<br>Foliendicke: 220 (mm)<br>Screen thickness:<br>Zulässigkeitsgrenzen gem. DIN EN 12 517 <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3<br>Acceptance level acc. to EN 12 517<br>Aufnahmeanordnung nach DIN EN 1435: <b>14</b><br>Test arrangement acc. EN 1435<br>Filmklasse: C 2<br>Filmgröße: <b>10 x 24</b><br>Film size. |  |                                  |  |                                           |  |                           |  |                  |  |                             |  |                                         |  |
| <b>Prüfergebnis/ Test data</b><br>Bildgüteprüfkörper/ Image quality indicator ( IQ 10A/EN461-2 )<br>Schweißnahtnummer Film-nr. <input type="checkbox"/> Filmfehler Bildgüte Schwärzung Befund/ Findings Bemerkung<br>Weld No. <input checked="" type="checkbox"/> Film defect (FF) Image quality (IQ) Density a (e) na (ne) (from - to)<br>1 15 2,4 x<br>2 15 2,4 x<br>3 15 2,4 x<br>4 15 2,4 x<br>5 15 2,4 x                                                                                                                                                                                                                                                                                                                                                                                                              |  |                                  |  |                                           |  |                           |  |                  |  |                             |  |                                         |  |
| Definition- Erklärung der Bewertung/ Definition- Legend<br>Aa = Pore/ Gas pore Ab = Schlauchpore/Wurmhole Ba = Schlackeneinschl./ Slag inclusion C = Bindefehler/Lack of fusion<br>D = ung. Durchschw./Lack of penetration Da = Wurzelkerbe/Root notch Db = Wurzelrückfall/Root reinforcement Dc = Wurzeldurchhang/Excessive penetration E = Riß/Crack<br>H = metallischer Einschluss/Metallic inclusion F = Einbrand/Undercut                                                                                                                                                                                                                                                                                                                                                                                             |  |                                  |  |                                           |  |                           |  |                  |  |                             |  |                                         |  |
| Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled<br>Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled<br>toleriert/ tolerated                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                                  |  |                                           |  |                           |  |                  |  |                             |  |                                         |  |
| Testing Contractor/Name of Examiner<br>Date Name Signature<br>8.12.2005 ZGT<br>Air Liquide<br>Date Name Signature<br>16.1.06 yarates BGDNI<br>E.H.R. 12.12.05 Kielholz<br>Date Name Signature<br>EHR 02<br>TÜV<br>Date Name Signature<br>08.12.05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |                                  |  |                                           |  |                           |  |                  |  |                             |  |                                         |  |



Signature

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Date

8.12.2005

yarates BGDNI

16.1.06

ZGT

ZGT

8.12.2005

| Testing Contractor/Name of Examiner                                                   |                                                                                       | Air Liquide                                                                           |                                                                                       |
|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Date                                                                                  | Name                                                                                  | Date                                                                                  | Name                                                                                  |
| 8.4.2005                                                                              | Zloba                                                                                 | 16-1-06                                                                               | Jarutsky                                                                              |
| Signature                                                                             | Signature                                                                             | Signature                                                                             | Signature                                                                             |
|  |  |  |  |
| E.H.R. 12.12.05 Kielholz                                                              |                                                                                       | E.H.R. 12.12.05 Kielholz                                                              |                                                                                       |
|    |                                                                                       |    |                                                                                       |
|    |                                                                                       |    |                                                                                       |
| TÜV                                                                                   |                                                                                       | TÜV                                                                                   |                                                                                       |
| Date                                                                                  |                                                                                       | Date                                                                                  |                                                                                       |
| 08.12.05                                                                              |                                                                                       | 08.12.05                                                                              |                                                                                       |
| Name                                                                                  |                                                                                       | Name                                                                                  |                                                                                       |
| Signature                                                                             |                                                                                       | Signature                                                                             |                                                                                       |
|    |                                                                                       |    |                                                                                       |
| Signature                                                                             |                                                                                       | Signature                                                                             |                                                                                       |
| Name                                                                                  |                                                                                       | Name                                                                                  |                                                                                       |
|    |                                                                                       |    |                                                                                       |
| Signature                                                                             |                                                                                       | Signature                                                                             |                                                                                       |
| Name                                                                                  |                                                                                       | Name                                                                                  |                                                                                       |
|    |                                                                                       |    |                                                                                       |

| AIR LIQUIDE                                           |                                  |  |  | Durchstrahlungsprüfung- Radiographic Examination |  |                                        |  | Bericht/ Report: <b>320</b> |  | Prüfdatum: 06.12.2005<br>Date of Exam.:                                                                                                                                                                        |  |
|-------------------------------------------------------|----------------------------------|--|--|--------------------------------------------------|--|----------------------------------------|--|-----------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Kennwort:                                             | Auftragsnummer:                  |  |  | Zeichnungsnummer/ISO-Nr.: <b>O 22002</b>         |  | Sheet: 1 of 1                          |  | Baufeld Nr.: xxx            |  | Constr area No.:                                                                                                                                                                                               |  |
| Job Name: <b>ASU No.9 Kosice</b>                      | Serial/Order No.: <b>K 70101</b> |  |  | Drawing No./ISO No.:                             |  | Schweißverfahren DIN 24063: <b>470</b> |  | Nahtform BW                 |  | Weld type:                                                                                                                                                                                                     |  |
| Benennung: <b>Coldbox</b>                             | Bauteil/Verbindung: pipe         |  |  | Welding process to DIN 24063:                    |  | Schweißer: 141                         |  | Welder:                     |  | Bewertung n.DIN EN 5817 <input type="checkbox"/> DIN EN 30042 <input checked="" type="checkbox"/> (DIN EN 12517/1) <input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C |  |
| Discription: <b>ohne/ without</b>                     | Schweißnahtnummer:               |  |  | Werkstoff/ Material A: <b>Al Mg 4,5Mn</b>        |  | Werkstoff/ Material B:                 |  | Quality level acc. to -/-   |  |                                                                                                                                                                                                                |  |
| Wärmebehandlung: <input type="checkbox"/> vor/ before | Weld- No.: <b>7.4</b>            |  |  | Folienart: Pb                                    |  | Folienart: Pb                          |  | Folienart: Pb               |  |                                                                                                                                                                                                                |  |
| Heat treatment: <input type="checkbox"/> nach/ after  | Prüfumfang: <b>25 %</b>          |  |  | Screen type: (mA)                                |  | Screen type: (mA)                      |  | Screen type: (mA)           |  |                                                                                                                                                                                                                |  |
| Oberflächenzustand Clean                              | Prüfmaß: <b>168x7,1</b>          |  |  | Abmessung/Dimension A:                           |  | Abmessung/Dimension B:                 |  | Abmessung/Dimension C:      |  | mm                                                                                                                                                                                                             |  |
| Surface quality:                                      | Extent of examination:           |  |  | Abmessung/Dimension A:                           |  | Abmessung/Dimension B:                 |  | Abmessung/Dimension C:      |  | mm                                                                                                                                                                                                             |  |

**Angaben zur Prüfung/ Data of examination**

|                                                                                              |                                                                                                                          |                   |                                                |                           |  |
|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|-------------------|------------------------------------------------|---------------------------|--|
| Prüfklasse gem. DIN EN 1435 <input type="checkbox"/> A <input checked="" type="checkbox"/> B | Zulässigkeitsgrenzen gem. DIN EN 12 517 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 |                   | Aufnahmeanordnung nach DIN EN 1435 : <b>14</b> |                           |  |
| Test class acc. to EN 1435                                                                   | Acceptance level acc. to EN 12 517                                                                                       |                   | Test arrangement acc. EN 1435                  |                           |  |
| Strahlungsquelle: <b>Selen 75</b>                                                            | Brennleckgr./Strahlenquellengr.: <b>3x3</b>                                                                              |                   | Filmsorte: Kodak Mx 100                        |                           |  |
| Source of radiation:                                                                         | Focal Spot/Source Size:                                                                                                  |                   | Film type:                                     |                           |  |
| Aktivität: <b>40 ci</b>                                                                      | Röhreneinstellung: (KV)                                                                                                  |                   | Belichtungszeit: <b>0,02 mm</b>                |                           |  |
| Activity:                                                                                    | Tube voltage/current:                                                                                                    |                   | Exposure time: <b>45 s</b>                     |                           |  |
| Folienart: Pb                                                                                |                                                                                                                          | Folienart: Pb     |                                                | Filmgröße: <b>10 x 20</b> |  |
| Screen type: (mA)                                                                            |                                                                                                                          | Screen type: (mA) |                                                | Film size:                |  |

**Prüfgegebnis/ Test data**

| Bildgüteprüfkörper/ Image quality indicator ( IQ 10A/EN461-2 ) | Film-nr. / Auswertbare Filmlänge | Film No. / Evaluated length of film in cm / from - to | Lage/ Position: <input checked="" type="checkbox"/> Filmnah/ close to film <input type="checkbox"/> Filmfern/ far from film |      |      |     |     |     |      |     |     |     | Bemerkung Comments ( from - to ) |     |           |                                |                    |
|----------------------------------------------------------------|----------------------------------|-------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|------|------|-----|-----|-----|------|-----|-----|-----|----------------------------------|-----|-----------|--------------------------------|--------------------|
|                                                                |                                  |                                                       | 2011                                                                                                                        | 2016 | 2013 | 301 | 401 | 402 | 5013 | 515 | 504 | 100 |                                  | 304 | 5011/5012 | Bildgüte Image quality ( IQI ) | Schwärzung Density |
| 7.4                                                            | 1                                |                                                       |                                                                                                                             |      |      |     |     |     |      |     |     |     |                                  | 15  | 2,4       | x                              |                    |
|                                                                | 2                                |                                                       |                                                                                                                             |      |      |     |     |     |      |     |     |     |                                  | 15  | 2,4       | x                              |                    |
|                                                                | 3                                |                                                       |                                                                                                                             |      |      |     |     |     |      |     |     |     |                                  | 15  | 2,4       | x                              |                    |
|                                                                | 4                                |                                                       |                                                                                                                             |      |      |     |     |     |      |     |     |     |                                  | 15  | 2,4       | x                              |                    |
|                                                                | 5                                |                                                       |                                                                                                                             |      |      |     |     |     |      |     |     |     |                                  | 15  | 2,4       | x                              |                    |

**Definition- Erklärung der Bewertung/ Definition- Legend**

Aa = Pore/ Gas pore      Ab = Schlauchpore/Wurmhole      Ad = Porenneht/ Porosity      Ba = Schlackeneinschl./ Slag inclusion      C = Bindefehler/ Lack of fusion  
D = ung. Durchschw./ Lack of penetration      Da = Wurzelkerbe/ Root notch      Db = Wurzelrückfall/ Root reinforcement      Dc = Wurzeldurchhang/ Excessive penetration      E = Riß/ Crack  
H = metallischer Einschluss/ Metallic inclusion      F = Einbrand/ Undercut

☒ Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled

☐ Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled

☐ toleriert/ tolerated

**☆ Additional Marking**

R1; R2      erste und zweite Rep./ first and second Rep.  
N      neu nach Rep./ cut and reweld  
F      Folgeprüfung/ Tracer shot  
G      Garantienaht/ RT instead of Pressure Test  
K      Kontrollschuß/ Control Shot  
I      I- Stöße/ I- Joint

Testing Contractor/Name of Examiner

Air Liquide

E.H.R.

12.12.05

Kielholz

TÜV

Date

Name

Signature

Date

Name

Signature

Date

Name

Signature

Date

Name

Signature

Date

Name

Signature

Date

Name

Signature

Date

Name

Signature

Signature

|                                                                                     |  |                                                     |  |                                                              |  |                                                        |  |                                                                                                   |  |
|-------------------------------------------------------------------------------------|--|-----------------------------------------------------|--|--------------------------------------------------------------|--|--------------------------------------------------------|--|---------------------------------------------------------------------------------------------------|--|
|  |  | Durchstrahlungsprüfung- Radiographic Examination    |  |                                                              |  | Bericht/ Report: <b>321</b>                            |  | Prüfdatum: <b>11.12.2005</b><br>Date of Exam.:                                                    |  |
| Kennwort:<br>Job Name: <b>ASU No.9 Kosice</b>                                       |  | Auftragsnummer:<br>Serial/Order No.: <b>K 70101</b> |  | Zeichnungsnummer/ISO-Nr.: <b>N 21021</b>                     |  | Seite: <b>1</b> von                                    |  | Baufeld Nr.: xxx<br>Constr area No.:                                                              |  |
| Benennung:<br>Discription: <b>Coldbox</b>                                           |  | Bauteil/Verbindung:<br>Part/Joint: pipe             |  | Drawing No./ISO No.:                                         |  | Sheet: of                                              |  | Nahtform BW                                                                                       |  |
| Wärmebehandlung: <input checked="" type="checkbox"/>                                |  | Schweißnahtnummer:<br>Weld- No.: <b>1.1</b>         |  | Schweißverfahren DIN 24063:<br>Welding process to DIN 24063: |  | Schweißer:<br>Welder:                                  |  | Nahtform BW<br>Weld type:                                                                         |  |
| Heat treatment: <input type="checkbox"/>                                            |  | Weld- No.: <b>1.1</b>                               |  | Werkstoff/ Material A:<br>Werkstoff/ Material B:             |  | Bewertung n.DIN EN 5817<br>Quality level acc. to --/-- |  | <input type="checkbox"/> A<br><input checked="" type="checkbox"/> B<br><input type="checkbox"/> C |  |
| Oberflächenzustand Clean                                                            |  | Prüfumfang:<br>Extent of examination:               |  | 10 %                                                         |  | Abmessung/Dimension A:<br>Abmessung/Dimension B:       |  | 60x3,9                                                                                            |  |
| Surface quality:                                                                    |  | Clean                                               |  | 10 %                                                         |  | 60x3,9                                                 |  | mm                                                                                                |  |

**Angaben zur Prüfung/ Data of examination**

|                                                                                                                            |  |                                                                                                                                                                |  |                                                                       |  |                |
|----------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------|--|----------------|
| Prüfklasse gem. DIN EN 1435 <input type="checkbox"/> A<br>Test class acc. to EN 1435 <input checked="" type="checkbox"/> B |  | Zulässigkeitsgrenzen gem. DIN EN 12 517 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3<br>Acceptance level acc. to EN 12 517 |  | Aufnahmeanordnung nach DIN EN 1435 :<br>Test arrangement acc. EN 1435 |  | <b>11</b>      |
| Strahlungsquelle:                                                                                                          |  | Brennfleckgr./Strahlenquellengr.: <b>3x3</b>                                                                                                                   |  | Filmsorte: Kodak Mx 100<br>Film type: Film system class: C 2          |  |                |
| Source of radiation: <b>Selen 75</b>                                                                                       |  | Focal Spot/Source Size:                                                                                                                                        |  | Filmdicke: f 200<br>Screen type:                                      |  | <b>10 x 20</b> |
| Aktivität: 40 ci<br>Activity:                                                                                              |  | Röhreneinstellung:                                                                                                                                             |  | Belichtungszeit: Exposure time: <b>45 s</b><br>Film size:             |  |                |

### Prüfergebnis/ Test data

[illegible]

Definition- Erklärung der Bewertung/ Definition- Legend

Definition: Erklärunge der Bewertungsfelder. Definition: Legend

|                                                       |                                    |                                               |                                                   |                                       |
|-------------------------------------------------------|------------------------------------|-----------------------------------------------|---------------------------------------------------|---------------------------------------|
| <b>Aa</b> = Pore/ Gas pore                            | <b>Ab</b> = Schlauchpore/Wurmhole  | <b>Ad</b> = Porennest/Porosity                | <b>Ba</b> = Schlackeneinschl./ Slag inclusion     | <b>C</b> = Bindefehler/Lack of fusion |
| <b>D</b> = ung. Durchschw./Lack of penetration        | <b>Da</b> = Wurzelkerbe/Root notch | <b>Db</b> = Wurzelrückfall/Root reinforcement | <b>Dc</b> = Wurzeldurchhang/Excessive penetration | <b>E</b> = Riß/Crack                  |
| <b>H</b> = metallischer Einschlufs/Metallic inclusion | <b>F</b> = Einbrand/Undercut       |                                               |                                                   |                                       |

|                                                    | Additional Marking |
|----------------------------------------------------|--------------------|
| <input checked="" type="checkbox"/> <b>erfüllt</b> | R1; R2             |
| <input type="checkbox"/>                           | N                  |
| <input type="checkbox"/>                           | F                  |
| <input type="checkbox"/>                           | G                  |
| <input type="checkbox"/>                           | I                  |

Testing Contractor/Name of Examiner

## Air Liquide

**E.H.R**



**TÜV**

Date Name Signature

Name

**Signature**

Name

**Signature**

Date \_\_\_\_\_ Name \_\_\_\_\_

**Signature**

14.72.200-2164

76-1-06

James Edward Bant





|                                                                                     |  |                                                     |  |                               |                             |                             |                                                |                                                      |  |
|-------------------------------------------------------------------------------------|--|-----------------------------------------------------|--|-------------------------------|-----------------------------|-----------------------------|------------------------------------------------|------------------------------------------------------|--|
|  |  | Durchstrahlungsprüfung- Radiographic Examination    |  |                               | Bericht/ Report: <b>322</b> |                             | Prüfdatum: <b>11.12.2005</b><br>Date of Exam.: |                                                      |  |
| Kennwort: <b>ASU No.9 Kosice</b>                                                    |  | Auftragsnummer:<br>Serial/Order No.: <b>K 70101</b> |  | Zeichnungsnummer/ISO-Nr.:     |                             | Seite: <b>1</b> von         |                                                | Baufeld Nr.: <b>xxx</b>                              |  |
| Benennung:<br>Discription: <b>Coldbox</b>                                           |  | Bauteil/Verbindung: <b>pipe</b>                     |  | Drawing No./ISO No.:          |                             | Sheet: of                   |                                                | Constr area No.:                                     |  |
| Wärmebehandlung: <input checked="" type="checkbox"/>                                |  | Part/Joint:                                         |  | Schweißverfahren DIN 24063:   |                             | Schweißer:                  |                                                | Nahtform BW                                          |  |
| Heat treatment: <input type="checkbox"/>                                            |  | Schweißnahtnummer:<br>Weld- No.: <b>4</b>           |  | Welding process to DIN 24063: |                             | Welder:                     |                                                | Weld type:                                           |  |
| nach/ after                                                                         |  | Werkstoff/ Material A:                              |  | Werkstoff/ Material B:        |                             | Bewertung n.DIN EN 5817     |                                                | <input type="checkbox"/> DIN EN 30042                |  |
| Oberfläche/zustand <b>Clean</b>                                                     |  | Prüfumfang: <b>25 %</b>                             |  | Abmessung/Dimension A:        |                             | Bewertung level acc. to -/- |                                                | <input checked="" type="checkbox"/> (DIN EN 12517/1) |  |
| Oberflächenzustand <b>Clean</b>                                                     |  | Extent of examination:                              |  | Abmessung/Dimension B:        |                             | Quality level acc. to -/-   |                                                | <input type="checkbox"/> B                           |  |
| Surface quality                                                                     |  | Surface quality                                     |  | Abmessung/Dimension B:        |                             | Quality level acc. to -/-   |                                                | <input type="checkbox"/> C                           |  |
| mm                                                                                  |  | mm                                                  |  | mm                            |                             | mm                          |                                                | mm                                                   |  |

**Angaben zur Prüfung/ Data of examination**

|                                                 |  |                                                                     |  |                                         |  |                                                                                                   |  |                                                                       |  |
|-------------------------------------------------|--|---------------------------------------------------------------------|--|-----------------------------------------|--|---------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------|--|
| <b>Angaben zur Prüfung/ Data of examination</b> |  |                                                                     |  |                                         |  |                                                                                                   |  |                                                                       |  |
| Prüfklasse gem. DIN EN 1435                     |  | <input type="checkbox"/> A<br><input checked="" type="checkbox"/> B |  | Zulässigkeitsgrenzen gem. DIN EN 12 517 |  | <input checked="" type="checkbox"/> 1<br><input type="checkbox"/> 2<br><input type="checkbox"/> 3 |  | Aufnahmeanordnung nach DIN EN 1435 :<br>Test arrangement acc. EN 1435 |  |
| Test class acc. to EN 1435                      |  |                                                                     |  |                                         |  |                                                                                                   |  |                                                                       |  |
| Strahlungsquelle:                               |  | Brennflckgr./Strahlenquellengr.: <b>3x3</b>                         |  | b (mm)                                  |  | Filmsorte:                                                                                        |  | Filmklasse:                                                           |  |
| Source of radiation:                            |  | Focal Spot/Source Size:                                             |  | (mm)                                    |  | Film type:                                                                                        |  | Film system class:                                                    |  |
| Aktivität:                                      |  | Röhreneinstellung:                                                  |  | Folienart:                              |  | Folienstärke:                                                                                     |  | Filmgröße:                                                            |  |
| Activity:                                       |  | Tube voltage/current:                                               |  | Screen type:                            |  | Screen thickness:                                                                                 |  | Film size:                                                            |  |
| 40 ci                                           |  | (KV)                                                                |  | (mA)                                    |  | 0,02 mm                                                                                           |  | <b>10 x 24</b>                                                        |  |
|                                                 |  |                                                                     |  |                                         |  | Belichtungszeit:                                                                                  |  | Exposure time:                                                        |  |
|                                                 |  |                                                                     |  |                                         |  | <b>45 s</b>                                                                                       |  |                                                                       |  |

## Prüfergebnis/ Test data

[illegible]

## Definition- Erklärung der Bewertung/ Definition- Legend

Definition- Erklärung der Bewertung/ Definition- Legend

|                                                    |                                    |                                               |                                                   |                                       |
|----------------------------------------------------|------------------------------------|-----------------------------------------------|---------------------------------------------------|---------------------------------------|
| <b>Aa</b> = Pore/ Gas pore                         | <b>Ab</b> = Schlauchpore/Wurmhole  | <b>Ad</b> = Porennest/Porosity                | <b>Ba</b> = Schlackeneinschl./ Slag inclusion     | <b>C</b> = Bindefehler/Lack of fusion |
| <b>D</b> = ung. Durchschw./Lack of penetration     | <b>Da</b> = Wurzelkerbe/Root notch | <b>Db</b> = Wurzelrückfall/Root reinforcement | <b>Dc</b> = Wurzeldurchhang/Excessive penetration | <b>E</b> = Riß/Crack                  |
| <b>H</b> = metallurg. Einschluß/Metallic inclusion | <b>F</b> = Einbrand/Undercut       |                                               |                                                   |                                       |

|                                                                                                                                         | ☆ Additional Marking |
|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| <input checked="" type="checkbox"/> Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled  | R1; R2               |
| <input type="checkbox"/> Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled | N                    |
| <input type="checkbox"/> toleriert/ tolerated                                                                                           | F<br>G<br>K<br>I     |

| Testing Contractor/Name of Examiner |      | Air Liquide                                                                           |         | E.H.R. |                                                                                       | TÜV     |                                                                                     |
|-------------------------------------|------|---------------------------------------------------------------------------------------|---------|--------|---------------------------------------------------------------------------------------|---------|-------------------------------------------------------------------------------------|
| Date                                | Name | Signature                                                                             | Date    | Name   | Signature                                                                             | Date    | Name                                                                                |
| 4-12-2005                           | ZIGA |  | 16-1-06 | Jawatz |  | 14-1-05 |  |
|                                     |      |                                                                                       |         | Bahr   |  |         |                                                                                     |

|                                                                                                                                                                                                                                                                                                               |                                                                  |                                                                                                        |                                                                                                                                                                                                                                                      |                                                                                                   |                                    |                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|------------------------------------|-------------------------------------------------------|
|  <b>AIR LIQUIDE</b>                                                                                                                                                                                                        |                                                                  | <b>Durchstrahlungsprüfung- Radiographic Examination</b>                                                |                                                                                                                                                                                                                                                      |                                                                                                   | <b>Bericht/ Report:</b> <b>323</b> | <b>Prüfdatum:</b> <b>11.12.2005</b><br>Date of Exam.: |
| <b>Kennwort:</b><br>Job Name: <b>ASU No.9 Kosice</b>                                                                                                                                                                                                                                                          | <b>Auftragsnummer:</b><br>Serial/Order No.: <b>K 70101</b>       | <b>Zeichnungsnummer/ISO-Nr.:</b> <b>AL 43011</b>                                                       | <b>Seite:</b> <b>2</b> <b>von</b><br>Sheet: of                                                                                                                                                                                                       | <b>Baufeld Nr.:</b> xxx<br>Constr area No.:                                                       |                                    |                                                       |
| <b>Benennung:</b><br>Discription: <b>Coldbox</b>                                                                                                                                                                                                                                                              | <b>Bauteil/Verbindung:</b> pipe<br><b>Part/Join:</b>             | <b>Drawing No./ISO No.:</b><br>Schweißverfahren DIN 24063: <b>153</b><br>Welding process to DIN 24063: | <b>Schweißer:</b><br>Welder:                                                                                                                                                                                                                         | <b>Nahtform BW</b><br>Weld type:                                                                  |                                    |                                                       |
| <b>Wärmebehandlung:</b> <br><b>Heat treatment:</b>   | <b>ohne/ without</b><br><b>vor/ before</b><br><b>nach/ after</b> | <b>Werkstoff/ Material A:</b> <b>Al Mg 4,5Mn</b><br><b>Werkstoff/ Material B:</b>                      | <b>Bewertung n.DIN EN 5817</b>  <br>Quality level acc. to -/- (DIN EN 12517/1) | <input type="checkbox"/> A<br><input checked="" type="checkbox"/> B<br><input type="checkbox"/> C |                                    |                                                       |
| <b>Oberflächenzustand</b> Clean<br><b>Surface quality:</b>                                                                                                                                                                                                                                                    | <b>Prüfumfang:</b> 10 %<br><b>Extent of examination:</b>         | <b>Abmessung/Dimension A:</b> <b>33,4x3,4</b><br><b>Abmessung/Dimension B:</b>                         | mm                                                                                                                                                                                                                                                   |                                                                                                   |                                    |                                                       |

**Angaben zur Prüfung/ Data of examination**

|                              |                                       |                                         |                            |                            |                            |                                                                       |
|------------------------------|---------------------------------------|-----------------------------------------|----------------------------|----------------------------|----------------------------|-----------------------------------------------------------------------|
| Prüfklasse gem. DIN EN 14335 | <input type="checkbox"/> A            | Zulässigkeitsgrenzen gem. DIN EN 12 517 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | Aufnahmeanordnung nach DIN EN 1435 :<br>Test arrangement acc. EN 1435 |
| Test class acc. to EN 1435   | <input checked="" type="checkbox"/> B | Acceptance level acc. to EN 12 517      |                            |                            |                            |                                                                       |
| Strahlungsquelle:            |                                       |                                         |                            |                            |                            |                                                                       |
| Source of radiation:         | <b>Selen 75</b>                       | Brennfleckgr./Strahlenquellengr.:       | <b>3x3</b>                 | Filmsorte:                 | Kodak Mx 100               | Filmklasse:<br>C 2                                                    |
| Aktivität:                   |                                       | Focal Spot/Source Size:                 |                            | Film type:                 |                            | Film system class:                                                    |
| Activity:                    | 40 ci                                 | Röhreneinstellung:                      |                            | Folienart:                 | Pb                         | Filmgröße:                                                            |
|                              |                                       | Tube voltage/current:                   | (KV)                       | Screen type:               |                            | Exposure time:                                                        |
|                              |                                       | Screen thickness:                       | 0,02 mm                    | Exposure time:             | <b>45 s</b>                | Film size:                                                            |
|                              |                                       |                                         |                            |                            |                            | <b>10 x 20</b>                                                        |

### Prüfergebnis/ Test data

[illegible]

## Definition- Erklärung der Bewertung/ Definition- Legend

Definition: Erklärung der Bewertung/ Definition/ Legend

|                                               |                             |                                        |                                            |                                |
|-----------------------------------------------|-----------------------------|----------------------------------------|--------------------------------------------|--------------------------------|
| Aa = Pore/ Gas pore                           | Ab = Schlauchpore/Wurmhole  | Ad = Porennetz/Porosity                | Ba = Schlackeinschl./ Slag inclusion       | C = Bindefehler/Lack of fusion |
| D = ung. Durchschw./Lack of penetration       | Da = Wurzelkerbe/Root notch | Db = Wurzelrückfall/Root reinforcement | Dc = Wurzeldurchhang/Excessive penetration | E = Riß/Crack                  |
| H = metallischer Einschluß/Metallic inclusion | F = Einbrand/Undercut       |                                        |                                            |                                |

| <div> <div></div> <div>Anforderung nach Prüfungspezifikation erfüllt/ Requirements according to test specification fulfilled</div> </div>             | <div> <div>☆</div> <div>Additional Marking</div> </div>                                                                                                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <div> <div></div> <div>Anforderungen nach Prüfungspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled</div> </div> | <div> <div>R1: R2</div> <div>erste und zweite Rep./first and second Rep. neu nach Rep./ cut and reweld</div> <div>F</div> <div>Folgeprüfung/ Tracer shot</div> <div>G</div> <div>Garantienahm/ RT instead of Pressure Test</div> <div>K</div> <div>Kontrollschuhs/ Control Shot</div> <div>I</div> <div>I- Stols/ I- Joint</div> </div> |

| Testing Contractor/Name of Examiner |         | Air Liquide |         | E.H.R.   |             | EHR 02   |          | TÜV       |             |
|-------------------------------------|---------|-------------|---------|----------|-------------|----------|----------|-----------|-------------|
| Date                                | Name    | Signature   | Date    | Name     | Signature   | Date     | Name     | Signature |             |
| 4.12.2001                           | Ziegler | [Signature] | 16-1-06 | Jaworski | [Signature] | 13.12.05 | Kielholz | 14.4.05   | [Signature] |



|                                                         |  |                                                         |  |                                           |  |                                                                                                                   |  |
|---------------------------------------------------------|--|---------------------------------------------------------|--|-------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------|--|
| <b>AIR LIQUIDE</b>                                      |  | <b>Durchstrahlungsprüfung- Radiographic Examination</b> |  | Bericht/ Report: <b>325</b>               |  | Prüfdatum: <b>16.12.2005</b>                                                                                      |  |
| Kennwort:                                               |  | Zeichnungsnummer/ISO-Nr.: <b>OL 40101</b>               |  | Seite: <b>1</b> von <b>1</b>              |  | Baufeld Nr.: xxx                                                                                                  |  |
| Job Name: <b>ASU No.9 Kosice</b>                        |  | Serial/Order No.: <b>K 70101</b>                        |  | Sheet: of                                 |  | Const. area No.:                                                                                                  |  |
| Benennung:                                              |  | Bauteil/Verbindung: pipe                                |  | Schweißverfahren DIN 24063: <b>82</b>     |  | Nahtform BW                                                                                                       |  |
| Description: <b>Coldbox</b>                             |  | Part/Joint:                                             |  | Welding process to DIN 24063:             |  | Weld type:                                                                                                        |  |
| Wärmebehandlung: <input type="checkbox"/> ohne/ without |  | Schweißnahtnummer:                                      |  | Werkstoff/ Material A: <b>Al Mg 4,5Mn</b> |  | Bewertung n.DIN EN 5817 <input type="checkbox"/> DIN EN 30042 <input type="checkbox"/> <input type="checkbox"/> A |  |
| Heat treatment: <input type="checkbox"/> vor/ before    |  | Weld- No.: <b>8</b>                                     |  | Werkstoff/ Material B:                    |  | Quality level acc. to -/- (DIN EN 12517/1) <input type="checkbox"/> B <input type="checkbox"/> C                  |  |
| Oberflächenzustand Clean                                |  | Prüfumfang: <b>25 %</b>                                 |  | Abmessung/Dimension A: <b>114,3x6</b>     |  | mm                                                                                                                |  |
| Surface quality:                                        |  | Extent of examination:                                  |  | Abmessung/Dimension B:                    |  |                                                                                                                   |  |

**Angaben zur Prüfung/ Data of examination**

|                                                                                   |                                                                                                                          |                                                |                           |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|---------------------------|
| Prüfklasse gem. DIN EN 1435 <input type="checkbox"/> A <input type="checkbox"/> B | Zulässigkeitsgrenzen gem. DIN EN 12 517 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 | Aufnahmeanordnung nach DIN EN 1435 : <b>11</b> |                           |
| Test class acc. to EN 1435                                                        | Acceptance level acc. to EN 12 517                                                                                       | Test arrangement acc. EN 1435                  |                           |
| Strahlungsquelle: <b>Selen 75</b>                                                 | Brennfleckgr./Strahlenquellengr.: <b>3x3</b>                                                                             | Filmsorte: <b>Agfa</b>                         | Filmklasse: <b>C 2</b>    |
| Source of radiation:                                                              | Focal Spot/Source Size:                                                                                                  | Film type:                                     | Film system class:        |
| Aktivität:                                                                        | Röhreneinstellung:                                                                                                       | Belichtungszeit:                               | Filmgröße: <b>10 x 24</b> |
| Activity: 40 ci                                                                   | Tube voltage/current: (KV)                                                                                               | Exposure time: <b>45 s</b>                     | Film size:                |

**Prüfergebnis/ Test data**

| Bildgüteprüfkörper/ Image quality indicator (IQ 10A/EN461-2) | Lage/ Position:                                                                 |                                                 | Filmnah/ close to film              |                                    | Filmtief/ far from film |                           | Bemerkung<br>Comments<br>(from - to) |
|--------------------------------------------------------------|---------------------------------------------------------------------------------|-------------------------------------------------|-------------------------------------|------------------------------------|-------------------------|---------------------------|--------------------------------------|
|                                                              | Imperfektionen (EN 26520)                                                       |                                                 | Filmfehler<br>Image quality<br>(FF) | Bildgüte<br>Image quality<br>(IQI) | Schwärzung<br>Density   | Befund/ Findings<br>a (e) |                                      |
| 1                                                            | 2011   2016   2013   301   401   402   5013   515   504   100   304   5011/5012 | Aa   Ab   Ba   C   D   Da   Db   Dc   E   H   F |                                     | <b>15</b>                          | <b>2,3</b>              | <b>x</b>                  |                                      |
| 2                                                            |                                                                                 |                                                 |                                     | <b>15</b>                          | <b>2,4</b>              | <b>x</b>                  |                                      |
| 3                                                            |                                                                                 |                                                 |                                     | <b>15</b>                          | <b>2,3</b>              | <b>x</b>                  |                                      |
| 8                                                            |                                                                                 |                                                 |                                     |                                    |                         |                           |                                      |

**Definition- Erklärung der Bewertung/ Definition- Legend**

**Aa** = Pore/ Gas pore **Ab** = Schlauchpore/Wurmhole **Ad** = Porennest/Porosity **Ba** = Schlackeneinschl./ Slag inclusion **C** = Bindefehler/Lack of fusion  
**D** = ung. Durchschw./Lack of penetration **Da** = Wurzelkerbe/Root notch **Db** = Wurzelrückfall/Root reinforcement **Dc** = Wurzeldurchhang/Excessive penetration **E** = Riß/Crack  
**H** = metallischer Einschluss/Metallic inclusion **F** = Einbrand/Undercut

☐ Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled

☐ Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled

☐ toleriert/ tolerated

## ☆ Additional Marking

R1: R2 erste und zweite Rep./first and second Rep.  
 N neu nach Rep./ cut and reweld  
 F Folgeprüfung/ Tracer shot  
 G Garantienahme/ RT instead of Pressure Test  
 K Kontrollschuß/ Control Shot  
 I I- Stoß/ I- Joint

Testing Contractor/Name of Examiner

Air Liquide

E.H.R.

16.12.05

Kielholz

Date Name Signature

Date

Name

Signature

Date

Signature

Date

Name

Signature

|                                                                                                                                                                                         |  |                                                     |  |                                                                         |                             |                                                                                                                                                        |                                                |                                                                                                                        |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------|--|-------------------------------------------------------------------------|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|--|
|                                                                                                      |  | Durchstrahlungsprüfung- Radiographic Examination    |  |                                                                         | Bericht/ Report: <b>326</b> |                                                                                                                                                        | Prüfdatum: <b>11.12.2005</b><br>Date of Exam.: |                                                                                                                        |  |
| Kennwort:<br>Job Name: <b>ASU No.9 Kosice</b>                                                                                                                                           |  | Auftragsnummer:<br>Serial/Order No.: <b>K 70101</b> |  | Zeichnungsnummer//SO-Nr.: <b>N 21021</b>                                |                             | Seite: <b>3</b> von<br>Sheet: of                                                                                                                       |                                                | Baufeld Nr.: <b>xxx</b><br>Constr area No.:                                                                            |  |
| Benennung:<br>Discription: <b>Coldbox</b>                                                                                                                                               |  | Bauteil/Verbindung:<br>Part/Joint: <b>pipe</b>      |  | Schweißverfahren DIN 24063:<br>Welding process to DIN 24063: <b>141</b> |                             | Schweißer:<br>Welder: <b>488</b>                                                                                                                       |                                                | Nahtform BW<br>Weld type:                                                                                              |  |
| Wärmebehandlung: <input checked="" type="checkbox"/> <b>ohne/ without</b><br>Heat treatment: <input type="checkbox"/> <b>vor/ before</b><br><input type="checkbox"/> <b>nach/ after</b> |  | Schweißnahtnummer:<br>Weld- No.: <b>21</b>          |  | Werkstoff/ Material A: <b>Al Mg 4,5Mn</b><br>Werkstoff/ Material B:     |                             | Bewertung n.DIN EN 5817 <input type="checkbox"/> <b>DIN EN 30042</b> <input checked="" type="checkbox"/><br>Quality level acc. to -/- (DIN EN 12517/1) |                                                | <input type="checkbox"/> <b>A</b><br><input checked="" type="checkbox"/> <b>B</b><br><input type="checkbox"/> <b>C</b> |  |
| Oberflächenzustand <b>Clean</b><br>Surface quality:                                                                                                                                     |  | Prüfmfang:<br>Extent of examination: <b>10 %</b>    |  | Abmessung/Dimension A: <b>60x3,9</b><br>Abmessung/Dimension B:          |                             |                                                                                                                                                        |                                                | mm                                                                                                                     |  |

**Angaben zur Prüfung/ Data of examination**

| Angaben zur Prüfung, data of examination: |  |                                                                  |  |                                         |  |                                                                                  |  |                                      |  |
|-------------------------------------------|--|------------------------------------------------------------------|--|-----------------------------------------|--|----------------------------------------------------------------------------------|--|--------------------------------------|--|
| Prüfklasse gem. DIN EN 1435               |  | <input type="checkbox"/> A <input checked="" type="checkbox"/> B |  | Zulässigkeitsgrenzen gem. DIN EN 12 517 |  | <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 |  | Aufnahmeanordnung nach DIN EN 1435 : |  |
| Test class acc. to EN 1435                |  |                                                                  |  | Acceptance level acc. to EN 12 517      |  |                                                                                  |  | Test arrangement acc. EN 1435        |  |
| Strahlungsquelle:                         |  | Brennfleckgr./Strahlenquellengr.:                                |  | b                                       |  | Filmsorte:                                                                       |  | Filmklasse:                          |  |
| Source of radiation:                      |  | Focal Spot/Source Size:                                          |  | 3x3                                     |  | Film type:                                                                       |  | Film system class:                   |  |
| Aktivität:                                |  | Röhreneinstellung:                                               |  | Foliendicke:                            |  | Belichtungszeit:                                                                 |  | Filmgröße:                           |  |
| Activity:                                 |  | Tube voltage/current:                                            |  | (KV)                                    |  | (mA)                                                                             |  | 0,02 mm                              |  |
|                                           |  | 40 ci                                                            |  |                                         |  |                                                                                  |  | Exposure time: 45 s                  |  |
|                                           |  |                                                                  |  |                                         |  |                                                                                  |  | Film size.                           |  |
|                                           |  |                                                                  |  |                                         |  |                                                                                  |  | 11                                   |  |

**Prüfergebnis/ Test data**[illegible]

## Definition- Erklärung der Bewertung/ Definition- Legend

Definition- Erklärung der Bewertung/ Definition/ Legend

|                                                     |                                    |                                               |                                                   |                                       |
|-----------------------------------------------------|------------------------------------|-----------------------------------------------|---------------------------------------------------|---------------------------------------|
| <b>Aa</b> = Pore/ Gas pore                          | <b>Ab</b> = Schlauchpore/Wurmhole  | <b>Ad</b> = Porennet/Porosity                 | <b>Ba</b> = Schlackeinschl./ Slag inclusion       | <b>C</b> = Bindefehler/Lack of fusion |
| <b>D</b> = ung. Durchschw./Lack of penetration      | <b>Da</b> = Wurzelkerbe/Root notch | <b>Db</b> = Wurzelrückfall/Root reinforcement | <b>Dc</b> = Wurzeldurchhang/Excessive penetration | <b>E</b> = Riß/Crack                  |
| <b>H</b> = metallischer Einschuß/Metallic inclusion | <b>F</b> = Einbrand/Undercut       |                                               |                                                   |                                       |

|                                     | Anforderung nach Prüfungspezifikation erfüllt/ Requirements according to test specification fulfilled             | ☆ Additional Marking                                                                                                            |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> | Anforderungen nach Prüfungspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled | R1: R2<br>N                                                                                                                     |
| <input type="checkbox"/>            | erfüllt/ fulfilled                                                                                                | erste und zweite Rep./first and second Rep.<br>neu nach Rep./ cut and reweld                                                    |
| <input type="checkbox"/>            | toleriert/ tolerated                                                                                              | F<br>G<br>K<br>I                                                                                                                |
|                                     |                                                                                                                   | Folgeprüfung/ Tracer shot<br>Garantienahmt/ RT instead of Pressure Test<br>Kontrollschuss/ Control Shot<br>I - Stols/ I - Joint |

**Testing Contractor/Name of Examiner**

Date \_\_\_\_\_ Name \_\_\_\_\_ Signature \_\_\_\_\_

Date

Name

**Signature**

Name

**Signature**

Date \_\_\_\_\_ Name \_\_\_\_\_

**Signature**

14. 17. 2005 7164

| AIR LIQUIDE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |                                  |  | Durchstrahlungsprüfung- Radiographic Examination                                            |  |                                                                                         |  | Bericht/ Report: <b>327</b>                                                         |  | Prüfdatum: 11.12.2005                 |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------|--|---------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------|--|---------------------------------------|--|
| Kennwort:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  | Auftragsnummer:                  |  | Zeichnungsnummer/ISO-Nr.: <b>A 21004</b>                                                    |  | Seite: 3 von                                                                            |  | Baufeld Nr.: xxx                                                                    |  | Date of Exam.:                        |  |
| Job Name: <b>ASU No.9 Kosice</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  | Serial/Order No.: <b>K 70101</b> |  | Drawing No./ISO No.:                                                                        |  | Sheet: of                                                                               |  | Constr area No.:                                                                    |  |                                       |  |
| Benennung:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  | Bauteil/Verbindung: pipe         |  | Schweißverfahren DIN 24063: 141                                                             |  | Schweißart: 488                                                                         |  | Nahtform BW                                                                         |  |                                       |  |
| Discription: <b>Coldbox</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  | Part/Joint:                      |  | Welding process to DIN 24063:                                                               |  | Welder:                                                                                 |  | Weld type:                                                                          |  |                                       |  |
| Wärmebehandlung: <input type="checkbox"/> ohne/ without                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  | Schweißnahtnummer:               |  | Werkstoff/ Material A: <b>Al Mg 4,5Mn</b>                                                   |  | Bewertung n. DIN EN 5817 <input type="checkbox"/> DIN EN 30042 <input type="checkbox"/> |  | Film type:                                                                          |  | <input type="checkbox"/> A            |  |
| Heat treatment: <input type="checkbox"/> vor/ before                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  | Weld- No.: <b>32</b>             |  | Werkstoff/ Material B:                                                                      |  | Quality level acc. to -/-                                                               |  | (DIN EN 12517/1)                                                                    |  | <input checked="" type="checkbox"/> B |  |
| Oberflächenzustand Clean                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  | Prüfumfang: <b>10 %</b>          |  | Abmessung/Dimension A: <b>60x3,9</b>                                                        |  |                                                                                         |  |                                                                                     |  | <input type="checkbox"/> C            |  |
| Surface quality:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  | Extent of examination:           |  | Abmessung/Dimension B:                                                                      |  |                                                                                         |  |                                                                                     |  | mm                                    |  |
| <b>Angaben zur Prüfung/ Data of examination</b><br>Prüfklasse gem. DIN EN 1435 <input type="checkbox"/> A <input checked="" type="checkbox"/> B Zulässigkeitsgrenzen gem. DIN EN 12 517 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 Aufnahmeanordnung nach DIN EN 1435 : <b>11</b><br>Test class acc. to EN 1435 Acceptance level acc. to EN 12 517 Test arrangement acc. EN 1435<br>Strahlungsquelle: <b>Selen 75</b> Brennfleckgr./Strahlenquellengr.: <b>3x3</b> Filmsorte: <b>Kodak Mx 100</b> Filmklasse: <b>C 2</b><br>Source of radiation: Focal Spot/Source Size: b (mm) f 200 Film type: Film system class:<br>Aktivität: Röhreneinstellung: (KV) (mA) Screen type: Foliendicke: Screen tickness: 0,02 mm Belichtungszeit: Filmgröße: <b>10 x 20</b><br>Activity: 40 ci Tube voltage/current: (KV) (mA) Screen type: Foliendicke: Screen tickness: 0,02 mm Belichtungszeit: Filmgröße: |  |                                  |  |                                                                                             |  |                                                                                         |  |                                                                                     |  |                                       |  |
| <b>Prüfergebnis/ Test data</b><br>Bildgüteprüfkörper/ Image quality indicator ( IQ 10A/EN461-2 ) Lage/ Position: <input checked="" type="checkbox"/> Filmmat./ close to film Filmfern/ far from film<br>Schweißnahtnummer Film-nr. Auswertbare Filmlänge Imperfections ( EN 25520 ) Filmfehler Bildgüte Schwärzung Befund/ Findings Bemerkung<br>Weld No. Film No. Evaluated length of film in cm / from - to Aa Ab Ad Ba C D Da Db Dc Dd E F Fc Gc Hc Jc Kc Lc Mc Nc Oc Pc Qc Rc Sc Tc Uc Vc Wc Xc Yc Zc<br>Aa Ab Ad Ba C D Da Db Dc Dd E F Fc Gc Hc Jc Kc Lc Mc Nc Oc Pc Qc Rc Sc Tc Uc Vc Wc Xc Yc Zc<br>A B C D E F G H I J K L M N O P Q R S T U V W X Y Z<br>32                                                                                                                                                                                                                                                                |  |                                  |  |                                                                                             |  |                                                                                         |  |                                                                                     |  |                                       |  |
| Definition- Erklärung der Bewertung/ Definition- Legend<br>Aa = Pore/ Gas pore Ab = Schlauchpore/Wormhole Ad = Porennes/Porosity Ba = Schlackeneinschl./ Slag inclusion C = Bindefehler/Lack of fusion<br>D = ung. Durchschw./Lack of penetration Da = Wurzelkerbe/Root notch Db = Wurzelrückfall/Root reinforcement Dc = Wurzeldurchhang/Excessive penetration E = Riß/Crack<br>H = metallischer Einschluss/Metallic inclusion F = Einbrand/Undercut                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                  |  |                                                                                             |  |                                                                                         |  |                                                                                     |  |                                       |  |
| Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled<br>Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled<br>toleriert/ tolerated                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |                                  |  |                                                                                             |  |                                                                                         |  |                                                                                     |  |                                       |  |
| <b>Testing Contractor/Name of Examiner</b><br>E.H.R. 13.12.05 Kielhofz<br>Name: <b>Yavuz BAHRI</b> Date: <b>16-1-06</b> Signature: <b>Bahri</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |                                  |  | <b>Air Liquide</b><br>Name: <b>Yavuz BAHRI</b> Date: <b>16-1-06</b> Signature: <b>Bahri</b> |  |                                                                                         |  | <b>TÜV</b><br>Name: <b>Yavuz BAHRI</b> Date: <b>16-1-06</b> Signature: <b>Bahri</b> |  |                                       |  |

 Date: 11.12.2005  
 Name: **Yavuz BAHRI**  
 Signature: **Bahri**

 Date: **16-1-06**  
 Name: **Yavuz BAHRI**  
 Signature: **Bahri**

 Date: **16-1-06**  
 Name: **Yavuz BAHRI**  
 Signature: **Bahri**

 Date: **13.12.05**  
 Name: **Kielhofz**  
 Signature: **E.H.R.**

 Date: **16.12.05**  
 Name: **Yavuz BAHRI**  
 Signature: **Bahri**

 Date: **11.12.2005**  
 Name: **Yavuz BAHRI**  
 Signature: **Bahri**

|                                                                                                                                        |  |                                                     |  |                                                                         |                             |                                                                                                                                                        |                                                |                                                                                                   |  |
|----------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------|--|-------------------------------------------------------------------------|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------------------------------------------------|--|
|                                                     |  | Durchstrahlungsprüfung- Radiographic Examination    |  |                                                                         | Bericht/ Report: <b>328</b> |                                                                                                                                                        | Prüfdatum: <b>11.12.2005</b><br>Date of Exam.: |                                                                                                   |  |
| Kennwort:<br>Job Name: <b>ASU No.9 Kosice</b>                                                                                          |  | Auftragsnummer:<br>Serial/Order No.: <b>K 70101</b> |  | Zeichnungsnummer/ISO-Nr.: <b>O 61111</b>                                |                             | Seite: <b>1</b> von<br>Sheet: of                                                                                                                       |                                                | Baufeld Nr.: <b>xxx</b><br>Constr area No.:                                                       |  |
| Benennung:<br>Discription: <b>Coldbox</b>                                                                                              |  | Bauteil/Verbindung:<br>Part/Joint: <b>pipe</b>      |  | Schweißverfahren DIN 24063:<br>Welding process to DIN 24063: <b>488</b> |                             | Nahtform BW<br>Weld type:                                                                                                                              |                                                |                                                                                                   |  |
| Wärmebehandlung: <input checked="" type="checkbox"/> <b>vor/ before</b><br>Heat treatment: <input type="checkbox"/> <b>nach/ after</b> |  | Schweißnahtnummer:<br>Weld- No.: <b>3</b>           |  | Werkstoff/ Material A: <b>Al Mg 4,5Mn</b><br>Werkstoff/ Material B:     |                             | Bewertung n.DIN EN 5817 <input type="checkbox"/> <b>DIN EN 30042</b> <input checked="" type="checkbox"/><br>Quality level acc. to -// (DIN EN 12517/1) |                                                | A <input type="checkbox"/><br>B <input checked="" type="checkbox"/><br>C <input type="checkbox"/> |  |
| Oberflächenzustand <b>Clean</b><br>Surface quality:                                                                                    |  | Prüfumfang:<br>Extent of examination: <b>10 %</b>   |  | Abmessung/Dimension A: <b>60x3,9</b><br>Abmessung/Dimension B:          |                             |                                                                                                                                                        |                                                | mm                                                                                                |  |

**Angaben zur Prüfung/ Data of examination**

|                             |                                              |                                         |                            |                            |                            |                                                                       |
|-----------------------------|----------------------------------------------|-----------------------------------------|----------------------------|----------------------------|----------------------------|-----------------------------------------------------------------------|
| Prüfklasse gem. DIN EN 1435 | <input type="checkbox"/> A                   | Zulässigkeitsgrenzen gem. DIN EN 12 517 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | Aufnahmeanordnung nach DIN EN 1435 :<br>Test arrangement acc. EN 1435 |
| Test class acc. to EN 1435  | <input checked="" type="checkbox"/> B        | Acceptance level acc. to EN 12 517      |                            |                            |                            |                                                                       |
| Strahlungsquelle:           | Brennfleckgr./Strahlenquellengr.: <b>3x3</b> |                                         | b                          | (mm)                       | f 200                      | Filmsorte:<br>Film type:                                              |
| Source of radiation:        | <b>Selen 75</b>                              | Focal Spot/Source Size:                 |                            |                            |                            | Filmklasse:<br>Film system class:                                     |
| Aktivität:                  |                                              | Röhreneinstellung:                      | Folienart:                 | Pb                         | Folienstärke:              | Filmgröße:                                                            |
| Activity:                   | 40 ci                                        | Tube voltage/current:                   | (kV)                       | (mA)                       | Screen type:               | Exposure time:                                                        |
|                             |                                              |                                         |                            |                            | Screen thickness:          | 45 s<br>Film size.                                                    |

### Prüfergebnis/ Test data

[illegible]

Definition- Erklärung der Bewertung/ Definition- Legend

Definition: Erklärung der Bewertung / Definition / Legend

|                                                     |                                    |                                               |                                                   |                                       |
|-----------------------------------------------------|------------------------------------|-----------------------------------------------|---------------------------------------------------|---------------------------------------|
| <b>Aa</b> = Pore/ Gas pore                          | <b>Ab</b> = Schlauchpore/Wurmhole  | <b>Ad</b> = Porennest/Porosity                | <b>Ba</b> = Schlackeneinschl./ Slag inclusion     | <b>C</b> = Bindefehler/Lack of fusion |
| <b>D</b> = ung. Durchschw./Lack of penetration      | <b>Da</b> = Wurzelkerbe/Root notch | <b>Db</b> = Wurzelrückfall/Root reinforcement | <b>Dc</b> = Wurzeldurchhang/Excessive penetration | <b>E</b> = Riß/Crack                  |
| <b>H</b> = metallischer Einschuß/Metallic inclusion | <b>F</b> = Einbrand/Undercut       |                                               |                                                   |                                       |

|                                                                                                                                         | ☆ Additional Marking                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled  | R1; R2                                                                                                                           |
| <input type="checkbox"/> Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled | erste und zweite Rep./first and second Rep.<br>neu nach Rep./ cut and reweld                                                     |
| <input type="checkbox"/> toleriert/ tolerated                                                                                           | F Folgeprüfung/ Tracer shot<br>G Garantienahm/ RT instead of Pressure Test<br>K Kontrollschuß/ Control Shot<br>I I-Stoß/ I-Joint |

Testing Contractor/Name of Examiner

## Air Liquide

**E.H.R**



Tűv

Date \_\_\_\_\_ Name \_\_\_\_\_

Signature

Date \_\_\_\_\_ Name \_\_\_\_\_

**Signature**

Name

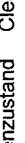
**Signature**

Date:

