

[illegible]

REBIS Industrial Workgroup Software
1600 Riviera Ave., Suite 300
Walnut Creek, CA 94596

79319820_KOMPLETT

07/29/2005 ASU KOSICE

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AutoPIPE 6.20 MODEL PAGE 2

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AUTOPIPE SYSTEM INFORMATION

SYSTEM NAME : 79319820_KOMPLETT

PROJECT ID : ASU KOSICE

DESCRIPTION :

PREPARED BY : _____
WEGSTEIN

CHECKED BY : _____
FRICKHOEFER

PIPING CODE : B31.3

VERTICAL AXIS : Z

AMBIENT TEMPERATURE : 20.0 deg C

COMPONENT LIBRARY : HANAU_AL

MATERIAL LIBRARY : AUTOB313

MODEL REVISION NUMBER : 2

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C O M P O N E N T D A T A L I S T I N G

*** SEGMENT A , LINE # 79319820

From A01 to A02, DX= -785.04 mm, DY= 285.73 mm, L= 835.42 mm

Run

PIPE DATA:

Pipe Id= 400MX6.0, Material= AL, Poisson= 0.300, Nom Size= 400 mm,
OD= 406.00 mm, Sch= 6.0, Wall Thk= 6.000 mm, Mill= 0.750 mm, Cor= 0 mm,
Pipe Density= 2707.12 kg/m3, Pipe Unit Wgt= 200.17 N/m, Insul Thk= 0 mm,
Lining Thk= 0 mm, Long Weld factor= 1.00, Circ Weld factor= 1.00,
Long Modulus= 0.06899 x10⁶ N/m, Hoop Modulus= 0.06899 x10⁶ N/m,
Shear Modulus= 0.02653 x10⁶ N/m, Sc= 103.4 N/mm2, Syc= 0 N/mm2

OPERATING DATA:

P1= 0 N/mm2, T1= -196.00 deg C, Expl= -3.84587 mm/m,
E1= 0.07646 x10⁶ N/m, Sh1= 71.00 N/mm2

POINT DATA:

A01, Coordinates, X= 0.00 mm, Y= 0.00 mm, Z= 0.00 mm

SUPPORT DATA:

A01, Anchor, KTX= Rigid, KTY= Rigid, KTZ= Rigid, KRX= Rigid, KRY= Rigid,
KRZ= Rigid

From A02 to A03, DZ= 613.05 mm

Bend

COMPONENT DATA (Bend, TIP= A02, Near= A02 N, Far= A02 F):

Elbow, Radius= 609.99 mm, Bend angle= 90.00 deg, End flanges= 0,
Flex= 18.033, SIFI= 4.43, SIFO= 3.69

POINT DATA:

A02, Coordinates, X= -785.04 mm, Y= 285.73 mm, Z= 0.00 mm
A02 N, Coordinates, X= -211.84 mm, Y= 77.10 mm, Z= 0.00 mm
A02 F, Coordinates, X= -785.04 mm, Y= 285.73 mm, Z= 609.99 mm

From A03 to A04, DZ= 346.95 mm

Redu

COMPONENT DATA (Reducer):

Length= 346.95 mm, SIF= 1.00

POINT DATA:

A03, Coordinates, X= -785.04 mm, Y= 285.73 mm, Z= 613.05 mm

From A04 to A05, DZ= 800.00 mm

Run

PIPE DATA:

Pipe Id= 350MX6.0, Nom Size= 350 mm, OD= 355.00 mm

POINT DATA:

A04, Coordinates, X= -785.04 mm, Y= 285.73 mm, Z= 960.00 mm

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C O M P O N E N T D A T A L I S T I N G

From A05 to A06, DZ= 2700.00 mm Tee

COMPONENT DATA (Tee Header, Center= A05):
B16.9 welding tee, SIFI= 3.25, SIFO= 4.00