**Signature**





|                                                                                                                              |                                                     |                                                              |                                                      |                                                                      |                                                                                                   |                                                |
|------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|--------------------------------------------------------------|------------------------------------------------------|----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|------------------------------------------------|
|  <b>AIR LIQUIDE</b>                       |                                                     | <b>Durchstrahlungsprüfung- Radiographic Examination</b>      |                                                      |                                                                      | Bericht/ Report: <b>330</b>                                                                       | Prüfdatum: <b>11.12.2005</b><br>Date of Exam.: |
| Kennwort:<br>Job Name: <b>ASU No.9 Kosice</b>                                                                                | Auftragsnummer:<br>Serial/Order No.: <b>K 70101</b> | Zeichnungsnummer/ISO-Nr.:<br>Drawing No./ISO No.:            | Seite: <b>7</b> von<br>Sheet: of                     | Baufeld Nr.: xxx<br>Constr area No.:                                 |                                                                                                   |                                                |
| Benennung:<br>Discription: <b>Coldbox</b>                                                                                    | Bauteil/Verbindung:<br>Part/Join: pipe              | Schweißverfahren DIN 24063:<br>Welding process to DIN 24063: | 141<br>Schweißer:<br>Welder:                         | Nahtform BW<br>Weld type:                                            |                                                                                                   |                                                |
| Wärmebehandlung: <input checked="" type="checkbox"/><br>Heat treatment: <input type="checkbox"/><br><input type="checkbox"/> | Schweißnahtnummer:<br>Weld- No.: <b>51</b>          | Werkstoff/ Material A:<br>Werkstoff/ Material B:             | Bewertung n.DIN EN 5817<br>Quality level acc. to -// | DIN EN 30042 <input checked="" type="checkbox"/><br>(DIN EN 12517/1) | <input type="checkbox"/> A<br><input checked="" type="checkbox"/> B<br><input type="checkbox"/> C |                                                |
| Oberflächenzustand Clean<br>Surface quality:                                                                                 | Prüfumfang:<br>Extent of examination:               | Abmessung/Dimension A:<br>Abmessung/Dimension B:             | <b>33,4x3,4</b>                                      |                                                                      |                                                                                                   |                                                |
|                                                                                                                              | 10 %                                                |                                                              |                                                      |                                                                      | mm                                                                                                |                                                |

**Angaben zur Prüfung/ Data of examination**

|                             |                                              |                                         |                                       |                            |                            |                                                                       |                |
|-----------------------------|----------------------------------------------|-----------------------------------------|---------------------------------------|----------------------------|----------------------------|-----------------------------------------------------------------------|----------------|
| Prüfklasse gem. DIN EN 1435 | <input type="checkbox"/> A                   | Zulässigkeitsgrenzen gem. DIN EN 12 517 | <input checked="" type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | Aufnahmeanordnung nach DIN EN 1435 :<br>Test arrangement acc. EN 1435 | <b>11</b>      |
| Test class acc. to EN 1435  | <input checked="" type="checkbox"/> B        | Acceptance level acc. to EN 12 517      |                                       |                            |                            |                                                                       |                |
| Strahlungsquelle:           | Brennfleckgr./Strahlenquellengr.: <b>3x3</b> |                                         | Filmsorte:                            | Kodak Mx 100               |                            | Filmklasse:                                                           | C 2            |
| Source of radiation:        | Focal Spot/Source Size:                      |                                         | Film type:                            |                            |                            | Film system class:                                                    |                |
| Aktivität:                  | Röhreneinstellung:                           |                                         | Folienart:                            | Pb                         | Folienstärke:              | Belichtungszeit:                                                      | Filmgröße:     |
| Activity:                   | 40 ci                                        | Tube voltage/current:                   | Screen type:                          | ( mA )                     | Screen thickness:          | Exposure time:                                                        | Film size.     |
|                             |                                              | ( KV )                                  |                                       |                            | 0,02 mm                    | <b>45 s</b>                                                           | <b>10 x 20</b> |

| Prüfergebnis/ Test data |
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[illegible]

### Definition- Erklärung der Bewertung/ Definition- Legend

**Aa** = Pore/ Gas pore      **Ab** = Schlauchpore/Wurmhole      **Ad** = Porennes/Porosity      **Ba** = Schlackeneinschl./ Slag inclusion      **C** = Bindefehler/Lack of fusion  
**D** = ung. Durchschw./Lack of penetration      **Da** = Wurzelkerbe/Root notch      **Db** = Wurzelrückenfall/Root reinforcement      **Dc** = Wurzeldurchhang/Excessive penetration      **E** = Riß/Crack  
**H** = metallischer Einschluß/Metallic inclusion      **F** = Einbrand/Undercut

|                                                                                                                                         | ☆ Additional Marking                                                                                                                  |
|-----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled  | R1; R2 erste und zweite Rep./first and second Rep.<br>N neu nach Rep./ cut and reweld                                                 |
| <input type="checkbox"/> Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled | F Folgeprüfung/ Tracer shot<br>G Garantienaht/ RT instead of Pressure Test<br>K Kontrollschweiß/ Control Shot<br>I - Stöße/ I - Joint |
| <input type="checkbox"/> toleriert/ tolerated                                                                                           |                                                                                                                                       |

**Testing Contractor/Name of Examiner**

Date \_\_\_\_\_ Name \_\_\_\_\_

Name \_\_\_\_\_ Signature \_\_\_\_\_

Date \_\_\_\_\_

Signature \_\_\_\_\_

Signature \_\_\_\_\_

Date

Name

Name

Signature

Signature

**TÜV**

Date \_\_\_\_\_

Date \_\_\_\_\_

**Signature**

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|                                                                                     |  |                                                         |  |                               |  |                             |  |                                                      |  |
|-------------------------------------------------------------------------------------|--|---------------------------------------------------------|--|-------------------------------|--|-----------------------------|--|------------------------------------------------------|--|
|  |  | <b>Durchstrahlungsprüfung- Radiographic Examination</b> |  |                               |  | Bericht/ Report: <b>331</b> |  | Prüfdatum: <b>11.12.2005</b><br>Date of Exam.:       |  |
| Kennwort:                                                                           |  | Auftragsnummer:<br>Serial/Order No.: <b>K 70101</b>     |  | Zeichnungsnummer/ISO-Nr.:     |  | Seite: <b>1</b> von         |  | Baufeld Nr.: xxx                                     |  |
| Job Name: <b>ASU No.9 Kosice</b>                                                    |  | Serial/Order No.: <b>K 70101</b>                        |  | Drawing No./ISO No.:          |  | Sheet:                      |  | Constr area No.:                                     |  |
| Benennung:                                                                          |  | Bauteil/Verbindung: pipe                                |  | Schweißverfahren DIN 24063:   |  | Schweißer:                  |  | Nahtform BW                                          |  |
| Discription: <b>Coldbox</b>                                                         |  | Part/Joint:                                             |  | Welding process to DIN 24063: |  | Welder:                     |  | Weld type:                                           |  |
| Wärmebehandlung: <input checked="" type="checkbox"/>                                |  | Schweißnahtnummer:                                      |  | Werkstoff/ Material A:        |  | Bewertung n.DIN EN 5817     |  | <input type="checkbox"/> DIN EN 30042                |  |
| Heat treatment: <input type="checkbox"/>                                            |  | Weld- No.: <b>6</b>                                     |  | Werkstoff/ Material B:        |  | Quality level acc. to -/-   |  | <input checked="" type="checkbox"/> (DIN EN 12517/1) |  |
| Oberflächenzustand Clean                                                            |  | Prüfungsfang: <b>10 %</b>                               |  | Abmessung/Dimension A:        |  | Abmessung/Dimension B:      |  | <input type="checkbox"/> C                           |  |
| Surface quality:                                                                    |  | Extent of examination:                                  |  | Abmessung/Dimension A:        |  | Abmessung/Dimension B:      |  | <input type="checkbox"/> mm                          |  |

**Angehören zur Prüfung/ Data of examination**

|                                                                                                                            |  |                                                                               |  |                                                                                                                                                                      |  |                                                               |  |                                                                                     |  |
|----------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------|--|-------------------------------------------------------------------------------------|--|
| Prüfklasse gem. DIN EN 1435 <input type="checkbox"/> A<br>Test class acc. to EN 1435 <input checked="" type="checkbox"/> B |  | Zulässigkeitsgrenzen gem. DIN EN 12 517<br>Acceptance level acc. to EN 12 517 |  |  1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> |  | Prüfarrangement acc. EN 1435<br>Test arrangement acc. EN 1435 |  |  |  |
| Strahlungsquelle:<br>Source of radiation: <b>Selen 75</b>                                                                  |  | Brennfleckgr./Strahlenquellengr.: <b>3x3</b><br>Focal Spot/Source Size:       |  | b (mm)                                                                                                                                                               |  | Filmsorte: Kodak Mx 100<br>Film type:                         |  | Filmklasse:<br>Film system class: C 2                                               |  |
| Röhreneinstellung:<br>Tube voltage/current: 40 ci                                                                          |  | (KV)                                                                          |  | Folienart: Pb<br>Screen type:                                                                                                                                        |  | Belichtungszeit:<br>Exposure time: <b>45 s</b>                |  | Filmgröße:<br>Film size: <b>10 x 20</b>                                             |  |

|      | Prüfergebnis/ Test data |
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[illegible]

## Definition Erklärung der Bewertung/ Definition- Legend

|                                                     |                                    |                                               |                      |
|-----------------------------------------------------|------------------------------------|-----------------------------------------------|----------------------|
| <b>Aa</b> = Pore/ Gas pore                          | <b>Ad</b> = Porennest/Porosity     | <b>Ba</b> = Schlackeneinschl./ Slag inclusion | <b>E</b> = Riß/Crack |
| <b>D</b> = ung. Durchschw./Lack of penetration      | <b>Da</b> = Wurzelkerbe/Root notch | <b>Dc</b> = Wurzelrückfall/Root reinforcement | <b>E</b> = Riß/Crack |
| <b>H</b> = metallischer Einschuß/Metallic inclusion | <b>F</b> = Einbrand/Undercut       |                                               |                      |

| <div> <div></div> <div>Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled</div> </div> | <div> <div></div> <div>Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled</div> </div> | <div> <div></div> <div>toleriert/ tolerated</div> </div> | <div> <div>☆</div> <div>Additional Marking</div> </div> |
|----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|---------------------------------------------------------|
|                                                                                                                                        |                                                                                                                                                    |                                                          | R1; R2                                                  |
|                                                                                                                                        |                                                                                                                                                    |                                                          | N                                                       |
|                                                                                                                                        |                                                                                                                                                    |                                                          | F                                                       |
|                                                                                                                                        |                                                                                                                                                    |                                                          | G                                                       |
|                                                                                                                                        |                                                                                                                                                    |                                                          | K                                                       |
|                                                                                                                                        |                                                                                                                                                    |                                                          | I                                                       |

| Testing Contractor/Name of Examiner |
|-------------------------------------|
| 10/10/2019                          |

## Air Liquide

E.H.R  
13.12

Kiehlholz

**TÜV**

Date \_\_\_\_\_ Name \_\_\_\_\_ Signature \_\_\_\_\_

Date \_\_\_\_\_

Name \_\_\_\_\_ Signature \_\_\_\_\_

Name

**Signature**

Date \_\_\_\_\_

Signature \_\_\_\_\_

|                                                                                                                                                                                                |                                                                                                       |                                                                                                                              |                                  |                                             |                                                                                                                                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|----------------------------------|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
|  <b>AIR LIQUIDE</b>                                                                                         |                                                                                                       | <b>Durchstrahlungsprüfung- Radiographic Examination</b>                                                                      |                                  | Bericht/ Report: <b>332</b>                 | Prüfdatum: <b>11.12.2005</b><br>Date of Exam.:                                                                                                  |
| Kennwort:<br>Job Name: <b>ASU No.9 Kosice</b><br>Benennung:<br>Discription: <b>Coldbox</b><br>Wärmebehandlung: <input checked="" type="checkbox"/><br>Heat treatment: <input type="checkbox"/> | Auftragsnummer:<br>Serial/Order No.: <b>K 70101</b><br>Bauteil/Verbindung: <b>pipe</b><br>Part/Joint: | Zeichnungsnummer/ISO-Nr.:<br>Drawing No./ISO No.: <b>195</b><br>Schweißverfahren DIN 24063:<br>Welding process to DIN 24063: | Seite: <b>2</b> von<br>Sheet: of | Baufeld Nr.: <b>xxx</b><br>Constr area No.: |                                                                                                                                                 |
| Weld- No.: <b>27</b><br>ohne/ without: <input checked="" type="checkbox"/><br>vor/ before: <input type="checkbox"/><br>nach/ after: <input type="checkbox"/>                                   | Schweißnahtnummer:<br>Weld- No.: <b>1.4541</b>                                                        | Werkstoff/ Material A:<br>Werkstoff/ Material B:                                                                             | Schweißer:<br>Welder:            | Nahtform BW<br>Weld type:                   | Bewertung n.DIN EN 5817 <input type="checkbox"/> DIN EN 30042 <input checked="" type="checkbox"/><br>Quality level acc. to -/- (DIN EN 12517/1) |
| Oberflächenzustand <b>Clean</b><br>Surface quality:                                                                                                                                            | Prüfumfang:<br>Extent of examination: <b>10 %</b>                                                     | Abmessung/Dimension A:<br>Abmessung/Dimension B: <b>60x2,9</b>                                                               |                                  |                                             | A <input type="checkbox"/><br>B <input checked="" type="checkbox"/><br>C <input type="checkbox"/>                                               |
|                                                                                                                                                                                                |                                                                                                       |                                                                                                                              |                                  |                                             | mm                                                                                                                                              |

**Angaben zur Prüfung/ Data of examination**

|                                                                               |  |          |  |                                                              |  |              |  |         |
|-------------------------------------------------------------------------------|--|----------|--|--------------------------------------------------------------|--|--------------|--|---------|
| Aufnahmeanordnung nach DIN EN 14355 :<br>Test arrangement acc. EN 14355       |  | 1        |  | 2                                                            |  | 3            |  | 11      |
| Zulässigkeitsgrenzen gem. DIN EN 12 517<br>Acceptance level acc. to EN 12 517 |  | A        |  | B                                                            |  | C            |  |         |
| Strahlungsquelle:<br>Source of radiation:                                     |  | Selen 75 |  | Brennfleckgr./Strahlenquellengr.:<br>Focal Spot/Source Size: |  | 3x3          |  | C 2     |
| Aktivität:<br>Activity:                                                       |  | 40 ci    |  | Folienart:<br>Screen type:                                   |  | Pb           |  |         |
| Belichtungszeit:<br>Exposure time:                                            |  | 45 s     |  | Folienstärke:<br>Screen thickness:                           |  | 0,02 mm      |  | 10 x 20 |
| Filmmgröße:<br>Film size:                                                     |  | 10 x 20  |  | Filmsorte:<br>Film type:                                     |  | Kodak Mx 100 |  |         |

### Prüfergebnis/ Test data

[illegible]

## Definition- Erklärung der Bewertung/ Definition- Legend

| Definition- Erklärung der Bewertung/ Definition- Legend |                                    |                                               |                                                   |
|---------------------------------------------------------|------------------------------------|-----------------------------------------------|---------------------------------------------------|
| <b>Aa</b> = Pore/ Gas pore                              | <b>Ab</b> = Schlauchpore/Wurmhole  | <b>Ad</b> = Porennest/Porosity                | <b>Ba</b> = Schlackeneinschl./ Slag inclusion     |
| <b>D</b> = ung. Durchschw./Lack of penetration          | <b>Da</b> = Wurzelkerbe/Root notch | <b>Db</b> = Wurzelrückfall/Root reinforcement | <b>Dc</b> = Wurzeldurchhang/Excessive penetration |
| <b>H</b> = metallischer Einschluss/Metallic inclusion   | <b>F</b> = Einbrand/Undercut       |                                               | <b>C</b> = Bindefehler/Lack of fusion             |
|                                                         |                                    |                                               | <b>E</b> = Riß/Crack                              |

|                                     | Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled             | ☆ Additional Marking |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------|
| <input checked="" type="checkbox"/> | Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled | R1; R2               |
| <input type="checkbox"/>            |                                                                                                                | N                    |
| <input type="checkbox"/>            | toleriert/ tolerated                                                                                           | F                    |
|                                     |                                                                                                                | G                    |
|                                     |                                                                                                                | K                    |
|                                     |                                                                                                                | I                    |

|                                            |           |                |             |
|--------------------------------------------|-----------|----------------|-------------|
| <b>Testing Contractor/Name of Examiner</b> | Date      | Name           | Signature   |
| TESTING CONTRACTOR'S NO. 812               | 4-12-2006 | EKG            | [Signature] |
| <b>Air Liquide</b>                         | Date      | Name           | Signature   |
|                                            | 16-1-06   | Jantet<br>Behr | BATH        |
| <b>E.H.R.</b><br>13.12.05<br>Kielholz      | Date      | Name           | Signature   |
| <b>EHR 02</b>                              |           |                | [Signature] |
| <b>TÜV</b>                                 | Date      | Name           | Signature   |
|                                            | 14.12.05  |                | [Signature] |

|                                                                                     |                                                     |                                                         |                         |                            |                                                  |                             |                                                |
|-------------------------------------------------------------------------------------|-----------------------------------------------------|---------------------------------------------------------|-------------------------|----------------------------|--------------------------------------------------|-----------------------------|------------------------------------------------|
|  |                                                     | <b>Durchstrahlungsprüfung- Radiographic Examination</b> |                         |                            |                                                  | Bericht/ Report: <b>333</b> | Prüfdatum: <b>16.12.2005</b><br>Date of Exam.: |
| Kennwort:<br>Job Name: <b>ASU No.9 Kosice</b>                                       | Auftragsnummer:<br>Serial/Order No.: <b>K 70101</b> | Zeichnungsummer/ISO-Nr.:                                | Seite: <b>1</b> von     | Baufeld Nr.: xxx           | Constr area No.:                                 |                             |                                                |
| Benennung:<br>Discription: <b>Coldbox</b>                                           | Bauteil/Verbindung: pipe                            | Schweißverfahren DIN 24063:                             | Sheet: 141 of           | Schweißmaß:                | Nahtform BW                                      |                             |                                                |
| Wärmebehandlung: <input checked="" type="checkbox"/>                                | Part/Joint:                                         | Welding process to DIN 24063:                           | Welder:                 | Weld type:                 | DIN EN 30042 <input checked="" type="checkbox"/> | A                           |                                                |
| Heat treatment: <input type="checkbox"/>                                            | Schweißnahtnummer:                                  | Werkstoff/ Material A: <b>Al Mg 4,5Mn</b>               | Bewertung n.DIN EN 5817 | Quality level acc. to -II- | (DIN EN 12517/1)                                 | B                           |                                                |
| nach/ after <input type="checkbox"/>                                                | Weld- No.: <b>3</b>                                 | Werkstoff/ Material B:                                  | Bewertung               | Quality level acc. to -II- | (DIN EN 12517/1)                                 | C                           |                                                |
| Oberflächenzustand Clean                                                            | Prüfumfang: 10 %                                    | Abmessung/Dimension A:                                  | Abmessung/Dimension B:  | 60x3,9                     | mm                                               |                             |                                                |
| Surface quality:                                                                    | Extent of examination:                              | Abmessung/Dimension A:                                  | Abmessung/Dimension B:  | 60x3,9                     | mm                                               |                             |                                                |

### Angaben zur Prüfung/ Data of examination

|                                                           |          |                                                                               |                   |                                                                      |            |
|-----------------------------------------------------------|----------|-------------------------------------------------------------------------------|-------------------|----------------------------------------------------------------------|------------|
| Prüfklasse gem. DIN EN 1435<br>Test class acc. to EN 1435 | A<br>B   | Zulässigkeitsgrenzen gem. DIN EN 12 517<br>Acceptance level acc. to EN 12 517 | 1<br>2<br>3       | Aufnahmeanordnung nach DIN EN 1435:<br>Test arrangement acc. EN 1435 | 11         |
| Strahlungsquelle:                                         |          | Brennfleckgr./Strahlenquellengr.: 3x3                                         |                   | Filmsorte:                                                           | C 2        |
| Source of radiation:                                      | Selen 75 | Focal Spot/Source Size:                                                       | b                 | Film type:                                                           |            |
| Aktivität:                                                |          | Röhreneinstellung:                                                            | Folienart:        | Belichtungszeit:                                                     | Filmgröße: |
| Activity:                                                 | 40 ci    | Tube voltage/current:                                                         | Screen type:      | Exposure time:                                                       | Film size. |
|                                                           |          | (KV)                                                                          | (mA)              | 45 s                                                                 |            |
|                                                           |          |                                                                               | Screen thickness: |                                                                      |            |
|                                                           |          |                                                                               | Pb                | 0.02 mm                                                              |            |
|                                                           |          |                                                                               |                   |                                                                      | 10 x 24    |

### Prüfergebnis/ Test data

[illegible]

### Definition- Erklärung der Bewertung/ Definition- Legend

Definition- Erklärung der Bewertung/ Deutungs- Legende

|                                                      |                                     |                                                |                                                    |                                        |
|------------------------------------------------------|-------------------------------------|------------------------------------------------|----------------------------------------------------|----------------------------------------|
| <b>Aa</b> = Pore/ Gas pore                           | <b>Ab</b> = Schlauchpore/Wurmhole   | <b>Ad</b> = Porennetz/ Porosity                | <b>Ba</b> = Schlackeneinschl./ Slag inclusion      | <b>C</b> = Bindefehler/ Lack of fusion |
| <b>D</b> = ung. Durchschw./ Lack of penetration      | <b>Da</b> = Wurzelkerbe/ Root notch | <b>Db</b> = Wurzelrückfall/ Root reinforcement | <b>Dc</b> = Wurzeldurchhang/ Excessive penetration | <b>E</b> = Riß/ Crack                  |
| <b>H</b> = metallischer Einschuß/ Metallic inclusion | <b>F</b> = Einbrand/ Undercut       |                                                |                                                    |                                        |

|                                                                                                                                         | ☆ Additional Marking                                                                                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled  | R1; R2                                                                                                                                       |
| <input type="checkbox"/> Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled | N                                                                                                                                            |
| <input type="checkbox"/> toleriert/ tolerated                                                                                           | F<br>Folgeprüfung/ Tracer shot<br>G<br>Garantienahm/ RT instead of Pressure Test<br>K<br>Kontrollschuß/ Control Shot<br>I - Stolz/ I - Joint |

**Testing Contractor/Name of Examiner**

## Air Liquide

**E.H.R**



**TÜV**

Date \_\_\_\_\_ Name \_\_\_\_\_ Signature \_\_\_\_\_

Name

**Signature**

Name

Signature

Date \_\_\_\_\_ Name \_\_\_\_\_

**Signature**

| Testing Contractor/Name of Examiner |      | Air Liquide        |          | E.H.R.   |          | EHR 02             |          | TÜV                |                    |
|-------------------------------------|------|--------------------|----------|----------|----------|--------------------|----------|--------------------|--------------------|
| Date                                | Name | Signature          | Date     | Name     | Date     | Signature          | Date     | Name               | Signature          |
| 13.12.05                            | 264  | <i>[Signature]</i> | 13.12.05 | Kielholz | 13.12.05 | <i>[Signature]</i> | 13.12.05 | <i>[Signature]</i> | <i>[Signature]</i> |

|                                                         |  |                                  |  |                                                          |  |                                              |  |                                                                                                    |  |                                                                                             |  |
|---------------------------------------------------------|--|----------------------------------|--|----------------------------------------------------------|--|----------------------------------------------|--|----------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------|--|
| <b>AIR LIQUIDE</b>                                      |  |                                  |  | <b>Durchstrahlungsprüfung - Radiographic Examination</b> |  |                                              |  | Bericht/ Report: <b>335</b>                                                                        |  | Prüfdatum: <b>11.12.2005</b><br>Date of Exam.:                                              |  |
| Kennwort:                                               |  | Auftragsnummer:                  |  | Zeichnungsnummer/ISO-Nr.: <b>R 43013</b>                 |  | Seite: <b>1</b> von <b>153</b>               |  | Baufeld Nr.: xxx                                                                                   |  | Constr area No.:                                                                            |  |
| Job Name: <b>ASU No.9 Kosice</b>                        |  | Serial/Order No.: <b>K 70101</b> |  | Drawing No./ISO No.:                                     |  | Sheet: of                                    |  | Bauteil/Verbindung: pipe                                                                           |  | Schweißverfahren DIN 24063: <b>141</b>                                                      |  |
| Benennung:                                              |  | Part/Joint:                      |  | Schweißverfahren DIN 24063:                              |  | Schweißverfahren: <b>153</b>                 |  | Nahtform BW                                                                                        |  | Weld type:                                                                                  |  |
| Disposition: <b>Coldbox</b>                             |  | Schweißnahtnummer:               |  | Welding process to DIN 24063:                            |  | Welder:                                      |  | Bewertung n. DIN EN 5817 <input type="checkbox"/> DIN EN 30042 <input checked="" type="checkbox"/> |  | <input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C |  |
| Wärmebehandlung: <input type="checkbox"/> ohnel/without |  | Weld- No.: <b>3</b>              |  | Werkstoff/ Material A: <b>Al Mg 4.5Mn</b>                |  | Bewertung level acc. to -/- (DIN EN 12517/1) |  |                                                                                                    |  |                                                                                             |  |
| Heat treatment: <input type="checkbox"/> vor/ before    |  |                                  |  | Werkstoff/ Material B:                                   |  |                                              |  |                                                                                                    |  |                                                                                             |  |
| Oberflächenzustand Clean                                |  | Prüfumfang: 10 %                 |  | Abmessung/Dimension A: <b>33,4x3,4</b>                   |  |                                              |  |                                                                                                    |  | mm                                                                                          |  |
| Surface quality:                                        |  | Extent of examination:           |  | Abmessung/Dimension B:                                   |  |                                              |  |                                                                                                    |  |                                                                                             |  |

**Angaben zur Prüfung/ Data of examination**

|                                                                                              |  |                                                                                                                                     |  |                                                |  |
|----------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------|--|
| Prüfklasse gem. DIN EN 1435 <input type="checkbox"/> A <input checked="" type="checkbox"/> B |  | Zulässigkeitsgrenzen gem. DIN EN 12 517 <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 |  | Aufnahmeanordnung nach DIN EN 1435 : <b>11</b> |  |
| Test class acc. to EN 1435                                                                   |  | Acceptance level acc. to EN 12 517                                                                                                  |  | Test arrangement acc. EN 1435                  |  |
| Strahlungsquelle: <b>Selen 75</b>                                                            |  | Brennfleckgr./Strahlenquellengr.: <b>3x3</b>                                                                                        |  | Filmsorte: <b>Kodak Mx 100</b>                 |  |
| Source of radiation:                                                                         |  | Focal Spot/Source Size:                                                                                                             |  | Film type:                                     |  |
| Aktivität: 40 ci                                                                             |  | Röhreneinstellung:                                                                                                                  |  | Belichtungszeit: <b>0,02 mm</b>                |  |
| Activity:                                                                                    |  | Tube voltage/current:                                                                                                               |  | Exposure time: <b>45 s</b>                     |  |
|                                                                                              |  | Folienart: Pb                                                                                                                       |  | Filmgröße: <b>10 x 20</b>                      |  |
|                                                                                              |  | Screen type:                                                                                                                        |  | Film size:                                     |  |

**Prüfergebnis/ Test data**

| Bildgüteprüfkörper/ Image quality indicator ( IQ 10A/EN461-2 ) | Schweißnahtnummer/ Film-nr. <input checked="" type="checkbox"/> <b>☆</b> | Weld No. | Film No. | Lage/ Position: <input checked="" type="checkbox"/> Filmnah/ close to film <input type="checkbox"/> Filmfern/ far from film |    |    |    |   |   |    |    |    |   |   |    | Bemerkung/ Comments (from - to) |                     |       |         |
|----------------------------------------------------------------|--------------------------------------------------------------------------|----------|----------|-----------------------------------------------------------------------------------------------------------------------------|----|----|----|---|---|----|----|----|---|---|----|---------------------------------|---------------------|-------|---------|
|                                                                |                                                                          |          |          | Aa                                                                                                                          | Ab | Ad | Ba | C | D | Da | Db | Dc | E | F | FF |                                 | Image quality (IQL) | a (e) | na (ne) |
| <b>3</b>                                                       | A                                                                        |          |          |                                                                                                                             |    |    |    |   |   |    |    |    |   |   |    |                                 |                     |       |         |
|                                                                | B                                                                        |          |          |                                                                                                                             |    |    |    |   |   |    |    |    |   |   |    |                                 |                     |       |         |
|                                                                |                                                                          |          |          |                                                                                                                             |    |    |    |   |   |    |    |    |   |   |    |                                 |                     |       |         |
|                                                                |                                                                          |          |          |                                                                                                                             |    |    |    |   |   |    |    |    |   |   |    |                                 |                     |       |         |

**Definition- Erklärung der Bewertung/ Definition- Legend**

Aa = Pore/ Gas pore      Ab = Schlauchpore/Wurmhole      Ad = Porennest/ Porosity      Ba = Schlackeneinschl./ Slag inclusion      C = Bindefehler/Lack of fusion  
D = ung. Durchschw./ Lack of penetration      Da = Wurzelkerbe/ Root notch      Db = Wurzelrückfall/ Root reinforcement      Dc = Wurzeldurchhang/ Excessive penetration      E = Riß/ Crack  
H = metallischer Einschluss/ Metallic inclusion      F = Einbrand/ Undercut

☒ Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled

☐ Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled

☐ toleriert/ tolerated

## ☆ Additional Marking

R1; R2      erste und zweite Rep./ first and second Rep.  
N      neu nach Rep./ cut and reweld  
F      Folgeprüfung/ Tracer shot  
G      Garantienaht/ RT instead of Pressure Test  
K      Kontrollschuß/ Control Shot  
I      I- Stoß/ I- Joint

Testing Contractor/Name of Examiner

Air Liquide

E.H.R.

13.12.05 Kielholz

TÜV

Date      Name      Signature

Date

Name

Signature

Name

Signature

Date

Name

Signature

4.12.2005 ZGK

16-1-06

J. J. J. J.

B. J. J. J.

B. J. J. J.

| AIR LIQUIDE                                             |  |                           |  | Durchstrahlungsprüfung - Radiographic Examination |  |                                                                                         |  | Bericht/ Report: 336                       |  | Prüfdatum: 12.12.2005                                                                             |  |
|---------------------------------------------------------|--|---------------------------|--|---------------------------------------------------|--|-----------------------------------------------------------------------------------------|--|--------------------------------------------|--|---------------------------------------------------------------------------------------------------|--|
| Kennwort:                                               |  | Auftragsnummer:           |  | Zeichnungsnummer/ISO-Nr.: O 40008                 |  | Seite: 1 von                                                                            |  | Baufeld Nr.: xxx                           |  | Date of Exam.:                                                                                    |  |
| Job Name: ASU No.9 Kosice                               |  | Serial/Order No.: K 70101 |  | Drawing No./ISO No.:                              |  | Sheet: of                                                                               |  | Constr area No.:                           |  |                                                                                                   |  |
| Benennung:                                              |  | Bauteil/Verbindung: pipe  |  | Schweißverfahren DIN 24063: 141                   |  | Schweißer: 195                                                                          |  | Nahtform BW                                |  |                                                                                                   |  |
| Disposition: Coldbox                                    |  | Part/Joint:               |  | Welding process to DIN 24063:                     |  | Welder:                                                                                 |  | Weld type:                                 |  |                                                                                                   |  |
| Wärmebehandlung: <input type="checkbox"/> ohne/ without |  | Schweißnahtnummer:        |  | Werkstoff/ Material A: 1.4541                     |  | Bewertung n. DIN EN 5817 <input type="checkbox"/> DIN EN 30042 <input type="checkbox"/> |  | Quality level acc. to -/- (DIN EN 12517/1) |  | <input type="checkbox"/> A<br><input checked="" type="checkbox"/> B<br><input type="checkbox"/> C |  |
| Heat treatment: <input type="checkbox"/> vor/ before    |  | Weld- No.: 2              |  | Werkstoff/ Material B:                            |  |                                                                                         |  |                                            |  |                                                                                                   |  |
| Oberflächenzustand Clean                                |  | Prüfumfang: 10 %          |  | Abmessung/Dimension A: 48,3x2,6                   |  |                                                                                         |  |                                            |  | mm                                                                                                |  |
| Surface quality:                                        |  | Extent of examination:    |  | Abmessung/Dimension B:                            |  |                                                                                         |  |                                            |  |                                                                                                   |  |

## Angaben zur Prüfung/ Data of examination

|                                                                                              |                                                                                                                          |                                                                       |                    |
|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|--------------------|
| Prüfklasse gem. DIN EN 1435 <input type="checkbox"/> A <input checked="" type="checkbox"/> B | Zulässigkeitsgrenzen gem. DIN EN 12 517 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 | Aufnahmeanordnung nach DIN EN 1435 :<br>Test arrangement acc. EN 1435 |                    |
| Strahlungsquelle: Selen 75                                                                   | Brennfleckgr./Strahlenquellengr.: 3x3                                                                                    | Filmsorte: Kodak Mx 100                                               | Filmklasse: C 2    |
| Source of radiation:                                                                         | Focal Spot/Source Size:                                                                                                  | Film type:                                                            | Film system class: |
| Aktivität: 40 ci                                                                             | Röhreneinstellung: (KV) (mA) (mm) f 200                                                                                  | Folienart: Pb                                                         | Filmgröße: 10 x 20 |
| Activity:                                                                                    | Tube voltage/current:                                                                                                    | Screen type:                                                          | Film size:         |
|                                                                                              |                                                                                                                          | Screen tickness:                                                      |                    |

## Prüfergebnis/ Test data

| Bildgüteprüfkörper/ Image quality indicator (IQ 10A/EN461-2) | Lage/ Position: | Filmnah/ close to film            |                                    | Filmfern/ far from film |                                   | Bemerkung<br>Comments<br>(from - to) |     |      |     |     |     |     |      |      |  |  |
|--------------------------------------------------------------|-----------------|-----------------------------------|------------------------------------|-------------------------|-----------------------------------|--------------------------------------|-----|------|-----|-----|-----|-----|------|------|--|--|
|                                                              |                 | Filmfehler<br>Film defect<br>(FF) | Bildgüte<br>Image quality<br>(IQL) | Schwärzung<br>Density   | Befund/ Findings<br>a (e) na (ne) |                                      |     |      |     |     |     |     |      |      |  |  |
| 2                                                            | A               | 2011                              | 2016                               | 2013                    | 301                               | 401                                  | 402 | 5013 | 515 | 504 | 100 | 304 | 5011 | 5012 |  |  |
|                                                              | B               | Aa                                | Ab                                 | Ad                      | Ba                                | C                                    | D   | Da   | Db  | Dc  | E   | F   | H    | F    |  |  |
|                                                              |                 |                                   |                                    |                         |                                   |                                      |     |      |     |     |     |     |      |      |  |  |
|                                                              |                 |                                   |                                    |                         |                                   |                                      |     |      |     |     |     |     |      |      |  |  |

## Definition- Erklärung der Bewertung/ Definition- Legend

Aa = Pore/ Gas pore      Ab = Schlauchpore/Wurmhole      Ad = Porennest/Porosity      Ba = Schlackeneinschl./ Slag inclusion      C = Bindefehler/Lack of fusion  
D = ung. Durchschw./Lack of penetration      Da = Wurzelkerbe/Root notch      Db = Wurzelrückfall/Root reinforcement      Dc = Wurzeldurchhang/Excessive penetration      E = Rib/Crack  
H = metallischer Einschluss/Metallic inclusion      F = Einbrand/Undercut

Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled

Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled

toleriert/ tolerated

## ☆ Additional Marking

R1; R2      erste und zweite Rep./first and second Rep.  
N      neu nach Rep./ cut and reweld  
F      Folgeprüfung/ Tracer shot  
G      Garantienaht/ RT instead of Pressure Test  
K      Kontrollschuß/ Control Shot  
I      I - Stols/ I - Joint

Testing Contractor/Name of Examiner

Air Liquide

E.H.R.

13.12.05

Kielholz

EHR 02

TÜV

Date

Name

Signature

Date

Name

Signature

Date

Name

Signature

Date

Name

Signature

| Durchstrahlungsprüfung - Radiographic Examination                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |                                        |  |                                             |  |                                |  |                                                                                         |  | Bericht/ Report: <b>337</b> |  | Prüfdatum: 12.12.2005<br>Date of Exam.: |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------|--|---------------------------------------------|--|--------------------------------|--|-----------------------------------------------------------------------------------------|--|-----------------------------|--|-----------------------------------------|--|
| Kennwort: <b>AIR LIQUIDE</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  | Auftragsnummer: <b>ASU No.9 Kosice</b> |  | Zeichnungsnummer/ISO-Nr.: <b>K 70101</b>    |  | Seite: <b>1</b> von <b>195</b> |  | Baufeld Nr.: xxx                                                                        |  | Constr area No.:            |  |                                         |  |
| Benennung: <b>Coldbox</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  | Bauteil/Verbindung: <b>pipe</b>        |  | Schweißverfahren DIN 24063: <b>141</b>      |  | Schweißer: <b>195</b>          |  | Nahtform BW                                                                             |  | Weld type:                  |  |                                         |  |
| Beschreibung: <b>ohne/ without</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  | Schweißnahtnummer: <b>8</b>            |  | Welding process to DIN 24063: <b>1.4541</b> |  | Welder:                        |  | Bewertung n. DIN EN 5817 <input type="checkbox"/> DIN EN 30042 <input type="checkbox"/> |  | <input type="checkbox"/> A  |  |                                         |  |
| Wärmebehandlung: <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  | Weld- No.: <b>8</b>                    |  | Werkstoff/ Material A:                      |  | Quality level acc. to -/-      |  | (DIN EN 12517/1)                                                                        |  | <input type="checkbox"/> B  |  |                                         |  |
| Heat treatment: <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | nach/ after                            |  | Werkstoff/ Material B:                      |  |                                |  |                                                                                         |  | <input type="checkbox"/> C  |  |                                         |  |
| Oberflächenzustand <b>Clean</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  | Prüfumfang: <b>10 %</b>                |  | Abmessung/Dimension A: <b>33,7x2,6</b>      |  |                                |  |                                                                                         |  | mm                          |  |                                         |  |
| Surface quality:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  | Extent of examination:                 |  | Abmessung/Dimension B:                      |  |                                |  |                                                                                         |  |                             |  |                                         |  |
| <b>Angaben zur Prüfung/ Data of examination</b><br>Prüfkategorie gem. DIN EN 1435 <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> 3 Aufnahmeanordnung nach DIN EN 1435 : <b>11</b><br>Test class acc. to EN 1435 <b>3x3</b> Acceptance level acc. to EN 12 517 <b>1</b> <input type="checkbox"/> 2 <input type="checkbox"/> 3 Test arrangement acc. EN 1435<br>Strahlungsquelle: <b>Selen 75</b> Brennfleckgr./Strahlenquellenlgr.: <b>3x3</b> Folienart: <b>f 200</b> Filmsorte: <b>Kodak Mx 100</b> Filmklasse: <b>C 2</b><br>Source of radiation: <b>Selen 75</b> Focal Spot/Source Size: <b>3x3</b> (mm) <b>Pb</b> Film type: <b>0,02</b> mm Belichtungszeit: <b>45 s</b> Filmgröße: <b>10 x 20</b><br>Aktivität: <b>40 ci</b> Röhreneinstellung: (KV) (mA) Screen type: Screen thickness: <b>0,02</b> mm Exposure time <b>45 s</b> Film size: <b>10 x 20</b><br>Activity: <b>40 ci</b> Tube voltage/current: (KV) (mA) Screen type: Screen thickness: <b>0,02</b> mm Exposure time <b>45 s</b> Film size: <b>10 x 20</b> |  |                                        |  |                                             |  |                                |  |                                                                                         |  |                             |  |                                         |  |
| <b>Prüfergebnis/ Test data</b><br>Bildgüteprüfkörper/ Image quality indicator (IQ 10A1EN461-2) Lage/ Position: <input checked="" type="checkbox"/> Filmnah/ close to film <input type="checkbox"/> Filmfern/ far from film<br>Schweißnahtnummer Film-nr. Auswertbare Filmlänge Imperfections (EN 26520) Filmfehler Bildgüte Schwärzung Befund/ Findings Bemerkung<br>Weld No. Film No. in cm / from + to Aa Ab Ad Ba C D Da Db Dc E H F 2011 2016 2013 301 401 402 501 3 515 504 100 304 5011/5012 (FF) (IQI) Density a (e) na (ne) (from - to)<br>A B 15 2,4 x 15 2,4 x<br>8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |                                        |  |                                             |  |                                |  |                                                                                         |  |                             |  |                                         |  |
| Definition- Erklärung der Bewertung/ Definition- Legend<br>Aa = Pore/ Gas pore Ab = Schlauchpore/Wurmhole Ba = Schlackeneinschl./ Slag inclusion C = Bindefehler/Lack of fusion<br>D = ung. Durchschw./Lack of penetration Da = Wurzelkerbe/Root notch Db = Wurzelrückfall/Root reinforcement Dc = Wurzeldurchhang/Excessive penetration E = Riß/Crack<br>H = metallischer Einschluss/Metallic inclusion F = Einbrand/Undercut                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |                                        |  |                                             |  |                                |  |                                                                                         |  |                             |  |                                         |  |
| Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled<br>Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled<br>toleriert/ tolerated<br>Testing Contractor/Name of Examiner <b>Air Liquide</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |                                        |  |                                             |  |                                |  |                                                                                         |  |                             |  |                                         |  |
| Additional Marking<br>R1; R2 erste und zweite Rep./first and second Rep.<br>N neu nach Rep./ cut and reweld<br>F Folgeprüfung/ Tracer shot<br>G Garantienah/ RT instead of Pressure Test<br>K Kontrollschuß/ Control Shot<br>I I- Stoß/ I- Joint                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                                        |  |                                             |  |                                |  |                                                                                         |  |                             |  |                                         |  |

Testing Contractor/Name of Examiner

Air Liquide

E.H.R.

Kielholz

TÜV

Date Name Signature

Date Name Signature

Date Name Signature

Date Name Signature

14.12.2005

16-1-06

Jouretz Bahr

Signature

Date

Signature



|                                                         |                                 |                                                          |                                             |                                                                                                                             |  |                                                                                                                             |  |
|---------------------------------------------------------|---------------------------------|----------------------------------------------------------|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------------|--|
| <b>AIR LIQUIDE</b>                                      |                                 | <b>Durchstrahlungsprüfung - Radiographic Examination</b> |                                             | Bericht/ Report: <b>338</b>                                                                                                 |  | Prüfdatum: <b>12.12.2005</b><br>Date of Exam.:                                                                              |  |
| Kennwort: <b>ASU No.9 Kosice</b>                        | Auftragsnummer: <b>K 70101</b>  | Zeichnungsnummer/ISO-Nr.: <b>AL 43015</b>                | Seite: <b>1</b> von <b>195</b>              | Baufeld Nr.: xxx                                                                                                            |  | Constr area No.:                                                                                                            |  |
| Benennung: <b>Coldbox</b>                               | Bauteil/Verbindung: <b>pipe</b> | Schweißverfahren DIN 24063: <b>141</b>                   | Schweißer: <b>195</b>                       | Nahtform BW                                                                                                                 |  | Weld type:                                                                                                                  |  |
| Wärmebehandlung: <input type="checkbox"/> ohne/ without | Schweißnahtnummer: <b>4</b>     | Welding process to DIN 24063: <b>1.4541</b>              | Welder: <b>195</b>                          | Bewertung n.DIN EN 5817 <input type="checkbox"/> DIN EN 30042 <input type="checkbox"/>                                      |  | Quality level acc. to -/- (DIN EN 12517/1) <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C |  |
| Heat treatment: <input type="checkbox"/> vor/ before    | Weld- No.: <b>4</b>             | Werkstoff/ Material A: <b>1.4541</b>                     | Welding process to DIN 24063: <b>1.4541</b> | Quality level acc. to -/- (DIN EN 12517/1) <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C |  |                                                                                                                             |  |
| Oberflächenzustand <b>Clean</b>                         | Prüfmfang: <b>10 %</b>          | Abmessung/Dimension A: <b>33,7x2,6</b>                   | Abmessung/Dimension B: <b>33,7x2,6</b>      | Abmessung/Dimension A: <b>33,7x2,6</b>                                                                                      |  | Abmessung/Dimension B: <b>33,7x2,6</b>                                                                                      |  |
| Surface quality:                                        | Extent of examination:          | mm                                                       |                                             |                                                                                                                             |  |                                                                                                                             |  |

**Angaben zur Prüfung/ Data of examination**

|                                                                                              |                                                                                                                          |                                                |                                 |
|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|---------------------------------|
| Prüfklasse gem. DIN EN 1435 <input type="checkbox"/> A <input checked="" type="checkbox"/> B | Zulässigkeitsgrenzen gem. DIN EN 12 517 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 | Aufnahmeanordnung nach DIN EN 1435 : <b>11</b> |                                 |
| Test class acc. to EN 1435 <input type="checkbox"/> A <input checked="" type="checkbox"/> B  | Acceptance level acc. to EN 12 517                                                                                       | Test arrangement acc. EN 1435                  |                                 |
| Strahlungsquelle: <b>Selen 75</b>                                                            | Brennfleckgr./Strahlenquellengr.: <b>3x3</b>                                                                             | Filmsorte: <b>Kodak Mx 100</b>                 | Filmklasse: <b>C 2</b>          |
| Source of radiation:                                                                         | Focal Spot/Source Size:                                                                                                  | Film type:                                     | Film system class:              |
| Aktivität: <b>40 ci</b>                                                                      | Röhreneinstellung: <b>75</b>                                                                                             | Folienart: <b>Pb</b>                           | Belichtungszeit: <b>10 x 20</b> |
| Activity:                                                                                    | Tube voltage/current: <b>40 ci</b>                                                                                       | Screen type: <b>0,02 mm</b>                    | Exposure time: <b>45 s</b>      |
| FilmgröÙe: <b>10 x 20</b>                                                                    |                                                                                                                          |                                                |                                 |

**Prüfergebnisse/ Test data**

| Bildgüteprüfkörper/ Image quality indicator (IQ 10A)EN461-2 | Lage/ Position: <input checked="" type="checkbox"/> Filmnah/ close to film <input type="checkbox"/> Filmfern/ far from film | Filmfehler/ Defects       |      |     |     |                              |      |     |     |                           |     |           |       | Bemerkung/ Comments (from - to) |
|-------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|---------------------------|------|-----|-----|------------------------------|------|-----|-----|---------------------------|-----|-----------|-------|---------------------------------|
|                                                             |                                                                                                                             | Imperfektionen (EN 26520) |      |     |     | Filmfehler/ Film defect (FF) |      |     |     | Schwärzung/ Density (IQI) |     |           |       |                                 |
| Weld No.                                                    | 2011                                                                                                                        | 2016                      | 2013 | 301 | 401 | 402                          | 5013 | 515 | 504 | 100                       | 304 | 5011/5012 | a (e) | na (ne)                         |
| A                                                           |                                                                                                                             |                           |      |     |     |                              |      |     |     |                           |     |           | 15    | 2,4                             |
| B                                                           |                                                                                                                             |                           |      |     |     |                              |      |     |     |                           |     |           | 15    | 2,4                             |
|                                                             |                                                                                                                             |                           |      |     |     |                              |      |     |     |                           |     |           |       |                                 |
|                                                             |                                                                                                                             |                           |      |     |     |                              |      |     |     |                           |     |           |       |                                 |
|                                                             |                                                                                                                             |                           |      |     |     |                              |      |     |     |                           |     |           |       |                                 |
|                                                             |                                                                                                                             |                           |      |     |     |                              |      |     |     |                           |     |           |       |                                 |
|                                                             |                                                                                                                             |                           |      |     |     |                              |      |     |     |                           |     |           |       |                                 |
|                                                             |                                                                                                                             |                           |      |     |     |                              |      |     |     |                           |     |           |       |                                 |
|                                                             |                                                                                                                             |                           |      |     |     |                              |      |     |     |                           |     |           |       |                                 |

**Definition- Erklärung der Bewertung/ Definition- Legend**

Aa = Pore/ Gas pore      Ab = Schlauchpore/Wurmhole      Ad = Porenneß/ Porosity      Ba = Schlackeneinschl./ Slag inclusion      C = Bindefehler/Lack of fusion  
D = ung. Durchschw./Lack of penetration      Da = Wurzelkerbe/Root notch      Db = Wurzelrückfall/Root reinforcement      Dc = Wurzeldurchhang/Excessive penetration      E = Riß/Crack  
H = metallischer Einschuß/Metallic inclusion      F = Einbrand/Undercut

☒ Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled

☐ Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled

☐ toleriert/ tolerated

## ☆ Additional Marking

R1; R2      erste und zweite Rep./first and second Rep.  
N      neu nach Rep./ cut and reweld  
F      Folgeprüfung/ Tracer shot  
G      Garantienaht/ RT instead of Pressure Test  
K      Kontrollschuß/ Control Shot  
I      1- Stöße/ 1- Joint

Testing Contractor/Name of Examiner

Air Liquide

E.H.R.

13.12.05

Kielholz

TÜV

Date      Name      Signature

Date      Name      Signature

Date      Name      Signature

Date      Name      Signature

Date      Name      Signature

Date      Name      Signature

| Testing Contractor/Name of Examiner |      | Air Liquide |         | E.H.R.     |           | TÜV      |      |
|-------------------------------------|------|-------------|---------|------------|-----------|----------|------|
| Date                                | Name | Signature   | Date    | Name       | Signature | Date     | Name |
| 16-12-2005                          | 364  |             | 16-1-06 | Y. Bouvier |           | 14-12-05 |      |
| 10-2005 502 \$12                    |      |             |         | 13.12.05   | Kielholz  |          |      |

|                                                                                                      |                                                     |                                                         |                     |                                            |                                       |                                                |
|------------------------------------------------------------------------------------------------------|-----------------------------------------------------|---------------------------------------------------------|---------------------|--------------------------------------------|---------------------------------------|------------------------------------------------|
|                   |                                                     | <b>Durchstrahlungsprüfung- Radiographic Examination</b> |                     |                                            | Bericht/ Report: <b>340</b>           | Prüfdatum: <b>12.12.2005</b><br>Date of Exam.: |
| Kennwort:                                                                                            |                                                     |                                                         |                     |                                            |                                       |                                                |
| Job Name: <b>ASU No.9 Kosice</b>                                                                     | Auftragsnummer:<br>Serial/Order No.: <b>K 70101</b> | Zeichnungsnummer/ISO-Nr.: <b>N 21025</b>                | Seite: <b>1</b> von | Baufeld Nr.: xxx                           |                                       |                                                |
| Benennung:                                                                                           | Bauteil/Verbindung: pipe                            | Drawing No./ISO No.:                                    | Sheet: of           | Constr area No.:                           |                                       |                                                |
| Discription: <b>Coldbox</b>                                                                          | Part/Joint:                                         | Schweißverfahren DIN 24063:                             | 141                 | Schweißer:                                 | Nahtform BW                           |                                                |
| Wärmebehandlung:  | ohne/ without                                       | Werkstoff/ Material A:                                  | <b>1.4541</b>       | Welder:                                    | Weld type:                            |                                                |
| Heat treatment:   | vor/ before                                         | Weld- No.: <b>5</b>                                     |                     | Bewertung n.DIN EN 5817                    | <input type="checkbox"/> A            |                                                |
|                   | nach/ after                                         |                                                         |                     | Quality level acc. to -//-(DIN EN 12517/1) | <input checked="" type="checkbox"/> B |                                                |
| Oberflächenzustand Clean                                                                             | Prüfungsfang: <b>10 %</b>                           | Abmessung/Dimension A:                                  | <b>26,9x2</b>       |                                            | <input type="checkbox"/> C            |                                                |
| Surface quality:                                                                                     | Extent of examination:                              | Abmessung/Dimension B:                                  |                     |                                            |                                       | mm                                             |

**Angaben zur Prüfung/ Data of examination**

|                                                                                                                            |  |                                                                               |  |                                                                                  |  |                                                                       |  |                                                                                                     |
|----------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------|--|-----------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------|
| Prüfklasse gem. DIN EN 1435 <input type="checkbox"/> A <input checked="" type="checkbox"/> B<br>Test class acc. to EN 1435 |  | Zulässigkeitsgrenzen gem. DIN EN 12 517<br>Acceptance level acc. to EN 12 517 |  | 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> |  | Aufnahmeanordnung nach DIN EN 1435 :<br>Test arrangement acc. EN 1435 |  | <div style="border: 1px solid black; padding: 5px; text-align: center; font-weight: bold;">11</div> |
| Strahlungsquelle:                                                                                                          |  | Brennfleckgr./Strahlensquellengr.: <b>3x3</b>                                 |  | Filmsorte:                                                                       |  | Filmklasse:                                                           |  |                                                                                                     |
| Source of radiation: <b>Selen 75</b>                                                                                       |  | Focal Spot/Source Size:                                                       |  | Film type:                                                                       |  | Film system class:                                                    |  |                                                                                                     |
| Aktivität: 40 ci                                                                                                           |  | Röhreneinstellung:                                                            |  | Folienart: Pb                                                                    |  | Belichtungszeit:                                                      |  |                                                                                                     |
| Activity:                                                                                                                  |  | Tube voltage/current:                                                         |  | Screen type:                                                                     |  | Exposure time:                                                        |  | Filmgröße:                                                                                          |
|                                                                                                                            |  | (KV)                                                                          |  | (mA)                                                                             |  | 0.02 mm                                                               |  | Film size.                                                                                          |
|                                                                                                                            |  | 45 s                                                                          |  |                                                                                  |  |                                                                       |  |                                                                                                     |

### Prüfergebnis/ Test data

[illegible]

## Definition- Erklärung der Bewertung/ Definition- Legend

**Aa** = Pore/ Gas pore      **Ab** = Schlauchpore/Wurmhole      **Ad** = Porennes/Porosity      **Ba** = Schlackeneinschl./ Slag inclusion      **C** = Bindefehler/Lack of fusion  
**D** = ung. Durchschw./Lack of penetration      **Da** = Wurzelkerbe/Root notch      **Db** = Wurzelrückfall/Root reinforcement      **Dc** = Wurzeldurchhang/Excessive penetration      **E** = Riß/Crack  
**H** = metallischer Einschuß/Metallic inclusion      **F** = Einbrand/Undercut

|                                                                                                                                         | ☆ Additional Marking                                                                                                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled  | R1; R2                                                                                                                                             |
| <input type="checkbox"/> Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled | N                                                                                                                                                  |
| <input type="checkbox"/> toleriert/ tolerated                                                                                           | F<br>Folgeprüfung/ Tracer shot<br>G<br>Garantienahmt/ RT instead of Pressure Test<br>K<br>Kontrollschuß/ Control Shot<br>I<br>I - Stols/ I - Joint |

Testing Contractor/Name of Examiner

## Air Liquide

**E.H.R.**

Kielholz

**TÜV**

|  |      |           |
|--|------|-----------|
|  | Name | Signature |
|--|------|-----------|

Date

signature

Name \_\_\_\_\_

**Signature**

Name

Signature

14.12.2005 ZBA

Laurey B. B. V.

|                                                                                                                                                                                                             |                                                     |                                                                                         |                                                                                                                        |                     |                                                                                                     |                             |                                                |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|---------------------|-----------------------------------------------------------------------------------------------------|-----------------------------|------------------------------------------------|
|                                                                                                                          |                                                     | <b>Durchstrahlungsprüfung- Radiographic Examination</b>                                 |                                                                                                                        |                     |                                                                                                     | Bericht/ Report: <b>341</b> | Prüfdatum: <b>12.12.2005</b><br>Date of Exam.: |
| Kennwort:<br>Job Name: <b>ASU No.9 Kosice</b>                                                                                                                                                               | Auftragsnummer:<br>Serial/Order No.: <b>K 70101</b> | Zeichnungsnummer/ISO-Nr.: <b>O 61108</b>                                                |                                                                                                                        | Seite: <b>1</b> von | Baufeld Nr.: xxx<br>Constr area No.:                                                                |                             |                                                |
| Benennung:<br>Discription: <b>Coldbox</b>                                                                                                                                                                   | Bauteil/Verbindung: pipe<br>Part/Joint:             | Drawing No./ISO No.:<br>Schweißverfahren DIN 24063: 141<br>Schweißverfahren: <b>470</b> | Schweißverfahren: 141<br>Schweißer:                                                                                    | Nahtform BW         |                                                                                                     |                             |                                                |
| Wärmebehandlung: <br>Heat treatment:  | ohne/ without<br>vor/ before<br>nach/ after         | Schweißnahtnummer:<br>Weld- No.: <b>5</b>                                               | Welder:<br>Bewertung n.DIN EN 5817  | Weld type:          | } <input type="checkbox"/> A<br><input checked="" type="checkbox"/> B<br><input type="checkbox"/> C |                             |                                                |
| Oberflächenzustand Clean<br>Surface quality:                                                                                                                                                                | Prüfumfang:<br>Extent of examination:               | Werkstoff/ Material A:<br>Werkstoff/ Material B:                                        | Bewertung n.DIN EN 5817 <input type="checkbox"/> DIN EN 30042<br>Quality level acc. to -/- (DIN EN 12517/1)            |                     |                                                                                                     |                             |                                                |
|                                                                                                                                                                                                             | 10 %                                                | Abmessung/Dimension A:<br>Abmessung/Dimension B:                                        | 26,9x2                                                                                                                 |                     |                                                                                                     |                             |                                                |
|                                                                                                                                                                                                             |                                                     | mm                                                                                      |                                                                                                                        |                     |                                                                                                     |                             |                                                |

**Angaben zur Prüfung/ Data of examination**

|                                                                                                                            |  |                                                                                                                                                                |  |                                                                       |  |                                                                                               |
|----------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------|
| Prüfklasse gem. DIN EN 1435 <input type="checkbox"/> A <input checked="" type="checkbox"/> B<br>Test class acc. to EN 1435 |  | Zulässigkeitsgrenzen gem. DIN EN 12 517 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3<br>Acceptance level acc. to EN 12 517 |  | Aufnahmeanordnung nach DIN EN 1435 :<br>Test arrangement acc. EN 1435 |  | <div style="border: 1px solid black; padding: 5px; text-align: center; width: 40px;">11</div> |
| Strahlungsquelle:                                                                                                          |  | Brennfleckgr./Strahlenquellengr.: <b>3x3</b>                                                                                                                   |  | Filmsorte: Kodak Mx 100<br>Film klasse: C 2                           |  |                                                                                               |
| Source of radiation: <b>Selen 75</b>                                                                                       |  | Focal Spot/Source Size:                                                                                                                                        |  | Film system class:                                                    |  |                                                                                               |
| Röhreneinstellung:                                                                                                         |  | Folienart: Pb                                                                                                                                                  |  | Folien dicke:                                                         |  | Filmgröße: <b>10 x 20</b><br>Film size:                                                       |
| Aktivität: 40 ci<br>Activity:                                                                                              |  | (KV)<br>(mA)                                                                                                                                                   |  | Belichtungszeit:<br>Exposure time <b>45 s</b>                         |  |                                                                                               |
| Tube voltage/current:                                                                                                      |  | Screen type:                                                                                                                                                   |  | Screen thickness:                                                     |  |                                                                                               |

### Prüfergebnis/ Test data

[illegible]

## Definition- Erklärung der Bewertung/ Definition- Legend

| Definition- Erklärung der Bewertung/ Definition- Legend |                                    |                                               |                                                   |
|---------------------------------------------------------|------------------------------------|-----------------------------------------------|---------------------------------------------------|
| <b>Aa</b> = Pore/ Gas pore                              | <b>Ab</b> = Schlauchpore/Wurmhole  | <b>Ad</b> = Porennest/Porosity                | <b>Ba</b> = Schlackeneinschl./ Slag inclusion     |
| <b>D</b> = ung. Durchschw./Lack of penetration          | <b>Da</b> = Wurzelkerbe/Root notch | <b>Db</b> = Wurzelrückfall/Root reinforcement | <b>Dc</b> = Wurzeldurchhang/Excessive penetration |
| <b>H</b> = metallischer Einschuß/Metallic inclusion     |                                    | <b>F</b> = Einbrand/Undercut                  | <b>C</b> = Bindefehler/Lack of fusion             |
|                                                         |                                    |                                               | <b>E</b> = Riß/Crack                              |

|                                                                                                                                         | ☆ Additional Marking                                                                                                          |
|-----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled  | R1: R2<br>N                                                                                                                   |
| <input type="checkbox"/> Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled | erste und zweite Rep./first and second Rep.<br>neu nach Rep./ cut and reweld                                                  |
| <input type="checkbox"/> toleriert/ tolerated                                                                                           | F<br>G<br>K<br>I                                                                                                              |
|                                                                                                                                         | Folgeprüfung/ Tracer shot<br>Garantienah/ RT instead of Pressure Test<br>Kontrollschuss/ Control Shot<br>I - Stols/ I - Joint |

Testing Contractor/Name of Examiner

## Air Liquide

**E.H.R**

ielholz

**TÜV**

|      |      |           |
|------|------|-----------|
| Date | Name | Signature |
|------|------|-----------|

Date \_\_\_\_\_

Name

**Signature**

Name

**Signature**

Name

**Signature**

14-12-2005 2164

Date 16-1-06 Name Yanzes Signature BANA



|                                                         |  |                                                          |  |                                        |  |                                                                                          |  |
|---------------------------------------------------------|--|----------------------------------------------------------|--|----------------------------------------|--|------------------------------------------------------------------------------------------|--|
| <b>AIR LIQUIDE</b>                                      |  | <b>Durchstrahlungsprüfung - Radiographic Examination</b> |  | Bericht/ Report: <b>343</b>            |  | Prüfdatum: <b>12.12.2005</b>                                                             |  |
| Kennwort:                                               |  | Zeichnungsnummer/ISO-Nr.: <b>OL 61102</b>                |  | Seite: <b>1</b> von <b>1</b>           |  | Baufeld Nr.: xxx                                                                         |  |
| Job Name: <b>ASU No.9 Kosice</b>                        |  | Drawing No./ISO No.:                                     |  | Sheet: of                              |  | Constr area No.:                                                                         |  |
| Benennung:                                              |  | Bauteil/Verbindung: <b>pipe</b>                          |  | Schweißverfahren: <b>195</b>           |  | Nahtform BW                                                                              |  |
| Description: <b>Coldbox</b>                             |  | Part/Joint:                                              |  | Schweißer:                             |  | Weld type:                                                                               |  |
| Wärmebehandlung: <input type="checkbox"/> ohne/ without |  | Schweißnahtnummer:                                       |  | Werkstoff/ Material A: <b>1.4541</b>   |  | Bewertung n.DIN EN 5817 <input type="checkbox"/> DIN EN 30042 <input type="checkbox"/> A |  |
| Heat treatment: <input type="checkbox"/> vor/ before    |  | Weld- No.: <b>2</b>                                      |  | Werkstoff/ Material B:                 |  | Quality level acc. to -/- (DIN EN 12517/1) <input type="checkbox"/> B                    |  |
| Oberflächenzustand <b>Clean</b>                         |  | Prüfumfang: <b>10 %</b>                                  |  | Abmessung/Dimension A: <b>42,4x2,9</b> |  | mm                                                                                       |  |
| Surface quality:                                        |  | Extent of examination:                                   |  | Abmessung/Dimension B:                 |  |                                                                                          |  |

**Angaben zur Prüfung/ Data of examination**

|                                                                                   |                                                                                                                          |                                                |                           |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|---------------------------|
| Prüfklasse gem. DIN EN 1435 <input type="checkbox"/> A <input type="checkbox"/> B | Zulässigkeitsgrenzen gem. DIN EN 12 517 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 | Aufnahmeanordnung nach DIN EN 1435 : <b>11</b> |                           |
| Test class acc. to EN 1435                                                        | Acceptance level acc. to EN 12 517                                                                                       | Test arrangement acc. EN 1435                  |                           |
| Strahlungsquelle: <b>Selen 75</b>                                                 | Brennfleckgr./Strahlenquellengr.: <b>3x3</b>                                                                             | Filmsorte: <b>Kodak Mx 100</b>                 | Filmklasse: <b>C 2</b>    |
| Source of radiation:                                                              | Focal Spot/Source Size:                                                                                                  | Film type:                                     | Film system class:        |
| Aktivität: <b>40 ci</b>                                                           | Röhreneinstellung:                                                                                                       | Belichtungszeit: <b>0,02 mm</b>                | Filmgröße: <b>10 x 20</b> |
| Activity:                                                                         | Tube voltage/current: (KV) (mA)                                                                                          | Exposure time: <b>45 s</b>                     | Film size:                |

**Prüfergebnisse/ Test data**

| Bildgüteprüfkörper/ Image quality indicator ( IQ 10A/EN461-2 ) | Film-nr. <input type="checkbox"/> Auswertbare Filmlänge | Lager/ Position: <input checked="" type="checkbox"/> Filmmat/ close to film |      |      |     |     |     |      |     |     |     |     |           | Filmfehler <input type="checkbox"/> Film defect (FF) | Bildgüte <input type="checkbox"/> Image quality (IQ) | Schwärzung <input type="checkbox"/> Density | Befund/ Findings | Bemerkung <input type="checkbox"/> Comments (from - to) |
|----------------------------------------------------------------|---------------------------------------------------------|-----------------------------------------------------------------------------|------|------|-----|-----|-----|------|-----|-----|-----|-----|-----------|------------------------------------------------------|------------------------------------------------------|---------------------------------------------|------------------|---------------------------------------------------------|
|                                                                |                                                         | 2011                                                                        | 2016 | 2013 | 301 | 401 | 402 | 5013 | 515 | 504 | 100 | 304 | 5011/5012 |                                                      |                                                      |                                             |                  |                                                         |
| Weld No. <input type="checkbox"/> in cm / from - to            | Aa                                                      | Ab                                                                          | Ad   | Ba   | C   | D   | Da  | Db   | Dc  | E   | F   |     |           |                                                      |                                                      |                                             |                  |                                                         |
| <b>A</b>                                                       |                                                         |                                                                             |      |      |     |     |     |      |     |     |     |     |           |                                                      |                                                      |                                             |                  |                                                         |
| <b>B</b>                                                       |                                                         |                                                                             |      |      |     |     |     |      |     |     |     |     |           |                                                      |                                                      |                                             |                  |                                                         |
|                                                                |                                                         |                                                                             |      |      |     |     |     |      |     |     |     |     |           |                                                      |                                                      |                                             |                  |                                                         |
|                                                                |                                                         |                                                                             |      |      |     |     |     |      |     |     |     |     |           |                                                      |                                                      |                                             |                  |                                                         |
|                                                                |                                                         |                                                                             |      |      |     |     |     |      |     |     |     |     |           |                                                      |                                                      |                                             |                  |                                                         |
|                                                                |                                                         |                                                                             |      |      |     |     |     |      |     |     |     |     |           |                                                      |                                                      |                                             |                  |                                                         |
|                                                                |                                                         |                                                                             |      |      |     |     |     |      |     |     |     |     |           |                                                      |                                                      |                                             |                  |                                                         |
|                                                                |                                                         |                                                                             |      |      |     |     |     |      |     |     |     |     |           |                                                      |                                                      |                                             |                  |                                                         |
|                                                                |                                                         |                                                                             |      |      |     |     |     |      |     |     |     |     |           |                                                      |                                                      |                                             |                  |                                                         |
|                                                                |                                                         |                                                                             |      |      |     |     |     |      |     |     |     |     |           |                                                      |                                                      |                                             |                  |                                                         |

**Definition- Erklärung der Bewertung/ Definition- Legend**

**Aa** = Pore/ Gas pore **Ab** = Schlauchpore/Wurmhole **Ad** = Porennetz/ Porosity **Ba** = Schlackeneinschl./ Slag inclusion **C** = Bindefehler/Lack of fusion  
**D** = ung. Durchschw./Lack of penetration **Da** = Wurzelkerbe/Root notch **Db** = Wurzelrückfall/Root reinforcement **Dc** = Wurzeldurchhang/Excessive penetration **E** = Riß/Crack  
**H** = metallischer Einschluss/Metallic inclusion **F** = Einbrand/Undercut

☒ Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled

☐ Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled

☐ toleriert/ tolerated

## ★ Additional Marking

R1; R2 ☐ erste und zweite Rep./first and second Rep.  
 N ☐ neu nach Rep./ cut and reweld  
 F ☐ Folgeprüfung/ Tracer shot  
 G ☐ Garantienah/ RT instead of Pressure Test  
 K ☐ Kontrollschul/ Control Shot  
 I ☐ I-Stoß/ I-Joint

Testing Contractor/Name of Examiner

Date

Name

Signature

Date

Name

Signature

Air Liquide

E.H.R.

13.12.05

Kielholz

EHR 02

TÜV

Date

Signature

Date

Signature



|                                                                                                        |                                                            |                                                                     |                                                                                                                                                 |                                                                                                   |                                                                                                                       |                                                       |
|--------------------------------------------------------------------------------------------------------|------------------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
|  <b>AIR LIQUIDE</b> |                                                            | <b>Durchstrahlungsprüfung- Radiographic Examination</b>             |                                                                                                                                                 |                                                                                                   | <b>Bericht/ Report:</b> <div style="border: 1px solid black; padding: 2px; display: inline-block;"> <b>344</b> </div> | <b>Prüfdatum:</b> <b>12.12.2005</b><br>Date of Exam.: |
| <b>Kenntwort:</b><br>Job Name: <b>ASU No.9 Kosice</b>                                                  | <b>Auftragsnummer:</b><br>Serial/Order No.: <b>K 70101</b> | Zeichnungsummer/ISO-Nr.: <b>AL 23009</b><br>Drawing No./ISO No.:    | <b>Seite:</b> <b>1</b> <b>von</b><br>Sheet: of                                                                                                  | <b>Baufeld Nr.:</b> xxx<br>Constr area No.:                                                       |                                                                                                                       |                                                       |
| <b>Benennung:</b><br>Discription: <b>Coldbox</b>                                                       | Bauteil/Verbindung: pipe<br>Part/Joint:                    | Schweißverfahren DIN 24063: 141<br>Welding process to DIN 24063:    | <b>Schweißer:</b><br>Welder:                                                                                                                    | <b>Nahtform BW</b><br>Weld type:                                                                  |                                                                                                                       |                                                       |
| Wärmebehandlung: <input checked="" type="checkbox"/><br>Heat treatment: <input type="checkbox"/>       | Schweißnahtnummer: <b>1</b><br>Weld- No.:                  | Werkstoff/ Material A: <b>Al Mg 4,5Mn</b><br>Werkstoff/ Material B: | Bewertung n.DIN EN 5817 <input type="checkbox"/> DIN EN 30042 <input checked="" type="checkbox"/><br>Quality level acc. to -/- (DIN EN 12517/1) | <input type="checkbox"/> A<br><input checked="" type="checkbox"/> B<br><input type="checkbox"/> C |                                                                                                                       |                                                       |
| Oberflächenzustand Clean<br>Surface quality:                                                           | Prüfungsfang: <b>10 %</b><br>Extent of examination:        | Abmessung/Dimension A: <b>60x3,9</b><br>Abmessung/Dimension B:      | mm                                                                                                                                              |                                                                                                   |                                                                                                                       |                                                       |

**Angaben zur Prüfung/ Data of examination**

|                                                 |       |                                                                  |  |                                         |  |                                                                                  |  |                                                                       |  |
|-------------------------------------------------|-------|------------------------------------------------------------------|--|-----------------------------------------|--|----------------------------------------------------------------------------------|--|-----------------------------------------------------------------------|--|
| Angabe zur Identifizierung: Date of examination |       |                                                                  |  |                                         |  |                                                                                  |  |                                                                       |  |
| Prüfklasse gem. DIN EN 1435                     |       | <input type="checkbox"/> A <input checked="" type="checkbox"/> B |  | Zulässigkeitsgrenzen gem. DIN EN 12 517 |  | <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 |  | Aufnahmeanordnung nach DIN EN 1435 :<br>Test arrangement acc. EN 1435 |  |
| Test class acc. to EN 1435                      |       |                                                                  |  |                                         |  |                                                                                  |  |                                                                       |  |
| Strahlungsquelle:                               |       | Brennflckgr./Strahlenquellengr.: <b>3x3</b>                      |  | b (mm)                                  |  | Filmsorte:                                                                       |  | Filmklasse:                                                           |  |
| Source of radiation: <b>Selen 75</b>            |       | Focal Spot/Source Size:                                          |  |                                         |  | Film type:                                                                       |  | Film system class:                                                    |  |
| Aktivität:                                      |       | Röhreneinstellung:                                               |  | Folienart: Pb                           |  | Folienstärke:                                                                    |  | Filmgröße:                                                            |  |
| Activity:                                       | 40 ci | Tube voltage/current: (KV) (mA)                                  |  | Screen type:                            |  | Screen thickness: 0,02 mm                                                        |  | Exposure time: <b>45 s</b>                                            |  |
|                                                 |       |                                                                  |  |                                         |  |                                                                                  |  | Film size.                                                            |  |
|                                                 |       |                                                                  |  |                                         |  |                                                                                  |  | <b>11</b>                                                             |  |

### Prüfergebnis/ Test data

[illegible]

## Definition- Erklärung der Bewertung/ Definition- Legend

Definition/- Erklärung der Bewertung/ Deutungs- Legende

|                                                       |                                    |                                               |                                                   |                                       |
|-------------------------------------------------------|------------------------------------|-----------------------------------------------|---------------------------------------------------|---------------------------------------|
| <b>Aa</b> = Pore/ Gas pore                            | <b>Ab</b> = Schlauchpore/Wurmhole  | <b>Ad</b> = Porennest/Porosity                | <b>Ba</b> = Schlackeinschl./ Slag inclusion       | <b>C</b> = Bindefehler/Lack of fusion |
| <b>D</b> = ung. Durchschw./Lack of penetration        | <b>Da</b> = Wurzelkerbe/Root notch | <b>Db</b> = Wurzelrückfall/Root reinforcement | <b>Dc</b> = Wurzeldurchhang/Excessive penetration | <b>E</b> = Riß/Crack                  |
| <b>H</b> = metallischer Einschluss/Metallic inclusion |                                    | <b>F</b> = Einbrand/Undercut                  |                                                   |                                       |

|                                                                                                                                            | ☆ Additional Marking                                                                                                                                                                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> Anforderung nach Prüfungspezifikation erfüllt/ Requirements according to test specification fulfilled  |                                                                                                                                                                                                               |
| <input type="checkbox"/> Anforderungen nach Prüfungspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled | R1; R2<br>N<br>F<br>G<br>K<br>I                                                                                                                                                                               |
| <input type="checkbox"/> toleriert/ tolerated                                                                                              | erste und zweite Rep./first and second Rep.<br>neu nach Rep./ cut and reweld<br>Folgeprüfung/ Tracer shot<br>Garantienahm/ RT instead of Pressure Test<br>Kontrollschuß/ Control Shot<br>I - Stols/ I - Joint |

Testing Contractor/Name of Examiner

## Air Liquide

**E.H.R.**

**TÜV**

Date \_\_\_\_\_ Name \_\_\_\_\_ Signature \_\_\_\_\_

Date \_\_\_\_\_

Signature

Name

**Signature**

Date \_\_\_\_\_ Name \_\_\_\_\_

**Signature**

14-12-2001 254

16-1-06

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|-------------------------------------------------------|--|----------------------------------|--|---------------------------------------------------------|--|----------------------------------------------------------------------------------------|--|-------------------------------------------|--|----------------------------------------------------------------------------------------|--|
| <b>AIR LIQUIDE</b>                                    |  |                                  |  | <b>Durchstrahlungsprüfung- Radiographic Examination</b> |  |                                                                                        |  | Bericht/ Report: <b>345</b>               |  | Prüfdatum: <b>12.12.2005</b>                                                           |  |
| Kennwort:                                             |  | Auftragsnummer:                  |  | Zeichnungsnummer/ISO-Nr.:                               |  | Seite: <b>1</b> von <b>1</b>                                                           |  | Bauteil Nr.:                              |  | Date of Exam.:                                                                         |  |
| Job Name: <b>ASU No.9 Kosice</b>                      |  | Serial/Order No.: <b>K 70101</b> |  | Drawing No./ISO No.:                                    |  | Sheet: <b>1</b> of <b>1</b>                                                            |  | Constr area No.:                          |  | xxx                                                                                    |  |
| Benennung: <b>Coldbox</b>                             |  | Bauteil/Verbindung: <b>pipe</b>  |  | Schweißverfahren DIN 24063: <b>141</b>                  |  | Schweißer: <b>491</b>                                                                  |  | Nahtform BW                               |  |                                                                                        |  |
| Disposition: <b>ohne/ without</b>                     |  | Part/Joint:                      |  | Welding process to DIN 24063:                           |  | Welder:                                                                                |  | Weld type:                                |  |                                                                                        |  |
| Wärmebehandlung: <input type="checkbox"/> vor/ before |  | Schweißnahtnummer: <b>2</b>      |  | Werkstoff/ Material A: <b>Al Mg 4,5Mn</b>               |  | Bewertung n.DIN EN 5817 <input type="checkbox"/> DIN EN 30042 <input type="checkbox"/> |  | Quality level acc. to -/-(DIN EN 12517/1) |  | <input type="checkbox"/> A<br><input type="checkbox"/> B<br><input type="checkbox"/> C |  |
| Heat treatment: <input type="checkbox"/> nach/ after  |  | Weld- No.: <b>2</b>              |  | Werkstoff/ Material B:                                  |  |                                                                                        |  |                                           |  |                                                                                        |  |
| Oberflächenzustand <b>Clean</b>                       |  | Prüfumfang: <b>10 %</b>          |  | Abmessung/Dimension A: <b>60x3,9</b>                    |  |                                                                                        |  |                                           |  | mm                                                                                     |  |
| Surface quality:                                      |  | Extent of examination:           |  | Abmessung/Dimension B:                                  |  |                                                                                        |  |                                           |  |                                                                                        |  |

**Angaben zur Prüfung/ Data of examination**

|                                                                                   |                                                                                                                          |                                                                       |                           |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|---------------------------|
| Prüfklasse gem. DIN EN 1435 <input type="checkbox"/> A <input type="checkbox"/> B | Zulässigkeitsgrenzen gem. DIN EN 12 517 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 | Aufnahmeanordnung nach DIN EN 1435 :<br>Test arrangement acc. EN 1435 |                           |
| Test class acc. to EN 1435                                                        | Acceptance level acc. to EN 12 517                                                                                       |                                                                       |                           |
| Strahlungsquelle: <b>Selen 75</b>                                                 | Brennfleckgr./Strahlenquellenlgr.: <b>3x3</b>                                                                            | Filmsorte: <b>Kodak Mx 100</b>                                        | Filmklasse: <b>C 2</b>    |
| Source of radiation:                                                              | Focal Spot/Source Size:                                                                                                  | Film type:                                                            | Film system class:        |
| Aktivität: <b>40 ci</b>                                                           | Röhreneinstellung: <b>(KV)</b>                                                                                           | Folienart: <b>Pb</b>                                                  | Filmgröße: <b>10 x 20</b> |
| Activity:                                                                         | Tube voltage/current:                                                                                                    | Screen type:                                                          | Film size:                |
|                                                                                   |                                                                                                                          | Screen thickness: <b>0.02 mm</b>                                      | Exposure time <b>45 s</b> |

**Prüfergebnis/ Test data**

| Bildgüteprüfkörper/ Image quality indicator ( IQ 10A/EN461-2 ) | Lage/ Position: <input checked="" type="checkbox"/> Filmnah/ close to film <input type="checkbox"/> Filmfern/ far from film | Filmfehler/ Defects         |      |      |     |     |                     |     |      |     |     | Bemerkung/ Comments ( from - to ) |      |      |         |           |
|----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|-----------------------------|------|------|-----|-----|---------------------|-----|------|-----|-----|-----------------------------------|------|------|---------|-----------|
|                                                                |                                                                                                                             | Imperfektionen ( EN 26520 ) |      |      |     |     | Schwärzung/ Density |     |      |     |     |                                   |      |      |         |           |
| Schweißnahtnummer/ Weld No.                                    | Film-nr. / Film No.                                                                                                         | 2011                        | 2016 | 2013 | 301 | 401 | 402                 | 501 | 5012 | 504 | 100 | 304                               | 5011 | 5012 | a ( e ) | na ( ne ) |
| A                                                              |                                                                                                                             | Aa                          | Ab   | Ad   | Ba  | C   | D                   | Da  | Db   | Dc  | E   | H                                 | F    |      | 14      | 2,4       |
| B                                                              |                                                                                                                             |                             |      |      |     |     |                     |     |      |     |     |                                   |      |      | 14      | 2,4       |
|                                                                |                                                                                                                             |                             |      |      |     |     |                     |     |      |     |     |                                   |      |      |         |           |
|                                                                |                                                                                                                             |                             |      |      |     |     |                     |     |      |     |     |                                   |      |      |         |           |
|                                                                |                                                                                                                             |                             |      |      |     |     |                     |     |      |     |     |                                   |      |      |         |           |
|                                                                |                                                                                                                             |                             |      |      |     |     |                     |     |      |     |     |                                   |      |      |         |           |
|                                                                |                                                                                                                             |                             |      |      |     |     |                     |     |      |     |     |                                   |      |      |         |           |
|                                                                |                                                                                                                             |                             |      |      |     |     |                     |     |      |     |     |                                   |      |      |         |           |
|                                                                |                                                                                                                             |                             |      |      |     |     |                     |     |      |     |     |                                   |      |      |         |           |

**Definition- Erklärung der Bewertung/ Definition- Legend**

**Aa** = Pore/ Gas pore **Ab** = Schlauchpore/Wurmhole **Ad** = Porennest/Porosity **Ba** = Schlackeneinschl./ Slag inclusion **C** = Bindefehler/Lack of fusion  
**D** = ung. Durchschw./Lack of penetration **Da** = Wurzelkerbe/Root notch **Db** = Wurzelrückfall/Root reinforcement **Dc** = Wurzeldurchhang/Excessive penetration **E** = Riß/Crack  
**H** = metallischer Einschluss/Metallic inclusion **F** = Einbrand/Undercut

☒ Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled

☐ Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled

☐ toleriert/ tolerated

## ☆ Additional Marking

R1; R2 erste und zweite Rep./first and second Rep.  
 N neu nach Rep./ cut and reweld  
 F Folgeprüfung/ Tracer shot  
 G Garantienah/ RT instead of Pressure Test  
 K Kontrollschuß/ Control Shot  
 I 1- Stolz/ 1- Joint

Testing Contractor/Name of Examiner

Air Liquide

E.H.R.

13.12.05

Kielholz

Date Name Signature

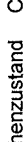
Date Name Signature

Date Name Signature

TÜV

Date Name Signature



|                                                                                                  |                                                     |                                                  |                                                                         |  |                                                                                                |  |                                                                                                   |  |
|--------------------------------------------------------------------------------------------------|-----------------------------------------------------|--------------------------------------------------|-------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------|--|
|               |                                                     | Durchstrahlungsprüfung- Radiographic Examination |                                                                         |  | Bericht/ Report: <b>346</b>                                                                    |  | Prüfdatum: <b>12.12.2005</b><br>Date of Exam.:                                                    |  |
| Kennwort:<br>Job Name: <b>ASU No.9 Kosice</b>                                                    | Auftragsnummer:<br>Serial/Order No.: <b>K 70101</b> |                                                  | Zeichnungsnummer/ISO-Nr.: <b>NL 23003</b>                               |  | Seite: <b>1</b> von<br>Sheet: of                                                               |  | Baufeld Nr.: xxx<br>Constr area No.:                                                              |  |
| Benennung:<br>Discription: <b>Coldbox</b>                                                        | Bauteil/Verbindung: pipe<br>Part/Joint:             |                                                  | Schweißverfahren DIN 24063:<br>Welding process to DIN 24063: <b>195</b> |  | Schweißer:<br>Welder:                                                                          |  | Nahtform BW<br>Weld type:                                                                         |  |
| Wärmebehandlung: <input checked="" type="checkbox"/><br>Heat treatment: <input type="checkbox"/> | ohne/ without<br>vor/ before<br>nach/ after         |                                                  | Werkstoff/ Material A: <b>Al Mg 4,5Mn</b><br>Werkstoff/ Material B:     |  | Bewertung n.DIN EN 5817 <input type="checkbox"/><br>Quality level acc. to -/- (DIN EN 12517/1) |  | A <input type="checkbox"/><br>B <input checked="" type="checkbox"/><br>C <input type="checkbox"/> |  |
| Oberflächenzustand Clean<br>Surface quality:                                                     | Prüfmfang: 10 %<br>Extent of examination:           |                                                  | Abmessung/Dimension A: <b>33,4x3,4</b><br>Abmessung/Dimension B:        |  |                                                                                                |  | mm                                                                                                |  |

### Angaben zur Prüfung/ Data of examination

|                                                          |                                                                         |                                                                               |                                                                                  |                                                                       |                          |
|----------------------------------------------------------|-------------------------------------------------------------------------|-------------------------------------------------------------------------------|----------------------------------------------------------------------------------|-----------------------------------------------------------------------|--------------------------|
| Prüflasse gem. DIN EN 1435<br>Test class acc. to EN 1435 | A <input type="checkbox"/> B <input checked="" type="checkbox"/>        | Zulässigkeitsgrenzen gem. DIN EN 12 517<br>Acceptance level acc. to EN 12 517 | 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> | Aufnahmeanordnung nach DIN EN 1435 :<br>Test arrangement acc. EN 1435 | <div>11</div>            |
| Strahlungsquelle:<br>Source of radiation:                | Brennfleckgr./Strahlenquellengr.: <b>3x3</b><br>Focal Spot/Source Size: |                                                                               | Filmsorte:<br>Film type:                                                         | Kodak Mx 100<br>Filmklasse:                                           | C 2                      |
| Aktivität:<br>Activity:                                  | Röhreneinstellung:<br>Tube voltage/current:                             | Folienart:<br>Screen type:                                                    | Foliendicke:<br>Screen thickness:                                                | Belichtungszeit:<br>Exposure time:                                    | Filmgröße:<br>Film size: |
| 40 ci                                                    | (KV)                                                                    | (mA)                                                                          | 0,02 mm                                                                          | 45 s                                                                  | 10 x 20                  |

### Prüfergebnis/ Test data

[illegible]

Definition- Erklärung der Bewertung/ Definition- Legend

**Aa** = Pore/ Gas pore      **Ab** = Schlauchpore/Wurmhole      **Ad** = Porennest/Porosity      **Ba** = Schlackeinschl./ Slag inclusion      **C** = Bindefehler/Lack of fusion  
**D** = ung. Durchstoß/Lack of penetration      **Da** = Wurzelkerbe/Root notch      **Db** = Wurzelrückfall/Root reinforcement      **Dc** = Wurzeldurchhang/Excessive penetration      **E** = Rißs/Crack  
**H** = metallischer Einschuß/Metallic inclusion      **F** = Einbrand/Undercut

|                                                                                                                                            | Additional Marking                                                                                                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> Anforderung nach Prüfungspezifikation erfüllt/ Requirements according to test specification fulfilled  |                                                                                                                                                                                                                 |
| <input type="checkbox"/> Anforderungen nach Prüfungspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled | R1; R2<br>N<br>F<br>G<br>K<br>I                                                                                                                                                                                 |
| <input type="checkbox"/> toleriert/ tolerated                                                                                              | erste und zweite Rep./first and second Rep.<br>neu nach Rep./ cut and reweld<br>Folgeprüfung/ Tracer shot<br>Garantienahmt/ RT instead of Pressure Test<br>Kontrollschuhs/ Control Shot<br>I - Stols/ I - Joint |

Testing Contractor/Name of Examiner

## Air Liquide

**E.H.R**



02R01

2

**TÜV**

1

2

1000

7

| Testing Contractor/Name of Examiner |      | Air Liquide                                                                           |         | E.H.R. |                                                                                       | EHR 02   |          | TÜV       |                                                                                     |
|-------------------------------------|------|---------------------------------------------------------------------------------------|---------|--------|---------------------------------------------------------------------------------------|----------|----------|-----------|-------------------------------------------------------------------------------------|
| Date                                | Name | Signature                                                                             | Date    | Name   | Signature                                                                             | Date     | Name     | Signature |                                                                                     |
| 14.12.2005                          | ZGA  |  | 16-1-06 | Jarvey |  | 13.12.05 | Kielholz | 14.12.05  |  |
|                                     |      |                                                                                       |         | Bahr   |  |          |          |           |  |

347 Bericht/ Report:

Prüfdatum: 12.12.2005  
Date of Exam.:

|                                                      |                                  |                                           |                                                                                                   |              |                                                                                                   |
|------------------------------------------------------|----------------------------------|-------------------------------------------|---------------------------------------------------------------------------------------------------|--------------|---------------------------------------------------------------------------------------------------|
| Kennwort:                                            | Auftragsnummer:                  |                                           | Zeichnungsnummer/ISO-Nr.:                                                                         | Seite: 4 von | Baufeld Nr.:                                                                                      |
| Job Name: <b>ASU No.9 Kosice</b>                     | Serial/Order No.: <b>K 70101</b> | Drawing No./ISO No.:                      | Sheet: of                                                                                         |              | Constr area No.:                                                                                  |
| Benennung:                                           | Bauteil/Verbindung: pipe         | Schweißverfahren DIN 24063:               | Schweißer: <b>195</b>                                                                             |              | Nahform BW                                                                                        |
| Disposition: <b>Coldbox</b>                          | Part/Joint:                      | Welding process to DIN 24063:             | Welder:                                                                                           |              | Weld type:                                                                                        |
| Wärmebehandlung: <input checked="" type="checkbox"/> | Schweißnahtnummer:               | Werkstoff/ Material A: <b>Al Mg 4,5Mn</b> | Bewertung n.DIN EN 5817 <input type="checkbox"/> DIN EN 30042 <input checked="" type="checkbox"/> |              | <input type="checkbox"/> A<br><input checked="" type="checkbox"/> B<br><input type="checkbox"/> C |
| Heat treatment: <input type="checkbox"/>             | Weld- No.: <b>44</b>             | Werkstoff/ Material B:                    | Quality level acc. to -/-<br>(DIN EN 12517/1)                                                     |              |                                                                                                   |
| Oberflächenzustand Clean                             | Prüfumfang: 10 %                 | Abmessung/Dimension A: <b>48,3x5,1</b>    |                                                                                                   |              |                                                                                                   |
| Surface quality:                                     | Extent of examination:           | Abmessung/Dimension B:                    |                                                                                                   |              |                                                                                                   |

### Angaben zur Prüfung/ Data of examination

|                                                                                              |  |                                                                                                                          |  |                                                                       |  |                    |  |            |  |
|----------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------|--|--------------------|--|------------|--|
| <b>Angaben zur Prüfung/ Data of examination</b>                                              |  |                                                                                                                          |  |                                                                       |  |                    |  |            |  |
| Prüfklasse gem. DIN EN 1435 <input type="checkbox"/> A <input checked="" type="checkbox"/> B |  | Zulässigkeitsgrenzen gem. DIN EN 12 517 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 |  | Aufnahmeanordnung nach DIN EN 1435 :<br>Test arrangement acc. EN 1435 |  |                    |  |            |  |
| Test class acc. to EN 1435                                                                   |  | Acceptance level acc. to EN 12 517                                                                                       |  | 11                                                                    |  |                    |  |            |  |
| Strahlungsquelle:                                                                            |  | Brennflächgr./Strahlenquellengr.: <b>3x3</b>                                                                             |  | Flmsorte:                                                             |  | Filmklasse:        |  |            |  |
| Source of radiation:                                                                         |  | Focal Spot/Source Size:                                                                                                  |  | Film type:                                                            |  | Film system class: |  |            |  |
| Aktivität:                                                                                   |  | Folienart:                                                                                                               |  | f 200                                                                 |  | Belichtungszeit:   |  | Filmgröße: |  |
| Activity:                                                                                    |  | Screen type:                                                                                                             |  | Pb                                                                    |  | Exposure time:     |  | Film size: |  |
| 40 ci                                                                                        |  | (KV)                                                                                                                     |  | Screen thickness:                                                     |  | 45 s               |  | 10 x 20    |  |

### Prüfergebnis/ Test data

[illegible]

Definition- Erklärung der Bewertung/ Definition- Legend

**Ad** = Porennetz/Porosity  
**Ba** = Schlackeneinschl./Slag inclusion  
**C** = Billdefekt/Lack of fusion  
**Dc** = Wurzelfurchung/Excessive penetration  
**E** = Riß/Crack  
**Rt** = Wurzelrückenfall/Root reinforcement

**Da** = Wurzelkerbe/Root notch  
**Db** = Wurzellucke/Root relief  
**F** = Einbrand/Indent

H = metallischer Einschluss/Metallic Inclusion

\_\_\_\_\_

Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled

Anforderungen na

100

☐ toleriert/ tolerated

★ Additional Marking

R1; R2  
erste und zweite Rep./first and  
second Rep. / out and reloaded

Neu nach Rep./ cut and reweid  
Folgerprüfung/ Tracer shot

Garantienah/ RT instead of

Kontrollschuß/ Control Shot

| Testing Contractor/Name of Examiner |
|-------------------------------------|
|                                     |

## Air liquide

**E.H.R**



**TÜV**

## Testing Contractor

## Example of Exa

## Air L

**E.H.K**  
13120

2/10/7

10

A01

10



Kiel. EHR

Kiel, EHR

|                                                                                                    |  |  |  |  |  |  |  |  |  |                                                                                                              |  |  |  |  |  |  |  |  |  |                                                                                                    |  |                                                                                                              |  |                         |  |
|----------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|--|--|--------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|--|--|----------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------------|--|-------------------------|--|
| AIR LIQUIDE                                                                                        |  |  |  |  |  |  |  |  |  | Durchstrahlungsprüfung- Radiographic Examination                                                             |  |  |  |  |  |  |  |  |  | Bericht/ Report: 348                                                                               |  | Prüfdatum: 17.12.2005                                                                                        |  |                         |  |
| Auftragsnummer: K 70101                                                                            |  |  |  |  |  |  |  |  |  | Zeichnungsnummer/ISO-Nr.: N 43009                                                                            |  |  |  |  |  |  |  |  |  | Seite: 1 von 153                                                                                   |  | Date of Exam.: xxx                                                                                           |  |                         |  |
| Job Name: ASU No.9 Kosice                                                                          |  |  |  |  |  |  |  |  |  | Drawing No./ISO No.: 141                                                                                     |  |  |  |  |  |  |  |  |  | Sheet: 153                                                                                         |  | Bauteil Nr.: xxx                                                                                             |  |                         |  |
| Bauteil/Verbindung: pipe                                                                           |  |  |  |  |  |  |  |  |  | Schweißverfahren DIN 24063:                                                                                  |  |  |  |  |  |  |  |  |  | Schweißer:                                                                                         |  | Nahtform BW                                                                                                  |  |                         |  |
| Part/Joint:                                                                                        |  |  |  |  |  |  |  |  |  | Welding process to DIN 24063:                                                                                |  |  |  |  |  |  |  |  |  | Weider:                                                                                            |  | Weld type:                                                                                                   |  |                         |  |
| Schweißnahtnummer: 18.1                                                                            |  |  |  |  |  |  |  |  |  | Werkstoff Material A: Al Mg 4,5Mn                                                                            |  |  |  |  |  |  |  |  |  | Bewertung n. DIN EN 5817                                                                           |  | DIN EN 30042                                                                                                 |  |                         |  |
| Weld- No.: 18.1                                                                                    |  |  |  |  |  |  |  |  |  | Werkstoff Material B:                                                                                        |  |  |  |  |  |  |  |  |  | Quality level acc. to -/-                                                                          |  | (DIN EN 12517/1)                                                                                             |  |                         |  |
| Prüfmfang: 10 %                                                                                    |  |  |  |  |  |  |  |  |  | Abmessung/Dimension A: 33,4x3,4                                                                              |  |  |  |  |  |  |  |  |  | Abmessung/Dimension B:                                                                             |  | mm                                                                                                           |  |                         |  |
| Oberflächenzustand Clean                                                                           |  |  |  |  |  |  |  |  |  | Prüfmfang: 10 %                                                                                              |  |  |  |  |  |  |  |  |  | Abmessung/Dimension A: 33,4x3,4                                                                    |  | Abmessung/Dimension B:                                                                                       |  |                         |  |
| Surface quality:                                                                                   |  |  |  |  |  |  |  |  |  | Zulässigkeitsgrenzen gem. DIN EN 12 517                                                                      |  |  |  |  |  |  |  |  |  | 1                                                                                                  |  | 2                                                                                                            |  | 3                       |  |
| Angaben zur Prüfung/ Data of examination                                                           |  |  |  |  |  |  |  |  |  | Zulässigkeitsgrenzen gem. DIN EN 12 517                                                                      |  |  |  |  |  |  |  |  |  | 1                                                                                                  |  | 2                                                                                                            |  | 3                       |  |
| Prüfklasse gem. DIN EN 1435                                                                        |  |  |  |  |  |  |  |  |  | Zulässigkeitsgrenzen gem. DIN EN 12 517                                                                      |  |  |  |  |  |  |  |  |  | 1                                                                                                  |  | 2                                                                                                            |  | 3                       |  |
| Test class acc. to EN 1435                                                                         |  |  |  |  |  |  |  |  |  | Zulässigkeitsgrenzen gem. DIN EN 12 517                                                                      |  |  |  |  |  |  |  |  |  | 1                                                                                                  |  | 2                                                                                                            |  | 3                       |  |
| Strahlungsquelle: Selen 75                                                                         |  |  |  |  |  |  |  |  |  | Brennfleckgr./Strahlenquellengr.: 3x3                                                                        |  |  |  |  |  |  |  |  |  | f 200                                                                                              |  | Foliendicke:                                                                                                 |  | Screen thickness:       |  |
| Source of radiation:                                                                               |  |  |  |  |  |  |  |  |  | Focal Spot/Source Size:                                                                                      |  |  |  |  |  |  |  |  |  | f 200                                                                                              |  | Foliendicke:                                                                                                 |  | Screen thickness:       |  |
| Aktivität: 40 ci                                                                                   |  |  |  |  |  |  |  |  |  | Röhreneinstellung:                                                                                           |  |  |  |  |  |  |  |  |  | (KV)                                                                                               |  | (mA)                                                                                                         |  | Screen type:            |  |
| Activity:                                                                                          |  |  |  |  |  |  |  |  |  | Tube voltage/current:                                                                                        |  |  |  |  |  |  |  |  |  | (KV)                                                                                               |  | (mA)                                                                                                         |  | Screen type:            |  |
| Prüfergebnis/ Test data                                                                            |  |  |  |  |  |  |  |  |  | Lage/ Position:                                                                                              |  |  |  |  |  |  |  |  |  | X                                                                                                  |  | Filmnah/ close to film                                                                                       |  | Filmfern/ far from film |  |
| Bildgüteprüfkörper/ Image quality indicator (IQ 10A)EN461-2                                        |  |  |  |  |  |  |  |  |  | Impfections (EN 26520)                                                                                       |  |  |  |  |  |  |  |  |  | Filmfehler                                                                                         |  | Bildgüte                                                                                                     |  | Schwärzung              |  |
| Film-nr. Auswertbare Filmlänge                                                                     |  |  |  |  |  |  |  |  |  | 2011 2016 2013 301 401 402 5013 515 504 100 304 5011 5012                                                    |  |  |  |  |  |  |  |  |  | Film defect                                                                                        |  | Image quality                                                                                                |  | Density                 |  |
| Schweißnahtnummer                                                                                  |  |  |  |  |  |  |  |  |  | Aa Ab Ad Ba C D Da Db Dc E H F                                                                               |  |  |  |  |  |  |  |  |  | (FF)                                                                                               |  | (IQL)                                                                                                        |  | a (e)                   |  |
| Weld No. ☆                                                                                         |  |  |  |  |  |  |  |  |  | Aa Ab Ad Ba C D Da Db Dc E H F                                                                               |  |  |  |  |  |  |  |  |  | (FF)                                                                                               |  | (IQL)                                                                                                        |  | na (ne)                 |  |
| 18.1                                                                                               |  |  |  |  |  |  |  |  |  | Aa Ab Ad Ba C D Da Db Dc E H F                                                                               |  |  |  |  |  |  |  |  |  | (FF)                                                                                               |  | (IQL)                                                                                                        |  | na (ne)                 |  |
| Definition- Erklärung der Bewertung/ Definition- Legend                                            |  |  |  |  |  |  |  |  |  | Ba = Schlackeneinschl./ Slag inclusion                                                                       |  |  |  |  |  |  |  |  |  | C = Bindefehler/Lack of fusion                                                                     |  | E = Riß/Crack                                                                                                |  |                         |  |
| Aa = Pore/ Gas pore                                                                                |  |  |  |  |  |  |  |  |  | Ab = Schlauchpore/Wurmhole                                                                                   |  |  |  |  |  |  |  |  |  | Ba = Schlackeneinschl./ Slag inclusion                                                             |  | C = Bindefehler/Lack of fusion                                                                               |  | E = Riß/Crack           |  |
| D = ung. Durchschw./Lack of penetration                                                            |  |  |  |  |  |  |  |  |  | Da = Wurzelkerbe/Root notch                                                                                  |  |  |  |  |  |  |  |  |  | Db = Wurzelrückfall/Root reinforcement                                                             |  | Dc = Wurzeldurchhang/Excessive penetration                                                                   |  | E = Riß/Crack           |  |
| H = metallischer Einschluss/Metallic inclusion                                                     |  |  |  |  |  |  |  |  |  | F = Einbrand/Undercut                                                                                        |  |  |  |  |  |  |  |  |  | Ba = Schlackeneinschl./ Slag inclusion                                                             |  | C = Bindefehler/Lack of fusion                                                                               |  | E = Riß/Crack           |  |
| Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled |  |  |  |  |  |  |  |  |  | Anforderung nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled |  |  |  |  |  |  |  |  |  | Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled |  | Anforderung nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled |  |                         |  |
| toleriert/ tolerated                                                                               |  |  |  |  |  |  |  |  |  | toleriert/ tolerated                                                                                         |  |  |  |  |  |  |  |  |  | toleriert/ tolerated                                                                               |  | toleriert/ tolerated                                                                                         |  |                         |  |
| DEFEKTSKOPIA                                                                                       |  |  |  |  |  |  |  |  |  | DEFEKTSKOPIA                                                                                                 |  |  |  |  |  |  |  |  |  | DEFEKTSKOPIA                                                                                       |  | DEFEKTSKOPIA                                                                                                 |  |                         |  |
| Dunajská 10, 040 01 Košice                                                                         |  |  |  |  |  |  |  |  |  | Dunajská 10, 040 01 Košice                                                                                   |  |  |  |  |  |  |  |  |  | Dunajská 10, 040 01 Košice                                                                         |  | Dunajská 10, 040 01 Košice                                                                                   |  |                         |  |
| Testing Contractor/Name of Examiner                                                                |  |  |  |  |  |  |  |  |  | Testing Contractor/Name of Examiner                                                                          |  |  |  |  |  |  |  |  |  | Testing Contractor/Name of Examiner                                                                |  | Testing Contractor/Name of Examiner                                                                          |  |                         |  |
| Date                                                                                               |  |  |  |  |  |  |  |  |  | Date                                                                                                         |  |  |  |  |  |  |  |  |  | Date                                                                                               |  | Date                                                                                                         |  |                         |  |
| Name                                                                                               |  |  |  |  |  |  |  |  |  | Name                                                                                                         |  |  |  |  |  |  |  |  |  | Name                                                                                               |  | Name                                                                                                         |  |                         |  |
| Signature                                                                                          |  |  |  |  |  |  |  |  |  | Signature                                                                                                    |  |  |  |  |  |  |  |  |  | Signature                                                                                          |  | Signature                                                                                                    |  |                         |  |
| Air Liquide                                                                                        |  |  |  |  |  |  |  |  |  | Air Liquide                                                                                                  |  |  |  |  |  |  |  |  |  | Air Liquide                                                                                        |  | Air Liquide                                                                                                  |  |                         |  |
| E.H.R.                                                                                             |  |  |  |  |  |  |  |  |  | E.H.R.                                                                                                       |  |  |  |  |  |  |  |  |  | E.H.R.                                                                                             |  | E.H.R.                                                                                                       |  |                         |  |
| 19.12.05                                                                                           |  |  |  |  |  |  |  |  |  | 19.12.05                                                                                                     |  |  |  |  |  |  |  |  |  | 19.12.05                                                                                           |  | 19.12.05                                                                                                     |  |                         |  |
| Kielholz                                                                                           |  |  |  |  |  |  |  |  |  | Kielholz                                                                                                     |  |  |  |  |  |  |  |  |  | Kielholz                                                                                           |  | Kielholz                                                                                                     |  |                         |  |
| Date                                                                                               |  |  |  |  |  |  |  |  |  | Date                                                                                                         |  |  |  |  |  |  |  |  |  | Date                                                                                               |  | Date                                                                                                         |  |                         |  |
| Name                                                                                               |  |  |  |  |  |  |  |  |  | Name                                                                                                         |  |  |  |  |  |  |  |  |  | Name                                                                                               |  | Name                                                                                                         |  |                         |  |
| Signature                                                                                          |  |  |  |  |  |  |  |  |  | Signature                                                                                                    |  |  |  |  |  |  |  |  |  | Signature                                                                                          |  | Signature                                                                                                    |  |                         |  |
| TUV                                                                                                |  |  |  |  |  |  |  |  |  | TUV                                                                                                          |  |  |  |  |  |  |  |  |  | TUV                                                                                                |  | TUV                                                                                                          |  |                         |  |
| 15.10.06                                                                                           |  |  |  |  |  |  |  |  |  | 15.10.06                                                                                                     |  |  |  |  |  |  |  |  |  | 15.10.06                                                                                           |  | 15.10.06                                                                                                     |  |                         |  |
| Date                                                                                               |  |  |  |  |  |  |  |  |  | Date                                                                                                         |  |  |  |  |  |  |  |  |  | Date                                                                                               |  | Date                                                                                                         |  |                         |  |
| Name                                                                                               |  |  |  |  |  |  |  |  |  | Name                                                                                                         |  |  |  |  |  |  |  |  |  | Name                                                                                               |  | Name                                                                                                         |  |                         |  |
| Signature                                                                                          |  |  |  |  |  |  |  |  |  | Signature                                                                                                    |  |  |  |  |  |  |  |  |  | Signature                                                                                          |  | Signature                                                                                                    |  |                         |  |

|                                                                                     |                                |                                                         |                                |                                       |                                       |
|-------------------------------------------------------------------------------------|--------------------------------|---------------------------------------------------------|--------------------------------|---------------------------------------|---------------------------------------|
|  |                                | <b>Durchstrahlungsprüfung- Radiographic Examination</b> |                                | Bericht/ Report: <b>349</b>           | Prüfdatum: <b>17.12.2005</b>          |
| Kennwort: <b>ASU No.9 Kosice</b>                                                    | Auftragsnummer: <b>K 70101</b> | Zeichnungsnummer/ISO-Nr.: <b>43006</b>                  | Seite: <b>3</b> von <b>xxx</b> | Baufeld Nr.: <b>xxx</b>               | Date of Exam.:                        |
| Bauteil/Verbindung: <b>pipe</b>                                                     | Serial/Order No.:              | Drawing No./ISO No.:                                    | Sheet:                         | Constr area No.:                      | Nahtform BW                           |
| Part/Joint:                                                                         | Schweißverfahren:              | Schweißverfahren DIN 24063:                             | 141                            | Schweißer:                            | Weld type:                            |
| Schweißnahtnummer: <b>23</b>                                                        | Weld- No.:                     | Welding process to DIN 24063:                           | <b>Al Mg 4,5Mn</b>             | Bewertung n.DIN EN 5817               | <input type="checkbox"/> A            |
| ohne/ without                                                                       | vor/ before                    | Werkstoff/ Material A:                                  | <b>AI Mg 4,5Mn</b>             | <input type="checkbox"/> DIN EN 30042 | <input checked="" type="checkbox"/> B |
| nach/ after                                                                         | Prüfumfang: <b>10 %</b>        | Werkstoff/ Material B:                                  | Quality level acc. to -/-      | (DIN EN 12517/1)                      | <input type="checkbox"/> C            |
| Oberflächenzustand <b>Clean</b>                                                     | Extent of examination:         | Abmessung/Dimension A:                                  | <b>60,3x3,9</b>                | Abmessung/Dimension B:                | mm                                    |
| Surface quality:                                                                    |                                |                                                         |                                |                                       |                                       |

**Angaben zur Prüfung/ Data of examination**

|                                  |  |                                         |  |                               |  |
|----------------------------------|--|-----------------------------------------|--|-------------------------------|--|
| Angebote zum 1.1.2019            |  | Zulässigkeitsgrenzen gem. DIN EN 12 517 |  | Test arrangement acc. EN 1435 |  |
| Prüfklasse gem. DIN EN 1435      |  | Acceptance level acc. to EN 12 517      |  | Filmsorte:                    |  |
| A                                |  | 3x3                                     |  | Agfa                          |  |
| B                                |  | (mm)                                    |  | Film type:                    |  |
| Test class acc. to EN 1435       |  | b                                       |  | f 200                         |  |
| Brennleckgr./Strahlenquellengr.: |  | Folienart:                              |  | Belichtungszeit:              |  |
| Strahlungsquelle:                |  | Pb                                      |  | Exposure time: 45 s           |  |
| Source of radiation:             |  | Screen type:                            |  | Filmgröße:                    |  |
| Aktivität:                       |  | (mA)                                    |  | Film size.                    |  |
| Röhreinsteilung:                 |  | (KV)                                    |  |                               |  |
| Activity:                        |  | 40 ci                                   |  |                               |  |
| Tube voltage/current:            |  |                                         |  |                               |  |
| Focal Spot/Source Size:          |  |                                         |  | Film system class:            |  |
| Selen 75                         |  |                                         |  | C 2                           |  |
| 10 x 24                          |  |                                         |  |                               |  |