POINT DATA:
A05, Coordinates, X= -785.04 mm, Y= 285.73 mm, Z= 1760.00 mm

From A06 to A07, DZ= 2932.96 mm Tee

COMPONENT DATA (Tee Header, Center= A06):
B16.9 welding tee, SIFI= 3.25, SIFO= 4.00

POINT DATA:
A06, Coordinates, X= -785.04 mm, Y= 285.73 mm, Z= 4460.00 mm

From A07 to A08, DX= 500.86 mm, DY= -182.30 mm, L= 533.00 mm Bend

COMPONENT DATA (Bend, TIP= A07, Near= A07 N, Far= A07 F):
Elbow, Radius= 532.99 mm, Bend angle= 90.00 deg, End flanges= 0,
Flex= 15.711, SIFI= 4.04, SIFO= 3.37

POINT DATA:
A07, Coordinates, X= -785.04 mm, Y= 285.73 mm, Z= 7392.96 mm
A07 N, Coordinates, X= -785.04 mm, Y= 285.73 mm, Z= 6859.97 mm
A07 F, Coordinates, X= -284.19 mm, Y= 103.44 mm, Z= 7392.96 mm
A08, Coordinates, X= -284.18 mm, Y= 103.43 mm, Z= 7392.96 mm

SUPPORT DATA:
A07 F, Anchor, KTX= Rigid, KTY= Rigid, KTZ= Rigid, KRX= Rigid,
KRY= Rigid, KRZ= Rigid

*** SEGMENT B , LINE # 79319820

From A05 to B01, DY= -230.00 mm Tee

COMPONENT DATA (Tee Branch, Center= A05):
B16.9 welding tee, SIFI= 3.25, SIFO= 4.00

PIPE DATA:
Pipe Id= 50MMX3.9, Nom Size= 50 mm, OD= 60.300 mm, Sch= 3.9,
Wall Thk= 3.900 mm, Mill= 0.487 mm

POINT DATA:
A05, Coordinates, X= -785.04 mm, Y= 285.73 mm, Z= 1760.00 mm

*** SEGMENT C , LINE # 79319820

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C O M P O N E N T D A T A L I S T I N G

From A06 to C01, DX= 85.33 mm, DY= 234.45 mm, L= 249.50 mm Tee

COMPONENT DATA (Tee Branch, Center= A06):
B16.9 welding tee, SIFI= 3.25, SIFO= 4.00

PIPE DATA:
Pipe Id= 250MX3.9, Nom Size= 250 mm, OD= 273.00 mm, Sch= 4.0,
Wall Thk= 4.000 mm, Mill= 0.500 mm

POINT DATA:
A06, Coordinates, X= -785.04 mm, Y= 285.73 mm, Z= 4460.00 mm

*** SEGMENT D , LINE # 79319820

From D00 to D01, DX= 90.00 mm Redu

COMPONENT DATA (Reducer):
Length= 90.00 mm, SIF= 1.00

PIPE DATA:
Pipe Id= 80MMX3.9, Nom Size= 80 mm, OD= 88.900 mm, Sch= 5.5,
Wall Thk= 5.500 mm, Mill= 0.688 mm

POINT DATA:
D00, Coordinates, X= 3155.09 mm, Y= -3834.73 mm, Z= 18517.13 mm

SUPPORT DATA:
D00, Anchor, KTX= Rigid, KTY= Rigid, KTZ= Rigid, KRX= Rigid, KRY= Rigid,
KRZ= Rigid

From D01 to D02, DX= 199.00 mm Run

PIPE DATA:
Pipe Id= 50MMX3.9, Nom Size= 50 mm, OD= 60.300 mm, Sch= 3.9,
Wall Thk= 3.900 mm, Mill= 0.487 mm

POINT DATA:
D01, Coordinates, X= 3245.09 mm, Y= -3834.73 mm, Z= 18517.13 mm

From D02 to D03, DY= 580.00 mm, DZ= -50.75 mm, L= 582.22 mm Bend

COMPONENT DATA (Bend, TIP= D02, Near= D02 N, Far= D02 F):
Elbow, Radius= 120.99 mm, Bend angle= 90.00 deg, End flanges= 0,
Flex= 2.781, SIFI= 1.27, SIFO= 1.06