### Prüfergebnis/ Test data

[illegible]

Erklärung der Bewertung/ Definition- Legend

| Definition- Erklärung der Bewertung/ Definition- Legende |                                                   |
|----------------------------------------------------------|---------------------------------------------------|
| <b>Aa</b> = Pore/ Gas pore                               | <b>Ab</b> = Schlauchpore/Wurmhole                 |
| <b>D</b> = ung. Durchschw./Lack of penetration           | <b>Da</b> = Wurzelkerbe/Root notch                |
|                                                          | <b>Db</b> = Wurzelrückfall/Root reinforcement     |
|                                                          | <b>Ad</b> = Porennetz/Porosity                    |
|                                                          | <b>Ba</b> = Schlackeneinschl./ Slag inclusion     |
|                                                          | <b>Dc</b> = Wurzeldurchhang/Excessive penetration |
|                                                          | <b>E</b> = Riß/Crack                              |
|                                                          | <b>F</b> = Einbrand/Undercut                      |
|                                                          | <b>C</b> = Bindeleiter/Lack of fusion             |

| Item | Requirement      | Test Specification      |
|------|------------------|-------------------------|
| 1.1  | Requirement 1.1  | Test Specification 1.1  |
| 1.2  | Requirement 1.2  | Test Specification 1.2  |
| 1.3  | Requirement 1.3  | Test Specification 1.3  |
| 1.4  | Requirement 1.4  | Test Specification 1.4  |
| 1.5  | Requirement 1.5  | Test Specification 1.5  |
| 1.6  | Requirement 1.6  | Test Specification 1.6  |
| 1.7  | Requirement 1.7  | Test Specification 1.7  |
| 1.8  | Requirement 1.8  | Test Specification 1.8  |
| 1.9  | Requirement 1.9  | Test Specification 1.9  |
| 1.10 | Requirement 1.10 | Test Specification 1.10 |
| 1.11 | Requirement 1.11 | Test Specification 1.11 |
| 1.12 | Requirement 1.12 | Test Specification 1.12 |
| 1.13 | Requirement 1.13 | Test Specification 1.13 |
| 1.14 | Requirement 1.14 | Test Specification 1.14 |
| 1.15 | Requirement 1.15 | Test Specification 1.15 |
| 1.16 | Requirement 1.16 | Test Specification 1.16 |
| 1.17 | Requirement 1.17 | Test Specification 1.17 |
| 1.18 | Requirement 1.18 | Test Specification 1.18 |
| 1.19 | Requirement 1.19 | Test Specification 1.19 |
| 1.20 | Requirement 1.20 | Test Specification 1.20 |
| 1.21 | Requirement 1.21 | Test Specification 1.21 |
| 1.22 | Requirement 1.22 | Test Specification 1.22 |
| 1.23 | Requirement 1.23 | Test Specification 1.23 |
| 1.24 | Requirement 1.24 | Test Specification 1.24 |
| 1.25 | Requirement 1.25 | Test Specification 1.25 |
| 1.26 | Requirement 1.26 | Test Specification 1.26 |
| 1.27 | Requirement 1.27 | Test Specification 1.27 |
| 1.28 | Requirement 1.28 | Test Specification 1.28 |
| 1.29 | Requirement 1.29 | Test Specification 1.29 |
| 1.30 | Requirement 1.30 | Test Specification 1.30 |
| 1.31 | Requirement 1.31 | Test Specification 1.31 |
| 1.32 | Requirement 1.32 | Test Specification 1.32 |
| 1.33 | Requirement 1.33 | Test Specification 1.33 |
| 1.34 | Requirement 1.34 | Test Specification 1.34 |
| 1.35 | Requirement 1.35 | Test Specification 1.35 |
| 1.36 | Requirement 1.36 | Test Specification 1.36 |
| 1.37 | Requirement 1.37 | Test Specification 1.37 |
| 1.38 | Requirement 1.38 | Test Specification 1.38 |
| 1.39 | Requirement 1.39 | Test Specification 1.39 |
| 1.40 | Requirement 1.40 | Test Specification 1.40 |
| 1.41 | Requirement 1.41 | Test Specification 1.41 |
| 1.42 | Requirement 1.42 | Test Specification 1.42 |
| 1.43 | Requirement 1.43 | Test Specification 1.43 |
| 1.44 | Requirement 1.44 | Test Specification 1.44 |
| 1.45 | Requirement 1.45 | Test Specification 1.45 |
| 1.46 | Requirement 1.46 | Test Specification 1.46 |
| 1.47 | Requirement 1.47 | Test Specification 1.47 |
| 1.48 | Requirement 1.48 | Test Specification 1.48 |
| 1.49 | Requirement 1.49 | Test Specification 1.49 |
| 1.50 | Requirement 1.50 | Test Specification 1.50 |
| 1.51 | Requirement 1.51 | Test Specification 1.51 |
| 1.52 | Requirement 1.52 | Test Specification 1.52 |
| 1.53 | Requirement 1.53 | Test Specification 1.53 |
| 1.54 | Requirement 1.54 | Test Specification 1.54 |
| 1.55 | Requirement 1.55 | Test Specification 1.55 |
| 1.56 | Requirement 1.56 | Test Specification 1.56 |
| 1.57 | Requirement 1.57 | Test Specification 1.57 |
| 1.58 | Requirement 1.58 | Test Specification 1.58 |
| 1.59 | Requirement 1.59 | Test Specification 1.59 |
| 1.60 | Requirement 1.60 | Test Specification 1.60 |
| 1.61 | Requirement 1.61 | Test Specification 1.61 |
| 1.62 | Requirement 1.62 | Test Specification 1.62 |
| 1.63 | Requirement 1.63 | Test Specification 1.63 |
| 1.64 | Requirement 1.64 | Test Specification 1.64 |
| 1.65 | Requirement 1.65 | Test Specification 1.65 |
| 1.66 | Requirement 1.66 | Test Specification 1.66 |
| 1.67 | Requirement 1.67 | Test Specification 1.67 |
| 1.68 | Requirement 1.68 | Test Specification 1.68 |
| 1.69 | Requirement 1.69 | Test Specification 1.69 |
| 1.70 | Requirement 1.70 | Test Specification 1.70 |
| 1.71 | Requirement 1.71 | Test Specification 1.71 |
| 1.72 | Requirement 1.72 | Test Specification 1.72 |
| 1.73 | Requirement 1.73 | Test Specification 1.73 |
| 1.74 | Requirement 1.74 | Test Specification 1.74 |
| 1.75 | Requirement 1.75 | Test Specification 1.75 |
| 1.76 | Requirement 1.76 | Test Specification 1.76 |
| 1.77 | Requirement 1.77 | Test Specification 1.77 |
| 1.78 | Requirement 1.78 | Test Specification 1.78 |
| 1.79 | Requirement 1.79 | Test Specification 1.79 |
| 1.80 | Requirement 1.80 | Test Specification 1.80 |
| 1.81 | Requirement 1.81 | Test Specification 1.81 |
| 1.82 | Requirement 1.82 | Test Specification 1.82 |
| 1.83 | Requirement 1.83 | Test Specification 1.83 |
| 1.84 | Requirement 1.84 | Test Specification 1.84 |
| 1.85 | Requirement 1.85 | Test Specification 1.85 |
| 1.86 | Requirement 1.86 | Test Specification 1.86 |
| 1.87 | Requirement 1.87 | Test Specification 1.87 |
| 1.88 | Requirement 1.88 | Test Specification 1.88 |
| 1.89 | Requirement 1.89 | Test Specification 1.89 |
| 1.90 | Requirement 1.90 | Test Specification 1.90 |
| 1.91 | Requirement 1.91 | Test Specification 1.91 |
| 1.92 | Requirement 1.92 | Test Specification 1.92 |
| 1.93 | Requirement 1.93 | Test Specification 1.93 |
| 1.94 | Requirement 1.94 | Test Specification 1.94 |
| 1.95 | Requirement 1.95 | Test Specification 1.95 |
| 1.96 | Requirement 1.96 | Test Specification 1.96 |
| 1.97 | Requirement 1.97 | Test Specification 1.97 |
|      |                  |                         |

Autocollating mechanism not specified

☐ tolerant/tolerated

**ELEKTOSKOPIA**  
Dunaiská 10, 040 01 Košice

Testing Contractor/Name of Examiner

## Air Liquide

| Air Liquide |      |
|-------------|------|
| Date        | Name |
| Signature   |      |

E.H.R.  
19.12.0

# ielholz

Name \_\_\_\_\_  
Signature \_\_\_\_\_

•

Date: 11.10.16  
 Name:

[illegible]

|                                                         |  |                                                          |  |                                                                                        |  |                              |  |
|---------------------------------------------------------|--|----------------------------------------------------------|--|----------------------------------------------------------------------------------------|--|------------------------------|--|
| <b>AIR LIQUIDE</b>                                      |  | <b>Durchstrahlungsprüfung - Radiographic Examination</b> |  | Bericht/ Report: <b>351</b>                                                            |  | Prüfdatum: <b>16.12.2005</b> |  |
| Kennwort: <b>ASU No.9 Kosice</b>                        |  | Zeichnungsnummer/ISO-Nr.: <b>A 21004</b>                 |  | Seite: <b>1</b> von <b>1</b>                                                           |  | Baufeld Nr.: xxx             |  |
| Serial/Order No.: <b>K 70101</b>                        |  | Drawing No./ISO No.: <b>141</b>                          |  | Sheet: <b>488</b>                                                                      |  | Constr area No.:             |  |
| Bauteil/Verbindung: <b>pipe</b>                         |  | Schweißverfahren DIN 24063:                              |  | Schweißer:                                                                             |  | Nahtform BW                  |  |
| Part/Joint:                                             |  | Welding process to DIN 24063:                            |  | Welder:                                                                                |  | Weld type:                   |  |
| Beschreibung: <b>Coldbox</b>                            |  | Werkstoff/ Material A: <b>Al Mg 4,5Mn</b>                |  | Bewertung n.DIN EN 5817 <input type="checkbox"/> DIN EN 30042 <input type="checkbox"/> |  | <input type="checkbox"/> A   |  |
| Wärmebehandlung: <input type="checkbox"/> ohne/ without |  | Werkstoff/ Material B:                                   |  | Quality level acc. to -/- (DIN EN 12517/1)                                             |  | <input type="checkbox"/> B   |  |
| Heat treatment: <input type="checkbox"/> vor/ before    |  | Weld-No.: <b>4</b>                                       |  |                                                                                        |  | <input type="checkbox"/> C   |  |
| <input type="checkbox"/> nach/ after                    |  |                                                          |  |                                                                                        |  |                              |  |
| Oberflächenzustand <b>Clean</b>                         |  | Prüfumfang: <b>60,3x3,9</b>                              |  | Abmessung/Dimension A:                                                                 |  | mm                           |  |
| Surface quality:                                        |  | Extent of examination: <b>10 %</b>                       |  | Abmessung/Dimension B:                                                                 |  |                              |  |

**Angaben zur Prüfung/ Data of examination**

|                                                                                              |                                                                                                                          |                                               |                              |
|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|------------------------------|
| Prüfklasse gem. DIN EN 1435 <input type="checkbox"/> A <input checked="" type="checkbox"/> B | Zulässigkeitsgrenzen gem. DIN EN 12 517 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 | Aufnahmeanordnung nach DIN EN 1435: <b>11</b> |                              |
| Test class acc. to EN 1435                                                                   | Acceptance level acc. to EN 12 517                                                                                       | Test arrangement acc. EN 1435                 |                              |
| Strahlungsquelle: <b>Selen 75</b>                                                            | Brennfleckgr./Strahlenquellenlgr.: <b>3x3</b>                                                                            | Filmsorte: <b>Agfa</b>                        | Filmklasse: <b>C 2</b>       |
| Source of radiation:                                                                         | Focal Spot/Source Size:                                                                                                  | Film type:                                    | Film system class:           |
| Aktivität: <b>40 ci</b>                                                                      | Röhreneinstellung: <b>(KV)</b>                                                                                           | Folienart: <b>Pb</b>                          | Filmgröße: <b>10 x 24</b>    |
| Activity:                                                                                    | Tube voltage/current:                                                                                                    | Screen type:                                  | Film size:                   |
|                                                                                              |                                                                                                                          | Screen thickness: <b>0,02 mm</b>              | Belichtungszeit: <b>45 s</b> |
|                                                                                              |                                                                                                                          |                                               | Exposure time                |

**Prüfergebnis/ Test data**

| Bildgüteprüfkörper/ Image quality indicator (IQ 10A/EN461-2) | Lage/ Position: | Filmnah/ close to film                                    |                 | Filmsfern/ far from film |                       | Bemerkung/ Comments (from - to) |
|--------------------------------------------------------------|-----------------|-----------------------------------------------------------|-----------------|--------------------------|-----------------------|---------------------------------|
|                                                              |                 | Filmfehler (FF)                                           | Schwärzung (IQ) | Befund/ Findings         | Image quality Density |                                 |
| 4                                                            | A               | 2011 2016 2013 301 401 402 5013 515 504 100 304 5011/5012 | 14              | 2,4                      | x                     |                                 |
|                                                              |                 | 2011 2016 2013 301 401 402 5013 515 504 100 304 5011/5012 | 14              | 2,4                      | x                     |                                 |
|                                                              |                 | 2011 2016 2013 301 401 402 5013 515 504 100 304 5011/5012 |                 |                          |                       |                                 |
|                                                              |                 | 2011 2016 2013 301 401 402 5013 515 504 100 304 5011/5012 |                 |                          |                       |                                 |

**Definition- Erklärung der Bewertung/ Definition- Legend**

**Aa** = Pore/ Gas pore **Ab** = Schlauchpore/Wurmhole **Ad** = Porennes/Porosity **Ba** = Schlackeneinschl./ Slag inclusion **C** = Bindefehler/Lack of fusion  
**D** = ung. Durchschw./Lack of penetration **Da** = Wurzelkerbe/Root notch **Db** = Wurzelrückfall/Root reinforcement **Dc** = Wurzelbruch/Excessive penetration **E** = Riß/Crack  
**H** = metallischer Einschluss/Metallic inclusion **F** = Einbrand/Undercut

☒ Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled

☐ Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled

☐ toleriert/ tolerated

## ★ Additional Marking

R1; R2 erste und zweite Rep./first and second Rep.  
 N neu nach Rep./ cut and reweld  
 F Folgeprüfung/ Tracer shot  
 G Garantienaht/ RT instead of Pressure Test  
 K Kontrollschuß/ Control Shot  
 I I-Stoß/ I-Joint

Testing Contractor/Name of Examiner

Air Liquide

E.H.R.

16.12.05

Kienholz

Date

Name

Signature

Date

Name

Signature

TÜV

Date

Name

Signature

| AIR LIQUIDE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |                                          |  | Durchstrahlungsprüfung - Radiographic Examination |  | Bericht/ Report: <b>352</b>                                                                            |  | Prüfdatum: <b>17.12.2005</b>                                                                                       |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------|--|---------------------------------------------------|--|--------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------|--|
| Kennwort: <b>ASU No.9 Kosice</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  | Zeichnungsnummer/ISO-Nr.: <b>N 43009</b> |  | Seite: <b>1</b> von <b>153</b>                    |  | Date of Exam.: xxx                                                                                     |  | Baufeld Nr.: xxx                                                                                                   |  |
| Job Name: <b>ASU No.9 Kosice</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  | Drawing No./ISO No.: <b>K 70101</b>      |  | Sheet: <b>153</b>                                 |  | Nahtform BW                                                                                            |  | Weld type: <input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C             |  |
| Benennung: <b>Coldbox</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  | Bauteil/Verbindung: <b>pipe</b>          |  | Schweißverfahren: <b>141</b>                      |  | Welding process to DIN 24063: <b>AI Mg 4,5Mn</b>                                                       |  | Bewertung n.DIN EN 5817 <input type="checkbox"/> DIN EN 30042 <input checked="" type="checkbox"/> (DIN EN 12517/1) |  |
| Description: <b>Coldbox</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  | Part/Joint: <b>ohne/ without</b>         |  | Schweißnahtnummer: <b>18.1</b>                    |  | Werkstoff/ Material A: <b>AI Mg 4,5Mn</b>                                                              |  | Quality level acc. to -/-                                                                                          |  |
| Wärmebehandlung: <input type="checkbox"/> vor/ before <input type="checkbox"/> nach/ after                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  | Weld- No.: <b>18.1</b>                   |  | Schweißverfahren: <b>141</b>                      |  | Weld type: <input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C |  | mm                                                                                                                 |  |
| Oberflächenzustand <b>Clean</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  | Prüfumfang: <b>10 %</b>                  |  | Abmessung/Dimension A: <b>33,4x3,4</b>            |  | Abmessung/Dimension B:                                                                                 |  | mm                                                                                                                 |  |
| Surface quality:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  | Extent of examination:                   |  | Abmessung/Dimension A: <b>33,4x3,4</b>            |  | Abmessung/Dimension B:                                                                                 |  | mm                                                                                                                 |  |
| <b>Angaben zur Prüfung/ Data of examination</b><br>Prüfklasse gem. DIN EN 1435 <input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C<br>Test class acc. to EN 1435 <b>3x3</b><br>Strahlungsquelle: <b>Selen 75</b><br>Source of radiation: <b>Selen 75</b><br>Aktivität: <b>40 ci</b><br>Activity: <b>40 ci</b><br>Röhreneinstellung: <b>(KV)</b><br>Tube voltage/current: <b>(mA)</b><br>Folienart: <b>Pb</b><br>Screen type: <b>f 200</b><br>Foliendicke: <b>0,02 mm</b><br>Screen thickness: <b>45 s</b><br>Exposure time: <b>45 s</b><br>Filmgröße: <b>10 x 24</b><br>Film size: <b>10 x 24</b><br>Aufnahmeanordnung nach DIN EN 1435: <b>11</b><br>Test arrangement acc. EN 1435: <b>C 2</b><br>Filmsorte: <b>Agfa</b><br>Film type: <b>10 x 24</b><br>Film system class: <b>10 x 24</b><br>Belichtungszeit: <b>45 s</b><br>Exposure time: <b>45 s</b><br>Filmgröße: <b>10 x 24</b><br>Film size: <b>10 x 24</b> |  |                                          |  |                                                   |  |                                                                                                        |  |                                                                                                                    |  |
| <b>Prüfergebnis/ Test data</b><br>Bildgüteprüfkörper/ Image quality indicator (IQ 10A) EN 461-2<br>Film-nr. <b>☆</b><br>Film No. <b>☆</b><br>Auswertbare Filmlänge<br>Evaluated length of film<br>in cm / from - to<br>2011   2016   2013   301   401   402   501   315   504   100   304   5011   5012<br>Aa   Ab   Ad   Ba   C   D   Da   Db   Dc   E   F<br>14   2,4   2,4<br>14   2,4<br>18.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |                                          |  |                                                   |  |                                                                                                        |  |                                                                                                                    |  |
| Definition- Erklärung der Bewertung/ Definition- Legend<br>Aa = Pore/ Gas pore<br>Ab = Schlauchpore/Wurmhole<br>D = ung. Durchschw./Lack of penetration<br>H = metallischer Einschluss/Metallic inclusion<br>Ba = Schlackeneinschl./ Slag inclusion<br>Db = Wurzelkerbe/Root notch<br>F = Einbrand/Undercut<br>Dc = Wurzelrückfall/Root reinforcement<br>C = Bindefehler/Lack of fusion<br>E = Riß/Crack                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |                                          |  |                                                   |  |                                                                                                        |  |                                                                                                                    |  |
| Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled<br>Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled<br>toleriert/ tolerated<br>DEFECTOSKOPIA<br>Dunajská 10, 040 01 Košice<br>TEL/FAX: 0937 67 649 79<br>mobile: 0935 802 812<br>Testing Contractor/Name of Examiner<br>Air Liquide<br>E.H.R.<br>19.12.05 Kielholz<br>TUV<br>19.12.05<br>Name<br>Date<br>Signature<br>Name<br>Date<br>Signature                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |                                          |  |                                                   |  |                                                                                                        |  |                                                                                                                    |  |



| AIR LIQUIDE                                                                                   |  |                                                                                                                             |  | Durchstrahlungsprüfung - Radiographic Examination                                                                         |  |                                                  |  | Bericht/ Report: <b>353</b>                                                                            |  | Prüfdatum: 16.12.2005                                                                                                  |  |
|-----------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------|--|--------------------------------------------------|--|--------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------|--|
| Kenntwort: <b>ASU No.9 Kosice</b>                                                             |  | Zeichnungsnummer/ISO-Nr.: <b>NL 73001</b>                                                                                   |  | Seite: 1 von                                                                                                              |  | Sheet: of                                        |  | Date of Exam.: xxx                                                                                     |  | Baufeld Nr.: xxx                                                                                                       |  |
| Job Name: <b>ASU No.9 Kosice</b>                                                              |  | Drawing No./ISO No.: <b>K 70101</b>                                                                                         |  | Schweißverfahren: <b>141</b>                                                                                              |  | Schweißverfahren: <b>195</b>                     |  | Nahtform: <b>BW</b>                                                                                    |  | Weld type: <input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C                 |  |
| Benennung: <b>Coldbox</b>                                                                     |  | Bauteil/Verbindung: <b>pipe</b>                                                                                             |  | Schweißverfahren: <b>DIN 24063</b>                                                                                        |  | Schweißverfahren: <b>DIN 24063</b>               |  | Weld type: <b>DIN EN 30042</b>                                                                         |  | Weld type: <b>DIN EN 30042</b>                                                                                         |  |
| Discription: <b>Coldbox</b>                                                                   |  | Part/Join: <b>ohne/ without</b>                                                                                             |  | Welding process to DIN 24063: <b>AI Mg 4,5Mn</b>                                                                          |  | Welding process to DIN 24063: <b>AI Mg 4,5Mn</b> |  | Bewertung n.DIN EN 5817: <input type="checkbox"/> DIN EN 5817 <input type="checkbox"/> DIN EN 12517(1) |  | Quality level acc. to -/-: <input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C |  |
| Wärmebehandlung: <input type="checkbox"/> vor/ before <input type="checkbox"/> nach/ after    |  | Schweißnahtnummer: <b>21</b>                                                                                                |  | Werkstoff/ Material A: <b>33,4x3,4</b>                                                                                    |  | Werkstoff/ Material B: <b>33,4x3,4</b>           |  | Abmessung/Dimension A: <b>10 %</b>                                                                     |  | Abmessung/Dimension B: <b>10 %</b>                                                                                     |  |
| Oberflächenzustand: <b>Clean</b>                                                              |  | Prüfungsumfang: <b>10 %</b>                                                                                                 |  | Abmessung/Dimension A: <b>33,4x3,4</b>                                                                                    |  | Abmessung/Dimension B: <b>33,4x3,4</b>           |  | Aufnahmeanordnung nach DIN EN 1435: <b>11</b>                                                          |  | Filmklasse: <b>C 2</b>                                                                                                 |  |
| Surface quality: <b>Clean</b>                                                                 |  | Extent of examination: <b>10 %</b>                                                                                          |  | Zulässigkeitsgrenzen gem. DIN EN 12 517: <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 |  | Test arrangement acc. EN 1435: <b>11</b>         |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| <b>Angaben zur Prüfung/ Data of examination</b>                                               |  |                                                                                                                             |  | <b>Angabe zur Prüfung/ Data of examination</b>                                                                            |  |                                                  |  | <b>Angabe zur Prüfung/ Data of examination</b>                                                         |  |                                                                                                                        |  |
| Prüfklasse gem. DIN EN 1435: <input type="checkbox"/> A <input checked="" type="checkbox"/> B |  | Zulässigkeitsgrenzen gem. DIN EN 12 517: <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3   |  | Aufnahmeanordnung nach DIN EN 1435: <b>11</b>                                                                             |  | Filmklasse: <b>C 2</b>                           |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Test class acc. to EN 1435: <input type="checkbox"/> A <input checked="" type="checkbox"/> B  |  | Acceptance level acc. to EN 12 517: <b>3x3</b>                                                                              |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Strahlungsquelle: <b>Selen 75</b>                                                             |  | Brennfleckgr./Strahlenquellengr.: <b>3x3</b>                                                                                |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Source of radiation: <b>Selen 75</b>                                                          |  | Focal Spot/Source Size: <b>3x3</b>                                                                                          |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Röhreneinstellung: <b>40 ci</b>                                                               |  | Tube voltage/current: <b>40 ci</b>                                                                                          |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Aktivität: <b>40 ci</b>                                                                       |  | Tube voltage/current: <b>40 ci</b>                                                                                          |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| <b>Prüfergebnis/ Test data</b>                                                                |  |                                                                                                                             |  | <b>Prüfergebnis/ Test data</b>                                                                                            |  |                                                  |  | <b>Prüfergebnis/ Test data</b>                                                                         |  |                                                                                                                        |  |
| Bildgüteprüfkörper/ Image quality indicator (IQ 10A)EN461-2                                   |  | Lage/ Position: <input checked="" type="checkbox"/> Filmnah/ close to film <input type="checkbox"/> Filmfern/ far from film |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Film-nr. / Auswertbare Filmlänge                                                              |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Schweißnahtnummer                                                                             |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input checked="" type="checkbox"/> A <input type="checkbox"/> B                     |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input checked="" type="checkbox"/> B                     |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size: <b>10 x 24</b>                        |  | Filmgröße: <b>10 x 24</b>                                                                              |  | Film size: <b>10 x 24</b>                                                                                              |  |
| Weld No. <input type="checkbox"/> A <input type="checkbox"/> B                                |  | Imperfektionen (EN 25520)                                                                                                   |  | Filmgröße: <b>10 x 24</b>                                                                                                 |  | Film size                                        |  |                                                                                                        |  |                                                                                                                        |  |

|  |                    |                                                         |                  |                                                                                               |                              |            |
|--|--------------------|---------------------------------------------------------|------------------|-----------------------------------------------------------------------------------------------|------------------------------|------------|
|  | <b>AIR LIQUIDE</b> | <b>Durchstrahlungsprüfung- Radiographic Examination</b> | Bericht/ Report: | <div style="border: 1px solid black; padding: 5px; display: inline-block;"> <b>354</b> </div> | Prüfdatum:<br>Date of Exam.: | 16.12.2005 |
|  |                    |                                                         | Seite:           | 2                                                                                             |                              |            |

|                    |                                                   |  |                        |  |         |  |                               |  |                                                                                                                           |  |
|--------------------|---------------------------------------------------|--|------------------------|--|---------|--|-------------------------------|--|---------------------------------------------------------------------------------------------------------------------------|--|
| Kenntwort:         | ASU No.9 Kosice                                   |  | Auftragsnummer:        |  | K 70101 |  | Zeichnungsnummer/ISO-Nr.:     |  | OL 01100                                                                                                                  |  |
| Job Name:          |                                                   |  | Serial/Order No.:      |  | K 70101 |  | Drawing No./ISO No.:          |  | 195                                                                                                                       |  |
| Benennung:         |                                                   |  | Bauteil/Verbindung:    |  | pipe    |  | Schweißverfahren DIN 24063:   |  | 141                                                                                                                       |  |
| Disposition:       | Coldbox                                           |  | Part/Joint:            |  |         |  | Schweißverfahren DIN 24063:   |  | 141                                                                                                                       |  |
| Wärmebehandlung:   | <input checked="" type="checkbox"/> ohne/ without |  | Schweißnahtnummer:     |  |         |  | Welding process to DIN 24063: |  | Schweißer:                                                                                                                |  |
| Heat treatment:    | <input type="checkbox"/> vor/ before              |  | Weld- No.:             |  | 21      |  | Werkstoff/ Material A:        |  | Welder:                                                                                                                   |  |
|                    | <input type="checkbox"/> nach/ after              |  |                        |  |         |  | Werkstoff/ Material B:        |  | Bewertung n.DIN EN 5817                                                                                                   |  |
|                    |                                                   |  |                        |  |         |  |                               |  | Quality level acc. to -/-                                                                                                 |  |
| Oberflächenzustand | Clean                                             |  | Prüfumfang:            |  | 10 %    |  | Abmessung/Dimension A:        |  | 33,4x3,4                                                                                                                  |  |
| Surface quality:   |                                                   |  | Extent of examination: |  |         |  | Abmessung/Dimension B:        |  |                                                                                                                           |  |
|                    |                                                   |  |                        |  |         |  | Weld type:                    |  | <input type="checkbox"/> DIN EN 30042<br><input checked="" type="checkbox"/> DIN EN 12517/1<br><input type="checkbox"/> C |  |
|                    |                                                   |  |                        |  |         |  |                               |  | <input type="checkbox"/> A<br><input checked="" type="checkbox"/> B<br><input type="checkbox"/> C                         |  |
|                    |                                                   |  |                        |  |         |  |                               |  | mm                                                                                                                        |  |

|                                                 |  |                                                                  |  |                                              |  |                                                                                             |  |                                      |  |
|-------------------------------------------------|--|------------------------------------------------------------------|--|----------------------------------------------|--|---------------------------------------------------------------------------------------------|--|--------------------------------------|--|
| <b>Angaben zur Prüfung/ Data of examination</b> |  |                                                                  |  |                                              |  |                                                                                             |  |                                      |  |
| Prüfklasse gem. DIN EN 14335                    |  | <input type="checkbox"/> A <input checked="" type="checkbox"/> B |  | Zulässigkeitsgrenzen gem. DIN EN 12 517      |  | <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 |  | Aufnahmeanordnung nach DIN EN 14335: |  |
| Test class acc. to EN 14335                     |  |                                                                  |  | Acceptance level acc. to EN 12 517           |  |                                                                                             |  | Test arrangement acc. EN 14335       |  |
| Strahlungsquelle:                               |  | <b>Selen 75</b>                                                  |  | Brennfleckgr./Strahlenquellengr.: <b>3x3</b> |  | (mm)                                                                                        |  | Agfa                                 |  |
| Source of radiation:                            |  |                                                                  |  | Focal Spot/Source Size:                      |  | b                                                                                           |  | Filmsorte:                           |  |
| Aktivität:                                      |  | Röhreneinstellung:                                               |  | (KV)                                         |  | Folienart:                                                                                  |  | Film type:                           |  |
| Activity:                                       |  | 40 ci                                                            |  | Tube voltage/current:                        |  | Pb                                                                                          |  | f 200                                |  |
|                                                 |  |                                                                  |  |                                              |  | Folienart:                                                                                  |  | Film system class:                   |  |
|                                                 |  |                                                                  |  |                                              |  | Screen type:                                                                                |  | Film size:                           |  |
|                                                 |  |                                                                  |  |                                              |  | Screen thickness:                                                                           |  | Film size.                           |  |
|                                                 |  |                                                                  |  |                                              |  | 0,02 mm                                                                                     |  | Belichtungszeit:                     |  |
|                                                 |  |                                                                  |  |                                              |  |                                                                                             |  | Exposure time: <b>45 s</b>           |  |
|                                                 |  |                                                                  |  |                                              |  |                                                                                             |  | Filmgröße: <b>10 x 24</b>            |  |
|                                                 |  |                                                                  |  |                                              |  |                                                                                             |  | C 2                                  |  |
|                                                 |  |                                                                  |  |                                              |  |                                                                                             |  | <b>11</b>                            |  |

| Prüfergebnis/ Test data                                      |  |                                                                        |  |                             |  |      |  |                                     |  |                                      |  |                       |  |                  |  |                                        |  |     |  |     |  |           |  |           |  |  |  |  |  |
|--------------------------------------------------------------|--|------------------------------------------------------------------------|--|-----------------------------|--|------|--|-------------------------------------|--|--------------------------------------|--|-----------------------|--|------------------|--|----------------------------------------|--|-----|--|-----|--|-----------|--|-----------|--|--|--|--|--|
| Bildgüteprüfkörper/ Image quality indicator ( IQ 10AIEN461-2 |  | Lage/ Position:                                                        |  | Filmmatr./ close to film    |  |      |  | Filmfern/ far from film             |  |                                      |  |                       |  |                  |  |                                        |  |     |  |     |  |           |  |           |  |  |  |  |  |
| Film-nr.<br>Schweißnahtnummer<br>Weld No. ☆                  |  | Auswertbare Filmlänge<br>Evaluated length of film<br>in cm / from ÷ to |  | Imperfektionen ( EN 26520 ) |  |      |  | Filmfehler<br>Film defect<br>( FF ) |  | Bildgüte<br>Image quality<br>( IQL ) |  | Schwärzung<br>Density |  | Befund/ Findings |  | Bemerkung<br>Comments<br>( from - to ) |  |     |  |     |  |           |  |           |  |  |  |  |  |
|                                                              |  |                                                                        |  | 2011                        |  | 2016 |  | 301                                 |  | 401                                  |  | 402                   |  | 5013             |  | 5015                                   |  | 504 |  | 100 |  | 5011/5012 |  | 5011/5012 |  |  |  |  |  |
|                                                              |  |                                                                        |  | Aa                          |  | Ab   |  | Ad                                  |  | Ba                                   |  | C                     |  | D                |  | Da                                     |  | Db  |  | Dc  |  | E         |  | F         |  |  |  |  |  |
| A                                                            |  |                                                                        |  |                             |  |      |  |                                     |  |                                      |  |                       |  |                  |  |                                        |  |     |  |     |  |           |  |           |  |  |  |  |  |
| B                                                            |  |                                                                        |  |                             |  |      |  |                                     |  |                                      |  |                       |  |                  |  |                                        |  |     |  |     |  |           |  |           |  |  |  |  |  |
|                                                              |  |                                                                        |  |                             |  |      |  |                                     |  |                                      |  |                       |  |                  |  |                                        |  |     |  |     |  |           |  |           |  |  |  |  |  |
|                                                              |  |                                                                        |  |                             |  |      |  |                                     |  |                                      |  |                       |  |                  |  |                                        |  |     |  |     |  |           |  |           |  |  |  |  |  |
|                                                              |  |                                                                        |  |                             |  |      |  |                                     |  |                                      |  |                       |  |                  |  |                                        |  |     |  |     |  |           |  |           |  |  |  |  |  |
|                                                              |  |                                                                        |  |                             |  |      |  |                                     |  |                                      |  |                       |  |                  |  |                                        |  |     |  |     |  |           |  |           |  |  |  |  |  |
|                                                              |  |                                                                        |  |                             |  |      |  |                                     |  |                                      |  |                       |  |                  |  |                                        |  |     |  |     |  |           |  |           |  |  |  |  |  |
|                                                              |  |                                                                        |  |                             |  |      |  |                                     |  |                                      |  |                       |  |                  |  |                                        |  |     |  |     |  |           |  |           |  |  |  |  |  |
|                                                              |  |                                                                        |  |                             |  |      |  |                                     |  |                                      |  |                       |  |                  |  |                                        |  |     |  |     |  |           |  |           |  |  |  |  |  |
|                                                              |  |                                                                        |  |                             |  |      |  |                                     |  |                                      |  |                       |  |                  |  |                                        |  |     |  |     |  |           |  |           |  |  |  |  |  |
|                                                              |  |                                                                        |  |                             |  |      |  |                                     |  |                                      |  |                       |  |                  |  |                                        |  |     |  |     |  |           |  |           |  |  |  |  |  |
|                                                              |  |                                                                        |  |                             |  |      |  |                                     |  |                                      |  |                       |  |                  |  |                                        |  |     |  |     |  |           |  |           |  |  |  |  |  |
|                                                              |  |                                                                        |  |                             |  |      |  |                                     |  |                                      |  |                       |  |                  |  |                                        |  |     |  |     |  |           |  |           |  |  |  |  |  |
|                                                              |  |                                                                        |  |                             |  |      |  |                                     |  |                                      |  |                       |  |                  |  |                                        |  |     |  |     |  |           |  |           |  |  |  |  |  |
|                                                              |  |                                                                        |  |                             |  |      |  |                                     |  |                                      |  |                       |  |                  |  |                                        |  |     |  |     |  |           |  |           |  |  |  |  |  |
|                                                              |  |                                                                        |  |                             |  |      |  |                                     |  |                                      |  |                       |  |                  |  |                                        |  |     |  |     |  |           |  |           |  |  |  |  |  |
|                                                              |  |                                                                        |  |                             |  |      |  |                                     |  |                                      |  |                       |  |                  |  |                                        |  |     |  |     |  |           |  |           |  |  |  |  |  |
|                                                              |  |                                                                        |  |                             |  |      |  |                                     |  |                                      |  |                       |  |                  |  |                                        |  |     |  |     |  |           |  |           |  |  |  |  |  |
|                                                              |  |                                                                        |  |                             |  |      |  |                                     |  |                                      |  |                       |  |                  |  |                                        |  |     |  |     |  |           |  |           |  |  |  |  |  |
|                                                              |  |                                                                        |  |                             |  |      |  |                                     |  |                                      |  |                       |  |                  |  |                                        |  |     |  |     |  |           |  |           |  |  |  |  |  |
|                                                              |  |                                                                        |  |                             |  |      |  |                                     |  |                                      |  |                       |  |                  |  |                                        |  |     |  |     |  |           |  |           |  |  |  |  |  |
|                                                              |  |                                                                        |  |                             |  |      |  |                                     |  |                                      |  |                       |  |                  |  |                                        |  |     |  |     |  |           |  |           |  |  |  |  |  |
|                                                              |  |                                                                        |  |                             |  |      |  |                                     |  |                                      |  |                       |  |                  |  |                                        |  |     |  |     |  |           |  |           |  |  |  |  |  |
|                                                              |  |                                                                        |  |                             |  |      |  |                                     |  |                                      |  |                       |  |                  |  |                                        |  |     |  |     |  |           |  |           |  |  |  |  |  |
|                                                              |  |                                                                        |  |                             |  |      |  |                                     |  |                                      |  |                       |  |                  |  |                                        |  |     |  |     |  |           |  |           |  |  |  |  |  |
|                                                              |  |                                                                        |  |                             |  |      |  |                                     |  |                                      |  |                       |  |                  |  |                                        |  |     |  |     |  |           |  |           |  |  |  |  |  |
|                                                              |  |                                                                        |  |                             |  |      |  |                                     |  |                                      |  |                       |  |                  |  |                                        |  |     |  |     |  |           |  |           |  |  |  |  |  |
|                                                              |  |                                                                        |  |                             |  |      |  |                                     |  |                                      |  |                       |  |                  |  |                                        |  |     |  |     |  |           |  |           |  |  |  |  |  |

| Definition- Erklärung der Bewertung/ Definition- Legend |                             |                                            |                                        |
|---------------------------------------------------------|-----------------------------|--------------------------------------------|----------------------------------------|
| Aa = Pore/ Gas pore                                     | Ab = Schlauchpore/Wurmhole  | Ad = Porenneß/Porosity                     | Ba = Schlackeneinschl./ Slag inclusion |
| D = ung. Durchschw./Lack of penetration                 | Da = Wurzelkerbe/Root notch | Db = Wurzelrückfall/Root reinforcement     | C = Bindefehler/Lack of fusion         |
| H = metallischer Einschuß/Metallic inclusion            | F = Einbrand/Undercut       | Dc = Wurzeldurchgang/Excessive penetration | E = Riß/Crack                          |
|                                                         |                             |                                            | Additional Marking                     |

|                                     | Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled | Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled |        | Additional marking                          |
|-------------------------------------|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|--------|---------------------------------------------|
| <input checked="" type="checkbox"/> | Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled |                                                                                                                | R1; R2 | erste und zweite Rep./first and second Rep. |
| <input type="checkbox"/>            |                                                                                                    | Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled | N      | neu nach Rep./ out and reweld               |
| <input type="checkbox"/>            |                                                                                                    |                                                                                                                | F      | Folgeprüfung/ Tracer shot                   |
| <input type="checkbox"/>            |                                                                                                    |                                                                                                                | G      | Garantienah/ RT instead of Pressure Test    |
| <input type="checkbox"/>            |                                                                                                    |                                                                                                                | K      | Kontrollschuss/ Control Shot                |
| <input type="checkbox"/>            |                                                                                                    |                                                                                                                | I      | I - Stoß/ I - Joint                         |

|                                            |                    |             |         |             |             |                     |
|--------------------------------------------|--------------------|-------------|---------|-------------|-------------|---------------------|
| <b>Testing Contractor/Name of Examiner</b> | <b>Air Liquide</b> |             |         |             |             |                     |
| Date                                       | Name               | Signature   | Date    | Name        | Signature   |                     |
| 16-1-06                                    | G. J. J. J.        | [Signature] | 16-1-06 | G. J. J. J. | [Signature] |                     |
|                                            |                    |             |         |             |             |                     |
| E.H.R.                                     | EHR 02             |             | Date    | Name        | Signature   | TÜV                 |
| 16.12.05                                   | Kielholz           |             |         |             | [Signature] | Date Name Signature |
|                                            |                    |             |         |             | [Signature] |                     |

| AIR LIQUIDE                                                   |  |                                         |  | Durchstrahlungsprüfung - Radiographic Examination |  | Bericht/ Report: 355      |  | Prüfdatum: 16.12.2005  |  |
|---------------------------------------------------------------|--|-----------------------------------------|--|---------------------------------------------------|--|---------------------------|--|------------------------|--|
| Auftragsnummer:                                               |  | Zeichnungsnummer/ISO-Nr.: NL 71202      |  | Seite: 1 von 1                                    |  | Sheet: 1 of 1             |  | Date of Exam.: xxx     |  |
| Serial/Order No.: K 70101                                     |  | Drawing No./ISO No.: 141                |  | Schweißverfahren: 82                              |  | Nahtform: BW              |  | Baufeld Nr.: xxx       |  |
| Bauteil/Verbindung: pipe                                      |  | Schweißverfahren DIN 24063:             |  | Weider: 141                                       |  | Weld type: 82             |  | Constr area No.: xxx   |  |
| Part/Joint:                                                   |  | Welding process to DIN 24063:           |  | Bewertung n. DIN EN 5817                          |  | DIN EN 30042              |  | A                      |  |
| Schweißnahtnummer: 5                                          |  | Werkstoff/ Material A: Al Mg 4,5Mn      |  | Quality level acc. to -/-                         |  | (DIN EN 12517/1)          |  | B                      |  |
| Weld- No.: 5                                                  |  | Werkstoff/ Material B:                  |  | Abmessung/Dimension A: 60,3x3,9                   |  | mm                        |  | C                      |  |
| Prüfmethode: Clean                                            |  | Prüfmethode: 50 %                       |  | Abmessung/Dimension B:                            |  |                           |  |                        |  |
| Oberflächenzustand: Clean                                     |  | Prüfmethode: 50 %                       |  | Abmessung/Dimension B:                            |  |                           |  |                        |  |
| Surface quality:                                              |  | Prüfmethode: 50 %                       |  | Abmessung/Dimension B:                            |  |                           |  |                        |  |
| Prüfung zur Prüfung/ Data of examination                      |  | Zulässigkeitsgrenzen gem. DIN EN 12 517 |  | 1                                                 |  | 2                         |  | 3                      |  |
| Prüfklasse gem. DIN EN 1435                                   |  | A                                       |  | B                                                 |  | C                         |  | D                      |  |
| Test class acc. to EN 1435                                    |  | 3x3                                     |  | f 200                                             |  | Filmgröße: 10 x 24        |  | Film system class: C 2 |  |
| Strahlungsquelle: Selen 75                                    |  | Brennfleckgr./Strahlenquellengr.: 3x3   |  | Folienart: Pb                                     |  | Belichtungszeit: 45 s     |  | Film size: 10 x 24     |  |
| Source of radiation: Selen 75                                 |  | Focal Spot/Source Size: 3x3             |  | Screen type: (mA)                                 |  | Screen thickness: 0,02 mm |  | Exposure time: 45 s    |  |
| Röhreneinstellung: 40 ci                                      |  | Tube voltage/current: (KV)              |  | Filmnah/ close to film                            |  | Filmfern/ far from film   |  | Bemerkung/ Comments    |  |
| Activity: 40 ci                                               |  | Tube voltage/current: (KV)              |  | Filmnah/ close to film                            |  | Filmfern/ far from film   |  | Bemerkung/ Comments    |  |
| Prüfergebnis/ Test data                                       |  | Lage/ Position: X                       |  | Filmnah/ close to film                            |  | Filmfern/ far from film   |  | Bemerkung/ Comments    |  |
| Bildgüteprüfkörper/ Image quality indicator (IQ 10A) EN 461-2 |  | Imperfektionen (EN 26520)               |  | Filmfehler                                        |  | Filmfehler                |  | Bemerkung/ Comments    |  |
| Schweißnahtnummer                                             |  | Film-nr.                                |  | Film-nr.                                          |  | Film-nr.                  |  | Bemerkung/ Comments    |  |
| Weld No.                                                      |  | Film-nr.                                |  | Film-nr.                                          |  | Film-nr.                  |  | Bemerkung/ Comments    |  |
| A                                                             |  | B                                       |  | C                                                 |  | D                         |  | E                      |  |
| B                                                             |  | C                                       |  | D                                                 |  | E                         |  | F                      |  |
| C                                                             |  | D                                       |  | E                                                 |  | F                         |  | G                      |  |
| D                                                             |  | E                                       |  | F                                                 |  | G                         |  | H                      |  |
| E                                                             |  | F                                       |  | G                                                 |  | H                         |  | I                      |  |
| F                                                             |  | G                                       |  | H                                                 |  | I                         |  | J                      |  |
| G                                                             |  | H                                       |  | I                                                 |  | J                         |  | K                      |  |
| H                                                             |  | I                                       |  | J                                                 |  | K                         |  | L                      |  |
| I                                                             |  | J                                       |  | K                                                 |  | L                         |  | M                      |  |
| J                                                             |  | K                                       |  | L                                                 |  | M                         |  | N                      |  |
| K                                                             |  | L                                       |  | M                                                 |  | N                         |  | O                      |  |
| L                                                             |  | M                                       |  | N                                                 |  | O                         |  | P                      |  |
| M                                                             |  | N                                       |  | O                                                 |  | P                         |  | Q                      |  |
| N                                                             |  | O                                       |  | P                                                 |  | Q                         |  | R                      |  |
| O                                                             |  | P                                       |  | Q                                                 |  | R                         |  | S                      |  |
| P                                                             |  | Q                                       |  | R                                                 |  | S                         |  | T                      |  |
| Q                                                             |  | R                                       |  | S                                                 |  | T                         |  | U                      |  |
| R                                                             |  | S                                       |  | T                                                 |  | U                         |  | V                      |  |
| S                                                             |  | T                                       |  | U                                                 |  | V                         |  | W                      |  |
| T                                                             |  | U                                       |  | V                                                 |  | W                         |  | X                      |  |
| U                                                             |  | V                                       |  | W                                                 |  | X                         |  | Y                      |  |
| V                                                             |  | W                                       |  | X                                                 |  | Y                         |  | Z                      |  |
| W                                                             |  | X                                       |  | Y                                                 |  | Z                         |  | aa                     |  |
| X                                                             |  | Y                                       |  | Z                                                 |  | aa                        |  | ab                     |  |
| Y                                                             |  | Z                                       |  | aa                                                |  | ab                        |  | ac                     |  |
| Z                                                             |  | aa                                      |  | ab                                                |  | ac                        |  | ad                     |  |
| aa                                                            |  | ab                                      |  | ac                                                |  | ad                        |  | ae                     |  |
| ab                                                            |  | ac                                      |  | ad                                                |  | ae                        |  | af                     |  |
| ac                                                            |  | ad                                      |  | ae                                                |  | af                        |  | ag                     |  |
| ad                                                            |  | ae                                      |  | af                                                |  | ag                        |  | ah                     |  |
| ae                                                            |  | af                                      |  | ag                                                |  | ah                        |  | ai                     |  |
| af                                                            |  | ag                                      |  | ah                                                |  | ai                        |  | aj                     |  |
| ag                                                            |  | ah                                      |  | ai                                                |  | aj                        |  | ak                     |  |
| ah                                                            |  | ai                                      |  | aj                                                |  | ak                        |  | al                     |  |
| ai                                                            |  | aj                                      |  | ak                                                |  | al                        |  | am                     |  |
| aj                                                            |  | ak                                      |  | al                                                |  | am                        |  | an                     |  |
| ak                                                            |  | al                                      |  | am                                                |  | an                        |  | ao                     |  |
| al                                                            |  | am                                      |  | an                                                |  | ao                        |  | ap                     |  |
| am                                                            |  | an                                      |  | ao                                                |  | ap                        |  | aq                     |  |
| an                                                            |  | ao                                      |  | ap                                                |  | aq                        |  | ar                     |  |
| ao                                                            |  | ap                                      |  | aq                                                |  | ar                        |  | as                     |  |
| ap                                                            |  | aq                                      |  | ar                                                |  | as                        |  | at                     |  |
| aq                                                            |  | ar                                      |  | as                                                |  | at                        |  | au                     |  |
| ar                                                            |  | as                                      |  | at                                                |  | au                        |  | av                     |  |
| as                                                            |  | at                                      |  | au                                                |  | av                        |  | aw                     |  |
| at                                                            |  | au                                      |  | av                                                |  | aw                        |  | ax                     |  |
| au                                                            |  | av                                      |  | aw                                                |  | ax                        |  | ay                     |  |
| av                                                            |  | aw                                      |  | ax                                                |  | ay                        |  | az                     |  |
| aw                                                            |  | ax                                      |  | ay                                                |  | az                        |  | ba                     |  |
| ax                                                            |  | ay                                      |  | az                                                |  | ba                        |  | bb                     |  |
| ay                                                            |  | az                                      |  | ba                                                |  | bb                        |  | bc                     |  |
| az                                                            |  | ba                                      |  | bb                                                |  | bc                        |  | bd                     |  |
| ba                                                            |  | bb                                      |  | bc                                                |  | bd                        |  | be                     |  |
| bb                                                            |  | bc                                      |  | bd                                                |  | be                        |  | bf                     |  |
| bc                                                            |  | bd                                      |  | be                                                |  | bf                        |  | bg                     |  |
| bd                                                            |  | be                                      |  | bf                                                |  | bg                        |  | bh                     |  |
| be                                                            |  | bf                                      |  | bg                                                |  | bh                        |  | bi                     |  |
| bf                                                            |  | bg                                      |  | bh                                                |  | bi                        |  | bj                     |  |
| bg                                                            |  | bh                                      |  | bi                                                |  | bj                        |  | bk                     |  |
| bh                                                            |  | bi                                      |  | bj                                                |  | bk                        |  | bl                     |  |
| bi                                                            |  | bj                                      |  | bk                                                |  | bl                        |  | bm                     |  |
| bj                                                            |  | bk                                      |  | bl                                                |  | bm                        |  | bn                     |  |
| bk                                                            |  | bl                                      |  | bm                                                |  | bn                        |  | bo                     |  |
| bl                                                            |  | bm                                      |  | bn                                                |  | bo                        |  | bp                     |  |
| bm                                                            |  | bn                                      |  | bo                                                |  | bp                        |  | bq                     |  |
| bn                                                            |  | bo                                      |  | bp                                                |  | bq                        |  | br                     |  |
| bo                                                            |  | bp                                      |  | bq                                                |  | br                        |  | bs                     |  |
| bp                                                            |  | bq                                      |  | br                                                |  | bs                        |  | bt                     |  |
| bq                                                            |  | br                                      |  | bs                                                |  | bt                        |  | bu                     |  |
| br                                                            |  | bs                                      |  | bt                                                |  | bu                        |  | bv                     |  |
| bs                                                            |  | bt                                      |  | bu                                                |  | bv                        |  | bw                     |  |
| bt                                                            |  | bu                                      |  | bv                                                |  | bw                        |  | bx                     |  |
| bu                                                            |  | bv                                      |  | bw                                                |  | bx                        |  | by                     |  |
| bv                                                            |  | bw                                      |  | bx                                                |  | by                        |  | bz                     |  |
| bw                                                            |  | bx                                      |  | by                                                |  | bz                        |  | ca                     |  |
| bx                                                            |  | by                                      |  | bz                                                |  | ca                        |  | cb                     |  |
| by                                                            |  | bz                                      |  | ca                                                |  | cb                        |  | cc                     |  |
| bz                                                            |  | ca                                      |  | cb                                                |  | cc                        |  | cd                     |  |
| ca                                                            |  | cb                                      |  | cc                                                |  | cd                        |  | ce                     |  |
| cb                                                            |  | cc                                      |  | cd                                                |  | ce                        |  | cf                     |  |
| cc                                                            |  | cd                                      |  | ce                                                |  | cf                        |  | cg                     |  |
| cd                                                            |  | ce                                      |  | cf                                                |  | cg                        |  | ch                     |  |
| ce                                                            |  | cf                                      |  | cg                                                |  | ch                        |  | ci                     |  |
| cf                                                            |  | cg                                      |  | ch                                                |  | ci                        |  | cj                     |  |
| cg                                                            |  | ch                                      |  | ci                                                |  | cj                        |  | ck                     |  |
| ch                                                            |  | ci                                      |  | cj                                                |  | ck                        |  | cl                     |  |
| ci                                                            |  | cj                                      |  | ck                                                |  | cl                        |  | cm                     |  |
| cj                                                            |  | ck                                      |  | cl                                                |  | cm                        |  | cn                     |  |
| ck                                                            |  | cl                                      |  | cm                                                |  | cn                        |  | co                     |  |
| cl                                                            |  | cm                                      |  | cn                                                |  | co                        |  | cp                     |  |
| cm                                                            |  | cn                                      |  | co                                                |  | cp                        |  | cq                     |  |
| cn                                                            |  | co                                      |  | cp                                                |  | cq                        |  | cr                     |  |
| co                                                            |  | cp                                      |  | cq                                                |  | cr                        |  | cs                     |  |
| cp                                                            |  | cq                                      |  | cr                                                |  | cs                        |  | ct                     |  |
| cq                                                            |  | cr                                      |  | cs                                                |  | ct                        |  | cu                     |  |
| cr                                                            |  | cs                                      |  | ct                                                |  | cu                        |  | cv                     |  |
| cs                                                            |  | ct                                      |  | cu                                                |  | cv                        |  | cw                     |  |
| ct                                                            |  | cu                                      |  | cv                                                |  | cw                        |  | cx                     |  |
| cu                                                            |  | cv                                      |  | cw                                                |  | cx                        |  | cy                     |  |
| cv                                                            |  | cw                                      |  | cx                                                |  | cy                        |  | cz                     |  |
| cw                                                            |  | cx                                      |  | cy                                                |  | cz                        |  | da                     |  |
| cx                                                            |  | cy                                      |  | cz                                                |  | da                        |  | db                     |  |
| cy                                                            |  | cz                                      |  | da                                                |  | db                        |  | dc                     |  |
| cz                                                            |  | da                                      |  | db                                                |  | dc                        |  | dd                     |  |
| da                                                            |  | db                                      |  | dc                                                |  | dd                        |  | de                     |  |
| db                                                            |  | dc                                      |  | dd                                                |  | de                        |  | df                     |  |
| dc                                                            |  | dd                                      |  | de                                                |  | df                        |  | dg                     |  |
| dd                                                            |  | de                                      |  | df                                                |  | dg                        |  | dh                     |  |
| de                                                            |  | df                                      |  | dg                                                |  | dh                        |  | di                     |  |
| df                                                            |  | dg                                      |  | dh                                                |  | di                        |  | dj                     |  |
| dg                                                            |  | dh                                      |  | di                                                |  | dj                        |  | dk                     |  |
| dh                                                            |  | di                                      |  | dj                                                |  | dk                        |  | dl                     |  |
| di                                                            |  | dj                                      |  | dk                                                |  | dl                        |  | dm                     |  |
| dj                                                            |  | dk                                      |  | dl                                                |  | dm                        |  | dn                     |  |
| dk                                                            |  | dl                                      |  | dm                                                |  | dn                        |  | do                     |  |
| dl                                                            |  | dm                                      |  | dn                                                |  | do                        |  | dp                     |  |
| dm                                                            |  | dn                                      |  | do                                                |  | dp                        |  | dq                     |  |
| dn                                                            |  | do                                      |  | dp                                                |  | dq                        |  | dr                     |  |
| do                                                            |  | dp                                      |  | dq                                                |  | dr                        |  | ds                     |  |
| dp                                                            |  | dq                                      |  | dr                                                |  | ds                        |  | dt                     |  |
| dq                                                            |  | dr                                      |  | ds                                                |  | dt                        |  | du                     |  |
| dr                                                            |  | ds                                      |  | dt                                                |  | du                        |  | dv                     |  |
| ds                                                            |  | dt                                      |  | du                                                |  | dv                        |  | dw                     |  |
| dt                                                            |  | du                                      |  | dv                                                |  | dw                        |  | dx                     |  |
| du                                                            |  | dv                                      |  | dw                                                |  | dx                        |  | dy                     |  |
| dv                                                            |  | dw                                      |  | dx                                                |  | dy                        |  | dz                     |  |
| dw                                                            |  | dx                                      |  | dy                                                |  | dz                        |  | ea                     |  |
| dx                                                            |  | dy                                      |  | dz                                                |  | ea                        |  | eb                     |  |
| dy                                                            |  | dz                                      |  | ea                                                |  | eb                        |  | ec                     |  |
| dz                                                            |  | ea                                      |  | eb                                                |  | ec                        |  | ed                     |  |
| ea                                                            |  | eb                                      |  | ec                                                |  | ed                        |  | ee                     |  |
| eb                                                            |  | ec                                      |  | ed                                                |  | ee                        |  | ef                     |  |
| ec                                                            |  | ed                                      |  | ee                                                |  | ef                        |  | eg                     |  |
| ed                                                            |  | ee                                      |  | ef                                                |  | eg                        |  | eh                     |  |
| ee                                                            |  | ef                                      |  | eg                                                |  | eh                        |  | ei                     |  |
| ef                                                            |  | eg                                      |  | eh                                                |  | ei                        |  | ej                     |  |
| eg                                                            |  | eh                                      |  | ei                                                |  | ej                        |  | ek                     |  |
| eh                                                            |  | ei                                      |  | ej                                                |  | ek                        |  | el                     |  |
| ei                                                            |  | ej                                      |  | ek                                                |  | el                        |  | em                     |  |
| ej                                                            |  | ek                                      |  | el                                                |  | em                        |  | en                     |  |
| ek                                                            |  | el                                      |  | em                                                |  | en                        |  | eo                     |  |
| el                                                            |  | em                                      |  | en                                                |  | eo                        |  | ep                     |  |
| em                                                            |  | en                                      |  | eo                                                |  | ep                        |  | eq                     |  |
| en                                                            |  | eo                                      |  | ep                                                |  | eq                        |  | er                     |  |
| eo                                                            |  | ep                                      |  | eq                                                |  | er                        |  | es                     |  |
| ep                                                            |  | eq                                      |  | er                                                |  | es                        |  | et                     |  |
| eq                                                            |  | er                                      |  | es                                                |  | et                        |  | eu                     |  |
| er                                                            |  | es                                      |  | et                                                |  | eu                        |  | ev                     |  |
| es                                                            |  | et                                      |  | eu                                                |  | ev                        |  | ew                     |  |
| et                                                            |  | eu                                      |  | ev                                                |  | ew                        |  | ex                     |  |
| eu                                                            |  | ev                                      |  | ew                                                |  | ex                        |  | ey                     |  |
| ev                                                            |  | ew                                      |  | ex                                                |  | ey                        |  | ez                     |  |
| ew                                                            |  | ex                                      |  | ey                                                |  | ez                        |  | fa                     |  |
| ex                                                            |  | ey                                      |  | ez                                                |  | fa                        |  | fb                     |  |
| ey                                                            |  | ez                                      |  | fa                                                |  | fb                        |  | fc                     |  |
| ez                                                            |  | fa                                      |  | fb                                                |  | fc                        |  | fd                     |  |
| fa                                                            |  | fb                                      |  | fc                                                |  | fd                        |  | fe                     |  |
| fb                                                            |  | fc                                      |  | fd                                                |  | fe                        |  | ff                     |  |
| fc                                                            |  | fd                                      |  | fe                                                |  | ff                        |  | fg                     |  |
| fd                                                            |  | fe                                      |  | ff                                                |  | fg                        |  | fh                     |  |
| fe                                                            |  | ff                                      |  | fg                                                |  | fh                        |  | fi                     |  |
| ff                                                            |  | fg                                      |  | fh                                                |  | fi                        |  | fj                     |  |
| fg                                                            |  | fh                                      |  | fi                                                |  | fj                        |  | fk                     |  |
| fh                                                            |  | fi                                      |  | fj                                                |  | fk                        |  | fl                     |  |
| fi                                                            |  | fj                                      |  | fk                                                |  | fl                        |  | fm                     |  |
| fj                                                            |  | fk                                      |  | fl                                                |  | fm                        |  | fn                     |  |
| fk                                                            |  | fl                                      |  | fm                                                |  | fn                        |  | fo                     |  |
| fl                                                            |  | fm                                      |  | fn                                                |  | fo                        |  | fp                     |  |
| fm                                                            |  | fn                                      |  | fo                                                |  | fp                        |  | fq                     |  |
| fn                                                            |  | fo                                      |  | fp                                                |  | fq                        |  | fr                     |  |
| fo                                                            |  | fp                                      |  | fq                                                |  | fr                        |  | fs                     |  |
| fp                                                            |  | fq                                      |  | fr                                                |  | fs                        |  | ft                     |  |
| fq                                                            |  | fr                                      |  | fs                                                |  | ft                        |  | fu                     |  |
| fr                                                            |  | fs                                      |  | ft                                                |  | fu                        |  | fv                     |  |
| fs                                                            |  | ft                                      |  | fu                                                |  | fv                        |  | fw                     |  |
| ft                                                            |  | fu                                      |  | fv                                                |  | fw                        |  | fx                     |  |
| fu                                                            |  | fv                                      |  | fw                                                |  | fx                        |  | fy                     |  |
| fv                                                            |  | fw                                      |  | fx                                                |  | fy                        |  | fz                     |  |
| fw                                                            |  | fx                                      |  | fy                                                |  | fz                        |  | ga                     |  |
| fx                                                            |  | fy                                      |  | fz                                                |  | ga                        |  | gb                     |  |
| fy                                                            |  | fz                                      |  | ga                                                |  | gb                        |  | gc                     |  |
| fz                                                            |  | ga                                      |  | gb                                                |  | gc                        |  | gd                     |  |
| ga                                                            |  | gb                                      |  | gc                                                |  | gd                        |  | ge                     |  |
| gb                                                            |  | gc                                      |  | gd                                                |  | ge                        |  | gf                     |  |
| gc                                                            |  | gd                                      |  | ge                                                |  | gf</                      |  |                        |  |