POINT DATA:
D02, Coordinates, X= 3444.09 mm, Y= -3834.73 mm, Z= 18517.13 mm
D02 N, Coordinates, X= 3323.10 mm, Y= -3834.73 mm, Z= 18517.13 mm
D02 F, Coordinates, X= 3444.09 mm, Y= -3714.20 mm, Z= 18506.58 mm

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C O M P O N E N T D A T A L I S T I N G

From D03 to D04, DX= -822.67 mm, DZ= -71.98 mm, L= 825.81 mm Bend

COMPONENT DATA (Bend, TIP= D03, Near= D03 N, Far= D03 F):
Elbow, Radius= 120.99 mm, Bend angle= 89.56 deg, End flanges= 0,
Flex= 2.781, SIFI= 1.27, SIFO= 1.06

POINT DATA:

D03, Coordinates, X= 3444.09 mm, Y= -3254.73 mm, Z= 18466.38 mm
D03 N, Coordinates, X= 3444.09 mm, Y= -3374.35 mm, Z= 18476.85 mm
D03 F, Coordinates, X= 3324.47 mm, Y= -3254.73 mm, Z= 18455.92 mm

From D04 to D05, DX= -24.40 mm, DZ= -2.13 mm, L= 24.49 mm Run

POINT DATA:

D04, Coordinates, X= 2621.42 mm, Y= -3254.73 mm, Z= 18394.40 mm

From D05 to D06, DX= -334.26 mm, DY= -141.67 mm, DZ= -29.96 mm,
L= 364.28 mm Bend

COMPONENT DATA (Bend, TIP= D05, Near= D05 N, Far= D05 F):
Elbow, Radius= 120.99 mm, Bend angle= 22.89 deg, End flanges= 0,
Flex= 2.781, SIFI= 1.27, SIFO= 1.06

POINT DATA:

D05, Coordinates, X= 2597.02 mm, Y= -3254.73 mm, Z= 18392.27 mm
D05 N, Coordinates, X= 2621.42 mm, Y= -3254.73 mm, Z= 18394.40 mm
D05 F, Coordinates, X= 2574.55 mm, Y= -3264.25 mm, Z= 18390.26 mm

From D06 to D07, DZ= -110.88 mm Bend

COMPONENT DATA (Bend, TIP= D06, Near= D06 N, Far= D06 F):
Elbow, Radius= 120.99 mm, Bend angle= 85.28 deg, End flanges= 0,
Flex= 2.781, SIFI= 1.27, SIFO= 1.06

POINT DATA:

D06, Coordinates, X= 2262.76 mm, Y= -3396.40 mm, Z= 18362.31 mm
D06 N, Coordinates, X= 2365.00 mm, Y= -3353.07 mm, Z= 18371.47 mm
D06 F, Coordinates, X= 2262.76 mm, Y= -3396.40 mm, Z= 18252.07 mm

From D07 to D08, DZ= -4932.56 mm Run

POINT DATA:

D07, Coordinates, X= 2262.76 mm, Y= -3396.40 mm, Z= 18251.43 mm

From D08 to D09, DX= -357.33 mm, DY= 357.33 mm, DZ= -44.21 mm,
L= 507.27 mm Bend

COMPONENT DATA (Bend, TIP= D08, Near= D08 N, Far= D08 F):
Elbow, Radius= 120.99 mm, Bend angle= 85.00 deg, End flanges= 0,

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C O M P O N E N T D A T A L I S T I N G

Flex= 2.781, SIFI= 1.27, SIFO= 1.06

POINT DATA:

D08, Coordinates, X= 2262.76 mm, Y= -3396.40 mm, Z= 13318.87 mm
D08 N, Coordinates, X= 2262.76 mm, Y= -3396.40 mm, Z= 13429.74 mm
D08 F, Coordinates, X= 2184.66 mm, Y= -3318.30 mm, Z= 13309.21 mm