|                                     |  |                                                          |  |                                                  |  |                                                |  |
|-------------------------------------|--|----------------------------------------------------------|--|--------------------------------------------------|--|------------------------------------------------|--|
| <b>AIR LIQUIDE</b>                  |  | <b>Durchstrahlungsprüfung - Radiographic Examination</b> |  | Bericht/ Report: <b>357</b>                      |  | Prüfdatum: <b>16.12.2005</b>                   |  |
| Kennwort: <b>ASU No.9 Kosice</b>    |  | Zeichnungsnummer/ISO-Nr.: <b>NL 71202</b>                |  | Seite: <b>2</b> von <b>xxx</b>                   |  | Baufeld Nr.: <b>xxx</b>                        |  |
| Benennung: <b>Coldbox</b>           |  | Serial/Order No.: <b>K 70101</b>                         |  | Sheet: <b>141</b> of <b>82</b>                   |  | Constr area No.: <b>Nahtform BW</b>            |  |
| Description: <b>ohne/ without</b>   |  | Bauteil/Verbindung: <b>pipe</b>                          |  | Schweißverfahren DIN 24063: <b>AI Mg 4,5Mn</b>   |  | Weld type: <b>DIN EN 30042</b>                 |  |
| Wärmebehandlung: <b>vor/ before</b> |  | Part/Joint: <b>13</b>                                    |  | Welding process to DIN 24063: <b>AI Mg 4,5Mn</b> |  | Quality level acc. to DIN EN 12517/1: <b>A</b> |  |
| Heat treatment: <b>nach/ after</b>  |  | Schweißnahtnummer: <b>13</b>                             |  | Werkstoff/ Material A: <b>AI Mg 4,5Mn</b>        |  | Quality level acc. to DIN EN 12517/1: <b>B</b> |  |
| Oberflächenzustand <b>Clean</b>     |  | Prüfumfang: <b>50 %</b>                                  |  | Werkstoff/ Material B: <b>AI Mg 4,5Mn</b>        |  | Quality level acc. to DIN EN 12517/1: <b>C</b> |  |
| Surface quality: <b>mm</b>          |  | Extent of examination: <b>50 %</b>                       |  | Abmessung/Dimension A: <b>60,3x3,9</b>           |  | Abmessung/Dimension B: <b>mm</b>               |  |

**Angaben zur Prüfung/ Data of examination**

|                                                                                              |                                                                                                                          |                                               |                                   |
|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-----------------------------------|
| Prüfklasse gem. DIN EN 1435 <input type="checkbox"/> A <input checked="" type="checkbox"/> B | Zulässigkeitsgrenzen gem. DIN EN 12 517 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 | Aufnahmeanordnung nach DIN EN 1435: <b>11</b> |                                   |
| Test class acc. to EN 1435 <input type="checkbox"/> A <input checked="" type="checkbox"/> B  | Acceptance level acc. to EN 12 517 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3      | Test arrangement acc. EN 1435                 |                                   |
| Strahlungsquelle: <b>Selen 75</b>                                                            | Brennfleckgr./Strahlenquellengr.: <b>3x3</b>                                                                             | Filmsorte: <b>Agfa</b>                        | Filmklasse: <b>C 2</b>            |
| Source of radiation: <b>Selen 75</b>                                                         | Focal Spot/Source Size: <b>3x3</b>                                                                                       | Film type: <b>0,02 mm</b>                     | Film system class: <b>10 x 24</b> |
| Aktivität: <b>40 ci</b>                                                                      | Röhreneinstellung: <b>13</b>                                                                                             | Belichtungszeit: <b>45 s</b>                  | Filmgröße: <b>10 x 24</b>         |
| Activity: <b>40 ci</b>                                                                       | Tube voltage/current: <b>13 (KV)</b>                                                                                     | Exposure time: <b>45 s</b>                    | Film size: <b>mm</b>              |

**Prüfergebnis/ Test data**

| Bildgüteprüfkörper/ Image quality indicator (IQ 10A1EN461-2) | Schweißnahtnummer/ Film-nr. | Weld No. | Film No. | ☆ | Lage/ Position: <input checked="" type="checkbox"/> Filmmat./ close to film <input type="checkbox"/> Filmmat./ far from film |      |      |     |     |     |     |      |     |     |     |     | Bemerkung/ Comments (from - to) |                               |                     |                                |  |
|--------------------------------------------------------------|-----------------------------|----------|----------|---|------------------------------------------------------------------------------------------------------------------------------|------|------|-----|-----|-----|-----|------|-----|-----|-----|-----|---------------------------------|-------------------------------|---------------------|--------------------------------|--|
|                                                              |                             |          |          |   | 2011                                                                                                                         | 2016 | 2013 | 301 | 401 | 402 | 501 | 5013 | 515 | 504 | 100 | 304 |                                 | 5011                          | 5012                |                                |  |
| A                                                            | B                           |          |          |   | Aa                                                                                                                           | Ab   | Ad   | Ba  | C   | D   | Da  | Db   | Dc  | E   | H   | F   | Filmfehler/ Film defect (FF)    | Bildgüte/ Image quality (IQI) | Schwärzung/ Density | Befund/ Findings a (e) na (ne) |  |
|                                                              |                             |          |          |   |                                                                                                                              |      |      |     |     |     |     |      |     |     |     |     |                                 |                               |                     |                                |  |
|                                                              |                             |          |          |   |                                                                                                                              |      |      |     |     |     |     |      |     |     |     |     |                                 |                               |                     |                                |  |
|                                                              |                             |          |          |   |                                                                                                                              |      |      |     |     |     |     |      |     |     |     |     |                                 |                               |                     |                                |  |
|                                                              |                             |          |          |   |                                                                                                                              |      |      |     |     |     |     |      |     |     |     |     |                                 |                               |                     |                                |  |
|                                                              |                             |          |          |   |                                                                                                                              |      |      |     |     |     |     |      |     |     |     |     |                                 |                               |                     |                                |  |
|                                                              |                             |          |          |   |                                                                                                                              |      |      |     |     |     |     |      |     |     |     |     |                                 |                               |                     |                                |  |
|                                                              |                             |          |          |   |                                                                                                                              |      |      |     |     |     |     |      |     |     |     |     |                                 |                               |                     |                                |  |
|                                                              |                             |          |          |   |                                                                                                                              |      |      |     |     |     |     |      |     |     |     |     |                                 |                               |                     |                                |  |

**Definition- Erklärung der Bewertung/ Definition- Legend**

Aa = Pore/ Gas pore      Ab = Schlauchpore/Wurmhole      Ad = Porennet/Porosity      Ba = Schlackeneinschl./ Slag inclusion      C = Bindefehler/Lack of fusion  
 D = ung. Durchschw./Lack of penetration      Da = Wurzelkerbe/Root notch      Db = Wurzelrückfall/Root reinforcement      Dc = Wurzeldurchhang/Excessive penetration      E = Riß/Crack  
 H = metallischer Einschluss/Metallic inclusion      F = Einbrand/Undercut

☒ Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled

☐ Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled

☐ toleriert/ tolerated

## ☆ Additional Marking

R1; R2      erste und zweite Rep./first and second Rep.  
 N      neu nach Rep./ cut and reweld  
 F      Folgeprüfung/ Tracer shot  
 G      Garantienahme/ RT instead of Pressure Test  
 K      Kontrollschuß/ Control Shot  
 I      I-Stoß/ I-Joint

Testing Contractor/Name of Examiner

Air Liquide

E.H.R.

16.12.05

Kielholz

Date      Name      Signature

Date

Name

Signature

TÜV

Date

Name

Signature



|                                                                                                                                                                                      |                                                     |                                                              |  |                                                      |                                                                                    |                                                                                                   |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|--------------------------------------------------------------|--|------------------------------------------------------|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|--|
|                                                                                                   |                                                     | <b>Durchstrahlungsprüfung - Radiographic Examination</b>     |  | Bericht/ Report: <b>358</b>                          |                                                                                    | Prüfdatum: <b>16.12.2005</b><br>Date of Exam.:                                                    |  |
| Kennwort:<br>Job Name: <b>ASU No.9 Kosice</b>                                                                                                                                        | Auftragsnummer:<br>Serial/Order No.: <b>K 70101</b> | Zeichnungsnummer/ISO-Nr.: <b>NL 71202</b>                    |  | Seite: <b>2</b> von                                  | Baufeld Nr.: <b>xxx</b>                                                            |                                                                                                   |  |
| Benennung:<br>Discription: <b>Coldbox</b>                                                                                                                                            | Bauteil/Verbindung:<br>Part/Join: <b>pipe</b>       | Drawing No./ISO No.: <b>82</b>                               |  | Sheet:                                               | Constr area No.:                                                                   |                                                                                                   |  |
| Wärmebehandlung: <input checked="" type="checkbox"/> <b>ohne/ without</b><br>Heat treatment: <input type="checkbox"/> <b>vor/ before</b> <input type="checkbox"/> <b>nach/ after</b> | Schweißnahtnummer:<br>Weld- No.: <b>11</b>          | Schweißverfahren DIN 24063:<br>Welding process to DIN 24063: |  | 141 Schweißer:<br>Welder:                            | Nahtform BW<br>Weld type:                                                          | <input type="checkbox"/> A<br><input checked="" type="checkbox"/> B<br><input type="checkbox"/> C |  |
| Oberflächenzustand <b>Clean</b>                                                                                                                                                      | Prüfumfang:<br>Extent of examination: <b>50 %</b>   | Werkstoff/ Material A:<br>Werkstoff/ Material B:             |  | Bewertung n.DIN EN 5817<br>Quality level acc. to -/- | <input type="checkbox"/> DIN EN 30042<br><input type="checkbox"/> (DIN EN 12517/1) |                                                                                                   |  |
|                                                                                                                                                                                      |                                                     | Abmessung/Dimension A:<br>Abmessung/Dimension B:             |  | <b>60,3x3,9</b>                                      |                                                                                    | mm                                                                                                |  |

**Angaben zur Prüfung/ Data of examination**

|                                                                                                 |  |                                                                               |  |                                                |  |                                                |  |
|-------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------|--|------------------------------------------------|--|------------------------------------------------|--|
| Prüfklasse gem. DIN EN 1435<br><input type="checkbox"/> A <input checked="" type="checkbox"/> B |  | Zulässigkeitsgrenzen gem. DIN EN 12 517<br>Acceptance level acc. to EN 12 517 |  | Brennfleckgr./Strahlenquellenläng.: <b>3x3</b> |  | Filmklasse:<br>Film system class:              |  |
| Test class acc. to EN 1435                                                                      |  | Strahlungsquelle:                                                             |  | Agfa                                           |  | C 2                                            |  |
| Source of radiation: <b>Selen 75</b>                                                            |  | Focal Spot/Source Size:                                                       |  | Filmlänge:                                     |  | Film size:                                     |  |
| Aktivität:<br>Activity: 40 ci                                                                   |  | Röhreneinstellung:<br>Tube voltage/current: (KV)                              |  | Foliendicke:<br>Screen thickness: 0,02 mm      |  | Belichtungszeit:<br>Exposure time: <b>45 s</b> |  |
| Aktivität:<br>Activity: 40 ci                                                                   |  | Foliendicke:<br>Screen thickness: 0,02 mm                                     |  | Filmlänge:                                     |  | Film size:                                     |  |

## Prüfergebnis/ Test data

[illegible]

## Definition- Erklärung der Bewertung/ Definition- Legend

| Definition-Erklärung der Bewertung/ Definition- Legend |                                    |                                                   |
|--------------------------------------------------------|------------------------------------|---------------------------------------------------|
| <b>Aa</b> = Pore/ Gas pore                             | <b>Ab</b> = Schlauchpore/Wurmhole  | <b>Ad</b> = Porennest/Porosity                    |
| <b>D</b> = ung. Durchschw./Lack of penetration         | <b>Da</b> = Wurzelkerbe/Root notch | <b>Db</b> = Wurzelrückfall/Root reinforcement     |
| <b>H</b> = metallischer Einschuß/Metallic inclusion    |                                    | <b>Ba</b> = Schlackeneinschl./ Slag inclusion     |
|                                                        |                                    | <b>C</b> = Bindefehler/Lack of fusion             |
|                                                        |                                    | <b>Dc</b> = Wurzeldurchhang/Excessive penetration |
|                                                        |                                    | <b>E</b> = Riß/Crack                              |
|                                                        |                                    | <b>F</b> = Einbrand/Undercut                      |

|                                                                                                                                         | ☆ Additional Marking |
|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| <input checked="" type="checkbox"/> Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled  | R1; R2               |
| <input type="checkbox"/> Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled | N                    |
| <input type="checkbox"/> toleriert/ tolerated                                                                                           | F                    |
|                                                                                                                                         | G                    |
|                                                                                                                                         | K                    |
|                                                                                                                                         | I                    |

**Testing Contractor/Name of Examiner**

## Air Liquide

E.H.R.

ielholz

Tiiiv

Date \_\_\_\_\_ Name \_\_\_\_\_ Signature \_\_\_\_\_

| Date | Name | Signature |
|------|------|-----------|
|------|------|-----------|

Name

Signature

Date \_\_\_\_\_ Name \_\_\_\_\_

**Signature**

16-12-2006

Name: Laurey  
Signature: BAdN

Signature \_\_\_\_\_

Date \_\_\_\_\_ Name \_\_\_\_\_

**Signature**

|                                                                                                                                           |                                                     |                                                                     |                                                                  |                                                                                                                                                 |                                                                                                   |                                                |
|-------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|---------------------------------------------------------------------|------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|------------------------------------------------|
|                                                        |                                                     | <b>Durchstrahlungsprüfung- Radiographic Examination</b>             |                                                                  |                                                                                                                                                 | Bericht/ Report: <b>359</b>                                                                       | Prüfdatum: <b>16.12.2005</b><br>Date of Exam.: |
| Kennwort:<br>Job Name: <b>ASU No.9 Kosice</b>                                                                                             | Auftragsnummer:<br>Serial/Order No.: <b>K 70101</b> | Zeichnungsnummer/ISO-Nr.: <b>NL 71202</b>                           |                                                                  | Seite: <b>3</b> von<br>Sheet: of                                                                                                                | Baufeld Nr.: xxx<br>Constr area No.:                                                              |                                                |
| Benennung:<br>Discription: <b>Coldbox</b>                                                                                                 | Bauteil/Verbindung: pipe<br>Part/Joint:             | Drawing No./ISO No.:<br>141                                         | Schweißer:<br>Welder:                                            | Schweißverfahren DIN 24063:<br>Welding process to DIN 24063:                                                                                    | Nahtform BW<br>Weld type:                                                                         |                                                |
| Wärmebehandlung: <input checked="" type="checkbox"/> ohne/ without<br>vor/ before<br>Heat treatment: <input type="checkbox"/> nach/ after | Schweißnahtnummer:<br>Weld- No.: <b>21</b>          | Werkstoff/ Material A: <b>Al Mg 4,5Mn</b><br>Werkstoff/ Material B: |                                                                  | Bewertung n.DIN EN 5817 <input type="checkbox"/> DIN EN 30042 <input checked="" type="checkbox"/><br>Quality level acc. to -/- (DIN EN 12517/1) | <input type="checkbox"/> A<br><input checked="" type="checkbox"/> B<br><input type="checkbox"/> C |                                                |
| Oberflächenzustand Clean<br>Surface quality:                                                                                              | Prüfmfang:<br>Extent of examination:                | 50 %                                                                | Abmessung/Dimension A: <b>60,3x3,9</b><br>Abmessung/Dimension B: |                                                                                                                                                 | mm                                                                                                |                                                |

**Angaben zur Prüfung/ Data of examination**

|                                                                                              |  |                                              |  |                                                         |  |                                                                       |  |                    |  |
|----------------------------------------------------------------------------------------------|--|----------------------------------------------|--|---------------------------------------------------------|--|-----------------------------------------------------------------------|--|--------------------|--|
| <b>Angaben zur Prüfung/ Data of examination</b>                                              |  |                                              |  |                                                         |  |                                                                       |  |                    |  |
| Prüfklasse gem. DIN EN 1435 <input type="checkbox"/> A <input checked="" type="checkbox"/> B |  | Zulässigkeitsgrenzen gem. DIN EN 12 517      |  | 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 |  | Aufnahmeanordnung nach DIN EN 1435 :<br>Test arrangement acc. EN 1435 |  |                    |  |
| Test class acc. to EN 1435                                                                   |  | Acceptance level acc. to EN 12 517           |  |                                                         |  | 11                                                                    |  |                    |  |
| Strahlungsquelle:                                                                            |  | Brennfleckgr./Strahlenquellengr.: <b>3x3</b> |  | b (mm)                                                  |  | Filmsorte:                                                            |  | Filmklasse:        |  |
| Source of radiation: <b>Selen 75</b>                                                         |  | Focal Spot/Source Size:                      |  | f 200                                                   |  | Film type:                                                            |  | Film system class: |  |
| Aktivität:                                                                                   |  | Folienart:                                   |  | Pb                                                      |  | Belichtungszeit:                                                      |  | Filmgröße:         |  |
| Activity: 40 ci                                                                              |  | Röhreneinstellung:                           |  | (mA)                                                    |  | Exposure time:                                                        |  | Film size:         |  |
|                                                                                              |  | Tube voltage/current:                        |  | (kV)                                                    |  | Screen thickness:                                                     |  | 0,02 mm            |  |
|                                                                                              |  |                                              |  |                                                         |  |                                                                       |  | <b>45 s</b>        |  |
|                                                                                              |  |                                              |  |                                                         |  |                                                                       |  | <b>10 x 24</b>     |  |

| Prüfergebnis/ Test data            | Prüfungstermin/ Test date            |
|------------------------------------|--------------------------------------|
| 1. Prüfungstermin/ 1st test date   | 2. Prüfungstermin/ 2nd test date     |
| 3. Prüfungstermin/ 3rd test date   | 4. Prüfungstermin/ 4th test date     |
| 5. Prüfungstermin/ 5th test date   | 6. Prüfungstermin/ 6th test date     |
| 7. Prüfungstermin/ 7th test date   | 8. Prüfungstermin/ 8th test date     |
| 9. Prüfungstermin/ 9th test date   | 10. Prüfungstermin/ 10th test date   |
| 11. Prüfungstermin/ 11th test date | 12. Prüfungstermin/ 12th test date   |
| 13. Prüfungstermin/ 13th test date | 14. Prüfungstermin/ 14th test date   |
| 15. Prüfungstermin/ 15th test date | 16. Prüfungstermin/ 16th test date   |
| 17. Prüfungstermin/ 17th test date | 18. Prüfungstermin/ 18th test date   |
| 19. Prüfungstermin/ 19th test date | 20. Prüfungstermin/ 20th test date   |
| 21. Prüfungstermin/ 21st test date | 22. Prüfungstermin/ 22nd test date   |
| 23. Prüfungstermin/ 23rd test date | 24. Prüfungstermin/ 24th test date   |
| 25. Prüfungstermin/ 25th test date | 26. Prüfungstermin/ 26th test date   |
| 27. Prüfungstermin/ 27th test date | 28. Prüfungstermin/ 28th test date   |
| 29. Prüfungstermin/ 29th test date | 30. Prüfungstermin/ 30th test date   |
| 31. Prüfungstermin/ 31st test date | 32. Prüfungstermin/ 32nd test date   |
| 33. Prüfungstermin/ 33rd test date | 34. Prüfungstermin/ 34th test date   |
| 35. Prüfungstermin/ 35th test date | 36. Prüfungstermin/ 36th test date   |
| 37. Prüfungstermin/ 37th test date | 38. Prüfungstermin/ 38th test date   |
| 39. Prüfungstermin/ 39th test date | 40. Prüfungstermin/ 40th test date   |
| 41. Prüfungstermin/ 41st test date | 42. Prüfungstermin/ 42nd test date   |
| 43. Prüfungstermin/ 43rd test date | 44. Prüfungstermin/ 44th test date   |
| 45. Prüfungstermin/ 45th test date | 46. Prüfungstermin/ 46th test date   |
| 47. Prüfungstermin/ 47th test date | 48. Prüfungstermin/ 48th test date   |
| 49. Prüfungstermin/ 49th test date | 50. Prüfungstermin/ 50th test date   |
| 51. Prüfungstermin/ 51st test date | 52. Prüfungstermin/ 52nd test date   |
| 53. Prüfungstermin/ 53rd test date | 54. Prüfungstermin/ 54th test date   |
| 55. Prüfungstermin/ 55th test date | 56. Prüfungstermin/ 56th test date   |
| 57. Prüfungstermin/ 57th test date | 58. Prüfungstermin/ 58th test date   |
| 59. Prüfungstermin/ 59th test date | 60. Prüfungstermin/ 60th test date   |
| 61. Prüfungstermin/ 61st test date | 62. Prüfungstermin/ 62nd test date   |
| 63. Prüfungstermin/ 63rd test date | 64. Prüfungstermin/ 64th test date   |
| 65. Prüfungstermin/ 65th test date | 66. Prüfungstermin/ 66th test date   |
| 67. Prüfungstermin/ 67th test date | 68. Prüfungstermin/ 68th test date   |
| 69. Prüfungstermin/ 69th test date | 70. Prüfungstermin/ 70th test date   |
| 71. Prüfungstermin/ 71st test date | 72. Prüfungstermin/ 72nd test date   |
| 73. Prüfungstermin/ 73rd test date | 74. Prüfungstermin/ 74th test date   |
| 75. Prüfungstermin/ 75th test date | 76. Prüfungstermin/ 76th test date   |
| 77. Prüfungstermin/ 77th test date | 78. Prüfungstermin/ 78th test date   |
| 79. Prüfungstermin/ 79th test date | 80. Prüfungstermin/ 80th test date   |
| 81. Prüfungstermin/ 81st test date | 82. Prüfungstermin/ 82nd test date   |
| 83. Prüfungstermin/ 83rd test date | 84. Prüfungstermin/ 84th test date   |
| 85. Prüfungstermin/ 85th test date | 86. Prüfungstermin/ 86th test date   |
| 87. Prüfungstermin/ 87th test date | 88. Prüfungstermin/ 88th test date   |
| 89. Prüfungstermin/ 89th test date | 90. Prüfungstermin/ 90th test date   |
| 91. Prüfungstermin/ 91st test date | 92. Prüfungstermin/ 92nd test date   |
| 93. Prüfungstermin/ 93rd test date | 94. Prüfungstermin/ 94th test date   |
| 95. Prüfungstermin/ 95th test date | 96. Prüfungstermin/ 96th test date   |
| 97. Prüfungstermin/ 97th test date | 98. Prüfungstermin/ 98th test date   |
| 99. Prüfungstermin/ 99th test date | 100. Prüfungstermin/ 100th test date |

[illegible]

Definition- Erklärung der Bewertung/ Definition- Legend

Definition- Erklärung der Bewertung/ Definition- Legend

|                                                     |                                    |                                               |                                                   |                                       |
|-----------------------------------------------------|------------------------------------|-----------------------------------------------|---------------------------------------------------|---------------------------------------|
| <b>Aa</b> = Pore/ Gas pore                          | <b>Ab</b> = Schlauchpore/Wurmhole  | <b>Ad</b> = Porennest/ Porosity               | <b>Ba</b> = Schlackeneinschl./ Slag inclusion     | <b>C</b> = Bindefehler/Lack of fusion |
| <b>D</b> = ung. Durchschw./Lack of penetration      | <b>Da</b> = Wurzelkerbe/Root notch | <b>Db</b> = Wurzelrückfall/Root reinforcement | <b>Dc</b> = Wurzeldurchhang/Excessive penetration | <b>E</b> = Riß/Crack                  |
| <b>H</b> = metallischer Einschuß/Metallic inclusion | <b>F</b> = Einbrand/Undercut       |                                               |                                                   |                                       |

| <div> <div></div> <div>Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled</div> </div> | <div> <div></div> <div>Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled</div> </div> | <div> <div></div> <div>toleriert/ tolerated</div> </div> | <div> <div>☆</div> <div>Additional Marking</div> </div>                           |
|----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                                                                                                                        |                                                                                                                                                    |                                                          | R1; R2<br>N                                                                       |
|                                                                                                                                        |                                                                                                                                                    |                                                          | F<br>erste und zweite Rep./first and second Rep.<br>neu nach Rep./ cut and reweld |
|                                                                                                                                        |                                                                                                                                                    |                                                          | G<br>Folgeprüfung/ Tracer shot                                                    |
|                                                                                                                                        |                                                                                                                                                    |                                                          | K<br>Garantienant/ RT instead of Pressure Test                                    |
|                                                                                                                                        |                                                                                                                                                    |                                                          | I<br>Kontrollschuß/ Control Shot                                                  |
|                                                                                                                                        |                                                                                                                                                    |                                                          | I - Stols/ I - Joint                                                              |

**Testing Contractor/Name of Examiner**

## Air Liquide

E.H.R  
16.12.0

ielholz

**TÜV**

| Date     | Name             |
|----------|------------------|
| 11/11/11 | John Doe         |
| 11/12/11 | Jane Smith       |
| 11/13/11 | Bob Johnson      |
| 11/14/11 | Alice Brown      |
| 11/15/11 | Charlie Davis    |
| 11/16/11 | Eve White        |
| 11/17/11 | Frank Green      |
| 11/18/11 | Grace Black      |
| 11/19/11 | Henry Gold       |
| 11/20/11 | Ivy Silver       |
| 11/21/11 | Jack Copper      |
| 11/22/11 | Karen Nickel     |
| 11/23/11 | Leo Zinc         |
| 11/24/11 | Mia Iron         |
| 11/25/11 | Noah Lead        |
| 11/26/11 | Olivia Tin       |
| 11/27/11 | Peter Platinum   |
| 11/28/11 | Quinn Silver     |
| 11/29/11 | Sam Gold         |
| 11/30/11 | Tina Copper      |
| 12/01/11 | Tom Nickel       |
| 12/02/11 | Uma Zinc         |
| 12/03/11 | Victor Iron      |
| 12/04/11 | Wendy Lead       |
| 12/05/11 | Xavier Tin       |
| 12/06/11 | Yara Platinum    |
| 12/07/11 | Zoe Silver       |
| 12/08/11 | Adam Gold        |
| 12/09/11 | Bella Copper     |
| 12/10/11 | Benjamin Nickel  |
| 12/11/11 | Chloe Zinc       |
| 12/12/11 | Daniel Iron      |
| 12/13/11 | Emily Lead       |
| 12/14/11 | Frederick Tin    |
| 12/15/11 | Georgia Platinum |
| 12/16/11 | Harry Silver     |
| 12/17/11 | Iris Gold        |
| 12/18/11 | Jack Copper      |
| 12/19/11 | Karen Nickel     |
| 12/20/11 | Leo Zinc         |
| 12/21/11 | Mia Iron         |
| 12/22/11 | Noah Lead        |
| 12/23/11 | Olivia Tin       |
| 12/24/11 | Peter Platinum   |
| 12/25/11 | Quinn Silver     |
| 12/26/11 | Sam Gold         |
| 12/27/11 | Tina Copper      |
| 12/28/11 | Tom Nickel       |
| 12/29/11 | Uma Zinc         |
| 12/30/11 | Victor Iron      |
| 12/31/11 | Wendy Lead       |

Name \_\_\_\_\_ Signature \_\_\_\_\_

Date \_\_\_\_\_ Name \_\_\_\_\_

**Signature**

Name

**Signature**

Name \_\_\_\_\_

Signature

16.12.2005 1917

Lawrence Rabin

|                                                         |  |                                      |  |                                                         |  |                                                                                        |  |                             |  |                              |  |
|---------------------------------------------------------|--|--------------------------------------|--|---------------------------------------------------------|--|----------------------------------------------------------------------------------------|--|-----------------------------|--|------------------------------|--|
| <b>AIR LIQUIDE</b>                                      |  |                                      |  | <b>Durchstrahlungsprüfung- Radiographic Examination</b> |  |                                                                                        |  | Bericht/ Report: <b>360</b> |  | Prüfdatum: <b>16.12.2005</b> |  |
| Kennwort:                                               |  | Auftragsnummer:                      |  | Zeichnungsnummer/ISO-Nr.: <b>NL 71102</b>               |  | Seite: <b>1</b> von <b>xxx</b>                                                         |  | Baufeld Nr.: <b>xxx</b>     |  | Date of Exam.:               |  |
| Job Name: <b>ASU No.9 Kosice</b>                        |  | Serial/Order No.: <b>K 70101</b>     |  | Drawing No./ISO No.:                                    |  | Sheet: <b>141</b> of <b>82</b>                                                         |  | Constr area No.:            |  |                              |  |
| Benennung:                                              |  | Bauteil/Verbindung: <b>pipe</b>      |  | Schweißverfahren DIN 24063:                             |  | Schweißer: <b>82</b>                                                                   |  | Nahtform BW                 |  |                              |  |
| Description: <b>Coldbox</b>                             |  | Part/Joint:                          |  | Welding process to DIN 24063:                           |  | Welder:                                                                                |  | Weld type:                  |  |                              |  |
| Wärmebehandlung: <input type="checkbox"/> ohne/ without |  | Schweißnahtnummer:                   |  | Werkstoff/ Material A: <b>Al Mg 4,5Mn</b>               |  | Bewertung n.DIN EN 5817 <input type="checkbox"/> DIN EN 30042 <input type="checkbox"/> |  | Weld type:                  |  | <input type="checkbox"/> A   |  |
| Heat treatment: <input type="checkbox"/> vor/ before    |  | Weld- No.: <b>2</b>                  |  | Werkstoff/ Material B:                                  |  | Quality level acc. to -/-                                                              |  | (DIN EN 12517/1)            |  | <input type="checkbox"/> B   |  |
|                                                         |  | <input type="checkbox"/> nach/ after |  |                                                         |  |                                                                                        |  |                             |  | <input type="checkbox"/> C   |  |
| Oberflächenzustand <b>Clean</b>                         |  | Prüfumfang: <b>50 %</b>              |  | Abmessung/Dimension A: <b>60,3x3,9</b>                  |  |                                                                                        |  |                             |  | mm                           |  |
| Surface quality:                                        |  | Extent of examination:               |  | Abmessung/Dimension B:                                  |  |                                                                                        |  |                             |  |                              |  |

**Angaben zur Prüfung/ Data of examination**

|                                                                                              |                                                                                                                          |                                                |                           |
|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|---------------------------|
| Prüfklasse gem. DIN EN 1435 <input type="checkbox"/> A <input checked="" type="checkbox"/> B | Zulässigkeitsgrenzen gem. DIN EN 12 517 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 | Aufnahmeanordnung nach DIN EN 1435 : <b>11</b> |                           |
| Test class acc. to EN 1435                                                                   | Acceptance level acc. to EN 12 517                                                                                       | Test arrangement acc. EN 1435                  |                           |
| Strahlungsquelle: <b>Selen 75</b>                                                            | Brennleackgr./Strahlenquellengr.: <b>3x3</b>                                                                             | Filmsorte: <b>Agfa</b>                         | Filmklasse: <b>C 2</b>    |
| Source of radiation:                                                                         | Focal Spot/Source Size:                                                                                                  | Film type:                                     | Film system class:        |
| Aktivität: <b>40 ci</b>                                                                      | Röhreneinstellung:                                                                                                       | Belichtungszeit: <b>45 s</b>                   | Filmgröße: <b>10 x 24</b> |
| Activity:                                                                                    | Tube voltage/current: (KV)                                                                                               | Exposure time                                  | Film size:                |

**Prüfergebnisse/ Test data**

| Bildgüteprüfkörper/ Image quality indicator (IQ 10A)EN461-2 | Lage/ Position: <input checked="" type="checkbox"/> Filmnah/ close to film <input type="checkbox"/> Filmfern/ far from film | Imperfektionen (EN 26520) |      |      |     |     |     |      |     |     |     | Bemerkung<br>Comments<br>(from - to) |                           |                                    |                       |                           |         |
|-------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|---------------------------|------|------|-----|-----|-----|------|-----|-----|-----|--------------------------------------|---------------------------|------------------------------------|-----------------------|---------------------------|---------|
|                                                             |                                                                                                                             | 2011                      | 2016 | 2013 | 301 | 401 | 402 | 5013 | 515 | 504 | 100 |                                      | 304                       | 5011/5012                          |                       |                           |         |
| Schweißnahtnummer<br>Weld No.                               | Film-nr.<br>Film No.                                                                                                        | Aa                        | Ab   | Ad   | Ba  | Bc  | Da  | Db   | Dc  | E   | F   | FF                                   | Filmfehler<br>Film defect | Bildgüte<br>Image quality<br>(LQI) | Schwächung<br>Density | Befund/ Findings<br>a (e) | na (ne) |
|                                                             |                                                                                                                             |                           |      |      |     |     |     |      |     |     |     |                                      |                           |                                    |                       |                           |         |
| <b>2</b>                                                    | <b>A</b>                                                                                                                    |                           |      |      |     |     |     |      |     |     |     |                                      |                           | <b>14</b>                          | <b>2,4</b>            | <b>x</b>                  |         |
|                                                             | <b>B</b>                                                                                                                    |                           |      |      |     |     |     |      |     |     |     |                                      |                           | <b>14</b>                          | <b>2,4</b>            | <b>x</b>                  |         |
|                                                             |                                                                                                                             |                           |      |      |     |     |     |      |     |     |     |                                      |                           |                                    |                       |                           |         |
|                                                             |                                                                                                                             |                           |      |      |     |     |     |      |     |     |     |                                      |                           |                                    |                       |                           |         |

**Definition- Erklärung der Bewertung/ Definition- Legend**

**Aa** = Pore/ Gas pore **Ab** = Schlauchpore/Wurmhole **Ad** = Porenneht/ Porosity **Ba** = Schlackeneinschl./ Slag inclusion **C** = Bindefehler/Lack of fusion  
**D** = ung. Durchschw./ Lack of penetration **Da** = Wurzelkerbe/ Root notch **Db** = Wurzelrückfall/ Root reinforcement **Dc** = Wurzeldurchhang/ Excessive penetration **E** = Riß/ Crack  
**H** = metallischer Einschluss/ Metallic inclusion **F** = Einbrand/ Undercut

☒ Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled

☐ Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled

☐ toleriert/ tolerated

## ☆ Additional Marking

R1; R2 erste und zweite Rep./ first and second Rep.  
 N neu nach Rep./ cut and reweld  
 F Folgeprüfung/ Tracer shot  
 G Garantenah/ RT instead of Pressure Test  
 K Kontrollschuß/ Control Shot  
 I 1- Stoß/ 1- Joint

Testing Contractor/Name of Examiner

Date

Name

Signature

16.12.2005

Z64

Signature

Air Liquide

E.H.R.

16.12.05

Kielholz

Date

Name

Signature

TÜV

15.1.06

Date

Name

Signature





TÜV  
Date  
Signature

 Signature

EHF 02  
elholz  
Name

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| E.H.R   | Date |
| 16.12.0 |      |

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James

## Liquide

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| <b>Air</b> | <b>Date</b> |
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## Examining the Structure

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**actor/Name**

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Test \_\_\_\_\_ Date \_\_\_\_\_

|                                                                                     |  |                                                         |  |                                       |  |
|-------------------------------------------------------------------------------------|--|---------------------------------------------------------|--|---------------------------------------|--|
|  |  | <b>Durchstrahlungsprüfung- Radiographic Examination</b> |  | <b>Prüfdatum: 16.12.2005</b>          |  |
| <b>Report/ Bericht: 362</b>                                                         |  | <b>Seite: 2 von</b>                                     |  | <b>Date of Exam.: xxx</b>             |  |
| <b>Zeichnungsnummer/ISO-Nr.: NL 71102</b>                                           |  | <b>Sheet: 82</b>                                        |  | <b>Constr area No.:</b>               |  |
| <b>Auftragsnummer:</b>                                                              |  | <b>141 Schweißer:</b>                                   |  | <b>Nahtform BW</b>                    |  |
| <b>Serial/Order No.: K 70101</b>                                                    |  | <b>Schweißverfahren DIN 24063:</b>                      |  | <b>Weld type:</b>                     |  |
| <b>Bauteil/Verbindung:</b> pipe                                                     |  | <b>Welding process to DIN 24063:</b>                    |  | <input type="checkbox"/> A            |  |
| <b>Part/Joint:</b>                                                                  |  | <b>AI Mg 4,5Min</b>                                     |  | <input checked="" type="checkbox"/> B |  |
| <b>Schweißnahtnummer:</b>                                                           |  | <b>Werkstoff/ Material A:</b>                           |  | <input type="checkbox"/> C            |  |
| <b>Weld- No.: 17</b>                                                                |  | <b>Werkstoff/ Material B:</b>                           |  | <b>Bewertung n.DIN EN 5817</b>        |  |
| <b>ohne/ without</b>                                                                |  | <b>Abmessung/Dimension A:</b>                           |  | <b>Quality level acc. to -/-</b>      |  |
| <b>vor/ before</b>                                                                  |  | <b>60,3x3,9</b>                                         |  | <b>(DIN EN 12517/1)</b>               |  |
| <b>nach/ after</b>                                                                  |  | <b>Abmessung/Dimension B:</b>                           |  |                                       |  |
| <b>Prüfumfang:</b> 50 %                                                             |  |                                                         |  |                                       |  |
| <b>Extent of examination:</b>                                                       |  |                                                         |  |                                       |  |
| <b>Oberflächenzustand Clean</b>                                                     |  |                                                         |  |                                       |  |
| <b>Surface quality:</b>                                                             |  |                                                         |  |                                       |  |

### Ansehen zur Prüfung/ Data of examination

|                                                  |  |                                                                  |  |                                       |  |        |  |                    |  |            |  |
|--------------------------------------------------|--|------------------------------------------------------------------|--|---------------------------------------|--|--------|--|--------------------|--|------------|--|
| Anforderungen an die Prüfklasse gem. DIN EN 1435 |  | A <input type="checkbox"/> B <input checked="" type="checkbox"/> |  | Zulassigkeitsgrenzen gem. EN 12 517   |  | Agfa   |  | Filmklasse:        |  | C 2        |  |
| Test class acc. to EN 1435                       |  |                                                                  |  | Acceptance level acc. to EN 12 517    |  | Agfa   |  | Film system class: |  |            |  |
| Strahlungsquelle:                                |  | Selen 75                                                         |  | Brennfleckgr./Strahlenquellengr.: 3x3 |  | b (mm) |  | f 200              |  |            |  |
| Source of radiation:                             |  |                                                                  |  | Focal Spot/Source Size:               |  | Pb     |  | Folienart:         |  |            |  |
| Aktivität:                                       |  | 40 ci                                                            |  | Röhreneinstellung:                    |  | (mA)   |  | Screen type:       |  |            |  |
| Activity:                                        |  |                                                                  |  | Tube voltage/current:                 |  | (KV)   |  | Folienstärke:      |  | 0,02 mm    |  |
|                                                  |  |                                                                  |  |                                       |  |        |  | Belichtungszeit:   |  | 45 s       |  |
|                                                  |  |                                                                  |  |                                       |  |        |  | Filmgröße:         |  | 10 x 24    |  |
|                                                  |  |                                                                  |  |                                       |  |        |  | Exposure time:     |  | Film size. |  |
| Filmform/for from film                           |  |                                                                  |  |                                       |  |        |  |                    |  |            |  |

## Prüfergebnis/ Test data

[illegible][illegible]

Metallischer Einschlussmetalle

Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification

Anforderungen nach

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tolerant/ tolerated

☆ Additional Marking

|        |                                             |
|--------|---------------------------------------------|
| R1; R2 | erste und zweite Rep./first and second Rep. |
| N      | neu nach Rep./ cut and reweld               |
| F      | Folgeprüfung/ Tracer shot                   |
| G      | Garantienah/ RT instead of Pressure Test    |
| K      | Kontrollschuß/ Control Shot                 |
| K      | 1- Stöls/ 1- Joint                          |

# 1. Introduction

| Testing Contractor/Name of Examiner | Signature | Date |
|-------------------------------------|-----------|------|
|                                     |           |      |

## Testing conducted under

Signature

## Air Liquide

Date Name Signature

E.H.R

16.12.05 Kielholz

| Name | Date |
|------|------|
|------|------|

Date \_\_\_\_\_ Name \_\_\_\_\_

U-IR 02

ielholz

Name \_\_\_\_\_ Signature \_\_\_\_\_

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Date \_\_\_\_\_ Name \_\_\_\_\_

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|------|------|-----------|
| Date | Name | Signature |
|      |      |           |

|         |         |           |
|---------|---------|-----------|
| Date    | Name    | Signature |
| 16-1-06 | Yousang | Yousang   |

16.12.05 Kielholz

Name

**Signature**

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Date \_\_\_\_\_

**Name** \_\_\_\_\_

**Signature** \_\_\_\_\_



## Bericht/ Report: 365

**Prüfdatum:** 16.12.2005

|                                                 |                                     |   |                                         |  |                                     |   |                          |   |                          |   |                                      |
|-------------------------------------------------|-------------------------------------|---|-----------------------------------------|--|-------------------------------------|---|--------------------------|---|--------------------------|---|--------------------------------------|
| <b>Angaben zur Prüfung/ Data of examination</b> |                                     |   |                                         |  |                                     |   |                          |   |                          |   |                                      |
| Prüfklasse gem. DIN EN 1435                     | <input type="checkbox"/>            | A | Zulässigkeitsgrenzen gem. DIN EN 12 517 |  | <input checked="" type="checkbox"/> | 1 | <input type="checkbox"/> | 2 | <input type="checkbox"/> | 3 | Aufnahmeanordnung nach DIN EN 1435 : |
| Test class acc. to EN 1435                      | <input checked="" type="checkbox"/> | B | Acceptance level acc. to EN 12 517      |  |                                     |   |                          |   |                          |   | Test arrangement acc. EN 1435        |
| Strahlungsquelle:                               | Brennfleckgr./Strahlenquellengr.:   |   |                                         |  | 3x3                                 |   | Filmsorte:               |   | Agfa                     |   | Filmklasse:                          |
| Source of radiation:                            | Selen 75                            |   |                                         |  | b                                   |   | ( mm )                   |   | f 200                    |   | Film system class:                   |
| Aktivität:                                      | Röhreinrichtung:                    |   |                                         |  | Folienart:                          |   | Pb                       |   | Folienstärke:            |   | Belichtungszeit:                     |
| Activity:                                       | 40 ci                               |   |                                         |  | ( KV )                              |   | ( mA )                   |   | Screen type:             |   | Exposure time:                       |
|                                                 | Tube voltage/current:               |   |                                         |  |                                     |   | 0,02                     |   | mm                       |   | Filmgröße:                           |
|                                                 |                                     |   |                                         |  |                                     |   |                          |   |                          |   | Film size:                           |
|                                                 |                                     |   |                                         |  |                                     |   |                          |   |                          |   | 10 x 24                              |
|                                                 |                                     |   |                                         |  |                                     |   |                          |   |                          |   | C 2                                  |

| <b>Prüfsergebnis/ Test data</b>                                  |                       |                                                                        |                            |      |    |                 |    |   |   |    |    |                       |                                      |                        |                  |                                        |                         |           |          |           |  |
|------------------------------------------------------------------|-----------------------|------------------------------------------------------------------------|----------------------------|------|----|-----------------|----|---|---|----|----|-----------------------|--------------------------------------|------------------------|------------------|----------------------------------------|-------------------------|-----------|----------|-----------|--|
| Bildgüteprüfkörper/ Image quality indicator ( IQ 10A IEN 461-2 ) |                       |                                                                        |                            |      |    | Lage/ Position: |    |   |   |    |    |                       |                                      | Filmnah/ close to film |                  |                                        | Filmfern/ far from film |           |          |           |  |
| Film-nr.<br>Weld No.                                             | Schweißnahtnummer<br> | Auswertbare Filmlänge<br>Evaluated length of film<br>in cm / from ÷ to | Imperfektions ( EN 26520 ) |      |    |                 |    |   |   |    |    | Filmsfehler<br>( FF ) | Bildgüte<br>Image quality<br>( IQI ) | Schwärzung<br>Density  | Befund/ Findings | Bemerkung<br>Comments<br>( from - to ) |                         |           |          |           |  |
|                                                                  |                       |                                                                        | 2011                       | 2016 | Ab | Ad              | Ba | C | D | Da | Db | Dc                    | E                                    | H                      | F                |                                        |                         |           | a ( e )  | na ( ne ) |  |
| <b>3</b>                                                         | <b>A</b>              |                                                                        |                            |      |    |                 |    |   |   |    |    |                       |                                      |                        |                  |                                        |                         | <b>14</b> | <b>x</b> |           |  |
|                                                                  | <b>B</b>              |                                                                        |                            |      |    |                 |    |   |   |    |    |                       |                                      |                        |                  |                                        |                         | <b>14</b> | <b>x</b> |           |  |
|                                                                  |                       |                                                                        |                            |      |    |                 |    |   |   |    |    |                       |                                      |                        |                  |                                        |                         |           |          |           |  |
|                                                                  |                       |                                                                        |                            |      |    |                 |    |   |   |    |    |                       |                                      |                        |                  |                                        |                         |           |          |           |  |
|                                                                  |                       |                                                                        |                            |      |    |                 |    |   |   |    |    |                       |                                      |                        |                  |                                        |                         |           |          |           |  |
|                                                                  |                       |                                                                        |                            |      |    |                 |    |   |   |    |    |                       |                                      |                        |                  |                                        |                         |           |          |           |  |

Definition- Erklärung der Bewertung/ Definition- Legend

|                                                     |                                    |                                               |                                                   |                                       |
|-----------------------------------------------------|------------------------------------|-----------------------------------------------|---------------------------------------------------|---------------------------------------|
| <b>Aa</b> = Pore/ Gas pore                          | <b>Ab</b> = Schlauchpore/Wurmhole  | <b>Ad</b> = Porennest/ Porosity               | <b>Ba</b> = Schlackeneinschl./ Slag inclusion     | <b>C</b> = Bindefehler/Lack of fusion |
| <b>D</b> = ung. Durchschw./Lack of penetration      | <b>Da</b> = Wurzelkerbe/Root notch | <b>Db</b> = Wurzelrückfall/Root reinforcement | <b>Dc</b> = Wurzeldurchhang/Excessive penetration | <b>E</b> = Riß/Crack                  |
| <b>H</b> = metallischer Einschuß/Metallic inclusion | <b>F</b> = Einbrand/Undercut       |                                               |                                                   |                                       |

|                                                                                                                                         | ☆ Additional Marking |
|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| <input checked="" type="checkbox"/> Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled  | R1: R2               |
| <input type="checkbox"/> Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled | N                    |
| <input type="checkbox"/> toleriert/ tolerated                                                                                           | F<br>G<br>K<br>I     |