From D09 to D10, DX= -505.34 mm, DZ= -44.21 mm, L= 507.27 mm

Bend

COMPONENT DATA (Bend, TIP= D09, Near= D09 N, Far= D09 F):

Elbow, Radius= 120.99 mm, Bend angle= 44.82 deg, End flanges= 0,
Flex= 2.781, SIFI= 1.27, SIFO= 1.06

POINT DATA:

D09, Coordinates, X= 1905.43 mm, Y= -3039.07 mm, Z= 13274.66 mm
D09 N, Coordinates, X= 1940.58 mm, Y= -3074.22 mm, Z= 13279.01 mm
D09 F, Coordinates, X= 1855.73 mm, Y= -3039.07 mm, Z= 13270.31 mm

From D10 to D11, DZ= -381.55 mm

Bend

COMPONENT DATA (Bend, TIP= D10, Near= D10 N, Far= D10 F):

Elbow, Radius= 120.99 mm, Bend angle= 85.00 deg, End flanges= 0,
Flex= 2.781, SIFI= 1.27, SIFO= 1.06

POINT DATA:

D10, Coordinates, X= 1400.09 mm, Y= -3039.07 mm, Z= 13230.45 mm
D10 N, Coordinates, X= 1510.54 mm, Y= -3039.07 mm, Z= 13240.11 mm
D10 F, Coordinates, X= 1400.09 mm, Y= -3039.07 mm, Z= 13119.58 mm

From D11 to D12, DZ= -6092.85 mm

Run

POINT DATA:

D11, Coordinates, X= 1400.09 mm, Y= -3039.07 mm, Z= 12848.90 mm

From D12 to D13, DY= 534.99 mm, DZ= -143.35 mm, L= 553.86 mm

Bend

COMPONENT DATA (Bend, TIP= D12, Near= D12 N, Far= D12 F):

Elbow, Radius= 120.99 mm, Bend angle= 75.00 deg, End flanges= 0,
Flex= 2.781, SIFI= 1.27, SIFO= 1.06

POINT DATA:

D12, Coordinates, X= 1400.09 mm, Y= -3039.07 mm, Z= 6756.05 mm
D12 N, Coordinates, X= 1400.09 mm, Y= -3039.07 mm, Z= 6848.89 mm
D12 F, Coordinates, X= 1400.09 mm, Y= -2949.39 mm, Z= 6732.02 mm

From D13 to D14, DZ= -2091.76 mm

Bend

COMPONENT DATA (Bend, TIP= D13, Near= D13 N, Far= D13 F):

Elbow, Radius= 120.99 mm, Bend angle= 75.00 deg, End flanges= 0,
Flex= 2.781, SIFI= 1.27, SIFO= 1.06

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C O M P O N E N T D A T A L I S T I N G

POINT DATA:

D13, Coordinates, X= 1400.09 mm, Y= -2504.08 mm, Z= 6612.70 mm
D13 N, Coordinates, X= 1400.09 mm, Y= -2593.76 mm, Z= 6636.73 mm
D13 F, Coordinates, X= 1400.09 mm, Y= -2504.08 mm, Z= 6519.86 mm

From D14 to D15, DX= -679.27 mm, DY= 128.69 mm, DZ= -185.25 mm,
L= 715.74 mm

Bend

COMPONENT DATA (Bend, TIP= D14, Near= D14 N, Far= D14 F):
Elbow, Radius= 120.99 mm, Bend angle= 75.00 deg, End flanges= 0,
Flex= 2.781, SIFI= 1.27, SIFO= 1.06

POINT DATA:

D14, Coordinates, X= 1400.09 mm, Y= -2504.08 mm, Z= 4520.94 mm
D14 N, Coordinates, X= 1400.09 mm, Y= -2504.08 mm, Z= 4613.78 mm
D14 F, Coordinates, X= 1311.98 mm, Y= -2487.39 mm, Z= 4496.91 mm

From D15 to D16, DZ= -2389.37 mm

Bend

COMPONENT DATA (Bend, TIP= D15, Near= D15 N, Far= D15 F):
Elbow, Radius= 120.99 mm, Bend angle= 75.00 deg, End flanges= 0,
Flex= 2.781, SIFI= 1.27, SIFO= 1.06

POINT DATA:

D15, Coordinates, X= 720.82 mm, Y= -2375.39 mm, Z= 4335.69 mm
D15 N, Coordinates, X= 808.93 mm, Y= -2392.08 mm, Z= 4359.72 mm
D15 F, Coordinates, X= 720.82 mm, Y= -2375.39 mm, Z= 4242.85 mm

From D16 to D17, DX= -1505.90 mm, DY= 1505.90 mm, DZ= -186.32 mm,
L= 2137.80 mm

Bend

COMPONENT DATA (Bend, TIP= D16, Near= D16 N, Far= D16 F):
Elbow, Radius= 120.99 mm, Bend angle= 85.00 deg, End flanges= 0,
Flex= 2.781, SIFI= 1.27, SIFO= 1.06

POINT DATA:

D16, Coordinates, X= 720.82 mm, Y= -2375.39 mm, Z= 1946.32 mm
D16 N, Coordinates, X= 720.82 mm, Y= -2375.39 mm, Z= 2057.19 mm
D16 F, Coordinates, X= 642.72 mm, Y= -2297.29 mm, Z= 1936.66 mm

From D17 to B01, DX= 0.04 mm, DY= 925.22 mm, L= 925.22 mm

Bend

COMPONENT DATA (Bend, TIP= D17, Near= D17 N, Far= D17 F):
Elbow, Radius= 120.99 mm, Bend angle= 45.22 deg, End flanges= 0,
Flex= 2.781, SIFI= 1.27, SIFO= 1.06

POINT DATA:

D17, Coordinates, X= -785.08 mm, Y= -869.49 mm, Z= 1760.00 mm
D17 N, Coordinates, X= -749.59 mm, Y= -904.98 mm, Z= 1764.39 mm
D17 F, Coordinates, X= -785.08 mm, Y= -819.10 mm, Z= 1760.00 mm

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*** SEGMENT E , LINE # 79319820

From E08 to E00, DY= -110.00 mm

Run

PIPE DATA:

Pipe Id= 250MX4.0, Nom Size= 250 mm, OD= 273.00 mm, Sch= 4.0,
Wall Thk= 4.000 mm, Mill= 0.500 mm

POINT DATA:

E08, Coordinates, X= 4950.14 mm, Y= 690.39 mm, Z= 1381.12 mm

SUPPORT DATA:

E08, Anchor, KTX= Rigid, KTY= Rigid, KTZ= Rigid, KRX= Rigid, KRY= Rigid,
KRZ= Rigid

From E00 to E01, DY= -381.00 mm

Run

POINT DATA:

E00, Coordinates, X= 4950.14 mm, Y= 580.39 mm, Z= 1381.12 mm

From E01 to E02, DX= -900.00 mm

Bend

COMPONENT DATA (Bend, TIP= E01, Near= E01 N, Far= E01 F):

Elbow, Radius= 380.99 mm, Bend angle= 90.00 deg, End flanges= 0,
Flex= 19.586, SIFI= 4.68, SIFO= 3.90

POINT DATA:

E01, Coordinates, X= 4950.14 mm, Y= 199.39 mm, Z= 1381.12 mm
E01 N, Coordinates, X= 4950.14 mm, Y= 580.38 mm, Z= 1381.12 mm
E01 F, Coordinates, X= 4569.15 mm, Y= 199.39 mm, Z= 1381.12 mm

From E02 to E03, DZ= 3078.88 mm

Bend

COMPONENT DATA (Bend, TIP= E02, Near= E02 N, Far= E02 F):