## Air Liquide

**E.H.R**

**E.H.R.**  
16.12.05 Kielholz

Tűz

Date \_\_\_\_\_  
Name \_\_\_\_\_  
Signature \_\_\_\_\_

Name \_\_\_\_\_

**Signature**

Signature \_\_\_\_\_

Date \_\_\_\_\_ Name \_\_\_\_\_

Signature

Date \_\_\_\_\_ Name \_\_\_\_\_



# Durchstrahlungsprüfung- Radiographic Examination

|                                                                                                                                                                                                             |                                                     |                                                                     |  |                                                                                                                                                                                                                                                                           |                  |                             |                                                |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|---------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------------------|------------------------------------------------|
|                                                                                                                          |                                                     | <b>Durchstrahlungsprüfung- Radiographic Examination</b>             |  |                                                                                                                                                                                                                                                                           |                  | Bericht/ Report: <b>366</b> | Prüfdatum: <b>16.12.2005</b><br>Date of Exam.: |
| Kennwort:<br>Job Name: <b>ASU No.9 Kosice</b>                                                                                                                                                               | Auftragsnummer:<br>Serial/Order No.: <b>K 70101</b> | Zeichnungsnummer/ISO-Nr.: <b>NL 71202</b>                           |  | Seite: <b>1</b> von                                                                                                                                                                                                                                                       | Baufeld Nr.: xxx | Constr area No.:            |                                                |
| Benennung:<br>Discription: <b>Coldbox</b>                                                                                                                                                                   | Bauteil/Verbindung: pipe<br>Part/Joint:             | Drawing No./ISO No.: 141                                            |  | Schweißer: <b>82</b><br>Welder:                                                                                                                                                                                                                                           | Nahtform BW      |                             |                                                |
| Wärmebehandlung: <br>Heat treatment:  | Schweißnahtnummer:<br>Weld- No.: <b>9</b>           | Werkstoff/ Material A: <b>Al Mg 4,5Mn</b><br>Werkstoff/ Material B: |  | Bewertung n.DIN EN 5817 <br>Quality level acc. to -/- (DIN EN 12517/1)                                                                                                                 | Weld type:       |                             |                                                |
| Oberflächenzustand Clean<br>Surface quality:                                                                                                                                                                | Prüfmfang: <b>50 %</b><br>Extent of examination:    | Abmessung/Dimension A: <b>60,3x3,9</b><br>Abmessung/Dimension B:    |  | } A <br>B <br>C  |                  |                             |                                                |
| mm                                                                                                                                                                                                          |                                                     |                                                                     |  |                                                                                                                                                                                                                                                                           |                  |                             |                                                |

**Anqaben zur Prüfung/ Data of examination**

|                                                 |  |                                      |  |                                         |  |      |  |                  |  |                                                                         |    |
|-------------------------------------------------|--|--------------------------------------|--|-----------------------------------------|--|------|--|------------------|--|-------------------------------------------------------------------------|----|
| <b>Angaben zur Prüfung/ Data of examination</b> |  |                                      |  |                                         |  |      |  |                  |  |                                                                         |    |
| Prüfklasse gem. DIN EN 14335                    |  | A                                    |  | Zulässigkeitsgrenzen gem. DIN EN 12 517 |  | 1    |  | 3                |  | Aufnahmeanordnung nach DIN EN 14335 :<br>Test arrangement acc. EN 14335 | 11 |
| Test class acc. to EN 14335                     |  | B                                    |  | Acceptance level acc. to EN 12 517      |  |      |  |                  |  |                                                                         |    |
| Strahlungsquelle:                               |  | Brennfleckgr./Strahlenquellenlengr.: |  | 3x3                                     |  | b    |  | (mm)             |  | Agfa                                                                    |    |
| Source of radiation:                            |  | Focal Spot/Source Size:              |  | Selen 75                                |  | f    |  | 200              |  | Filmklasse:<br>Film system class:                                       |    |
| Aktivität:                                      |  | Röhreneinstellung:                   |  | Folienart:                              |  | Pb   |  | Folien dicke:    |  | Filmgröße:                                                              |    |
| Activity:                                       |  | Tube voltage/current:                |  | (KV)                                    |  | (mA) |  | Screen tickness: |  | Film size.                                                              |    |
| 40 ci                                           |  |                                      |  |                                         |  |      |  | 0.02 mm          |  | 10 x 24                                                                 |    |
|                                                 |  |                                      |  |                                         |  |      |  |                  |  | 45 s                                                                    |    |

### Prüfergebnis/ Test data

[illegible]

Definition- Erklärung der Bewertung/ Definition- Legend

**Ab** = Schlauchpore/Wurmhole      **Ad** = Porennetz/Porosity      **Ba** = Schlackeneinschl./Slag inclusion      **C** = Bindefehler/Lack of fusion  
**D** = ung. Durchschw./Lack of penetration      **Db** = Wurzelkerbe/Rot notch      **Dc** = Wurzeldurchhang/Excessive penetration      **E** = Riß/Crack  
**H** = metallischer Einschl./Metallic inclusion      **F** = Einbrand/Undercut

Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled

☐ Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled

☐ tolerant/ tolerated

★ Additional Marking

|        |                                             |
|--------|---------------------------------------------|
| R1: R2 | erste und zweite Rep./first and second Rep. |
| N      | neu nach Rep./cut and reweld                |
| N      | Folgeprüfung/ Tracer shot                   |
| F      | Garantienah/ RT instead of Pressure Test    |
| G      | Kontrollschuß/ Control Shot                 |
| K      | I-Stoß/ I-Joint                             |
| K      |                                             |

|                                     |
|-------------------------------------|
| Testing Contractor/Name of Examiner |
|-------------------------------------|

## Air Liquide

**E.H.R.**

**E.H.R**  
16.12.05 Kielholz

**TÜV**

Date Name Signature

Date \_\_\_\_\_

Name

**Signature**

Name

**Signature**

Date \_\_\_\_\_ Name \_\_\_\_\_

**Signature**

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E.H.R  
16.12.01

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|--------------------------------------------------------------------------------------------------|--------------------------------------------------|--------------------------------------------------------------|----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|---------------------------------------------|------------------------------------------------|
|               | Durchstrahlungsprüfung- Radiographic Examination |                                                              |                                                                            |                                                                                                   | Bericht/ Report: <b>368</b>                 | Prüfdatum: <b>16.12.2005</b><br>Date of Exam.: |
|                                                                                                  | Kenwort:<br>Job Name: <b>ASU No.9 Kosice</b>     | Auftragsnummer:<br>Serial/Order No.: <b>K 70101</b>          | Zeichnungsnummer/ISO-Nr.: <b>NL73001</b>                                   | Seite: <b>1</b> von<br>Sheet: of                                                                  | Baufeld Nr.: <b>xxx</b><br>Constr area No.: |                                                |
| Benennung:<br>Description: <b>Coldbox</b>                                                        | Bauteil/Verbindung: <b>pipe</b><br>Part/Join:    | Schweißverfahren DIN 24063:<br>Welding process to DIN 24063: | 141<br>Schweißer:<br>Welder:                                               | Nahtform BW<br>Weld type:                                                                         |                                             |                                                |
| Wärmebehandlung: <input checked="" type="checkbox"/><br>Heat treatment: <input type="checkbox"/> | ohne/ without<br>vor/ before<br>nach/ after      | Werkstoff/ Material A:<br>Werkstoff/ Material B:             | <b>Al Mg 4,5Mn</b><br>Bewertung n.DIN EN 5817<br>Quality level acc. to -/- | <input type="checkbox"/> A<br><input checked="" type="checkbox"/> B<br><input type="checkbox"/> C |                                             |                                                |
| Oberflächenzustand <b>Clean</b><br>Surface quality:                                              | Prüfmfang:<br>Extent of examination:             | <b>10 %</b>                                                  | <b>48,3x5,1</b>                                                            |                                                                                                   | mm                                          |                                                |

### Angaben zur Prüfung/ Data of examination

|                                                              |                                                                         |                                                                               |                                                                                  |                                                                       |               |
|--------------------------------------------------------------|-------------------------------------------------------------------------|-------------------------------------------------------------------------------|----------------------------------------------------------------------------------|-----------------------------------------------------------------------|---------------|
| Prüfkategorie gem. DIN EN 1435<br>Test class acc. to EN 1435 | A <input type="checkbox"/> B <input checked="" type="checkbox"/>        | Zulässigkeitsgrenzen gem. DIN EN 12 517<br>Acceptance level acc. to EN 12 517 | 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> | Aufnahmeanordnung nach DIN EN 1435 :<br>Test arrangement acc. EN 1435 | <div>11</div> |
| Strahlungsquelle:<br>Source of radiation:                    | Brennfleckgr./Strahlenquellengr.: <b>3x3</b><br>Focal Spot/Source Size: |                                                                               | Filmsorte:<br>Film type:                                                         | Filmklasse:<br>Film system class:                                     | C 2           |
| Röhreneinstellung:<br>Tube voltage/current:                  | Aktivität: 40 ci<br>Activity:                                           | Foliendicke:<br>Screen thickness:                                             | Belichtungszeit:<br>Exposure time:                                               | Filmgröße: <b>10 x 24</b><br>Film size:                               |               |
| <b>Prüfergebnis/ Test data</b>                               |                                                                         |                                                                               |                                                                                  |                                                                       |               |

### Prüfergebnis/ Test data

[illegible]

## Definition- Erklärung der Bewertung/ Definition- Legend

Definition: Naming and Bewertung Legend

|                                                     |                                    |                                               |                                                   |                                       |
|-----------------------------------------------------|------------------------------------|-----------------------------------------------|---------------------------------------------------|---------------------------------------|
| <b>Aa</b> = Pore/ Gas pore                          | <b>Ab</b> = Schlauchpore/Wurmhole  | <b>Ad</b> = Porennest/Porosity                | <b>Ba</b> = Schlackeneinschl./ Slag inclusion     | <b>C</b> = Bindefehler/Lack of fusion |
| <b>D</b> = ung. Durchschw./Lack of penetration      | <b>Da</b> = Wurzelkerbe/Root notch | <b>Db</b> = Wurzelrückfall/Root reinforcement | <b>Dc</b> = Wurzeldurchhang/Excessive penetration | <b>E</b> = Riß/Crack                  |
| <b>H</b> = metallischer Einschuß/Metallic inclusion | <b>F</b> = Einbrand/Undercut       |                                               |                                                   |                                       |

|                                                                                                                                            | ☆ Additional Marking                                                                                                                                                                                         |
|--------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> Anforderung nach Prüfungspezifikation erfüllt/ Requirements according to test specification fulfilled  | R1; R2                                                                                                                                                                                                       |
| <input type="checkbox"/> Anforderungen nach Prüfungspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled | N<br>F<br>G<br>K<br>I                                                                                                                                                                                        |
| <input type="checkbox"/> toleriert/ tolerated                                                                                              | erste und zweite Rep./first and second Rep.<br>neu nach Rep./ cut and reweld<br>Folgeprüfung/ Tracer shot<br>Garantienahrt/ RT instead of Pressure Test<br>Kontrollschuß/ Control Shot<br>I- Stols/ I- Joint |

| Testing Contractor/Name of Examiner                                                   |           | Air Liquide                                                                           |                                                                                       | E.H.R.                                                                                |           | EHR 02                                                                               |           | TÜV                                                                                 |           |
|---------------------------------------------------------------------------------------|-----------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------|--------------------------------------------------------------------------------------|-----------|-------------------------------------------------------------------------------------|-----------|
| Date                                                                                  | Name      | Date                                                                                  | Name                                                                                  | Date                                                                                  | Name      | Date                                                                                 | Name      | Date                                                                                | Name      |
| 16.12.2005                                                                            | ELG       | 16.12.06                                                                              | Yavuz Bahri                                                                           | 16.12.05                                                                              | Kielholz  | 15.12.06                                                                             |           | 15.12.06                                                                            |           |
| Signature                                                                             | Signature | Signature                                                                             | Signature                                                                             | Signature                                                                             | Signature | Signature                                                                            | Signature | Signature                                                                           | Signature |
|  |           |  |  |  |           |  |           |  |           |



12.12.2005 Eilat  
16-1-06  
Jawad Bahi  
Bahi

|                                                         |                                  |                                                         |  |                                                               |  |                                            |  |
|---------------------------------------------------------|----------------------------------|---------------------------------------------------------|--|---------------------------------------------------------------|--|--------------------------------------------|--|
| <b>AIR LIQUIDE</b>                                      |                                  | <b>Durchstrahlungsprüfung- Radiographic Examination</b> |  | Bericht/ Report: <b>370</b>                                   |  | Prüfdatum: <b>17.12.2005</b>               |  |
| Kennwort:                                               | Auftragsnummer:                  |                                                         |  | Zeichnungsnummer/ISO-Nr.: <b>AL 43015</b>                     |  | Seite: <b>1</b> von <b>153</b>             |  |
| Job Name: <b>ASU No.9 Kosice</b>                        | Serial/Order No.: <b>K 70101</b> |                                                         |  | Drawing No./ISO No.:                                          |  | Baufeld Nr.: xxx                           |  |
| Benennung:                                              | Bauteil/Verbindung: <b>pipe</b>  |                                                         |  | Schweißverfahren DIN 24063:                                   |  | Constr area No.:                           |  |
| Description: <b>Coldbox</b>                             | Part/Joint:                      |                                                         |  | Schweißprozess zu DIN 24063:                                  |  | Nahtform BW                                |  |
| Wärmebehandlung: <input type="checkbox"/> ohne/ without | Schweißnahtnummer:               |                                                         |  | Werkstoff/ Material A: <b>Al Mg 4,5Mn</b>                     |  | Weld type: <input type="checkbox"/> A      |  |
| Heat treatment: <input type="checkbox"/> vor/ before    | Weld- No.: <b>8</b>              |                                                         |  | Werkstoff/ Material B:                                        |  | <input type="checkbox"/> B                 |  |
|                                                         | nach/ after                      |                                                         |  | Bewertung n.DIN EN 5817 <input type="checkbox"/> DIN EN 30042 |  | <input type="checkbox"/> C                 |  |
| Oberflächenzustand <b>Clean</b>                         | Prüfumfang: <b>10 %</b>          |                                                         |  | Abmessung/Dimension A: <b>48,3x5,1</b>                        |  | Quality level acc. to -/- (DIN EN 12517/1) |  |
| Surface quality:                                        | Extent of examination:           |                                                         |  | Abmessung/Dimension B:                                        |  | mm                                         |  |

**Angaben zur Prüfung/ Data of examination**

|                                                                                              |                                                                                                                                     |                                                |                           |
|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|---------------------------|
| Prüfklasse gem. DIN EN 1435 <input type="checkbox"/> A <input checked="" type="checkbox"/> B | Zulässigkeitsgrenzen gem. DIN EN 12 517 <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 | Aufnahmeanordnung nach DIN EN 1435 : <b>11</b> |                           |
| Test class acc. to EN 1435                                                                   | Acceptance level acc. to EN 12 517                                                                                                  | Test arrangement acc. EN 1435                  |                           |
| Strahlungsquelle: <b>Selen 75</b>                                                            | Brennfleckgr./Strahlenquellengr.: <b>3x3</b>                                                                                        | Filmsorte: <b>Agfa</b>                         | Filmklasse: <b>C 2</b>    |
| Source of radiation:                                                                         | Focal Spot/Source Size:                                                                                                             | Film type:                                     | Film system class:        |
| Aktivität: <b>40 ci</b>                                                                      | Röhreneinstellung:                                                                                                                  | Belichtungszeit: <b>45 s</b>                   | Filmgröße: <b>10 x 24</b> |
| Activity:                                                                                    | Tube voltage/current: (kV)                                                                                                          | Exposure time:                                 | Film size:                |

**Prüfergebnisse/ Test data**

| Bildgüteprüfkörper/ Image quality indicator (IQ 10A/EN461-2) | Lage/ Position:              | Filmmahl/ close to film                                                         | Filmfehler/ Film defect (FF) | Bildgüte/ Image quality (IQ) | Befund/ Findings | Bemerkung/ Comments (from - to) |  |
|--------------------------------------------------------------|------------------------------|---------------------------------------------------------------------------------|------------------------------|------------------------------|------------------|---------------------------------|--|
| 8<br>A<br>B                                                  | Imperfektionen (EN 26520)    | 2011   2016   2013   301   401   402   5013   515   504   100   304   5011/5012 | F                            | 14                           | 2,4              | x                               |  |
|                                                              | Aa Ab Ad Ba C D Da Db Dc E F |                                                                                 |                              | 14                           | 2,4              | x                               |  |
|                                                              |                              |                                                                                 |                              |                              |                  |                                 |  |
|                                                              |                              |                                                                                 |                              |                              |                  |                                 |  |

**Definition- Erklärung der Bewertung/ Definition- Legend**

**Aa** = Pore/ Gas pore      **Ab** = Schlauchpore/Wurmhole      **Ba** = Schlackeneinschl./ Slag inclusion      **C** = Bindefehler/Lack of fusion  
**D** = ung. Durchschw./Lack of penetration      **Da** = Wurzelkerbe/Root notch      **Db** = Wurzelrückfall/Root reinforcement      **Dc** = Wurzeldurchhang/Excessive penetration      **E** = Riß/Crack  
**H** = metallischer Einschluss/Metallic inclusion      **F** = Einbrand/Undercut

☒ Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled

☐ Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled

☒ toleriert/ tolerated

☐ nicht toleriert/ not tolerated

Defektoskopie  
 Dunajská 10, 040 01 Košice  
 Tel./fax: 0957 67 64679  
 Mobil: 0953 012 812

Air Liquide

Date Name Signature

Date

Name

Signature

E.H.R.

19.12.05 Kielholz

Date Name Signature

☆ Additional Marking

R1; R2      erste und zweite Rep./first and second Rep.  
 N      neu nach Rep./ cut and reweld  
 F      Folgeprüfung/ Tracer shot  
 G      Garantienah/ RT instead of Pressure Test  
 K      Kontrollschuß/ Control Shot  
 I      I- Stöße/ I- Joint

TÜV

Date Name Signature

Testing Contractor/Name of Examiner

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9000-1  
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### Angaben zur Prüfung/ Data of examination

### Prüfergebnis/ Test data

32

|  | Anforderung nach Prüfungsspezifikation erfüllt/ Requirements according to test specification fulfilled |
|--|--------------------------------------------------------------------------------------------------------|
|  |                                                                                                        |

☐ Anforderungen nach Prüfungsspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled

toleriert/tolerated

DEKOSKOP A  
Das 040 Ks

Testing Contractor/Name of Examiner

## Air Liquide

**E.H.R**

12.01.06 Kieholz

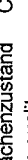
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|-------------------------------------------------------------------------------------|--|-----------------------------------------------------|--|-------------------------------------------|-----------------------------|---------------------------------------------------------------|------------------------------------------------|---------------------------------------|--|
|  |  | Durchstrahlungsprüfung- Radiographic Examination    |  |                                           | Bericht/ Report: <b>374</b> |                                                               | Prüfdatum: <b>11.01.2006</b><br>Date of Exam.: |                                       |  |
| Kennwort: <b>ASU No.9 Kosice</b>                                                    |  | Auftragsnummer:<br>Serial/Order No.: <b>K 70101</b> |  | Zeichnungsnummer/ISO-Nr.: <b>RL 43001</b> |                             | Seite: <b>4</b> von                                           |                                                | Baufeld Nr.: <b>xxx</b>               |  |
| Benennung:                                                                          |  | Bauteil/Verbindung: <b>pipe</b>                     |  | Drawing No./ISO No.:                      |                             | Sheet: of                                                     |                                                | Constr area No.:                      |  |
| Discription: <b>Coldbox</b>                                                         |  | Part/Joint:                                         |  | Schweißverfahren DIN 24063:               |                             | Schweißer: <b>141</b>                                         |                                                | Nahtform BW                           |  |
| Wärmebehandlung: <input checked="" type="checkbox"/>                                |  | Schweißnahtnummer:                                  |  | Welding process to DIN 24063:             |                             | Welder:                                                       |                                                | Weld type:                            |  |
| Heat treatment: <input type="checkbox"/>                                            |  | Weld- No.: <b>48</b>                                |  | Werkstoff/ Material A: <b>Al Mg 4,5Mn</b> |                             | Bewertung n.DIN EN 5817 <input type="checkbox"/> DIN EN 30042 |                                                | <input type="checkbox"/> A            |  |
| <input type="checkbox"/>                                                            |  | ohne/ without<br>vor/ before<br>nach/ after         |  | Werkstoff/ Material B:                    |                             | Quality level acc. to -/-<br>(DIN EN 12517/1)                 |                                                | <input checked="" type="checkbox"/> B |  |
| Oberflächenzustand <b>Clean</b>                                                     |  | Prüfumfang: <b>10 %</b>                             |  | Abmessung/Dimension A: <b>33,4x3,4</b>    |                             | <input type="checkbox"/> C                                    |                                                | <input type="checkbox"/> C            |  |
| Surface quality:                                                                    |  | Extent of examination:                              |  | Abmessung/Dimension B:                    |                             | mm                                                            |                                                | mm                                    |  |

**Angaben zur Prüfung/ Data of examination**

|                                                      |                              |                                       |                                              |                                                                                             |                                                                      |
|------------------------------------------------------|------------------------------|---------------------------------------|----------------------------------------------|---------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| <b>Prüfgegenstand:</b> Strahlungsdosisratebestimmung |                              |                                       |                                              |                                                                                             |                                                                      |
| <b>Prüfkategorie gem. DIN EN 1435</b>                | A <input type="checkbox"/>   | B <input checked="" type="checkbox"/> | Zuverlässigkeitsgrenzen gem. DIN EN 12 517   | 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> | Aufnahmeanordnung nach DIN EN 1435:<br>Test arrangement acc. EN 1435 |
| <b>Test class acc. to EN 1435</b>                    |                              |                                       | Acceptance level acc. to EN 12 517           |                                                                                             |                                                                      |
| <b>Strahlungsquelle:</b>                             |                              |                                       | <b>Brennfleckgr./Strahlenquellengr.: 3x3</b> | Filmsorte:                                                                                  | Filmklasse: C 2                                                      |
| <b>Source of radiation:</b>                          | <b>Selen 75</b>              |                                       | <b>Focal Spot/Source Size:</b>               | Film type:                                                                                  | Film system class:                                                   |
| <b>Aktivität:</b>                                    | <b>Röhreneinstellung:</b>    |                                       | <b>Folienart:</b> Pb                         | <b>Folienstärke:</b>                                                                        | <b>Filmgröße:</b>                                                    |
| <b>Activity:</b> 40 ci                               | <b>Tube voltage/current:</b> |                                       | <b>Screen type:</b>                          | <b>Screen thickness:</b> 0,02 mm                                                            | <b>Exposure time 45 s</b>                                            |
|                                                      |                              |                                       | (KV)                                         | (mA)                                                                                        | Film size.                                                           |
|                                                      |                              |                                       |                                              |                                                                                             | 10 x 24                                                              |

### Prüfergebnis/ Test data

[illegible]

## Definition- Erklärung der Bewertung/ Definition- Legend

**Aa** = Pore/ Gas pore      **Ab** = Schlauchpore/Wurmhole      **Ad** = Porennest/Porosity      **Ba** = Schlackeneinschl./ Slag inclusion      **C** = Bindefehler/Lack of fusion  
**D** = ung. Durchschw./Lack of penetration      **Da** = Wurzelkerbe/Root notch      **Db** = Wurzelrückfall/Root reinforcement      **Dc** = Wurzeldurchhang/Excessive penetration      **E** = Riß/Crack  
**H** = metallischer Einschuß/Metallic inclusion      **F** = Einbrand/Undercut

| <div> <div></div> <div>Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled</div> </div>             | <div> <div>☆</div> <div>Additional Marking</div> </div>                                                                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| <div> <div></div> <div>Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled</div> </div> | <div> <div>R1; R2</div> <div>erste und zweite Rep./first and second Rep.<br/>neu nach Rep./ cut and reweld</div> </div> |
| <div> <div></div> <div>toleriert/ tolerated</div> </div>                                                                                           | <div> <div>F</div> <div>Folgeprüfung/ Tracer shot</div> </div>                                                          |
| <div> <div></div> <div></div> </div>                                                                                                               | <div> <div>G</div> <div>Garantienah/ RT instead of Pressure Test</div> </div>                                           |
| <div> <div></div> <div></div> </div>                                                                                                               | <div> <div>K</div> <div>Kontrollschuß/ Control Shot</div> </div>                                                        |
| <div> <div></div> <div></div> </div>                                                                                                               | <div> <div>I</div> <div>I- Strö/ I- Joint</div> </div>                                                                  |

Testing Contractor/Name of Examiner

## Air Liquide

**E.H.R.**

Kielholz

**TÜV**

| Date | Name | Signature |
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**Signature**

Date \_\_\_\_\_

Name

**Signature**

Date \_\_\_\_\_ Name \_\_\_\_\_

**Signature**

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|-------------------------------------------------------------------------------------|-----------------------------------------------------|--------------------------------------------------------------|--|------------------------------------------------------|----------------------------------|---------------------------------------------------------------------------------------------------|------------------------------|
|  |                                                     | <b>Durchstrahlungsprüfung - Radiographic Examination</b>     |  |                                                      |                                  | Bericht/ Report: <b>374</b>                                                                       | Prüfdatum: <b>11.01.2006</b> |
| Kennwort:<br>Job Name: <b>ASU No.9 Kosice</b>                                       | Auftragsnummer:<br>Serial/Order No.: <b>K 70101</b> | Zeichnungsnummer/ISO-Nr.: <b>RL 43001</b>                    |  | Seite: <b>4</b> von <b>488</b>                       | Baufeld Nr.: xxx                 | Date of Exam.:                                                                                    |                              |
| Benennung:<br>Discription: <b>Coldbox</b>                                           | Bauteil/Verbindung:<br>Part/Join: <b>pipe</b>       | Schweißverfahren DIN 24063:<br>Welding process to DIN 24063: |  | Schweißer: <b>141</b>                                | Nahtform BW/ Weld type:          |                                                                                                   |                              |
| Wärmebehandlung:<br>Heat treatment:                                                 | Schweißnahtnummer:<br>Weld- No.: <b>48</b>          | Werkstoff/ Material A:<br>Werkstoff/ Material B:             |  | Bewertung n.DIN EN 5817<br>Quality level acc. to -/- | DIN EN 30042<br>(DIN EN 12517/1) | <input type="checkbox"/> A<br><input checked="" type="checkbox"/> B<br><input type="checkbox"/> C |                              |
| Oberflächenzustand<br>Surface quality: <b>Clean</b>                                 | Prüfmfang:<br>Extent of examination: <b>10 %</b>    | Abmessung/Dimension A:<br>Abmessung/Dimension B:             |  | <b>33,4x3,4</b>                                      |                                  |                                                                                                   | mm                           |

**Angaben zur Prüfung/ Data of examination**

|                             |                                       |                                         |      |                   |                          |                                                                       |
|-----------------------------|---------------------------------------|-----------------------------------------|------|-------------------|--------------------------|-----------------------------------------------------------------------|
| Prüfklasse gem. DIN EN 1435 | A                                     | Zulässigkeitsgrenzen gem. DIN EN 12 517 | 1    | 2                 | 3                        | Aufnahmeanordnung nach DIN EN 1435 :<br>Test arrangement acc. EN 1435 |
| Test class acc. to EN 1435  | B                                     | Acceptance level acc. to EN 12 517      |      |                   |                          |                                                                       |
| Strahlungsquelle:           | Brennfleckgr./Strahlenquellengr.: 3x3 |                                         |      |                   |                          |                                                                       |
| Source of radiation:        | Selen 75                              | Focal Spot/Source Size:                 | b    | (mm)              | Filmsorte:<br>Film type: | Filmklasse:<br>Film system class:                                     |
| Aktivität:                  | Röhreinrichtung:                      | Folienart:                              | Pb   | Folienstärke:     | Belichtungszeit:         |                                                                       |
| Activity:                   | 40 ci                                 | (KV)                                    | (mA) | Screen thickness: | Exposure time            | Filmgröße:<br>Film size.                                              |
|                             |                                       |                                         |      |                   | 45 s                     | 10 x 24                                                               |

### Prüfergebnis/ Test data

[illegible]

Definition- Erklärung der Bewertung/ Definition- Legend

**Aa** = Pore/ Gas pore      **Ab** = Schlauchpore/Wurmhole      **Ad** = Porennest/Porosity      **Ba** = Schlackeneneinschl./ Slag inclusion      **C** = Bindefehler/Lack of fusion  
**D** = ung. Durchschw./Lack of penetration      **Da** = Wurzelkerbe/Root notch      **Db** = Wurzelrückfall/Root reinforcement      **Dc** = Wurzeldurchhang/Excessive penetration      **E** = Riß/Crack  
**H** = metallischer Einschuß/Metallic inclusion      **F** = Einbrand/Undercut

|                                     | Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled | Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled | Additional Marking                                                           |
|-------------------------------------|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> |                                                                                                    |                                                                                                                | R1; R2                                                                       |
| <input type="checkbox"/>            |                                                                                                    |                                                                                                                | erste und zweite Rep./first and second Rep.<br>neu nach Rep./ cut and reweld |
| <input type="checkbox"/>            |                                                                                                    |                                                                                                                | N                                                                            |
| <input type="checkbox"/>            |                                                                                                    |                                                                                                                | F                                                                            |
| <input type="checkbox"/>            |                                                                                                    |                                                                                                                | Folgeprüfung/ Tracer shot                                                    |
| <input type="checkbox"/>            |                                                                                                    |                                                                                                                | G                                                                            |
| <input type="checkbox"/>            |                                                                                                    |                                                                                                                | Garantenahrt/ RT instead of Pressure Test                                    |
| <input type="checkbox"/>            |                                                                                                    |                                                                                                                | K                                                                            |
| <input type="checkbox"/>            |                                                                                                    |                                                                                                                | Kontrollschuß/ Control Shot                                                  |
| <input type="checkbox"/>            |                                                                                                    |                                                                                                                | I                                                                            |
| <input type="checkbox"/>            |                                                                                                    |                                                                                                                | I- Stols/ I- Joint                                                           |

Testing Contractor/Name of Examiner

## Air Liquide

**E.H.R.**

**TÜV**

Date Name Signature

Name \_\_\_\_\_ Signature \_\_\_\_\_

Name \_\_\_\_\_

Signature

Date \_\_\_\_\_ Name \_\_\_\_\_

Signature \_\_\_\_\_

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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|-------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------------------------------------------------|
|                                                                                                   |                                                     | <b>Durchstrahlungsprüfung - Radiographic Examination</b>                |  |                                                                                                                                                        |                                                                                                                              | Bericht/ Report: <b>377</b> | Prüfdatum: <b>12.01.2006</b><br>Date of Exam.: |
| Kennwort:<br>Job Name: <b>ASU No.9 Kosice</b>                                                                                                                                        | Auftragsnummer:<br>Serial/Order No.: <b>K 70101</b> | Zeichnungsnummer/ISO-Nr.: <b>RL 43001</b>                               |  | Seite: <b>1</b><br>Sheet: of                                                                                                                           | Baufeld Nr.: <b>xxx</b><br>Constr area No.:                                                                                  |                             |                                                |
| Benennung: <b>Coldbox</b>                                                                                                                                                            | Bauteil/Verbindung: <b>pipe</b><br>Part/Joint:      | Schweißverfahren DIN 24063: <b>153</b><br>Welding process to DIN 24063: |  | Schweißer: <b>141</b><br>Welder:                                                                                                                       | Nahtform BW<br>Weld type:                                                                                                    |                             |                                                |
| Wärmebehandlung: <input checked="" type="checkbox"/> <b>ohne/ without</b><br>Heat treatment: <input type="checkbox"/> <b>vor/ before</b> <input type="checkbox"/> <b>nach/ after</b> | Schweißnahtnummer:<br>Weld- No.: <b>16</b>          | Werkstoff/ Material A: <b>Al Mg 4,5Mn</b><br>Werkstoff/ Material B:     |  | Bewertung n.DIN EN 5817 <input type="checkbox"/> <b>DIN EN 30042</b> <input checked="" type="checkbox"/><br>Quality level acc. to -/- (DIN EN 12517/1) | } <input type="checkbox"/> <b>A</b><br>} <input checked="" type="checkbox"/> <b>B</b><br>} <input type="checkbox"/> <b>C</b> |                             |                                                |
| Oberflächenzustand <b>Clean</b><br>Surface quality:                                                                                                                                  | Prüfumfang:<br>Extent of examination: <b>10 %</b>   | Abmessung/Dimension A: <b>33,4x3,4</b><br>Abmessung/Dimension B:        |  | mm                                                                                                                                                     |                                                                                                                              |                             |                                                |

**Angaben zur Prüfung/ Data of examination**

|                             |                                              |                                         |                                       |                            |                            |                                               |                                      |
|-----------------------------|----------------------------------------------|-----------------------------------------|---------------------------------------|----------------------------|----------------------------|-----------------------------------------------|--------------------------------------|
| Prüfklasse gem. DIN EN 1435 | <input type="checkbox"/> A                   | Zulässigkeitsgrenzen gem. DIN EN 12 517 | <input checked="" type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | Aufnahmeanordnung nach DIN EN 1435:           | <b>11</b>                            |
| Test class acc. to EN 1435  | <input checked="" type="checkbox"/> B        | Acceptance level acc. to EN 12 517      |                                       |                            |                            | Test arrangement acc. EN 1435                 |                                      |
| Strahlungsquelle:           | Brennfleckgr./Strahlenquellengr.: <b>3x3</b> |                                         | b                                     | (mm)                       | f                          | 200                                           | Filmklasse:<br>Film type: <b>C 2</b> |
| Source of radiation:        | <b>Selen 75</b>                              |                                         | Focal Spot/Source Size:               |                            | Film system class:         |                                               |                                      |
| Aktivität:                  | Röhreinrichtung:                             |                                         | Folienart:                            | Pb                         | Folienstärke:              | Belichtungszeit:<br>Filmgröße: <b>10 x 24</b> |                                      |
| Activity:                   | 40 ci                                        |                                         | Screen type:                          |                            | Screen thickness:          | Exposure time <b>45 s</b><br>Film size:       |                                      |

### Prüfergebnis/ Test data

[illegible]

## Definition- Erklärung der Bewertung/ Definition- Legend

**Aa** = Pore/ Gas pore      **Ab** = Schlauchpore/Wurmhole      **Ad** = Porennet/Porosity      **Ba** = Schlackeneinschl./ Slag inclusion      **C** = Bindefehler/Lack of fusion  
**D** = ung. Durchschw./Lack of penetration      **Da** = Wurzelkerbe/Root notch      **Db** = Wurzelrückfall/Root reinforcement      **Dc** = Wurzeldurchhang/Excessive penetration      **E** = Riß/Crack  
**H** = metallischer Einschuß/Metallic inclusion      **F** = Einbrand/Undercut

| <div> <div></div> <div>Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled</div> </div>             | <div> <div>☆</div> <div>Additional Marking</div> </div>                                                                                                                                                                                                                                                                                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <div> <div></div> <div>Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled</div> </div> | <div> <div>R1; R2</div> <div>erste und zweite Rep./first and second Rep.</div> </div>                                                                                                                                                                                                                                                      |
| <div> <div></div> <div>toleriert/ tolerated</div> </div>                                                                                           | <div> <div>N</div> <div>neu nach Rep./ cut and reweld</div> </div> <div> <div>F</div> <div>Folgeprüfung/ Tracer shot</div> </div> <div> <div>G</div> <div>Garantienahm/ RT instead of Pressure Test</div> </div> <div> <div>K</div> <div>Kontrollschuis/ Control Shot</div> </div> <div> <div>I</div> <div>I- Stols/ J- Joint</div> </div> |

Testing Contractor/Name of Examiner

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Date \_\_\_\_\_ Name \_\_\_\_\_ Signature \_\_\_\_\_

Name \_\_\_\_\_  
Date \_\_\_\_\_

Name \_\_\_\_\_ Signature \_\_\_\_\_

Signature

**E.H.R**

12.01.06 Kieholz

Date \_\_\_\_\_ Name \_\_\_\_\_

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**Air Liquide**

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| Date    | Name       | Signature |
| 16-1-06 | J. Carsted | B. H. H.  |









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|-------------------------------------------------------------------|------|--------------------|---------|------------------------------------|-------------|------------|-------------|
| <b>Testing Contractor/Name of Examiner</b><br>mobil: 0905 602 812 |      | <b>Air Liquide</b> |         | <b>E.H.R.</b><br>11.01.06 Kielholz |             | <b>TÜV</b> |             |
| Date                                                              | Name | Signature          | Date    | Name                               | Signature   | Date       | Signature   |
| 14.01.2006                                                        | Zick | [Signature]        | 16-1-06 | Yannick                            | [Signature] | 10.1.06    | [Signature] |

| Testing Contractor/Name of Examiner |      | Air Liquide |         | E.H.R. |             | TÜV     |             |
|-------------------------------------|------|-------------|---------|--------|-------------|---------|-------------|
| Date                                | Name | Signature   | Date    | Name   | Signature   | Date    | Name        |
| 1.01.2006                           | ZIG  | [Signature] | 16-1-06 | Yamzey | [Signature] | 15.1.06 | [Signature] |





| Testing Contractor/Name of Examiner                                                   |      | Air Liquide                                                                           |        | E.H.R                                                                                 |          | TÜV                                                                                 |      |
|---------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------|--------|---------------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------|------|
| Date                                                                                  | Name | Date                                                                                  | Name   | Date                                                                                  | Name     | Date                                                                                | Name |
| 14.01.2006                                                                            | Zick | 16.1.06                                                                               | Yantey | 11.01.06                                                                              | Kielholz | 15.1.06                                                                             |      |
| Signature                                                                             |      | Signature                                                                             |        | Signature                                                                             |          | Signature                                                                           |      |
|  |      |  |        |  |          |  |      |





| Testing Contractor/Name of Examiner | Contractor/Name of Examiner | Contractor/Name of Examiner |
|-------------------------------------|-----------------------------|-----------------------------|
|                                     |                             |                             |

Testing Contractor/Name of Examiner

Date \_\_\_\_\_ Name \_\_\_\_\_ Signature \_\_\_\_\_

Date \_\_\_\_\_

**Signature**

**Signature**

## Air Liquide

**R.H.E.**

11.01.06 Kielholz

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Name \_\_\_\_\_

**Signature**

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|---------------------------|------------------------------------------------------------------------------|--|-------------------------------|----------------|--|----------------------------------------------------------|--------------------|-------------------------|----------------------------------|---------------------------------------------------------------------------------------------------|
| <b>AIR LIQUIDE</b>        |                                                                              |  |                               |                |  | <b>Durchstrahlungsprüfung - Radiographic Examination</b> |                    | <b>Bericht/ Report:</b> | <b>388</b>                       | <b>Prüfdatum:</b><br>Date of Exam.: <b>10.01.2006</b>                                             |
| <b>Kenntwort:</b>         | <b>ASU No.9 Kosice</b>                                                       |  | <b>Auftragsnummer:</b>        |                |  | <b>Zeichnungsnummer/ISO-Nr.:</b>                         | <b>OL 61103</b>    |                         | <b>Seite:</b> <b>1</b>           | <b>Baufeld Nr.:</b> xxx                                                                           |
| <b>Job Name:</b>          |                                                                              |  | <b>Serial/Order No.:</b>      | <b>K 70101</b> |  | <b>Drawing No./ISO No.:</b>                              |                    |                         | <b>Sheet:</b> of                 | <b>Constr area No.:</b>                                                                           |
| <b>Benennung:</b>         |                                                                              |  | <b>Bauteil/Verbindung:</b>    | pipe           |  | <b>Schweißverfahren DIN 24063:</b>                       | <b>195</b>         |                         | <b>Schweißer:</b>                | <b>Nahtform BW</b>                                                                                |
| <b>Description:</b>       | <b>Coldbox</b>                                                               |  | <b>Part/Joint:</b>            |                |  | <b>Welding process to DIN 24063:</b>                     |                    |                         | <b>Welder:</b>                   | <b>Weld type:</b>                                                                                 |
| <b>Wärmebehandlung:</b>   | <input checked="" type="checkbox"/> ohne/ without                            |  | <b>Schweißnahtnummer:</b>     |                |  | <b>Werkstoff/ Material A:</b>                            | <b>Al Mg 4,5Mn</b> |                         | <b>Bewertung n.DIN EN 5817</b>   | <input type="checkbox"/> DIN EN 30042 }<br><b>(DIN EN 12517/1)</b>                                |
| <b>Heat treatment:</b>    | <input type="checkbox"/> vor/ before<br><input type="checkbox"/> nach/ after |  | <b>Weld- No.:</b>             | <b>10</b>      |  | <b>Werkstoff/ Material B:</b>                            |                    |                         | <b>Quality level acc. to -/-</b> | <input type="checkbox"/> A<br><input checked="" type="checkbox"/> B<br><input type="checkbox"/> C |
| <b>Oberflächenzustand</b> | Clean                                                                        |  | <b>Prüfumfang:</b>            | <b>100 %</b>   |  | <b>Abmessung/Dimension A:</b>                            | <b>60,3x3,9</b>    |                         |                                  |                                                                                                   |
| <b>Surface quality:</b>   |                                                                              |  | <b>Extent of examination:</b> |                |  | <b>Abmessung/Dimension B:</b>                            |                    |                         |                                  | mm                                                                                                |

**Angaben zur Prüfung/ Data of examination**

|                             |                                              |                                         |                                       |                            |                            |                                                                       |                          |                                   |                                               |                          |                |
|-----------------------------|----------------------------------------------|-----------------------------------------|---------------------------------------|----------------------------|----------------------------|-----------------------------------------------------------------------|--------------------------|-----------------------------------|-----------------------------------------------|--------------------------|----------------|
| Prüfklasse gem. DIN EN 1435 | <input type="checkbox"/> A                   | Zulässigkeitsgrenzen gem. DIN EN 12 517 | <input checked="" type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | Aufnahmeanordnung nach DIN EN 1435 :<br>Test arrangement acc. EN 1435 | <b>11</b>                |                                   |                                               |                          |                |
| Test class acc. to EN 1435  | <input checked="" type="checkbox"/> B        | Acceptance level acc. to EN 12 517      |                                       |                            |                            |                                                                       |                          |                                   |                                               |                          |                |
| Strahlungsquelle:           | Brennfleckgr./Strahlenquellengr.: <b>3x3</b> |                                         | b                                     | (mm)                       | f                          | 200                                                                   | Filmsorte:<br>Film type: | Filmklasse:<br>Film system class: | C 2                                           |                          |                |
| Source of radiation:        | <b>Selen 75</b>                              |                                         | Focal Spot/Source Size:               |                            |                            |                                                                       |                          |                                   |                                               |                          |                |
| Aktivität:                  | Röhreinrichtung:                             |                                         | Folienart:                            | Pb                         | Folienstärke:              |                                                                       |                          |                                   |                                               |                          |                |
| Activity:                   | 40 ci                                        | Tube voltage/current:                   | (KV)                                  | (mA)                       | Screen type:               | Screen thickness:                                                     | 0,02                     | mm                                | Belichtungszeit:<br>Exposure time <b>45 s</b> | Filmgröße:<br>Film size: | <b>10 x 24</b> |

### Prüfergebnis/ Test data

[illegible]

Definition- Erklärung der Bewertung/ Definition- Legend

**Aa** = Pore/Porehole      **Ab** = Schlauchpore/Wurmhole      **Ad** = Porennest/Porosity      **Ba** = Schlackeneinschl./ Slag inclusion      **C** = Bindefehler/Lack of fusion  
**D** = ung. Durchschw./Lack of penetration      **Da** = Wurzelkerbe/Root notch      **Db** = Wurzelrückfall/Root reinforcement      **Dc** = Wurzeldurchhang/Excessive penetration      **E** = Riß/Crack  
**H** = metallischer Einschuß/Metallic inclusion      **F** = Einbrand/Undercut

|                                                                                                                                         | Additional Marking                                                                                                                                                                                          |
|-----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled  |                                                                                                                                                                                                             |
| <input type="checkbox"/> Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled | R1; R2<br>N<br>F<br>G<br>K<br>L                                                                                                                                                                             |
| <input type="checkbox"/> toleriert/ tolerated                                                                                           | erste und zweite Rep./first and second Rep.<br>neu nach Rep./ cut and reweld<br>Folgeprüfung/ Tracer shot<br>Garantenahrt/ RT instead of Pressure Test<br>Kontrollschuß/ Control Shot<br>1- Stols/ 1- Joint |

Testing Contractor/Name of Examiner

## Air Liquide

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**E.H.R**  
11.01.06 Kielholz

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Date \_\_\_\_\_ Name \_\_\_\_\_ Signature \_\_\_\_\_

Date \_\_\_\_\_ Name \_\_\_\_\_

**Signature**

Date \_\_\_\_\_

Name

Signature

Date \_\_\_\_\_ Name \_\_\_\_\_

Signature \_\_\_\_\_

11.01.2006 ZGA

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## Air Liquide

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Investing Contractor/Name of Examiner

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Name \_\_\_\_\_ Signature \_\_\_\_\_

Date \_\_\_\_\_ Name \_\_\_\_\_

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Date 7.06 Name

Signature \_\_\_\_\_

|                                            |             |             |                  |
|--------------------------------------------|-------------|-------------|------------------|
| <b>E.H.R.</b>                              | <b>Date</b> | <b>Name</b> | <b>Signature</b> |
| 12.01.06                                   | Kielholz    |             |                  |
| <b>Air Liquide</b>                         |             |             |                  |
| <b>TÜV</b>                                 | <b>Date</b> | <b>Name</b> | <b>Signature</b> |
|                                            | 15-1-06     |             | [Signature]      |
| <b>EHR 02</b>                              | <b>Date</b> | <b>Name</b> | <b>Signature</b> |
|                                            | 16-01-06    | Gawney      | Brown            |
| <b>Testing Contractor/Name of Examiner</b> | <b>Date</b> | <b>Name</b> | <b>Signature</b> |
| L. J. B. [Stamp]                           | -01.06      | ZIGAT       | JW               |

TÜV

15.1.06

Date

Signature

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4-1-2006

| Durchstrahlungsprüfung - Radiographic Examination                  |                                  |                                           |  | Bericht/ Report: <b>392</b> |                 | Prüfdatum: <b>12.01.2006</b>                                                                                                 |                  |
|--------------------------------------------------------------------|----------------------------------|-------------------------------------------|--|-----------------------------|-----------------|------------------------------------------------------------------------------------------------------------------------------|------------------|
| Kennwort:                                                          | Auftragsnummer:                  |                                           |  | Zeichnungsnummer/ISO-Nr.:   | Seite: <b>2</b> | of                                                                                                                           | Baufeld Nr.: xxx |
| Job Name: <b>ASU No.9 Kosice</b>                                   | Serial/Order No.: <b>K 70101</b> | Drawing No./ISO No.:                      |  | Sheet: <b>141</b>           |                 | Nahtform BW                                                                                                                  |                  |
| Benennung:                                                         | Bauteil/Verbindung: <b>pipe</b>  | Schweißverfahren DIN 24063:               |  | Schweißer:                  |                 | Weld type: <b>488</b>                                                                                                        |                  |
| Discription: <b>Coldbox</b>                                        | Part/Joint:                      | Welding process to DIN 24063:             |  | Welder:                     |                 | Bewertung n.DIN EN 5817 <input type="checkbox"/> DIN EN 30042 <input checked="" type="checkbox"/> <input type="checkbox"/> A |                  |
| Wärmebehandlung: <input checked="" type="checkbox"/> ohne/ without | Schweißnahtnummer:               | Werkstoff/ Material A: <b>Al Mg 4,5Mn</b> |  | Quality level acc. to -//-  |                 | B <input checked="" type="checkbox"/> C <input type="checkbox"/>                                                             |                  |
| Heat treatment: <input type="checkbox"/> vor/ before               | Weld- No.: <b>12</b>             | Werkstoff/ Material B:                    |  | Quality level acc. to -//-  |                 | DIN EN 12517(1)                                                                                                              |                  |
| Heat treatment: <input type="checkbox"/> nach/ after               |                                  |                                           |  |                             |                 |                                                                                                                              |                  |
| Oberflächenzustand <b>Clean</b>                                    | Prüfumfang: <b>25 %</b>          | Abmessung/Dimension A: <b>114,3x6</b>     |  | Abmessung/Dimension B:      |                 | mm                                                                                                                           |                  |
| Surface quality:                                                   | Extent of examination:           |                                           |  |                             |                 |                                                                                                                              |                  |

## Angaben zur Prüfung/ Data of examination

|                                                                                              |                                                                                                                          |                                                |                           |
|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|---------------------------|
| Prüfklasse gem. DIN EN 1435 <input type="checkbox"/> A <input checked="" type="checkbox"/> B | Zulässigkeitsgrenzen gem. DIN EN 12 517 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 | Aufnahmeanordnung nach DIN EN 1435 : <b>11</b> |                           |
| Test class acc. to EN 1435                                                                   | Acceptance level acc. to EN 12 517                                                                                       | Test arrangement acc. EN 1435                  |                           |
| Strahlungsquelle: <b>Selen 75</b>                                                            | Brennfleckgr./Strahlenquellengr.: <b>3X3</b>                                                                             | Filmsorte: <b>Agfa</b>                         | Filmklasse: <b>C 2</b>    |
| Source of radiation:                                                                         | Focal Spot/Source Size:                                                                                                  | Film type:                                     | Film system class:        |
| Aktivität: <b>40 ci</b>                                                                      | Röhreinsteilung:                                                                                                         | Folienart: <b>Pb</b>                           | Filmgröße: <b>10 x 24</b> |
| Activity:                                                                                    | Tube voltage/current:                                                                                                    | Screen type:                                   | Film size:                |
|                                                                                              | (KV)                                                                                                                     | (mA)                                           |                           |
|                                                                                              |                                                                                                                          | Screen thickness:                              | Exposure time <b>45 s</b> |
|                                                                                              |                                                                                                                          |                                                |                           |

## Prüfergebnis/ Test data

| Bildgüteprüfkörper/ Image quality indicator ( IQI 10AEN461-2 ) | Film-nr. / Auswertbare Filmlänge | Lage/ Position: <input checked="" type="checkbox"/> Filmnah/ close to film <input type="checkbox"/> Filmfern/ far from film |      |     |     |     |       |     |     |     |     |            |                  | Bemerkung                    |                    |                  |                      |
|----------------------------------------------------------------|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------|------|-----|-----|-----|-------|-----|-----|-----|-----|------------|------------------|------------------------------|--------------------|------------------|----------------------|
|                                                                |                                  | Imperfektionen ( EN 26520 )                                                                                                 |      |     |     |     |       |     |     |     |     |            |                  |                              |                    |                  |                      |
| Weld No.                                                       | Film No.                         | 2011                                                                                                                        | 2016 | 301 | 401 | 402 | 501/3 | 515 | 504 | 100 | 304 | 501/1/5012 | Film defect (FF) | Bildgüte Image quality (IQI) | Schwärzung Density | Befund/ Findings | Comments (from - to) |
| A                                                              |                                  | Aa                                                                                                                          | Ab   | Ad  | Ba  | C   | D     | Da  | Db  | Dc  | E   | H          | F                | 14                           | 2,3                | x                |                      |
| B                                                              |                                  |                                                                                                                             |      |     |     |     |       |     |     |     |     |            |                  | 14                           | 2,3                | x                |                      |
| C                                                              |                                  |                                                                                                                             |      |     |     |     |       |     |     |     |     |            |                  | 14                           | 2,3                | x                |                      |
|                                                                |                                  |                                                                                                                             |      |     |     |     |       |     |     |     |     |            |                  |                              |                    |                  |                      |
|                                                                |                                  |                                                                                                                             |      |     |     |     |       |     |     |     |     |            |                  |                              |                    |                  |                      |
|                                                                |                                  |                                                                                                                             |      |     |     |     |       |     |     |     |     |            |                  |                              |                    |                  |                      |
|                                                                |                                  |                                                                                                                             |      |     |     |     |       |     |     |     |     |            |                  |                              |                    |                  |                      |
|                                                                |                                  |                                                                                                                             |      |     |     |     |       |     |     |     |     |            |                  |                              |                    |                  |                      |
|                                                                |                                  |                                                                                                                             |      |     |     |     |       |     |     |     |     |            |                  |                              |                    |                  |                      |

## Definition- Erklärung der Bewertung/ Definition- Legend

Aa = Pore/ Gas pore      Ab = Schlauchpore/Wurmhole      Ba = Schlackeneinschl./ Slag inclusion      C = Bindefehler/Lack of fusion  
 D = ung. Durchschw./Lack of penetration      Da = Wurzelkerbe/Root notch      Db = Wurzelrückfall/Root reinforcement      Dc = Wurzeldurchhang/Excessive penetration      E = Riß/Crack  
 H = metallischer Einschluss/Metallic inclusion      F = Einbrand/Undercut

☒ Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled

☐ Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled

☐ toleriert/ tolerated

**DEKIOSKOPIA**  
 Dunajska 10. 040 01 Kosice

Testing Contractor/Name of Examiner

Air Liquide

E.H.R.  
 12.01.06 Kielholz

EHR 02

TÜV

Date Name Signature

Date Name Signature

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12.1.2006 EHR

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|-------------------------------------------------------------------------------------|----------------------------------|---------------------------------------------------------|-----------------------------------------------------|--|-------------------------------------------|------------------|---------------------------------------------------------------------------------------------------|---------------------------------------|
|  |                                  | <b>Durchstrahlungsprüfung- Radiographic Examination</b> |                                                     |  |                                           | Bericht/ Report: | <b>394</b>                                                                                        | Prüfdatum: <b>12.01.2006</b>          |
| Kennwort:                                                                           | Job Name: <b>ASU No.9 Kosice</b> |                                                         | Auftragsnummer:<br>Serial/Order No.: <b>K 70101</b> |  | Zeichnungsnummer/ISO-Nr.: <b>NL 40016</b> |                  | Seite: <b>2</b> of                                                                                | Date of Exam.:                        |
| Benennung:                                                                          |                                  |                                                         | Bauteil/Verbindung: <b>pipe</b>                     |  | Drawing No./ISO No.:                      |                  | Baufeld Nr.: <b>xxx</b>                                                                           |                                       |
| Discription: <b>Coldbox</b>                                                         |                                  |                                                         | Part/Joint:                                         |  | Schweißverfahren DIN 24063: <b>82</b>     |                  | Constr area No.:                                                                                  |                                       |
| W/ärmebehandlung: <input checked="" type="checkbox"/>                               | ohne/ without                    |                                                         | Schweißnahtnummer:                                  |  | Welding process to DIN 24063:             |                  | Nahtform BW                                                                                       |                                       |
| Heat treatment: <input type="checkbox"/>                                            | vor/ before                      |                                                         | Weld- No.: <b>9 N</b>                               |  | Werkstoff/ Material A: <b>Al Mg 4,5Mn</b> |                  | Welder:                                                                                           |                                       |
| Heat treatment: <input type="checkbox"/>                                            | nach/ after                      |                                                         |                                                     |  | Werkstoff/ Material B:                    |                  | Weld type:                                                                                        |                                       |
| Oberflächenzustand <b>Clean</b>                                                     |                                  |                                                         | Prüfmfang: <b>10 %</b>                              |  | Abmessung/Dimension A: <b>33,4x3,4</b>    |                  | Bewertung n.DIN EN 5817 <input type="checkbox"/> DIN EN 30042 <input checked="" type="checkbox"/> | <input type="checkbox"/> A            |
| Surface quality:                                                                    |                                  |                                                         | Extent of examination:                              |  | Abmessung/Dimension B:                    |                  | Quality level acc. to -/- (DIN EN 12517/1)                                                        | <input checked="" type="checkbox"/> B |
|                                                                                     |                                  |                                                         |                                                     |  |                                           |                  |                                                                                                   | <input type="checkbox"/> C            |
| mm                                                                                  |                                  |                                                         |                                                     |  |                                           |                  |                                                                                                   |                                       |