Elbow, Radius= 380.99 mm, Bend angle= 90.00 deg, End flanges= 0,
Flex= 19.586, SIFI= 4.68, SIFO= 3.90

POINT DATA:

E02, Coordinates, X= 4050.14 mm, Y= 199.39 mm, Z= 1381.12 mm
E02 N, Coordinates, X= 4431.13 mm, Y= 199.39 mm, Z= 1381.12 mm
E02 F, Coordinates, X= 4050.14 mm, Y= 199.39 mm, Z= 1762.11 mm

From E03 to E04, DX= -875.98 mm, DY= 1216.00 mm, L= 1498.66 mm

Bend

COMPONENT DATA (Bend, TIP= E03, Near= E03 N, Far= E03 F):

Elbow, Radius= 380.99 mm, Bend angle= 90.00 deg, End flanges= 0,
Flex= 19.586, SIFI= 4.68, SIFO= 3.90

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C O M P O N E N T D A T A L I S T I N G

POINT DATA:

E03, Coordinates, X= 4050.14 mm, Y= 199.39 mm, Z= 4460.00 mm
E03 N, Coordinates, X= 4050.14 mm, Y= 199.39 mm, Z= 4079.01 mm
E03 F, Coordinates, X= 3827.45 mm, Y= 508.52 mm, Z= 4460.00 mm

From E04 to E05, DX= -1774.02 mm, DY= 400.00 mm, L= 1818.56 mm Bend

COMPONENT DATA (Bend, TIP= E04, Near= E04 N, Far= E04 F):

Elbow, Radius= 380.99 mm, Bend angle= 41.53 deg, End flanges= 0,
Flex= 19.586, SIFI= 4.68, SIFO= 3.90

POINT DATA:

E04, Coordinates, X= 3174.16 mm, Y= 1415.39 mm, Z= 4460.00 mm
E04 N, Coordinates, X= 3258.59 mm, Y= 1298.19 mm, Z= 4460.00 mm
E04 F, Coordinates, X= 3033.26 mm, Y= 1447.16 mm, Z= 4460.00 mm

From E05 to E06, DX= -1774.02 mm, DY= -400.00 mm, L= 1818.56 mm Bend

COMPONENT DATA (Bend, TIP= E05, Near= E05 N, Far= E05 F):

Elbow, Radius= 380.98 mm, Bend angle= 25.41 deg, End flanges= 0,
Flex= 19.587, SIFI= 4.68, SIFO= 3.90

POINT DATA:

E05, Coordinates, X= 1400.14 mm, Y= 1815.39 mm, Z= 4460.00 mm
E05 N, Coordinates, X= 1483.94 mm, Y= 1796.50 mm, Z= 4460.00 mm
E05 F, Coordinates, X= 1316.34 mm, Y= 1796.50 mm, Z= 4460.00 mm

From E06 to C01, DX= -325.83 mm, DY= -895.21 mm, L= 952.66 mm Bend

COMPONENT DATA (Bend, TIP= E06, Near= E06 N, Far= E06 F):

Elbow, Radius= 380.99 mm, Bend angle= 57.29 deg, End flanges= 0,
Flex= 19.586, SIFI= 4.68, SIFO= 3.90

POINT DATA:

E06, Coordinates, X= -373.88 mm, Y= 1415.39 mm, Z= 4460.00 mm
E06 N, Coordinates, X= -170.85 mm, Y= 1461.17 mm, Z= 4460.00 mm
E06 F, Coordinates, X= -445.06 mm, Y= 1219.82 mm, Z= 4460.00 mm

Number of points in the system: 82

Weight of Empty Pipes + Weight of Contents = Total Weight of System
288.4 kg + 0.0 kg = 288.4 kg

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C O O R D I N A T E S D A T A L I S T I N G