**Angaben zur Prüfung/ Data of examination**

|                                                           |                                       |                                                                               |              |      |                                                                       |            |
|-----------------------------------------------------------|---------------------------------------|-------------------------------------------------------------------------------|--------------|------|-----------------------------------------------------------------------|------------|
| Prüfklasse gem. DIN EN 1435<br>Test class acc. to EN 1435 | A<br>B                                | Zulässigkeitsgrenzen gem. DIN EN 12 517<br>Acceptance level acc. to EN 12 517 | 1<br>2       | 3    | Aufnahmeanordnung nach DIN EN 1435 :<br>Test arrangement acc. EN 1435 | 11         |
| Strahlungsquelle:                                         | Brennfleckgr./Strahlenquellengr.: 3x3 |                                                                               | Filmsorte:   |      | Filmklasse:                                                           | C 2        |
| Source of radiation:                                      | Focal Spot/Source Size:               |                                                                               | Film type:   |      | Film system class:                                                    |            |
| Aktivität:                                                | Röhreinrichtung:                      |                                                                               | Folienart:   |      | Belichtungszeit:                                                      | Filmgröße: |
| Activity:                                                 | 40 ci                                 | Tube voltage/current:                                                         | (KV)         | (mA) | Exposure time                                                         | 10 x 24    |
| Prüfergebnis/ Test data                                   |                                       |                                                                               | Screen type: |      | Screen tickness:                                                      | Film size. |
|                                                           |                                       |                                                                               | 0,02 mm      |      | 45 s                                                                  |            |

### Prüfergebnis/ Test data

[illegible]

Definition- Erklärung der Bewertung/ Definition- Legend

**Aa** = Pore/ Gas pore      **Ab** = Schlauchpore/Wurmhole      **Ad** = Porennest/Porosity      **Ba** = Schlackeneinschl./ Slag inclusion      **C** = Bindefehler/Lack of fusion  
**D** = ung. Durchschw./Lack of penetration      **Da** = Wurzelkerbe/Root notch      **Db** = Wurzelrückfall/Root reinforcement      **Dc** = Wurzeldurchhang/Excessive penetration      **E** = Riß/Crack  
**H** = metallischer Einschluss/Metallic inclusion      **F** = Einbrand/Undercut

|                                                                                                                                         | ☆ Additional Marking                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled  | R1; R2                                                                                                                                                                                                       |
| <input type="checkbox"/> Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled | N<br>F<br>G<br>K<br>I                                                                                                                                                                                        |
| <input type="checkbox"/> toleriert/ tolerated                                                                                           | erste und zweite Rep./first and second Rep.<br>neu nach Rep./ out and reweld<br>Folgeprüfung/ Tracer shot<br>Garantienant/ RT instead of Pressure Test<br>Kontrollschuls/ Control Shot<br>I- Stols/ I- Joint |

**Testing Contractor/Name of Examiner**

## Air Liquide

**E.H.R.**

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Date Name Signature

Name \_\_\_\_\_

Signature \_\_\_\_\_

Name \_\_\_\_\_

Signature \_\_\_\_\_

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|------------------------------------------------------------------|--|----------------------------------|--|----------------------------------------------------------|--|---------------------------------------------------------------------------------------------------|--|----------------------------------------|--|------------------------------|--|
| <b>AIR LIQUIDE</b>                                               |  |                                  |  | <b>Durchstrahlungsprüfung - Radiographic Examination</b> |  |                                                                                                   |  | Bericht/ Report: <b>394</b>            |  | Prüfdatum: <b>12.01.2006</b> |  |
| Kennwort:                                                        |  | Auftragsnummer:                  |  | Zeichnungsnummer/ISO-Nr.: <b>NL 40016</b>                |  | Seite: <b>2</b>                                                                                   |  | Date of Exam.:                         |  | Baufeld Nr.: xxx             |  |
| Job Name: <b>ASU No.9 Kosice</b>                                 |  | Serial/Order No.: <b>K 70101</b> |  | Drawing No./ISO No.:                                     |  | Sheet: of                                                                                         |  | Constr area No.:                       |  |                              |  |
| Benennung: <b>Coldbox</b>                                        |  | Bauteil/Verbindung: <b>pipe</b>  |  | Schweißverfahren DIN 24063: <b>141</b>                   |  | Schweißer: <b>82</b>                                                                              |  | Nahform BW                             |  |                              |  |
| Discription: <b>ohne/ without</b>                                |  | Part/Joint:                      |  | Welding process to DIN 24063:                            |  | Welder:                                                                                           |  | Weld type:                             |  |                              |  |
| Wärmebehandlung: <input checked="" type="checkbox"/> vor/ before |  | Schweißnahtnummer: <b>9 N</b>    |  | Werkstoff/ Material A: <b>Al Mg 4,5Mn</b>                |  | Bewertung n.DIN EN 5817 <input type="checkbox"/> DIN EN 30042 <input checked="" type="checkbox"/> |  | Filmklasse: <input type="checkbox"/> A |  |                              |  |
| Heat treatment: <input type="checkbox"/> nach/ after             |  | Weld- No.:                       |  | Werkstoff/ Material B:                                   |  | Quality level acc. to -/- (DIN EN 12517/1)                                                        |  | <input checked="" type="checkbox"/> B  |  |                              |  |
| Oberflächenzustand <b>Clean</b>                                  |  | Prüfumfang: <b>10 %</b>          |  | Abmessung/Dimension A: <b>33,4x3,4</b>                   |  | Abmessung/Dimension B:                                                                            |  | mm                                     |  |                              |  |
| Surface quality:                                                 |  | Extent of examination:           |  |                                                          |  |                                                                                                   |  |                                        |  |                              |  |

**Angaben zur Prüfung/ Data of examination**

|                                                                                              |  |                                                                                                                                     |  |                                               |  |
|----------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------|--|
| Prüfklasse gem. DIN EN 1435 <input type="checkbox"/> A <input checked="" type="checkbox"/> B |  | Zulässigkeitsgrenzen gem. DIN EN 12 517 <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 |  | Aufnahmeanordnung nach DIN EN 1435: <b>11</b> |  |
| Test class acc. to EN 1435                                                                   |  | Acceptance level acc. to EN 12 517                                                                                                  |  | Test arrangement acc. EN 1435                 |  |
| Strahlungsquelle: <b>Selen 75</b>                                                            |  | Brennfleckgr./Strahlenquellengr.: <b>3x3</b>                                                                                        |  | Filmklasse: <b>C 2</b>                        |  |
| Source of radiation:                                                                         |  | Focal Spot/Source Size:                                                                                                             |  | Film type: <b>Agfa</b>                        |  |
| Aktivität: <b>40 ci</b>                                                                      |  | Röhreneinstellung: <b>(KV)</b>                                                                                                      |  | Belichtungszeit: <b>10 x 24</b>               |  |
| Tube voltage/current:                                                                        |  | Screen type: <b>(mA)</b>                                                                                                            |  | Film size:                                    |  |
| Activity:                                                                                    |  | Screen thickness: <b>0,02 mm</b>                                                                                                    |  | Exposure time <b>45 s</b>                     |  |

**Prüfgebnis/ Test data**

|                                                                |  |                                                                             |  |                        |  |
|----------------------------------------------------------------|--|-----------------------------------------------------------------------------|--|------------------------|--|
| Bildgrößeprüfkörper/ Image quality indicator (IQI 10A/EN461-2) |  | Lage/ Position: <input checked="" type="checkbox"/> Filmbahn/ close to film |  | Filmern/ far from film |  |
| Schweißnahtnummer <b>9 N</b>                                   |  | Imperfektionen (EN 25520)                                                   |  | Befund/ Findings       |  |
| Film-nr. <b>☆</b>                                              |  | Film defect (FF)                                                            |  | Bemerkung (from - to)  |  |
| Film No. <b>A</b>                                              |  | Film defect (FF)                                                            |  | Bemerkung (from - to)  |  |
| Film No. <b>B</b>                                              |  | Film defect (FF)                                                            |  | Bemerkung (from - to)  |  |
| Film No. <b>C</b>                                              |  | Film defect (FF)                                                            |  | Bemerkung (from - to)  |  |
| Film No. <b>D</b>                                              |  | Film defect (FF)                                                            |  | Bemerkung (from - to)  |  |
| Film No. <b>E</b>                                              |  | Film defect (FF)                                                            |  | Bemerkung (from - to)  |  |
| Film No. <b>F</b>                                              |  | Film defect (FF)                                                            |  | Bemerkung (from - to)  |  |
| Film No. <b>G</b>                                              |  | Film defect (FF)                                                            |  | Bemerkung (from - to)  |  |
| Film No. <b>H</b>                                              |  | Film defect (FF)                                                            |  | Bemerkung (from - to)  |  |
| Film No. <b>I</b>                                              |  | Film defect (FF)                                                            |  | Bemerkung (from - to)  |  |

**Definition- Erklärung der Bewertung/ Definition- Legend**

**Aa** = Pore/ Gas pore **Ab** = Schlauchpore/Wurmhole **Ad** = Porenneist/ Porosity **Ba** = Schlackeneinschl./ Slag inclusion **C** = Bindefehler/Lack of fusion  
**D** = ung. Durchschw./ Lack of penetration **Da** = Wurzelkerbe/ Root notch **Db** = Wurzelrückfall/ Root reinforcement **Dc** = Wurzeldurchhang/ Excessive penetration **E** = Riß/ Crack  
**H** = metallischer Einschluss/ Metallic inclusion **F** = Einbrand/ Undercut

☒ Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled

☐ Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled

☐ toleriert/ tolerated

**DEFEKTOSKOPIA**  
Dunajská 10, 040 01 Košice

Testing Contractor/Name of Examiner

Air Liquide

E.H.R.

12.01.06

Kielholz

EHR 02

TÜV

10.1.06

Date

Signature

Date

Name

Signature

Date

Name

Signature

Date

Name

Signature

Date

Name

Signature

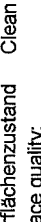
Date

Name

Signature





|                                                                                     |                                                     |                                                              |                                                                                                                                                 |                                                                                                        |                             |                                                |
|-------------------------------------------------------------------------------------|-----------------------------------------------------|--------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|-----------------------------|------------------------------------------------|
|  |                                                     | <b>Durchstrahlungsprüfung- Radiographic Examination</b>      |                                                                                                                                                 |                                                                                                        | Bericht/ Report: <b>396</b> | Prüfdatum: <b>11.01.2006</b><br>Date of Exam.: |
| Kenwort: <b>ASU No.9 Kosice</b>                                                     | Auftragsnummer:<br>Serial/Order No.: <b>K 70101</b> | Zeichnungsnummer/ISO-Nr.: <b>NIL 71202</b>                   | Seite: <b>1</b><br>Sheet: of                                                                                                                    | Baufeld Nr.: <b>xxx</b><br>Constr area No.:                                                            |                             |                                                |
| Benennung: <b>Coldbox</b>                                                           | Bauteil/Verbindung: <b>pipe</b><br>Part/Joint:      | Schweißverfahren DIN 24063:<br>Welding process to DIN 24063: | 141 Schweißer:<br>Welder:                                                                                                                       | <b>82</b><br>Nahtform BW<br>Weld type:                                                                 |                             |                                                |
| Wärmebehandlung: <input checked="" type="checkbox"/>                                | ohne/ without                                       | Werkstoff/ Material A:<br>Werkstoff/ Material B:             | Bewertung n.DIN EN 5817 <input type="checkbox"/> DIN EN 30042 <input checked="" type="checkbox"/><br>Quality level acc. to -//-(DIN EN 12517/1) | }<br><input type="checkbox"/> A<br><input checked="" type="checkbox"/> B<br><input type="checkbox"/> C |                             |                                                |
| Heat treatment: <input type="checkbox"/>                                            | vor/ before                                         | Weld- No.: <b>7</b>                                          |                                                                                                                                                 |                                                                                                        |                             |                                                |
| Oberflächenzustand <b>Clean</b>                                                     | Prüfumfang: <b>50 %</b><br>Extent of examination:   | Abmessung/Dimension A:<br>Abmessung/Dimension B:             | <b>60,3x3,9</b>                                                                                                                                 |                                                                                                        |                             |                                                |
| Surface quality:                                                                    | nach/ after                                         |                                                              |                                                                                                                                                 |                                                                                                        |                             |                                                |

### Angaben zur Prüfung/ Data of examination

|                             |                                              |                                         |                                       |                            |                            |                                                                       |                           |
|-----------------------------|----------------------------------------------|-----------------------------------------|---------------------------------------|----------------------------|----------------------------|-----------------------------------------------------------------------|---------------------------|
| Prüfklasse gem. DIN EN 1435 | <input type="checkbox"/> A                   | Zulässigkeitsgrenzen gem. DIN EN 12 517 | <input checked="" type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | Aufnahmeanordnung nach DIN EN 1435 :<br>Test arrangement acc. EN 1435 | <b>11</b>                 |
| Test class acc. to EN 1435  | <input checked="" type="checkbox"/> B        | Acceptance level acc. to EN 12 517      |                                       |                            |                            |                                                                       |                           |
| Strahlungsquelle:           | Brennfleckgr./Strahlenquellengr.: <b>3x3</b> |                                         | Filmsorte:                            |                            | Filmklasse: C 2            |                                                                       |                           |
| Source of radiation:        | Focal Spot/Source Size:                      |                                         | Film type:                            |                            | Film system class:         |                                                                       |                           |
| Aktivität:                  | Röhreinrichtung:                             |                                         | Folienart:                            |                            | Belichtungszeit:           |                                                                       |                           |
| Activity:                   | 40 ci                                        | Tube voltage/current:                   | (KV)                                  | (mA)                       | Screen type:               | Screen thickness:                                                     | Exposure time <b>45 s</b> |
|                             |                                              |                                         |                                       |                            | Folienstärke:              | Filmgröße:                                                            | <b>10 x 24</b>            |
|                             |                                              |                                         |                                       |                            |                            | Film size:                                                            |                           |

### Prüfergebnis/ Test data

[illegible]

## Definition- Erklärung der Bewertung/ Definition- Legend

**Aa** = Pore/ Gas pore      **Ab** = Schlauchpore/Wurmhole      **Ad** = Porennest/Porosity      **Ba** = Schlackeneinschl./ Slag inclusion      **C** = Bindefehler/Lack of fusion  
**D** = ung. Durchschw./Lack of penetration      **Da** = Wurzelkerbe/Root notch      **Db** = Wurzelrückfall/Root reinforcement      **Dc** = Wurzeldurchhang/Excessive penetration      **E** = Riß/Crack  
**H** = metallischer Einschluss/Metallic inclusion      **F** = Einbrand/Undercut

|                                                                                                                                         | Additional Marking                                                                                                                                                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled  |                                                                                                                                                                                                  |
| <input type="checkbox"/> Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled | R1; R2<br>N<br>neu nach Rep./ cut and reweld<br>F<br>Folgeprüfung/ Tracer shot<br>G<br>Garantenahrt/ RT instead of Pressure Test<br>K<br>Kontrollschuls/ Control Shot<br>I<br>I- Stols/ I- Joint |
| <input type="checkbox"/> toleriert/ tolerated                                                                                           |                                                                                                                                                                                                  |

**Testing Contractor/Name of Examiner**

## Air Liquide

**E.H.R**

Tűn

Date Name Signature

Name

Signature \_\_\_\_\_

Name

Signature

Name \_\_\_\_\_

Date \_\_\_\_\_

Signature

Name \_\_\_\_\_

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11-01-06

75A



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Page 1

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|                                                                                     |  |                                                                  |  |                                                                                                   |  |                                                                                             |  |
|-------------------------------------------------------------------------------------|--|------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------|--|
|  |  | <b>Durchstrahlungsprüfung- Radiographic Examination</b>          |  | Bericht/ Report: <b>397</b>                                                                       |  | Prüfdatum: <b>12.01.2006</b>                                                                |  |
| Kennwort: <b>ASU No.9 Kosice</b>                                                    |  | Zeichnungsnummer/ISO-Nr.: <b>OL 21024</b>                        |  | Seite: <b>1</b> of <b>82</b>                                                                      |  | Date of Exam.: <b>xxx</b>                                                                   |  |
| Job Name: <b>ASU No.9 Kosice</b>                                                    |  | Drawing No./ISO No.: <b>141</b>                                  |  | Schweißer: <b>Nahtform BW</b>                                                                     |  | Baufeld Nr.: <b>xxx</b>                                                                     |  |
| Benennung: <b>Coldbox</b>                                                           |  | Schweißverfahren DIN 24063: <b>Welding process to DIN 24063:</b> |  | Welder: <b>Weld type:</b>                                                                         |  | Constr area No.:                                                                            |  |
| Discription: <b>ohne/ without</b>                                                   |  | Bauteil/Verbindung: <b>pipe</b>                                  |  | Bewertung n.DIN EN 5817 <input type="checkbox"/> DIN EN 30042 <input checked="" type="checkbox"/> |  | A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> |  |
| Wärmebehandlung: <input checked="" type="checkbox"/>                                |  | Part/Joint: <b>Schweißnahtnummer: 11</b>                         |  | Werkstoff/ Material A: <b>Al Mg 4,5Mn</b>                                                         |  | Quality level acc. to -/- (DIN EN 12517/1)                                                  |  |
| Heat treatment: <input type="checkbox"/>                                            |  | Weld- No.: <b>11</b>                                             |  | Werkstoff/ Material B:                                                                            |  |                                                                                             |  |
| Oberflächenzustand <b>Clean</b>                                                     |  | Prüfungsfang: <b>10 %</b>                                        |  | Abmessung/Dimension A: <b>60,3x3,9</b>                                                            |  | mm                                                                                          |  |
| Surface quality:                                                                    |  | Extent of examination:                                           |  | Abmessung/Dimension B:                                                                            |  |                                                                                             |  |

**Aangeven waar de afbeelding is te zien in de afbeelding**

|                                                                                                                                                                                                 |  |                                              |  |                   |  |                           |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------------|--|-------------------|--|---------------------------|--|
| Prüfungszust.: <input type="checkbox"/> A <input checked="" type="checkbox"/> B<br>Prüfklasse gem. DIN EN 1435<br>Zulässigkeitsgrenzen gem. DIN EN 12 517<br>Acceptance level acc. to EN 12 517 |  | test arrangement acc. to EN 1435             |  | Filmklasse:       |  | C 2                       |  |
| Test class acc. to EN 1435                                                                                                                                                                      |  | Brennfleckgr./Strahlenquellengr.: <b>3X3</b> |  | Filmsorte:        |  | Film system class:        |  |
| Strahlungsquelle: <b>Selen 75</b>                                                                                                                                                               |  | Focal Spot/Source Size:                      |  | Film type:        |  | Filmgröße:                |  |
| Source of radiation:                                                                                                                                                                            |  | Folienart: <b>b</b> (mm)                     |  | Belichtungszeit:  |  | Film size:                |  |
| Aktivität:                                                                                                                                                                                      |  | (mm)                                         |  | Folienstärke:     |  | 10 x 24                   |  |
| Activity:                                                                                                                                                                                       |  | (mA)                                         |  | Screen thickness: |  | Exposure time <b>45 s</b> |  |
| 40 ci                                                                                                                                                                                           |  | (KV)                                         |  | 0,02 mm           |  | Film size.                |  |

**Prüfergebnis/ Test data**

| Weld No. | Schweißnahtnummer<br>☆ | Bildgüteprüfkörper/ Image quality indicator ( IQI 10A1EN461-2) | Lage/ Position: |            | Imperfektions ( EN 26520 ) |           |          |          |            |           |           |          |          |          | Filmfehler<br>Film defect<br>( FF ) | Bildgüte<br>Image quality<br>( IQI ) | Schwärzung<br>Density | Befund/ Findings |         | Bemerkung<br>Comments<br>( from - to ) |
|----------|------------------------|----------------------------------------------------------------|-----------------|------------|----------------------------|-----------|----------|----------|------------|-----------|-----------|----------|----------|----------|-------------------------------------|--------------------------------------|-----------------------|------------------|---------|----------------------------------------|
|          |                        |                                                                | 2011<br>Aa      | 2016<br>Ab | 2013<br>Ad                 | 301<br>Ba | 401<br>C | 402<br>D | 5013<br>Da | 515<br>Db | 515<br>Dc | 504<br>E | 100<br>H | 304<br>H |                                     |                                      |                       | 5011/5012<br>F   | a ( e ) |                                        |
| 11       |                        | A                                                              |                 |            |                            |           |          |          |            |           |           |          |          |          |                                     | 14                                   | 2,3                   | x                |         |                                        |
|          |                        | B                                                              |                 |            |                            |           |          |          |            |           |           |          |          |          |                                     | 14                                   | 2,5                   | x                |         |                                        |
|          |                        |                                                                |                 |            |                            |           |          |          |            |           |           |          |          |          |                                     |                                      |                       |                  |         |                                        |
|          |                        |                                                                |                 |            |                            |           |          |          |            |           |           |          |          |          |                                     |                                      |                       |                  |         |                                        |
|          |                        |                                                                |                 |            |                            |           |          |          |            |           |           |          |          |          |                                     |                                      |                       |                  |         |                                        |

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| Definition- Erklärung der Bewertung/ Deutungs- Legende | Ad = Porennetz/ Porosity    | Ba = Schlauchkette/Schleife/ Wurzel durchgang/Excessive penetration |
|--------------------------------------------------------|-----------------------------|---------------------------------------------------------------------|
| Aa = Pore/ Gas pore                                    | Ab = Wurzelkerbe/Root notch | Dc = Wurzelverdrängung/Root reinforcement                           |
| D = ung. Durchschw./Lack of penetration                | Da = Wurzelkerbe/Root notch |                                                                     |
| Du = metallischer Einschluss/Metallic inclusion        | F = Einbrand/Undercut       |                                                                     |

5) Calibration method according to test specification fulfilled

Antorferding (1961) has pointed out that the results according to test specification not fulfilled

| Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled |   |                                          |
|----------------------------------------------------------------------------------------------------------------|---|------------------------------------------|
| toleriert/ tolerated                                                                                           | N | neu nach Rep./ cut and reweid            |
|                                                                                                                | F | Folgeprüfung/ Tracer shot                |
|                                                                                                                | G | Garantienah/ RT instead of Pressure Test |
|                                                                                                                | K | Kontrollschuß/ Control Shot              |
|                                                                                                                | - | 1- Strolch/ 1- Joint                     |

paternal/ maternal

BOOK REVIEW

# 1110001 Kazio

| Test Item | Contractor | Name of Examiner |
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esting contractor name: 812

[illegible]

Date \_\_\_\_\_

Name \_\_\_\_\_

Signature \_\_\_\_\_

## Air Liquide

Y.H.W.

**E.H.K**  
2006/06/17

Signature \_\_\_\_\_

Name \_\_\_\_\_ Signature \_\_\_\_\_

Date \_\_\_\_\_

Name

Signature \_\_\_\_\_

TÜV

Date \_\_\_\_\_

Name \_\_\_\_\_

Signature \_\_\_\_\_



12.01.06 ZKA



| Durchstrahlungsprüfung - Radiographic Examination       |  |                                  |  |                                          |  |                           |  |                  |  | Bericht/ Report: <b>400</b> |  | Prüfdatum: 13.01.2006<br>Date of Exam.: |  |
|---------------------------------------------------------|--|----------------------------------|--|------------------------------------------|--|---------------------------|--|------------------|--|-----------------------------|--|-----------------------------------------|--|
| Kennwort: <b>AIR LIQUIDE</b>                            |  | Auftragsnummer:                  |  | Zeichnungsnummer/ISO-Nr.: <b>A 24105</b> |  | Sheet: 1 of               |  | Baufeld Nr.: xxx |  | Constr area No.:            |  |                                         |  |
| Job Name: <b>ASU No.9 Kosice</b>                        |  | Serial/Order No.: <b>K 70101</b> |  | Drawing No./ISO No.:                     |  | 141 Schweißer:            |  | 82               |  | Nahform BW                  |  |                                         |  |
| Benennung: <b>Coldbox</b>                               |  | Bautell/Verbindung: pipe         |  | Schweißverfahren DIN 24063:              |  | Welder:                   |  |                  |  | Weld type:                  |  |                                         |  |
| Description: <b>Coldbox</b>                             |  | Part/Joint:                      |  | Welding process to DIN 24063:            |  | Bewertung n.DIN EN 5817   |  | □ DIN EN 30042   |  | □ A                         |  |                                         |  |
| Wärmebehandlung: <input type="checkbox"/> ohne/ without |  | Schweißnahtnummer: <b>14 G</b>   |  | Werkstoff/ Material A:                   |  | Quality level acc. to -/- |  | (DIN EN 12517/1) |  | □ B                         |  |                                         |  |
| Heat treatment: <input type="checkbox"/> vor/ before    |  | Weld- No.:                       |  | Werkstoff/ Material B:                   |  |                           |  |                  |  | □ C                         |  |                                         |  |
| Heat treatment: <input type="checkbox"/> nach/ after    |  |                                  |  |                                          |  |                           |  |                  |  |                             |  |                                         |  |
| Oberflächenzustand Clean                                |  | Prüfumfang: <b>Garantienaht</b>  |  | Abmessung/Dimension A: <b>168x7,1</b>    |  |                           |  |                  |  | mm                          |  |                                         |  |
| Surface quality:                                        |  | Extent of examination:           |  | Abmessung/Dimension B:                   |  |                           |  |                  |  |                             |  |                                         |  |

| Angaben zur Prüfung/ Data of examination                                                     |  |                                                                                                                          |  |                                                |  |                            |  |                           |  |  |  |
|----------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------|--|----------------------------|--|---------------------------|--|--|--|
| Prüfklasse gem. DIN EN 1435 <input type="checkbox"/> A <input checked="" type="checkbox"/> B |  | Zulässigkeitsgrenzen gem. DIN EN 12 517 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 |  | Aufnahmeanordnung nach DIN EN 1435 : <b>14</b> |  |                            |  |                           |  |  |  |
| Test class acc. to EN 1435                                                                   |  | Acceptance level acc. to EN 12 517                                                                                       |  | Test arrangement acc. EN 1435                  |  |                            |  |                           |  |  |  |
| Strahlungsquelle: <b>Selen 75</b>                                                            |  | Brennfleckgr./Strahlenquellengr.: <b>3x3</b>                                                                             |  | Filmsorte: Kodak Mx 100                        |  | Filmklasse: C 2            |  |                           |  |  |  |
| Source of radiation:                                                                         |  | Focal Spot/Source Size:                                                                                                  |  | Film type:                                     |  | Film system class:         |  |                           |  |  |  |
| Aktivität: <b>40 ci</b>                                                                      |  | Röhreneinstellung: (KV) (mA)                                                                                             |  | Folienart: Pb                                  |  | Belichtungszeit: 0,02 mm   |  | Filmgröße: <b>10 x 20</b> |  |  |  |
| Activity:                                                                                    |  | Tube voltage/current:                                                                                                    |  | Screen type:                                   |  | Exposure time: <b>45 s</b> |  | Film size:                |  |  |  |

| Prüfergebnis/ Test data                                       |  |                                                                                   |  |                         |  |                    |  |                  |  |                                |  |
|---------------------------------------------------------------|--|-----------------------------------------------------------------------------------|--|-------------------------|--|--------------------|--|------------------|--|--------------------------------|--|
| Bildgüteprüfkörper/ Image quality indicator (IQI 10A/EN461-2) |  | Lage/ Position: <input checked="" type="checkbox"/> Filmaufnahme close to film    |  | Filmfern/ far from film |  |                    |  |                  |  |                                |  |
| Schweißnahtnummer <b>14 G</b>                                 |  | Film-nr. <b>1401</b>                                                              |  | Image quality (IQI)     |  | Schwärzung Density |  | Befund/ Findings |  | Bemerkung Comments (from - to) |  |
| Weld No. <b>1</b>                                             |  | 2011   2016   2013   301   401   402   5013   515   504   100   304   5011   5012 |  | Filmfehler (FF)         |  | a (e)              |  | na (ne)          |  |                                |  |
| 2                                                             |  | Aa   Ab   Ad   Ba   C   D   Da   Db   Dc   E   F                                  |  |                         |  | 15                 |  | 2,4              |  | x                              |  |
| 3                                                             |  |                                                                                   |  |                         |  | 15                 |  | 2,4              |  | x                              |  |
| 4                                                             |  |                                                                                   |  |                         |  | 15                 |  | 2,4              |  | x                              |  |
| 5                                                             |  |                                                                                   |  |                         |  | 15                 |  | 2,4              |  | x                              |  |

| Definition- Erklärung der Bewertung/ Definition- Legend |  |                             |  |                                        |  |                                            |  |                                |  |  |  |
|---------------------------------------------------------|--|-----------------------------|--|----------------------------------------|--|--------------------------------------------|--|--------------------------------|--|--|--|
| Aa = Pore/ Gas pore                                     |  | Ab = Schlauchpore/Wurmhole  |  | Ad = Porennetz/ Porosity               |  | Ba = Schlackeneinschl./ Slag inclusion     |  | C = Bindefehler/Lack of fusion |  |  |  |
| D = ung. Durchschw./Lack of penetration                 |  | Da = Wurzelkerbe/Root notch |  | Db = Wurzelrückfall/Root reinforcement |  | Dc = Wurzeldurchhang/Excessive penetration |  | E = Riß/Crack                  |  |  |  |
| H = metallischer Einschluss/Metallic inclusion          |  | F = Einbrand/Undercut       |  |                                        |  |                                            |  |                                |  |  |  |

| Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled |  |                                                                                                                |  |        |  |                                             |  |  |  |  |  |
|----------------------------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------|--|--------|--|---------------------------------------------|--|--|--|--|--|
| <input checked="" type="checkbox"/>                                                                |  | Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled |  | R1; R2 |  | erste und zweite Rep./first and second Rep. |  |  |  |  |  |
| <input type="checkbox"/>                                                                           |  |                                                                                                                |  | N      |  | neu nach Rep./ cut and reweld               |  |  |  |  |  |
| <input type="checkbox"/>                                                                           |  |                                                                                                                |  | F      |  | Folgeprüfung/ Tracer shot                   |  |  |  |  |  |
| <input type="checkbox"/>                                                                           |  |                                                                                                                |  | G      |  | Garantienaht/ RT instead of Pressure Test   |  |  |  |  |  |
| <input type="checkbox"/>                                                                           |  |                                                                                                                |  | K      |  | Kontrollschuß/ Control Shot                 |  |  |  |  |  |
| <input type="checkbox"/>                                                                           |  |                                                                                                                |  | I      |  | I- Stöße/ I- Joint                          |  |  |  |  |  |

| Testing Contractor/Name of Examiner |           | Air Liquide |           | E.H.R. 14.01.06 Kielholz |           | TÜV 15.1.06 |           |
|-------------------------------------|-----------|-------------|-----------|--------------------------|-----------|-------------|-----------|
| Date                                | Name      | Date        | Name      | Date                     | Name      | Date        | Name      |
| 14.01.06                            | Zick      | 16-1-06     | Baher     | 14.01.06                 | Kielholz  | 15.1.06     | Signature |
|                                     | Signature |             | Signature |                          | Signature |             | Signature |

|                                                          |  |                                           |  |                                                                                                   |  |                                       |  |
|----------------------------------------------------------|--|-------------------------------------------|--|---------------------------------------------------------------------------------------------------|--|---------------------------------------|--|
| <b>Durchstrahlungsprüfung - Radiographic Examination</b> |  |                                           |  | Bericht/ Report: <b>401</b>                                                                       |  | Prüfdatum: <b>13.01.2006</b>          |  |
| Kennwort: <b>ASU No.9 Kosice</b>                         |  | Zeichnungsnummer/ISO-Nr.: <b>A 24105</b>  |  | Sheet: <b>1</b> of                                                                                |  | Baufeld Nr.: <b>xxx</b>               |  |
| Serial/Order No.: <b>K 70101</b>                         |  | Drawing No./ISO No.:                      |  | 141 Schweißer: <b>82</b>                                                                          |  | Nahtform BW                           |  |
| Bauteil/Verbindung: <b>pipe</b>                          |  | Schweißverfahren DIN 24063:               |  | Weider:                                                                                           |  | Weld type:                            |  |
| Part/Joint:                                              |  | Welding process to DIN 24063:             |  | Bewertung n.DIN EN 5817 <input type="checkbox"/> DIN EN 30042 <input checked="" type="checkbox"/> |  | <input type="checkbox"/> A            |  |
| Schweißnahtnummer:                                       |  | Werkstoff/ Material A: <b>Al Mg 4,5Mn</b> |  | Quality level acc. to -/- (DIN EN 12517/1)                                                        |  | <input checked="" type="checkbox"/> B |  |
| Weld- No.: <b>13 G</b>                                   |  | Werkstoff/ Material B:                    |  |                                                                                                   |  | <input type="checkbox"/> C            |  |
| ohne/ without                                            |  |                                           |  |                                                                                                   |  |                                       |  |
| vor/ before                                              |  |                                           |  |                                                                                                   |  |                                       |  |
| nach/ after                                              |  |                                           |  |                                                                                                   |  |                                       |  |
| Oberflächenzustand <b>Clean</b>                          |  | Prüfumfang: <b>Garantienaht</b>           |  | Abmessung/Dimension A: <b>168x7,1</b>                                                             |  | mm                                    |  |
| Surface quality:                                         |  | Extent of examination:                    |  | Abmessung/Dimension B:                                                                            |  |                                       |  |

**Angaben zur Prüfung/ Data of examination**

|                                                                                              |                                                                                                                          |                                                |                                 |
|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|---------------------------------|
| Prüfklasse gem. DIN EN 1435 <input type="checkbox"/> A <input checked="" type="checkbox"/> B | Zulässigkeitsgrenzen gem. DIN EN 12 517 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 | Aufnahmeanordnung nach DIN EN 1435 : <b>14</b> |                                 |
| Test class acc. to EN 1435                                                                   | Acceptance level acc. to EN 12 517                                                                                       | Test arrangement acc. EN 1435                  |                                 |
| Strahlungsquelle: <b>Selen 75</b>                                                            | Brennfleckgr./Strahlenquellengr.: <b>3X3</b>                                                                             | Filmsorte: <b>168</b>                          | Filmklasse: <b>C 2</b>          |
| Source of radiation:                                                                         | Focal Spot/Source Size:                                                                                                  | Film type:                                     | Film system class:              |
| Aktivität: <b>40 ci</b>                                                                      | Röhreneinstellung:                                                                                                       | Foliendicke: <b>0,02 mm</b>                    | Belichtungszeit: <b>10 x 20</b> |
| Activity:                                                                                    | Tube voltage/current:                                                                                                    | Screen type:                                   | Exposure time <b>45 s</b>       |
|                                                                                              | (KV)                                                                                                                     | (mA)                                           | Film size:                      |

**Prüfergebnis/ Test data**

| Bildgrößeprüfkörper/ Image quality indicator ( IQI 10A/EN461-2 ) | Lage/ Position: <input checked="" type="checkbox"/> Filmnah/ close to film <input type="checkbox"/> Filmfern/ far from film |                                         | Filmfehler Image quality ( IQI ) |                    | Befund/ Findings |           | Bemerkung Comments ( from - to ) |
|------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|----------------------------------|--------------------|------------------|-----------|----------------------------------|
|                                                                  | Film-nr. Film No.                                                                                                           | Auswertbare Filmlänge in cm / from + to | Filmfehler Film defect ( FF )    | Schwärzung Density | a ( e )          | na ( ne ) |                                  |
| <b>13G</b>                                                       | 1                                                                                                                           |                                         |                                  | 15                 | 2,4              | x         |                                  |
|                                                                  | 2                                                                                                                           |                                         |                                  | 15                 | 2,4              | x         |                                  |
|                                                                  | 3                                                                                                                           |                                         |                                  | 15                 | 2,4              | x         |                                  |
|                                                                  | 4                                                                                                                           |                                         |                                  | 15                 | 2,4              | x         |                                  |
|                                                                  | 5                                                                                                                           |                                         |                                  | 15                 | 2,4              | x         |                                  |

**Definition- Erklärung der Bewertung/ Definition- Legend**

Aa = Pore/ Gas pore      Ab = Schlauchpore/Wurmhole      Ba = Schlackeneinschl./ Slag inclusion      C = Bindefehler/Lack of fusion  
D = ung. Durchschw./Lack of penetration      Da = Wurzelkerbe/Root notch      Db = Wurzelrückfall/Root reinforcement      Dc = Wurzeldurchhang/Excessive penetration      E = Riß/ Crack  
H = metallischer Einschluss/Metallic inclusion      F = Einbrand/Undercut

☒ Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled

☐ Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled

☐ toleriert/ tolerated



Testing Contractor/Name of Examiner  
mobile: 0905 602 812

Date **16-1-06** Name **Bahri** Signature **Bahri**

Air Liquide

Date **16-1-06** Name **Bahri** Signature **Bahri**

E.H.R. 14.01.06 Kielholz

Name

Signature

TÜV

Date

Name

Signature

|                                                         |  |                                           |  |                                              |  |                                                                   |  |
|---------------------------------------------------------|--|-------------------------------------------|--|----------------------------------------------|--|-------------------------------------------------------------------|--|
| <b>Durchstrahlungsprüfung- Radiographic Examination</b> |  |                                           |  | Bericht/ Report: <b>402</b>                  |  | Prüfdatum: <b>13.01.2006</b>                                      |  |
| Kennwort: <b>ASU No.9 Kosice</b>                        |  | Zeichnungsnummer/ISO-Nr.: <b>A 24205</b>  |  | Sheet: <b>2</b> of                           |  | Baufeld Nr.: <b>xxx</b>                                           |  |
| Serial/Order No.: <b>K 70101</b>                        |  | Drawing No./ISO No.:                      |  | Schweißverfahren: <b>153</b>                 |  | Nahtform: <b>BW</b>                                               |  |
| Bauteil/Verbindung: <b>pipe</b>                         |  | Schweißverfahren: <b>DIN 24063:</b>       |  | Schweißer: <b>141</b>                        |  | Weld type: <b>□ A</b>                                             |  |
| Part/Joint:                                             |  | Welding process to DIN 24063:             |  | Welder:                                      |  | Bewertung n.DIN EN 5817 <b>□</b> DIN EN 30042 <b>■</b> <b>□ B</b> |  |
| Wärmebehandlung: <b>□ ohne/ without</b>                 |  | Werkstoff/ Material A: <b>Al Mg 4,5Mn</b> |  | Bewertung level acc. to -/- (DIN EN 12517/1) |  | <b>□ C</b>                                                        |  |
| Heat treatment: <b>□ vor/ before</b>                    |  | Weld- No.: <b>23 G</b>                    |  | Quality level acc. to -/-                    |  |                                                                   |  |
| nach/ after                                             |  | Prüfumfang: <b>Garantienaht</b>           |  | Abmessung/Dimension A: <b>168x7,1</b>        |  | mm                                                                |  |
| Oberflächenzustand: <b>Clean</b>                        |  | Extent of examination:                    |  | Abmessung/Dimension B:                       |  |                                                                   |  |
| Surface quality:                                        |  |                                           |  |                                              |  |                                                                   |  |

**Angaben zur Prüfung/ Data of examination**

|                                        |                                                                          |                                               |                           |
|----------------------------------------|--------------------------------------------------------------------------|-----------------------------------------------|---------------------------|
| Prüfklasse gem. DIN EN 1435 <b>□ A</b> | Zulässigkeitsgrenzen gem. DIN EN 12 517 <b>□ 1</b> <b>□ 2</b> <b>□ 3</b> | Aufnahmeanordnung nach DIN EN 1435: <b>14</b> |                           |
| Test class acc. to EN 1435 <b>□ B</b>  | Acceptance level acc. to EN 12 517                                       | Test arrangement acc. EN 1435                 |                           |
| Strahlungsquelle: <b>Selen 75</b>      | Brennflächgr./Strahlenquellengr.: <b>3x3</b>                             | Filmsorte: <b>Kodak Mx 100</b>                | Filmklasse: <b>C 2</b>    |
| Source of radiation:                   | Focal Spot/Source Size:                                                  | Film type:                                    | Film system class:        |
| Aktivität: <b>40 ci</b>                | Röhreneinstellung: <b>(KV)</b>                                           | Folienart: <b>Pb</b>                          | Filmgröße: <b>10 x 20</b> |
| Activity:                              | Tube voltage/current:                                                    | Screen type:                                  | Film size:                |
|                                        | (mA)                                                                     | Screen thickness:                             |                           |

**Prüfgebnis/ Test data**

| Bildgüteprüfkörper/ Image quality indicator ( IQI 10A1EN461-2 ) | Film-nr. / Auswertbare Filmlänge | Film No. / Evaluated length of film in cm / from + to                      | Lager/ Position:            |                                 | Filmnah/ close to film           |                      | Filmfern/ far from film |   | Bemerkung / Comments ( from - to ) |    |    |   |   |    |     |   |  |  |
|-----------------------------------------------------------------|----------------------------------|----------------------------------------------------------------------------|-----------------------------|---------------------------------|----------------------------------|----------------------|-------------------------|---|------------------------------------|----|----|---|---|----|-----|---|--|--|
|                                                                 |                                  |                                                                            | Imperfektionen ( EN 26520 ) | Filmfehler / Film defect ( FF ) | Bildgüte / Image quality ( IQI ) | Schwärzung / Density | Befund/ Findings        |   |                                    |    |    |   |   |    |     |   |  |  |
| <b>23 G</b>                                                     | 1                                | 2011   2016   301   401   402   5013   515   504   100   304   5011   5012 | Aa                          | Ab                              | Ad                               | Ba                   | C                       | D | Da                                 | Db | Dc | E | F | 15 | 2,4 | x |  |  |
|                                                                 | 2                                |                                                                            |                             |                                 |                                  |                      |                         |   |                                    |    |    |   |   | 15 | 2,4 | x |  |  |
|                                                                 | 3                                |                                                                            |                             |                                 |                                  |                      |                         |   |                                    |    |    |   |   | 15 | 2,4 | x |  |  |
|                                                                 | 4                                |                                                                            |                             |                                 |                                  |                      |                         |   |                                    |    |    |   |   | 15 | 2,4 | x |  |  |
|                                                                 | 5                                |                                                                            |                             |                                 |                                  |                      |                         |   |                                    |    |    |   |   | 15 | 2,4 | x |  |  |

**Definition- Erklärung der Bewertung/ Definition- Legend**

**Aa** = Pore/ Gas pore **Ab** = Schlauchpore/Wurmhole **Ad** = Porennest/Porosity **Ba** = Schlackeneinschl./ Slag inclusion **C** = Bindefehler/Lack of fusion  
**D** = ung. Durchschw./Lack of penetration **Da** = Wurzelkerbe/Root notch **Db** = Wurzelrückfall/Root reinforcement **Dc** = Wurzeldurchhang/Excessive penetration **E** = Riß/Crack  
**H** = metallischer Einschluss/Metallic inclusion **F** = Einbrand/Undercut

☒ Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled

☐ Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled

☒ toleriert/ tolerated

Dunajská 10. 040 01 Kosice

Testing Contractor/Name of Examiner

Air Liquide

E.H.R.

14.01.06

Kielholz

EHR 02

TÜV

Date **14.01.06** Name **Elka** Signature **[Signature]**

Date **16-1-06**

Name **Yavuz**

Signature **[Signature]**

Date **14.01.06**

Name **Kielholz**

Signature **[Signature]**

Date **13.01.06**

Name **[Name]**

Signature **[Signature]**

| Durchstrahlungsprüfung- Radiographic Examination |                     |                        |              | Bericht/ Report:              | 403         | Prüfdatum:                | 13.01.2006                            |
|--------------------------------------------------|---------------------|------------------------|--------------|-------------------------------|-------------|---------------------------|---------------------------------------|
| Kennwort:                                        | Auftragsnummer:     |                        |              | Zeichnungsnummer/ISO-Nr.:     | 2           | Baufeld Nr.:              | xxx                                   |
| Job Name:                                        | ASU No.9 Kosice     | Serial/Order No.:      | K 70101      | Drawing No./ISO No.:          | Sheet: of   | Constr area No.:          |                                       |
| Benennung:                                       | Bauteil/Verbindung: | Part/Joint:            | pipe         | Schweißverfahren DIN 24063:   | 141         | Schweißer:                | Nahtform BW                           |
| Discription:                                     | Coldbox             |                        |              | Welding process to DIN 24063: | 153         | Welder:                   | Weld type:                            |
| Wärmebehandlung:                                 | ohne/ without       | Schweißnahtnummer:     |              | Werkstoff/ Material A:        | AI Mg 4,5Mn | Bewertung n.DIN EN 5817   | <input type="checkbox"/> A            |
| Heat treatment:                                  | vor/ before         | Weld- No.:             | 24 G         | Werkstoff/ Material B:        |             | Quality level acc. to -/- | <input checked="" type="checkbox"/> B |
|                                                  | nach/ after         |                        |              |                               |             | (DIN EN 12517/1)          | <input type="checkbox"/> C            |
| Oberflächenzustand                               | Clean               | Prüfumfang:            | Garantienaht | Abmessung/Dimension A:        | 168x7,1     |                           | mm                                    |
| Surface quality:                                 |                     | Extent of examination: |              | Abmessung/Dimension B:        |             |                           |                                       |

## Angaben zur Prüfung/ Data of examination

|                             |                                       |                                         |                            |                            |                            |                                      |                    |
|-----------------------------|---------------------------------------|-----------------------------------------|----------------------------|----------------------------|----------------------------|--------------------------------------|--------------------|
| Prüfklasse gem. DIN EN 1435 | <input type="checkbox"/> A            | Zulässigkeitsgrenzen gem. DIN EN 12 517 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | Aufnahmeanordnung nach DIN EN 1435 : | 14                 |
| Test class acc. to EN 1435  | <input checked="" type="checkbox"/> B | Acceptance level acc. to EN 12 517      |                            |                            |                            | Test arrangement acc. EN 1435        |                    |
| Strahlungsquelle:           | Selen 75                              | Brennfleckgr./Strahlenquellengr.:       | 3x3                        |                            |                            | Filmsorte:                           | Kodak Mx 100       |
| Source of radiation:        |                                       | Focal Spot/Source Size:                 |                            |                            |                            | Film type:                           | Film system class: |
| Aktivität:                  | 40 ci                                 | Röhreneinstellung:                      |                            |                            |                            | Folienart:                           | Folienstärke:      |
| Activity:                   |                                       | Tube voltage/current:                   | (KV)                       | (mA)                       | (mAs)                      | Screen type:                         | Exposure time 45 s |
|                             |                                       |                                         |                            |                            |                            | Screen thickness:                    | Film size.         |

## Prüfergebnis/ Test data

| Bildgüteprüfkörper/ Image quality indicator ( IQI 10A1EN461-2 | Lage/ Position: | Filmnah/ close to film | Filmfern/ far from film | Bemerkung     |
|---------------------------------------------------------------|-----------------|------------------------|-------------------------|---------------|
| Schweißnahtnummer                                             | Film-nr.        | Auswertbare Filmlänge  | Filmfehler              | Image quality |
| Weld No.                                                      | ☆               | Film No.               | Film defect             | ( IQI )       |
|                                                               |                 |                        | ( FF )                  |               |
| 1                                                             |                 |                        |                         | 15            |
| 2                                                             |                 |                        |                         | 15            |
| 3                                                             |                 |                        |                         | 15            |
| 4                                                             |                 |                        |                         | 15            |
| 5                                                             |                 |                        |                         | 15            |

## Definition- Erklärung der Bewertung/ Definition- Legend

Aa = Pore/ Gas pore      Ab = Schlauchpore/Wurmhole      Ad = Porennetz/ Porosity      Ba = Schlackeneinschl./ Slag inclusion      C = Bindefehler/Lack of fusion  
 D = ung. Durchschw./Lack of penetration      Da = Wurzelkerbe/Root notch      Db = Wurzelrückenfall/Root reinforcement      Dc = Wurzeldurchhang/Excessive penetration      E = Riß/Crack  
 H = metallischer Einschluss/Metallic Inclusion      F = Einbrand/Undercut

☒ Anforderung nach Prüfspezifikation erfüllt/ Requirements according to test specification fulfilled

☐ Anforderungen nach Prüfspezifikation nicht erfüllt/ Requirements according to test specification not fulfilled

☐ toleriert/ tolerated

DUNAJSKÁ 10, 040 01 KOŠICE  
 Tel: 055 604 67 00  
 Fax: 055 604 67 01

Testing Contractor/Name of Examiner

Air Liquide

E.H.R.

14.01.06

Kielholz

Date

Name

Signature

Date

Name

Signature

Date

Name

Signature

TÜV

Date

Name

Signature



Essener Hochdruck-  
Rohrleitungsbau

LZA NO. 9, Kosice - COLDBOX -

PT-Order

NO.: 1

Dat.: 16.12.05

AIR LIQUIDE

Baust. Kosice

|    | Fu | Line No | Sh. | Area  | Weid No | BR | Mat. | Welder No | PT - Prtk.No | Diam./Thickn. | Part/Joint | not | Rep.1-x | Location     |
|----|----|---------|-----|-------|---------|----|------|-----------|--------------|---------------|------------|-----|---------|--------------|
| 1  | NL | 21018   | 1   | C-Box | 2       |    |      | 82        | PT 1         | 33,4x3,4/1"   | Nozzle     |     | 856     | C-Box 14,6 m |
| 2  | N  | 21020-1 | 1   | C-Box | 2.2     |    |      | 491       | PT 2         | 88,9x5,5/3"   | Nozzle     |     | 819     | C-Box 17 m   |
| 3  | N  | 21020-1 | 1   | C-Box | 4       |    |      | 491       | PT 3         | 60,3x3,9/2"   | Nozzle     |     | 819     | C-Box 17 m   |
| 4  | OL | 23004   | 1   | C-Box | 2       |    |      | 491       | PT 4         | 60,3x3,9/2"   | Nozzle     |     | 885     | C-Box 25 m   |
| 5  | N  | 21020-2 | 1   | C-Box | 4       |    |      | 82        | PT 5         | 60,3x3,9/2"   | Nozzle     |     | 820     | C-Box 17,3 m |
| 6  | N  | 21020-2 | 1   | C-Box | 5       |    |      | 82/491    | PT 6         | 273x4/10"     | Nozzle     |     | 820     | C-Box 20,5 m |
| 7  | AL | 23002   | 1   | C-Box | 1       |    |      | 488       | PT 7         | 60,3x3,9/2"   | Nozzle     |     | 890     | C-Box 25 m   |
| 8  | A  | 20015   | 1   | C-Box | 9       |    |      | 470       | PT 8         | 60,3x3,9/2"   | Nozzle     |     | 843     | C-Box 4,4 m  |
| 9  | A  | 20015   | 1   | C-Box | 10      |    |      | 470       | PT 9         | 60,3x3,9/2"   | Nozzle     |     | 843     | C-Box 4,4 m  |
| 10 | OL | 61102   | 3   | C-Box | 31      |    |      | 491       | PT 10        | 60,3x3,9/2"   | Nozzle     |     | 97      | Workshop     |
| 11 |    |         |     |       |         |    |      |           |              |               |            |     |         |              |
| 12 |    |         |     |       |         |    |      |           |              |               |            |     |         |              |
| 13 |    |         |     |       |         |    |      |           |              |               |            |     |         |              |
| 14 |    |         |     |       |         |    |      |           |              |               |            |     |         |              |
| 15 |    |         |     |       |         |    |      |           |              |               |            |     |         |              |
| 16 |    |         |     |       |         |    |      |           |              |               |            |     |         |              |
| 17 |    |         |     |       |         |    |      |           |              |               |            |     |         |              |
| 18 |    |         |     |       |         |    |      |           |              |               |            |     |         |              |

16-06 Air Liquide  
Jouretz  
Bohrer BAHU

UFS  
EHR 02

BR maens, backingring.

No is without, yes is with backingring.

Backingring is 2mm Al - strip with 1mm Inox inlet Strip.

|                                                                                                                                                                                             |                              |                                                                    |                                                                                 |                                                                                        |                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|--------------------------------------------------------------------|---------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|---------------------------------------------------------------------|
|  <b>AIR LIQUIDE</b>                                                                                        |                              | <b>Oberflächenriß-Prüfprotokoll</b><br><i>Surface-Crack-Record</i> |                                                                                 | Kennzeichng.-Nr.<br>Ident-No. xxxxxx<br><hr/> S24-Protokoll                            |                                                                     |
| Zchnng.-Nr. / Fertig.-Iso-Nr.: <b>NL 21018 Sh.1</b><br>Drawing-no. / Isometric fab. plan no.:                                                                                               |                              |                                                                    |                                                                                 | KKS-Nr.: xxxxxx<br>Code no.: xxxxx                                                     |                                                                     |
|                                                                                                                                                                                             |                              |                                                                    |                                                                                 | Lfd.-Nr.:<br>Serial no.: xxxx                                                          |                                                                     |
| Komponente:<br>Component: <b>Nozzle</b>                                                                                                                                                     |                              | Werkstoff: Aluminium<br>Material:                                  |                                                                                 | Anforderungsstufe:<br>Inspection class:                                                |                                                                     |
| Prüfung nach Spez.:<br>Examination acc. to spec.:                                                                                                                                           |                              |                                                                    | Prüfung nach / vor Wärmebehandlung<br>Examination after / before heat treatment |                                                                                        | Prüf-Nr.: PT 1<br>Test no.:                                         |
| <b>MAGNETPULVERPRÜFUNG / Magnetic particle test</b>                                                                                                                                         |                              |                                                                    |                                                                                 |                                                                                        | Schritt-Nr.:<br>Sequence no.:                                       |
| Magnetisierungsstrom: JEW, JE<br>Magnetization current:                                                                                                                                     |                              | Prüfgerät: Tiede, TWM 220 / 42<br>Exam. equipm.:                   |                                                                                 | Felderzeug.: Joch, Spulen, Selbstdurchflut.<br>Magnetization: yoke, coil, prod. method |                                                                     |
| Feldstärke: > 2,0 - 6,5 kA/m<br>Field strength                                                                                                                                              |                              | Stromstärke: A<br>Amperage:                                        |                                                                                 | Pol / Kontaktabstand: mm<br>Pole / Prod-distance:                                      |                                                                     |
| Prüflächenzustand:<br>Surface preparation:                                                                                                                                                  |                              | Prüfmittel (Bez.):<br>Exam. means (des.):                          |                                                                                 | naß / trocken<br>wet / dry                                                             | fluoreszierend<br>fluorescent<br>ja / nein<br>yes / no              |
| <b>EINDRINGPRÜFUNG / Liquid penetrant test</b>                                                                                                                                              |                              |                                                                    |                                                                                 |                                                                                        |                                                                     |
| Eindringmittel: Diffutherm<br>Penetrant:                                                                                                                                                    |                              | Entwickler: Diffutherm<br>Developer:                               |                                                                                 | Reiniger: Diffutherm<br>Remover:                                                       |                                                                     |
| Entwicklungszeit: 10 min.<br>Developing time:                                                                                                                                               |                              | Eindringzeit: 10 min.<br>Penetration time:                         |                                                                                 | Art der Aufbringung: Spray<br>Application:                                             |                                                                     |
| Prüflächenzustand: Clean<br>Surface preparation:                                                                                                                                            |                              | Prüflächentemp.: 5 °C<br>Surface temp.:                            |                                                                                 | fluoreszierend<br>fluorescent<br>ja / nein x<br>yes / no                               |                                                                     |
| Schweißnaht-Nr.<br>A.Bl.-Nr.<br>Pos.-No.<br>Joint No.                                                                                                                                       | Schweißer-Nr.<br>Welders No. | Abmessung.<br>ä.Ø x Wd.<br>Dimension<br>O.D. x W.th.               | Befund<br>Result                                                                |                                                                                        |                                                                     |
|                                                                                                                                                                                             |                              |                                                                    | Anzeigenlage<br>Indication<br>location<br>1)<br>2)                              | Anzeigenlänge<br>Indication length<br>mm<br>2)                                         | Abstand vom Bezugspunkt<br>Distance fr. refer.<br>point<br>mm<br>2) |
|                                                                                                                                                                                             |                              |                                                                    |                                                                                 |                                                                                        | Bewertung<br>Evaluation<br>3)<br>e      ne                          |
| <b>N 2</b>                                                                                                                                                                                  | <b>82</b>                    | <b>33,4x3,4</b>                                                    |                                                                                 |                                                                                        | <b>X</b>                                                            |
|                                                                                                                                                                                             |                              |                                                                    |                                                                                 |                                                                                        |                                                                     |
|                                                                                                                                                                                             |                              |                                                                    |                                                                                 |                                                                                        |                                                                     |
|                                                                                                                                                                                             |                              |                                                                    |                                                                                 |                                                                                        |                                                                     |
|                                                                                                                                                                                             |                              |                                                                    |                                                                                 |                                                                                        |                                                                     |
|                                                                                                                                                                                             |                              |                                                                    |                                                                                 |                                                                                        |                                                                     |
|                                                                                                                                                                                             |                              |                                                                    |                                                                                 |                                                                                        |                                                                     |
|                                                                                                                                                                                             |                              |                                                                    |                                                                                 |                                                                                        |                                                                     |
|                                                                                                                                                                                             |                              |                                                                    |                                                                                 |                                                                                        |                                                                     |
| 1) Anzeigenlage: G = Grundwerkstoff      U = Übergangszone      S = Schweißgut<br>indication loc.      G = Base material      U = Transition zone      S = Weld metal                       |                              |                                                                    |                                                                                 |                                                                                        |                                                                     |
| 2) Nur Anzeigen eintragen, bei denen aufgrund von Größe/Häufigkeit, Reparatur/Nacharbeit erforderlich<br>Enter only indications which cause repair or refinish because of size/accumulation |                              |                                                                    |                                                                                 |                                                                                        |                                                                     |
| 3) e = Prüfung erfüllt      ne = Prüfung nicht erfüllt<br>examination results accepted      examination results not accepted                                                                |                              |                                                                    |                                                                                 |                                                                                        |                                                                     |
| Datum<br>Date <b>17.12.05</b><br>Unterschrift<br>Signature                                                                                                                                  |                              | Hersteller / Manufacturer<br>(H)                                   |                                                                                 | Kunde / Client<br>(K)                                                                  |                                                                     |
|                                                                                                                                                                                             |                              | Prüfer      Examiner<br>26.12.2005      20.12.2005                 |                                                                                 | Sachverständiger / TPI<br>(T)                                                          |                                                                     |
| Qualitätsstelle<br>S24.dot                                                                                                                                                                  |                              | Project:<br>C.- Nr.:                                               |                                                                                 | Seite von / page of<br>1 / 1                                                           |                                                                     |

|                                                                                                                                                                                             |                                         |                                                                                                                             |                                                  |                                                                                        |                                                                            |                                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------|------------------------------------|
|                                                                                                            |                                         | <h1 style="text-align: center;">Oberflächenriß-Prüfprotokoll</h1> <h2 style="text-align: center;">Surface-Crack-Record</h2> |                                                  |                                                                                        | Kennzeichnung.-Nr.<br>Ident.-No. <span style="float: right;">X</span>      |                                    |
|                                                                                                                                                                                             |                                         |                                                                                                                             |                                                  |                                                                                        | S24-Protokoll                                                              |                                    |
| Zchnng.-Nr. / Fertig.-Iso-Nr.: <b>N 21020 -1 Sh.1</b><br>Drawing-no. / Isometric fab. plan no.:                                                                                             |                                         |                                                                                                                             |                                                  |                                                                                        | KKS-Nr.:<br>Code no.: X                                                    |                                    |
|                                                                                                                                                                                             |                                         |                                                                                                                             |                                                  |                                                                                        | Lfd.-Nr.:<br>Serial no.: X                                                 |                                    |
| Komponente:<br>Component: <b>Nozzle</b>                                                                                                                                                     |                                         | Werkstoff: Aluminium<br>Material:                                                                                           |                                                  |                                                                                        | Anforderungsstufe:<br>Inspection class:                                    |                                    |
| Prüfung nach Spez.:<br>Examination acc. to spec.:                                                                                                                                           |                                         |                                                                                                                             |                                                  | Prüfung nach / vor Wärmebehandlung<br>Examination after / before heat treatment        |                                                                            | Prüf-Nr.: <b>PT 2</b><br>Test no.: |
| <b>MAGNETPULVERPRÜFUNG / Magnetic particle test</b>                                                                                                                                         |                                         |                                                                                                                             |                                                  |                                                                                        | Schritt-Nr.:<br>Sequence no.:                                              |                                    |
| Magnetisierungsstrom:<br>Magnetization current:                                                                                                                                             |                                         | Prüfgerät:<br>Exam. equipm.: <b>V</b>                                                                                       |                                                  | Felderzeug.: Joch, Spulen, Selbstdurchflut.<br>Magnetization: yoke, coil, prod. method |                                                                            |                                    |
| Feldstärke:<br>Field strength                                                                                                                                                               |                                         | Stromstärke:<br>Amperage: <b>A</b>                                                                                          |                                                  | Pol / Kontaktabstand:<br>Pole / Prod-distance: <b>mm</b>                               |                                                                            |                                    |
| Prüflächenzustand:<br>Surface preparation:                                                                                                                                                  |                                         | Prüfmittel (Bez.):<br>Exam. means (des.):                                                                                   |                                                  | naß / trocken<br>wet / dry                                                             | fluoreszierend<br>fluorescent                                              | ja / nein<br>yes / no              |
| <b>EINDRINGPRÜFUNG / Liquid penetrant test</b>                                                                                                                                              |                                         |                                                                                                                             |                                                  |                                                                                        |                                                                            |                                    |
| Eindringmittel: Diffutherm<br>Penetrant:                                                                                                                                                    |                                         | Entwickler: Diffutherm<br>Developer:                                                                                        |                                                  | Reiniger: Diffutherm<br>Remover:                                                       |                                                                            |                                    |
| Entwicklungszeit: <b>10 min.</b><br>Developing time:                                                                                                                                        |                                         | Eindringzeit: <b>10 min.</b><br>Penetration time:                                                                           |                                                  | Art der Aufbringung<br>Application:                                                    |                                                                            |                                    |
| Prüflächenzustand: <b>Clean</b><br>Surface preparation:                                                                                                                                     |                                         | Prüflächentemp.: <b>5 °C</b><br>Surface temp.:                                                                              |                                                  | fluoreszierend <b>ja / nein x</b><br>fluorescent yes / no                              |                                                                            |                                    |
| Schweißnaht-Nr.<br>A.Bi.-Nr.<br><br>Pos.-No.<br>Joint No.                                                                                                                                   | Schweißer<br>-Nr.<br><br>Welders<br>No. | Abmessung.<br>ä.Ø x Wd.<br><br>Dimension<br>O.D.xW.th.                                                                      | Befund<br>Result                                 |                                                                                        |                                                                            |                                    |
|                                                                                                                                                                                             |                                         |                                                                                                                             | Anzeigenlage<br>Indication<br>location<br><br>1) | Anzeigenlänge<br>Indication length<br>mm<br><br>2)                                     | Abstand vom<br>Bezugspunkt<br>Distance fr. refer.<br>point<br>mm<br><br>2) | Bewertung<br>Evaluation<br><br>3)  |
|                                                                                                                                                                                             |                                         |                                                                                                                             |                                                  |                                                                                        |                                                                            | e      ne                          |
| <b>N.2.2</b>                                                                                                                                                                                | <b>491</b>                              | <b>88,9x5,5</b>                                                                                                             | <b>X</b>                                         | <b>X</b>                                                                               | <b>X</b>                                                                   | <b>X</b>                           |
|                                                                                                                                                                                             |                                         |                                                                                                                             |                                                  |                                                                                        |                                                                            |                                    |
|                                                                                                                                                                                             |                                         |                                                                                                                             |                                                  |                                                                                        |                                                                            |                                    |
|                                                                                                                                                                                             |                                         |                                                                                                                             |                                                  |                                                                                        |                                                                            |                                    |
|                                                                                                                                                                                             |                                         |                                                                                                                             |                                                  |                                                                                        |                                                                            |                                    |
|                                                                                                                                                                                             |                                         |                                                                                                                             |                                                  |                                                                                        |                                                                            |                                    |
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|                                                                                                                                                                                             |                                         |                                                                                                                             |                                                  |                                                                                        |                                                                            |                                    |
|                                                                                                                                                                                             |                                         |                                                                                                                             |                                                  |                                                                                        |                                                                            |                                    |
| 1) Anzeigenlage: G = Grundwerkstoff      U = Übergangszone      S = Schweißgut<br>indication loc.      G = Base material      U = Transition zone      S = Weld metal                       |                                         |                                                                                                                             |                                                  |                                                                                        |                                                                            |                                    |
| 2) Nur Anzeigen eintragen, bei denen aufgrund von Größe/Häufigkeit, Reparatur/Nacharbeit erforderlich<br>Enter only indications which cause repair or refinish because of size/accumulation |                                         |                                                                                                                             |                                                  |                                                                                        |                                                                            |                                    |
| 3) e = Prüfung erfüllt      ne = Prüfung nicht erfüllt<br>examination results accepted      examination results not accepted                                                                |                                         |                                                                                                                             |                                                  |                                                                                        |                                                                            |                                    |
| Datum 19.12.05<br>Date                                                                                                                                                                      |                                         | Hersteller / Manufacturer<br>(H)                                                                                            |                                                  | Kunde / Client<br>(K)                                                                  |                                                                            | Sachverständiger /<br>TPI<br>(T)   |
|                                                                                                                                                                                             |                                         | Prüfer<br>Examiner                                                                                                          | Prüfaufsicht<br>Examination Supervisor           |                                                                                        |                                                                            |                                    |
| Unterschrift<br>Signature                                                                                                                                                                   |                                         | 19.12.2005                                                                                                                  | 19.12.2005                                       | 16-1-06                                                                                |                                                                            | 10.1.06                            |
| Qualitätsstelle<br>S24.dot                                                                                                                                                                  |                                         | Project:<br>C.- Nr.:                                                                                                        |                                                  |                                                                                        |                                                                            | Seite von / page of<br>1 / 1       |

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| AIR LIQUIDE                                                                                                                                                                                 |                                                                                                   | Oberflächenriß-Prüfprotokoll                                                    |                                                                                        | Kennzeichng.-Nr.<br>Ident-No.xxxxxx   |                                                         |                         |                            |
|                                                                                                                                                                                             |                                                                                                   | Surface-Crack-Record                                                            |                                                                                        | S24-Protokoll                         |                                                         |                         |                            |
| Zchnng.-Nr. / Fertig.-Iso-Nr.:<br><br>Drawing-no. / Isometric fab. plan no.:                                                                                                                |                                                                                                   | OL 23004 Sh.1                                                                   |                                                                                        | KKS-Nr.:xxxxxx<br><br>Code no.:xxxxxx |                                                         |                         |                            |
|                                                                                                                                                                                             |                                                                                                   |                                                                                 |                                                                                        | Lfd.-Nr.:<br>Serial no.:    xxxx      |                                                         |                         |                            |
| Komponente:<br>Component:     Nozzle                                                                                                                                                        | Werkstoff:Aluminium<br>Material:                                                                  |                                                                                 | Anforderungsstufe:<br>Inspection class:                                                |                                       |                                                         |                         |                            |
| Prüfung nach Spez.:<br>Examination acc. to spec.:                                                                                                                                           |                                                                                                   | Prüfung nach / vor Wärmebehandlung<br>Examination after / before heat treatment |                                                                                        | Prüf-Nr.: PT 4<br>Test no.:           |                                                         |                         |                            |
| MAGNETPULVERPRÜFUNG / Magnetic particle test                                                                                                                                                |                                                                                                   |                                                                                 |                                                                                        | Schritt-Nr.:<br>Sequence no.:         |                                                         |                         |                            |
| Magnetisierungsstrom: JEW, JE<br>Magnetization current:                                                                                                                                     | Prüfgerät: Tiede, TW 220 / 42<br>V<br>Exam.in. equipm.:                                           |                                                                                 | Felderzeug.: Joch, Spulen, Selbstdurchflut.<br>Magnetization: yoke, coil, prod. method |                                       |                                                         |                         |                            |
| Feldstärke: > 2,0 - 6,5 kA/m<br>Field strength                                                                                                                                              | Stromstärke: A<br>Amperage:                                                                       |                                                                                 | Pol / Kontaktabstand: mm<br>Pole / Prod-distance:                                      |                                       |                                                         |                         |                            |
| Prüfflächenzustand:<br>Surface preparation:                                                                                                                                                 | Prüfmittel (Bez.):<br>Exam. means (des.):                                                         |                                                                                 | naß / trocken<br>wet / dry                                                             | fluoreszierend<br>fluorescent         | ja / nein<br>yes / no                                   |                         |                            |
| EINDRINGPRÜFUNG / Liquid penetrant test                                                                                                                                                     |                                                                                                   |                                                                                 |                                                                                        |                                       |                                                         |                         |                            |
| Eindringmittel: Diffutherm<br>Penetrant:                                                                                                                                                    | Entwickler: Diffutherm<br>Developer.:                                                             |                                                                                 | Reiniger: Diffutherm<br>Remover:                                                       |                                       |                                                         |                         |                            |
| Entwicklungszeit: 10 min.                                                                                                                                                                   | Eindringzeit: 10 min.                                                                             |                                                                                 | Art der Aufbringung Spray<br>Application:                                              |                                       |                                                         |                         |                            |
| Prüfflächenzustand: Clean<br>Surface preparation:                                                                                                                                           | Prüffächentemp.: 5 °C<br>Surface temp.:                                                           |                                                                                 | fluoreszierend ja / nein x<br>fluorescent yes / no                                     |                                       |                                                         |                         |                            |
| Schweißnaht-Nr.<br>A.BI.-Nr.<br><br>Pos.-No.<br>Joint No.                                                                                                                                   | Schweißer-Nr.<br><br>Welders No.                                                                  | Abmessung.<br>ä.Ø x Wd.<br><br>Dimension<br>O.D.xW.th.                          | Befund<br>Result                                                                       |                                       |                                                         |                         |                            |
|                                                                                                                                                                                             |                                                                                                   |                                                                                 | Anzeigenlage<br>Indication location                                                    | Anzeigenlänge<br>Indication length mm | Abstand vom Bezugspunkt<br>Distance fr. refer. point mm | Bewertung<br>Evaluation | Bemerkung<br>en<br>Remarks |
|                                                                                                                                                                                             |                                                                                                   |                                                                                 | 1)                                                                                     | 2)                                    | 2)                                                      | 3)<br>e ne              |                            |
| N 2                                                                                                                                                                                         | 491                                                                                               | 60,3x3,9                                                                        |                                                                                        |                                       |                                                         | X                       |                            |
|                                                                                                                                                                                             |                                                                                                   |                                                                                 |                                                                                        |                                       |                                                         |                         |                            |
|                                                                                                                                                                                             |                                                                                                   |                                                                                 |                                                                                        |                                       |                                                         |                         |                            |
|                                                                                                                                                                                             |                                                                                                   |                                                                                 |                                                                                        |                                       |                                                         |                         |                            |
|                                                                                                                                                                                             |                                                                                                   |                                                                                 |                                                                                        |                                       |                                                         |                         |                            |
|                                                                                                                                                                                             |                                                                                                   |                                                                                 |                                                                                        |                                       |                                                         |                         |                            |
|                                                                                                                                                                                             |                                                                                                   |                                                                                 |                                                                                        |                                       |                                                         |                         |                            |
|                                                                                                                                                                                             |                                                                                                   |                                                                                 |                                                                                        |                                       |                                                         |                         |                            |
|                                                                                                                                                                                             |                                                                                                   |                                                                                 |                                                                                        |                                       |                                                         |                         |                            |
| 1) Anzeigenlage: G = Grundwerkstoff U = Übergangszone S = Schweißgut<br>indication loc. G = Base material U = Transition zone S = Weld metal                                                |                                                                                                   |                                                                                 |                                                                                        |                                       |                                                         |                         |                            |
| 2) Nur Anzeigen eintragen, bei denen aufgrund von Größe/Häufigkeit, Reparatur/Nacharbeit erforderlich<br>Enter only indications which cause repair or refinish because of size/accumulation |                                                                                                   |                                                                                 |                                                                                        |                                       |                                                         |                         |                            |
| 3) e = Prüfung erfüllt ne = Prüfung nicht erfüllt<br>examination results accepted examination results not accepted                                                                          |                                                                                                   |                                                                                 |                                                                                        |                                       |                                                         |                         |                            |
| Datum<br>Date 17.12.05                                                                                                                                                                      | Hersteller / Manufacturer<br>Prüfer Dunajská 10<br>Tel./fax: 093 67 646 79<br>mobil: 093 67 2 812 |                                                                                 | Kunde / Client<br>(K) Air-Liquid-Bahri                                                 |                                       | Sachverständiger / TPI<br>(T) 10.1.06                   |                         |                            |
| Unterschrift<br>Signature                                                                                                                                                                   | 20.12.2005                                                                                        |                                                                                 | 20.12.2005                                                                             |                                       | 16.1.06                                                 |                         |                            |
| Qualitätsstelle<br>S24.dot                                                                                                                                                                  | Project:<br>C.- Nr.:                                                                              |                                                                                 |                                                                                        |                                       | Seite von / page of<br>1 / 1                            |                         |                            |

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| AIR LIQUIDE                                                                                                                                                                                 |                                                                                                                             | Oberflächenriß-Prüfprotokoll                                                    |                                                             | Kennzeichng.-Nr.<br>Ident-No. xxxxxx                                                     |                                                                      |                                                    |                            |
|                                                                                                                                                                                             |                                                                                                                             | Surface-Crack-Record                                                            |                                                             | S24-Protokoll                                                                            |                                                                      |                                                    |                            |
| Zchnng.-Nr. / Fertig.-Iso-Nr.:<br><br>Drawing-no. / Isometric fab. plan no.:                                                                                                                |                                                                                                                             | N 21020-2 Sh.1                                                                  |                                                             | KKS-Nr.:xxxxx<br><br>Code no.:xxxxx                                                      |                                                                      |                                                    |                            |
|                                                                                                                                                                                             |                                                                                                                             |                                                                                 |                                                             | Lfd.-Nr.:<br>Serial no.: xxxx                                                            |                                                                      |                                                    |                            |
| Komponente:<br>Component: Nozzle                                                                                                                                                            |                                                                                                                             | Werkstoff:Aluminium<br>Material:                                                |                                                             | Anforderungsstufe:<br>Inspection class:                                                  |                                                                      |                                                    |                            |
| Prüfung nach Spez.:<br>Examination acc. to spec.:                                                                                                                                           |                                                                                                                             | Prüfung nach / vor Wärmebehandlung<br>Examination after / before heat treatment |                                                             | Prüf-Nr.: PT 5<br>Test no.:                                                              |                                                                      |                                                    |                            |
| MAGNETPULVERPRÜFUNG / Magnetic particle test                                                                                                                                                |                                                                                                                             |                                                                                 |                                                             | Schritt-Nr.:<br>Sequence no.:                                                            |                                                                      |                                                    |                            |
| Magnetisierungsstrom: JEW, JE<br>Magnetization current:                                                                                                                                     |                                                                                                                             | Prüfgerät: Tiede, TWB 220 / 42<br>Exam. equipm.:                                |                                                             | Felderzeug.: Joch, Spulen, Selbstdurchflut.<br>Magnetization: yoke, coil, prod. method   |                                                                      |                                                    |                            |
| Feldstärke: > 2,0 - 6,5 kA/m<br>Field strength                                                                                                                                              |                                                                                                                             | Stromstärke: A<br>Amperage:                                                     |                                                             | Pol / Kontaktabstand: mm<br>Pole / Prod-distance:                                        |                                                                      |                                                    |                            |
| Prüfflächenzustand:<br>Surface preparation:                                                                                                                                                 |                                                                                                                             | Prüfmittel (Bez.):<br>Exam. means (des.):                                       |                                                             | naß / trocken<br>wet / dry      fluoreszierend<br>fluorescent      ja / nein<br>yes / no |                                                                      |                                                    |                            |
| EINDRINGPRÜFUNG / Liquid penetrant test                                                                                                                                                     |                                                                                                                             |                                                                                 |                                                             |                                                                                          |                                                                      |                                                    |                            |
| Eindringmittel: Diffutherm<br>Penetrant:                                                                                                                                                    |                                                                                                                             | Entwickler: Diffutherm<br>Developer.:                                           |                                                             | Reiniger: Diffutherm<br>Remover:                                                         |                                                                      |                                                    |                            |
| Entwicklungszeit: 10 min.                                                                                                                                                                   |                                                                                                                             | Eindringzeit: 10 min.                                                           |                                                             | Art der Aufbringung Spray<br>Application:                                                |                                                                      |                                                    |                            |
| Prüfflächenzustand: Clean<br>Surface preparation:                                                                                                                                           |                                                                                                                             | Prüffächentemp.: 5 °C<br>Surface temp.:                                         |                                                             | fluoreszierend<br>fluorescent      ja / nein x<br>yes / no                               |                                                                      |                                                    |                            |
| Schweißnaht-Nr.<br>A.Bl.-Nr.<br><br>Pos.-No.<br>Joint No.                                                                                                                                   | Schweißer-Nr.<br><br>Welders No.                                                                                            | Abmessung.<br>ä.Ø x Wd.<br><br>Dimension<br>O.D.xW.th.                          | Befund<br>Result                                            |                                                                                          |                                                                      |                                                    |                            |
|                                                                                                                                                                                             |                                                                                                                             |                                                                                 | Anzeigenlage<br>Indication location<br><br>1)<br><br>2)     | Anzeigenlänge<br>Indication length<br><br>mm<br><br>2)                                   | Abstand vom Bezugspunkt<br>Distance fr. refer. point<br>mm<br><br>2) | Bewertung<br>Evaluation<br><br>3)<br><br>e      ne | Bemerkung<br>en<br>Remarks |
| N 4                                                                                                                                                                                         | 82                                                                                                                          | 60,3x3,9                                                                        |                                                             |                                                                                          |                                                                      | X                                                  |                            |
|                                                                                                                                                                                             |                                                                                                                             |                                                                                 |                                                             |                                                                                          |                                                                      |                                                    |                            |
|                                                                                                                                                                                             |                                                                                                                             |                                                                                 |                                                             |                                                                                          |                                                                      |                                                    |                            |
|                                                                                                                                                                                             |                                                                                                                             |                                                                                 |                                                             |                                                                                          |                                                                      |                                                    |                            |
|                                                                                                                                                                                             |                                                                                                                             |                                                                                 |                                                             |                                                                                          |                                                                      |                                                    |                            |
|                                                                                                                                                                                             |                                                                                                                             |                                                                                 |                                                             |                                                                                          |                                                                      |                                                    |                            |
|                                                                                                                                                                                             |                                                                                                                             |                                                                                 |                                                             |                                                                                          |                                                                      |                                                    |                            |
|                                                                                                                                                                                             |                                                                                                                             |                                                                                 |                                                             |                                                                                          |                                                                      |                                                    |                            |
|                                                                                                                                                                                             |                                                                                                                             |                                                                                 |                                                             |                                                                                          |                                                                      |                                                    |                            |
| 1) Anzeigenlage: G = Grundwerkstoff<br>indication loc. G = Base material                                                                                                                    |                                                                                                                             | U = Übergangszone<br>U = Transition zone                                        |                                                             | S = Schweißgut<br>S = Weld metal                                                         |                                                                      |                                                    |                            |
| 2) Nur Anzeigen eintragen, bei denen aufgrund von Größe/Häufigkeit, Reparatur/Nacharbeit erforderlich<br>Enter only indications which cause repair or refinish because of size/accumulation |                                                                                                                             |                                                                                 |                                                             |                                                                                          |                                                                      |                                                    |                            |
| 3) e = Prüfung erfüllt examination results accepted      ne = Prüfung nicht erfüllt examination results not accepted                                                                        |                                                                                                                             |                                                                                 |                                                             |                                                                                          |                                                                      |                                                    |                            |
| Datum<br>Date 17.12.05                                                                                                                                                                      | Hersteller / Manufacturer<br>Prüfer<br>Dunajská 10, 101 00 Praha 1<br>Tel./fax: +420 2 812 812 1<br>mobil: +420 2 812 812 2 |                                                                                 | Kunde / Client<br>(K)<br>Air Liquide<br>Yaroslav Boháč BAHU |                                                                                          | Sachverständiger / TPI<br>(T)<br>10.106<br>[Signature]               |                                                    |                            |
| Unterschrift<br>Signature [Signature]                                                                                                                                                       | 20.12.2005                                                                                                                  |                                                                                 | 20.12.2005                                                  |                                                                                          | 16-01-06                                                             |                                                    |                            |
| Qualitätsstelle<br>S24.dot                                                                                                                                                                  | Project:<br>C.- Nr.:                                                                                                        |                                                                                 |                                                             |                                                                                          | Seite von / page of<br>1 / 1                                         |                                                    |                            |

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| <div><div>AIR LIQUIDE</div></div>                                                                                                                                                                       |                                          | <div>Oberflächenriß-Prüfprotokoll</div>                                                                       |                                                                   | <div>Kennzeichng.-Nr.<br/>Ident-No. xxxxxx</div>                                                                   |                                                                                    |
|                                                                                                                                                                                                         |                                          | <div>Surface-Crack-Record</div>                                                                               |                                                                   | <div>S24-Protokoll</div>                                                                                           |                                                                                    |
| <div>Zchng.-Nr. / Fertig.-Iso-Nr.:<br/>Drawing-no. / Isometric fab. plan no.:</div>                                                                                                                     |                                          |                                                                                                               |                                                                   | <div>KKS-Nr.: xxxxx<br/>Code no.: xxxxx</div>                                                                      |                                                                                    |
|                                                                                                                                                                                                         |                                          |                                                                                                               |                                                                   | <div>Lfd.-Nr.:<br/>Serial no.: xxxx</div>                                                                          |                                                                                    |
| <div>Komponente:<br/>Component: Nozzle</div>                                                                                                                                                            |                                          | <div>Werkstoff: Aluminium<br/>Material:</div>                                                                 |                                                                   | <div>Anforderungsstufe:<br/>Inspection class:</div>                                                                |                                                                                    |
| <div>Prüfung nach Spez.:<br/>Examination acc. to spec.:</div>                                                                                                                                           |                                          | <div>Prüfung nach / vor Wärmebehandlung<br/>Examination after / before heat treatment</div>                   |                                                                   | <div>Prüf-Nr.: PT 7<br/>Test no.:</div>                                                                            |                                                                                    |
| <div>MAGNETPULVERPRÜFUNG / Magnetic particle test</div>                                                                                                                                                 |                                          |                                                                                                               |                                                                   | <div>Schritt-Nr.:<br/>Sequence no.:</div>                                                                          |                                                                                    |
| <div>Magnetisierungsstrom: JEW, JE<br/>Magnetization current:</div>                                                                                                                                     |                                          | <div>Prüfgerät: Tiede, TWM 220 / 42<br/>Examin. equipm.:</div>                                                |                                                                   | <div>Felderzeug.: Joch, Spulen, Selbstdurchflut.<br/>Magnetization: yoke, coil, prod. method</div>                 |                                                                                    |
| <div>Feldstärke: &gt; 2,0 - 6,5 kA/m<br/>Field strength</div>                                                                                                                                           |                                          | <div>Stromstärke: A<br/>Amperage:</div>                                                                       |                                                                   | <div>Pol / Kontaktabstand: mm<br/>Pole / Prod-distance:</div>                                                      |                                                                                    |
| <div>Prüfflächenzustand: Clean<br/>Surface preparation:</div>                                                                                                                                           |                                          | <div>Prüfmittel (Bez.):<br/>Exam. means (des.):</div>                                                         |                                                                   | <div>naß / trocken<br/>wet / dry</div> <div>fluoreszierend<br/>fluorescent</div> <div>ja / nein<br/>yes / no</div> |                                                                                    |
| <div>EINDRINGPRÜFUNG / Liquid penetrant test</div>                                                                                                                                                      |                                          |                                                                                                               |                                                                   |                                                                                                                    |                                                                                    |
| <div>Eindringmittel: Diffutherm<br/>Penetrant:</div>                                                                                                                                                    |                                          | <div>Entwickler: Diffutherm<br/>Developer.:</div>                                                             |                                                                   | <div>Reiniger: Diffutherm<br/>Remover:</div>                                                                       |                                                                                    |
| <div>Entwicklungszeit: 10 min.<br/>Developing time:</div>                                                                                                                                               |                                          | <div>Eindringzeit: 10 min.<br/>Penetration time:</div>                                                        |                                                                   | <div>Art der Aufbringung: Spray<br/>Application:</div>                                                             |                                                                                    |
| <div>Prüfflächenzustand: Clean<br/>Surface preparation:</div>                                                                                                                                           |                                          | <div>Prüffächentemp.: 5 °C<br/>Surface temp.:</div>                                                           |                                                                   | <div>fluoreszierend<br/>fluorescent</div> <div>ja / nein x<br/>yes / no</div>                                      |                                                                                    |
| <div>Schweißnaht-Nr.<br/>A.BI.-Nr.<br/>Pos.-No.<br/>Joint No.</div>                                                                                                                                     | <div>Schweißer-Nr.<br/>Welders No.</div> | <div>Abmessung.<br/>ä.Ø x Wd.<br/>Dimension<br/>O.D.xW.th.</div>                                              | <div>Befund<br/>Result</div>                                      |                                                                                                                    |                                                                                    |
|                                                                                                                                                                                                         |                                          |                                                                                                               | <div>Anzeigenlage<br/>Indication<br/>location<br/>1)<br/>2)</div> | <div>Anzeigenlänge<br/>Indication length<br/>mm<br/>2)</div>                                                       | <div>Abstand vom Bezugspunkt<br/>Distance fr. refer.<br/>point<br/>mm<br/>2)</div> |
|                                                                                                                                                                                                         |                                          |                                                                                                               |                                                                   |                                                                                                                    | <div>Bewertung<br/>Evaluation<br/>3)<br/>e ne</div>                                |
| <div>N 1</div>                                                                                                                                                                                          | <div>488</div>                           | <div>60,3x3,9</div>                                                                                           |                                                                   |                                                                                                                    | <div>X</div>                                                                       |
|                                                                                                                                                                                                         |                                          |                                                                                                               |                                                                   |                                                                                                                    |                                                                                    |
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|                                                                                                                                                                                                         |                                          |                                                                                                               |                                                                   |                                                                                                                    |                                                                                    |
|                                                                                                                                                                                                         |                                          |                                                                                                               |                                                                   |                                                                                                                    |                                                                                    |
| <div>1) Anzeigenlage: G = Grundwerkstoff U = Übergangszone S = Schweißgut<br/>indication loc. G = Base material U = Transition zone S = Weld metal</div>                                                |                                          |                                                                                                               |                                                                   |                                                                                                                    |                                                                                    |
| <div>2) Nur Anzeigen eintragen, bei denen aufgrund von Größe/Häufigkeit, Reparatur/Nacharbeit erforderlich<br/>Enter only indications which cause repair or refinish because of size/accumulation</div> |                                          |                                                                                                               |                                                                   |                                                                                                                    |                                                                                    |
| <div>3) e = Prüfung erfüllt ne = Prüfung nicht erfüllt<br/>examination results accepted examination results not accepted</div>                                                                          |                                          |                                                                                                               |                                                                   |                                                                                                                    |                                                                                    |
| <div>Datum<br/>Date 17.12.05</div>                                                                                                                                                                      |                                          | <div>Hersteller / Manufacturer<br/>(H)<br/>Prüfer Examiner<br/>Dunajská 10.<br/>Tel./fax: 091 67 646 79</div> |                                                                   | <div>Kunde / Client<br/>(K)<br/>Air liquide<br/>Bahri</div>                                                        |                                                                                    |
| <div>Unterschrift<br/>Signature</div>                                                                                                                                                                   |                                          | <div>Prüfaufsicht<br/>Examination Supervisor<br/>20.12.2005</div>                                             |                                                                   | <div>Sachverständiger / TPI<br/>(T)<br/>10.1.06<br/>(UTV)</div>                                                    |                                                                                    |
| <div>Qualitätsstelle<br/>S24.dot</div>                                                                                                                                                                  |                                          | <div>Project:<br/>C.- Nr.:</div>                                                                              |                                                                   | <div>Seite von / page of<br/>1 / 1</div>                                                                           |                                                                                    |

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| AIR LIQUIDE                                                                                                                                                                                 |                                                                                         | Oberflächenriß-Prüfprotokoll                       |                                                 |                                                                                 |                                                         |                                                                                       |                               | Kennzeichnung.-Nr.<br>Ident-No.xxxxxx   |                       |
| Surface-Crack-Record                                                                                                                                                                        |                                                                                         |                                                    |                                                 |                                                                                 |                                                         |                                                                                       |                               | S24-Protokoll                           |                       |
| Zchnng.-Nr. / Fertig.-Iso-Nr.:<br><b>A 20015 Sh.1</b>                                                                                                                                       |                                                                                         |                                                    |                                                 |                                                                                 |                                                         |                                                                                       |                               | KKS-Nr.:xxxxxx                          |                       |
| Drawing-no. / Isometric fab. plan no.:                                                                                                                                                      |                                                                                         |                                                    |                                                 |                                                                                 |                                                         |                                                                                       |                               | Code no.:xxxxxx                         |                       |
|                                                                                                                                                                                             |                                                                                         |                                                    |                                                 |                                                                                 |                                                         |                                                                                       |                               | Lfd.-Nr.:<br>Serial no.:    xxxx        |                       |
| Komponente:<br>Component: <b>Nozzle</b>                                                                                                                                                     |                                                                                         |                                                    |                                                 | Werkstoff:Aluminium<br>Material:                                                |                                                         |                                                                                       |                               | Anforderungsstufe:<br>Inspection class: |                       |
| Prüfung nach Spez.:<br>Examination acc. to spec.:                                                                                                                                           |                                                                                         |                                                    |                                                 | Prüfung nach / vor Wärmebehandlung<br>Examination after / before heat treatment |                                                         |                                                                                       |                               | Prüf-Nr.: PT 8<br>Test no.:             |                       |
| MAGNETPULVERPRÜFUNG / Magnetic particle test                                                                                                                                                |                                                                                         |                                                    |                                                 |                                                                                 |                                                         |                                                                                       | Schritt-Nr.:<br>Sequence no.: |                                         |                       |
| Magnetisierungsstrom: JEJ, JE<br>Magnetization current:                                                                                                                                     |                                                                                         |                                                    | Prüfgerät: Tiede, TW 220 / 42<br>Exam. equipm.: |                                                                                 |                                                         | Felderzeug: Joch, Spulen, Selbstdurchflut.<br>Magnetization: yoke, coil, prod. method |                               |                                         |                       |
| Feldstärke: > 2,0 - 6,5 kA/m<br>Field strength                                                                                                                                              |                                                                                         |                                                    | Stromstärke: A<br>Amperage:                     |                                                                                 |                                                         | Pol / Kontaktabstand: mm<br>Pole / Prod-distance:                                     |                               |                                         |                       |
| Prüfflächenzustand: Clean<br>Surface preparation:                                                                                                                                           |                                                                                         |                                                    | Prüfmittel (Bez.):<br>Exam. means (des.):       |                                                                                 |                                                         | naß / trocken<br>wet / dry                                                            |                               | fluoreszierend<br>fluorescent           | ja / nein<br>yes / no |
| EINDRINGPRÜFUNG / Liquid penetrant test                                                                                                                                                     |                                                                                         |                                                    |                                                 |                                                                                 |                                                         |                                                                                       |                               |                                         |                       |
| Eindringmittel: Diffutherm<br>Penetrant:                                                                                                                                                    |                                                                                         |                                                    | Entwickler: Diffutherm<br>Developer.:           |                                                                                 |                                                         | Reiniger: Diffutherm<br>Remover:                                                      |                               |                                         |                       |
| Entwicklungszeit: 10 min.<br>Developing time:                                                                                                                                               |                                                                                         |                                                    | Eindringzeit: 10 min.<br>Penetration time:      |                                                                                 |                                                         | Art der Aufbringung Spray<br>Application:                                             |                               |                                         |                       |
| Prüfflächenzustand: Clean<br>Surface preparation:                                                                                                                                           |                                                                                         |                                                    | Prüffächentemp.: 5 °C<br>Surface temp.:         |                                                                                 |                                                         | fluoreszierend<br>fluorescent                                                         |                               | ja / nein x<br>yes / no                 |                       |
| Schweißnaht-Nr.<br>A.BI.-Nr.                                                                                                                                                                | Schweißer-Nr.<br>Welders No.                                                            | Abmessung.<br>ä.Ø x Wd.<br>Dimension<br>O.D.xW.th. | Befund<br>Result                                |                                                                                 |                                                         |                                                                                       |                               |                                         |                       |
| Pos.-No.<br>Joint No.                                                                                                                                                                       |                                                                                         |                                                    | Anzeigenlage<br>Indication location             | Anzeigenlänge<br>Indication length mm                                           | Abstand vom Bezugspunkt<br>Distance fr. refer. point mm | Bewertung<br>Evaluation                                                               | Bemerkung<br>en<br>Remarks    |                                         |                       |
|                                                                                                                                                                                             |                                                                                         |                                                    | 1)                                              | 2)                                                                              | 2)                                                      | 3)<br>e ne                                                                            |                               |                                         |                       |
| N 9                                                                                                                                                                                         | 470                                                                                     | 60,3x3,9                                           |                                                 |                                                                                 |                                                         | X                                                                                     |                               |                                         |                       |
|                                                                                                                                                                                             |                                                                                         |                                                    |                                                 |                                                                                 |                                                         |                                                                                       |                               |                                         |                       |
|                                                                                                                                                                                             |                                                                                         |                                                    |                                                 |                                                                                 |                                                         |                                                                                       |                               |                                         |                       |
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|                                                                                                                                                                                             |                                                                                         |                                                    |                                                 |                                                                                 |                                                         |                                                                                       |                               |                                         |                       |
| 1) Anzeigenlage: G = Grundwerkstoff U = Übergangszone S = Schweißgut<br>indication loc. G = Base material U = Transition zone S = Weld metal                                                |                                                                                         |                                                    |                                                 |                                                                                 |                                                         |                                                                                       |                               |                                         |                       |
| 2) Nur Anzeigen eintragen, bei denen aufgrund von Größe/Häufigkeit, Reparatur/Nacharbeit erforderlich<br>Enter only indications which cause repair or refinish because of size/accumulation |                                                                                         |                                                    |                                                 |                                                                                 |                                                         |                                                                                       |                               |                                         |                       |
| 3) e = Prüfung erfüllt ne = Prüfung nicht erfüllt<br>examination results accepted examination results not accepted                                                                          |                                                                                         |                                                    |                                                 |                                                                                 |                                                         |                                                                                       |                               |                                         |                       |
| Datum<br>Date 17.12.05                                                                                                                                                                      | Hersteller / Manufacturer<br>(H)<br>Prüfer Examiner Prüfaufsicht Examination Supervisor |                                                    |                                                 |                                                                                 | Kunde / Client<br>(K)                                   | Sachverständiger / TPI<br>(T)                                                         |                               |                                         |                       |
| Unterschrift<br>Signature                                                                                                                                                                   | 20.12.2005                                                                              |                                                    |                                                 |                                                                                 | 20.12.2005                                              | 16-01-06                                                                              |                               |                                         |                       |
| Qualitätsstelle<br>S24.dot                                                                                                                                                                  | Project:<br>C.- Nr.:                                                                    |                                                    |                                                 |                                                                                 | Seite von / page of<br>1 / 1                            |                                                                                       |                               |                                         |                       |

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| AIR LIQUIDE                                                                                                                                                                                 |                                                    | Oberflächenriß-Prüfprotokoll                                                    |                                                                                        | Kennzeichnung.-Nr.<br>Ident-No. xxxxxx                               |                                               |
|                                                                                                                                                                                             |                                                    | Surface-Crack-Record                                                            |                                                                                        | S24-Protokoll                                                        |                                               |
| Zchng.-Nr. / Fertig.-Iso-Nr.:<br>Drawing-no. / Isometric fab. plan no.:                                                                                                                     |                                                    | A 20015 Sh.1                                                                    |                                                                                        | KKS-Nr.:xxxxxx<br>Code no.:xxxxx                                     |                                               |
|                                                                                                                                                                                             |                                                    |                                                                                 |                                                                                        | Lfd.-Nr.:<br>Serial no.: xxxx                                        |                                               |
| Komponente:<br>Component: Nozzle                                                                                                                                                            | Werkstoff:Aluminium<br>Material:                   |                                                                                 | Anforderungsstufe:<br>Inspection class:                                                |                                                                      |                                               |
| Prüfung nach Spez.:<br>Examination acc. to spec.:                                                                                                                                           |                                                    | Prüfung nach / vor Wärmebehandlung<br>Examination after / before heat treatment |                                                                                        | Prüf-Nr.: PT 9<br>Test no.:                                          |                                               |
| MAGNETPULVERPRÜFUNG / Magnetic particle test                                                                                                                                                |                                                    |                                                                                 |                                                                                        | Schritt-Nr.:<br>Sequence no.:                                        |                                               |
| Magnetisierungsstrom: JEW, JE<br>Magnetization current:                                                                                                                                     | Prüfgerät: Tiede, TWM 220 / 42 V<br>Exam. equipm.: |                                                                                 | Felderzeug.: Joch, Spulen, Selbstdurchflut.<br>Magnetization: yoke, coil, prod. method |                                                                      |                                               |
| Feldstärke: > 2,0 - 6,5 kA/m<br>Field strength                                                                                                                                              | Stromstärke: A<br>Amperage:                        |                                                                                 | Pol / Kontaktabstand: mm<br>Pole / Prod-distance:                                      |                                                                      |                                               |
| Prüfflächenzustand:<br>Surface preparation:                                                                                                                                                 | Prüfmittel (Bez.):<br>Exam. means (des.):          |                                                                                 | naß / trocken<br>wet / dry                                                             | fluoreszierend<br>fluorescent                                        | ja / nein<br>yes / no                         |
| EINDRINGPRÜFUNG / Liquid penetrant test                                                                                                                                                     |                                                    |                                                                                 |                                                                                        |                                                                      |                                               |
| Eindringmittel: Diffutherm<br>Penetrant:                                                                                                                                                    | Entwickler: Diffutherm<br>Developer.:              |                                                                                 | Reiniger: Diffutherm<br>Remover:                                                       |                                                                      |                                               |
| Entwicklungszeit: 10 min.<br>Developing time:                                                                                                                                               | Eindringzeit: 10 min.<br>Penetration time:         |                                                                                 | Art der Aufbringung Spray<br>Application:                                              |                                                                      |                                               |
| Prüfflächenzustand: Clean<br>Surface preparation:                                                                                                                                           | Prüffächentemp.: 5 °C<br>Surface temp.:            |                                                                                 | fluoreszierend ja / nein x<br>fluorescent yes / no                                     |                                                                      |                                               |
| Schweißnaht-Nr.<br>A.BI.-Nr.<br><br>Pos.-No.<br>Joint No.                                                                                                                                   | Schweißer-Nr.<br><br>Welders No.                   | Abmessung.<br>ä.Ø x Wd.<br><br>Dimension<br>O.D.xW.th.                          | Befund<br><br>Result                                                                   |                                                                      |                                               |
|                                                                                                                                                                                             |                                                    | Anzeigenlage<br>Indication location<br><br>1)<br><br>2)                         | Anzeigenlänge<br>Indication length<br>mm<br><br>2)                                     | Abstand vom Bezugspunkt<br>Distance fr. refer. point<br>mm<br><br>2) | Bewertung<br>Evaluation<br><br>3)<br><br>e ne |
| N 10                                                                                                                                                                                        | 470                                                | 60,3x3,9                                                                        |                                                                                        |                                                                      | X                                             |
|                                                                                                                                                                                             |                                                    |                                                                                 |                                                                                        |                                                                      |                                               |
|                                                                                                                                                                                             |                                                    |                                                                                 |                                                                                        |                                                                      |                                               |
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|                                                                                                                                                                                             |                                                    |                                                                                 |                                                                                        |                                                                      |                                               |
| 1) Anzeigenlage: G = Grundwerkstoff U = Übergangszone S = Schweißgut<br>indication loc. G = Base material U = Transition zone S = Weld metal                                                |                                                    |                                                                                 |                                                                                        |                                                                      |                                               |
| 2) Nur Anzeigen eintragen, bei denen aufgrund von Größe/Häufigkeit, Reparatur/Nacharbeit erforderlich<br>Enter only indications which cause repair or refinish because of size/accumulation |                                                    |                                                                                 |                                                                                        |                                                                      |                                               |
| 3) e = Prüfung erfüllt ne = Prüfung nicht erfüllt<br>examination results accepted examination results not accepted                                                                          |                                                    |                                                                                 |                                                                                        |                                                                      |                                               |
| Datum<br>Date 17.12.05                                                                                                                                                                      | Hersteller / Manufacturer<br>(H)                   |                                                                                 | Kunde / Client<br>(K)                                                                  |                                                                      | Sachverständiger / TPI<br>(T)                 |
| Unterschrift<br>Signature                                                                                                                                                                   | Prüfer<br>Examiner                                 | Prüfaufsicht<br>Examination Supervisor                                          |                                                                                        |                                                                      |                                               |
|                                                                                                                                                                                             | ZIGA                                               | ZIGA                                                                            | Airliquide                                                                             |                                                                      | 10.12.06                                      |
|                                                                                                                                                                                             | 20.12.2005                                         | 20.12.2005                                                                      | Gavuz Bayrakci BAW                                                                     |                                                                      |                                               |
| Qualitätsstelle<br>S24.dot                                                                                                                                                                  |                                                    | Project:<br>C.- Nr.:                                                            |                                                                                        | Seite von / page of<br>1 / 1                                         |                                               |

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| AIR LIQUIDE                                                                                                                                                                                 |                                                                                                                             | Oberflächenriß-Prüfprotokoll                                                    |                                                                                        | Kennzeichnung.-Nr.<br>Ident-No.xxxxxx                  |                                                                          |                                               |                            |
|                                                                                                                                                                                             |                                                                                                                             | Surface-Crack-Record                                                            |                                                                                        | S24-Protokoll                                          |                                                                          |                                               |                            |
| Zchnng.-Nr. / Fertig.-Iso-Nr.:<br>Drawing-no. / Isometric fab. plan no.:                                                                                                                    |                                                                                                                             | OL 61102 Sh.3                                                                   |                                                                                        | KKS-Nr.:xxxxxx<br>Code no.:xxxxxx                      |                                                                          |                                               |                            |
|                                                                                                                                                                                             |                                                                                                                             |                                                                                 |                                                                                        | Lfd.-Nr.:<br>Serial no.: xxxx                          |                                                                          |                                               |                            |
| Komponente:<br>Component: Nozzle                                                                                                                                                            | Werkstoff:Aluminium<br>Material:                                                                                            |                                                                                 | Anforderungsstufe:<br>Inspection class:                                                |                                                        |                                                                          |                                               |                            |
| Prüfung nach Spez.:<br>Examination acc. to spec.:                                                                                                                                           |                                                                                                                             | Prüfung nach / vor Wärmebehandlung<br>Examination after / before heat treatment |                                                                                        | Prüf-Nr.: PT 10<br>Test no.:                           |                                                                          |                                               |                            |
| MAGNETPULVERPRÜFUNG / Magnetic particle test                                                                                                                                                |                                                                                                                             |                                                                                 |                                                                                        | Schritt-Nr.:<br>Sequence no.:                          |                                                                          |                                               |                            |
| Magnetisierungsstrom: JEW, JE<br>Magnetization current:                                                                                                                                     | Prüfgerät: Tiede, TW 220 / 42<br>Exam.in. equipm.:                                                                          |                                                                                 | Felderzeug.: Joch, Spulen, Selbstdurchflut.<br>Magnetization: yoke, coil, prod. method |                                                        |                                                                          |                                               |                            |
| Feldstärke: > 2,0 - 6,5 kA/m<br>Field strength                                                                                                                                              | Stromstärke: A<br>Amperage:                                                                                                 |                                                                                 | Pol / Kontaktabstand: mm<br>Pole / Prod-distance:                                      |                                                        |                                                                          |                                               |                            |
| Prüfflächenzustand:<br>Surface preparation:                                                                                                                                                 | Prüfmittel (Bez.):<br>Exam. means (des.):                                                                                   |                                                                                 | naß / trocken<br>wet / dry                                                             | fluoreszierend<br>fluorescent                          | ja / nein<br>yes / no                                                    |                                               |                            |
| EINDRINGPRÜFUNG / Liquid penetrant test                                                                                                                                                     |                                                                                                                             |                                                                                 |                                                                                        |                                                        |                                                                          |                                               |                            |
| Eindringmittel: Diffutherm<br>Penetrant:                                                                                                                                                    | Entwickler: Diffutherm<br>Developer.:                                                                                       |                                                                                 | Reiniger: Diffutherm<br>Remover:                                                       |                                                        |                                                                          |                                               |                            |
| Entwicklungszeit: 10 min.                                                                                                                                                                   | Eindringzeit: 10 min.                                                                                                       |                                                                                 | Art der Aufbringung Spray<br>Application:                                              |                                                        |                                                                          |                                               |                            |
| Prüfflächenzustand: Clean<br>Surface preparation:                                                                                                                                           | Prüffächentemp.: 5 °C<br>Surface temp.:                                                                                     |                                                                                 | fluoreszierend<br>fluorescent ja / nein x<br>yes / no                                  |                                                        |                                                                          |                                               |                            |
| Schweißnaht-Nr.<br>A.BI.-Nr.<br><br>Pos.-No.<br>Joint No.                                                                                                                                   | Schweißer-Nr.<br><br>Welders No.                                                                                            | Abmessung.<br>ä.Ø x Wd.<br><br>Dimension<br>O.D.xW.th.                          | Befund<br>Result                                                                       |                                                        |                                                                          |                                               |                            |
|                                                                                                                                                                                             |                                                                                                                             |                                                                                 | Anzeigenlage<br>Indication location<br><br>1)<br><br>2)                                | Anzeigenlänge<br>Indication length<br><br>mm<br><br>2) | Abstand vom Bezugspunkt<br>Distance fr. refer. point<br><br>mm<br><br>2) | Bewertung<br>Evaluation<br><br>3)<br><br>e ne | Bemerkung<br>en<br>Remarks |
| N31                                                                                                                                                                                         | 491                                                                                                                         | 60,3x3,9                                                                        |                                                                                        |                                                        |                                                                          | X                                             |                            |
|                                                                                                                                                                                             |                                                                                                                             |                                                                                 |                                                                                        |                                                        |                                                                          |                                               |                            |
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|                                                                                                                                                                                             |                                                                                                                             |                                                                                 |                                                                                        |                                                        |                                                                          |                                               |                            |
| 1) Anzeigenlage: G = Grundwerkstoff U = Übergangszone S = Schweißgut<br>indication loc. G = Base material U = Transition zone S = Weld metal                                                |                                                                                                                             |                                                                                 |                                                                                        |                                                        |                                                                          |                                               |                            |
| 2) Nur Anzeigen eintragen, bei denen aufgrund von Größe/Häufigkeit, Reparatur/Nacharbeit erforderlich<br>Enter only indications which cause repair or refinish because of size/accumulation |                                                                                                                             |                                                                                 |                                                                                        |                                                        |                                                                          |                                               |                            |
| 3) e = Prüfung erfüllt ne = Prüfung nicht erfüllt<br>examination results accepted examination results not accepted                                                                          |                                                                                                                             |                                                                                 |                                                                                        |                                                        |                                                                          |                                               |                            |
| Datum<br>Date 17.12.05                                                                                                                                                                      | Hersteller / Manufacturer<br>(H)<br>Prüfer<br>Dunajská 10, 845 01 Košice<br>Tel./fax: 095 / 264 679<br>mobil: 095 / 262 812 |                                                                                 | Kunde / Client<br>(K)<br>Airliquide<br>Yaruzey Bahri BANI                              |                                                        | Sachverständiger / TPI<br>(T)<br>10.1.06<br>Gass                         |                                               |                            |
| Unterschrift<br>Signature                                                                                                                                                                   | 20.12.2005                                                                                                                  |                                                                                 | 20.12.2005                                                                             |                                                        | 16-1-06                                                                  |                                               |                            |
| Qualitätsstelle<br>S24.dot                                                                                                                                                                  | Project:<br>C.- Nr.:                                                                                                        |                                                                                 | Seite von / page of<br>1 / 1                                                           |                                                        |                                                                          |                                               |                            |