POINT NAME	-----X	-----Y	-----Z
*** SEGMENT A , LINE # 79319820			
A01	0.00	0.00	0.00
A02 N	-211.84	77.10	0.00
A02	-785.04	285.73	0.00
A02 F	-785.04	285.73	609.99
A03	-785.04	285.73	613.05
A04	-785.04	285.73	960.00
A05	-785.04	285.73	1760.00
A06	-785.04	285.73	4460.00
A07 N	-785.04	285.73	6859.97
A07	-785.04	285.73	7392.96
A07 F	-284.19	103.44	7392.96
A08	-284.18	103.43	7392.96
*** SEGMENT B , LINE # 79319820			
A05	-785.04	285.73	1760.00
B01	-785.04	55.73	1760.00
*** SEGMENT C , LINE # 79319820			
A06	-785.04	285.73	4460.00
C01	-699.71	520.18	4460.00
*** SEGMENT D , LINE # 79319820			
D00	3155.09	-3834.73	18517.13
D01	3245.09	-3834.73	18517.13
D02 N	3323.10	-3834.73	18517.13
D02	3444.09	-3834.73	18517.13
D02 F	3444.09	-3714.20	18506.58
D03 N	3444.09	-3374.35	18476.85
D03	3444.09	-3254.73	18466.38
D03 F	3324.47	-3254.73	18455.92
D04	2621.42	-3254.73	18394.40
D05 N	2621.42	-3254.73	18394.40
D05	2597.02	-3254.73	18392.27
D05 F	2574.55	-3264.25	18390.26
D06 N	2365.00	-3353.07	18371.47
D06	2262.76	-3396.40	18362.31
D06 F	2262.76	-3396.40	18252.07
D07	2262.76	-3396.40	18251.43
D08 N	2262.76	-3396.40	13429.74
D08	2262.76	-3396.40	13318.87
D08 F	2184.66	-3318.30	13309.21
D09 N	1940.58	-3074.22	13279.01
D09	1905.43	-3039.07	13274.66
D09 F	1855.73	-3039.07	13270.31
D10 N	1510.54	-3039.07	13240.11
D10	1400.09	-3039.07	13230.45
D10 F	1400.09	-3039.07	13119.58
D11	1400.09	-3039.07	12848.90
D12 N	1400.09	-3039.07	6848.89
D12	1400.09	-3039.07	6756.05
D12 F	1400.09	-2949.39	6732.02

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C O O R D I N A T E S D A T A L I S T I N G

POINT NAME	-----COORDINATE (mm)----- X	Y	Z
D13 N	1400.09	-2593.76	6636.73
D13	1400.09	-2504.08	6612.70
D13 F	1400.09	-2504.08	6519.86
D14 N	1400.09	-2504.08	4613.78
D14	1400.09	-2504.08	4520.94
D14 F	1311.98	-2487.39	4496.91
D15 N	808.93	-2392.08	4359.72
D15	720.82	-2375.39	4335.69
D15 F	720.82	-2375.39	4242.85
D16 N	720.82	-2375.39	2057.19
D16	720.82	-2375.39	1946.32
D16 F	642.72	-2297.29	1936.66
D17 N	-749.59	-904.98	1764.39
D17	-785.08	-869.49	1760.00
D17 F	-785.08	-819.10	1760.00
B01	-785.04	55.73	1760.00

*** SEGMENT E , LINE # 79319820

E08	4950.14	690.39	1381.12
E00	4950.14	580.39	1381.12
E01 N	4950.14	580.38	1381.12
E01	4950.14	199.39	1381.12
E01 F	4569.15	199.39	1381.12
E02 N	4431.13	199.39	1381.12
E02	4050.14	199.39	1381.12
E02 F	4050.14	199.39	1762.11
E03 N	4050.14	199.39	4079.01
E03	4050.14	199.39	4460.00
E03 F	3827.45	508.52	4460.00
E04 N	3258.59	1298.19	4460.00
E04	3174.16	1415.39	4460.00
E04 F	3033.26	1447.16	4460.00
E05 N	1483.94	1796.50	4460.00
E05	1400.14	1815.39	4460.00
E05 F	1316.34	1796.50	4460.00
E06 N	-170.85	1461.17	4460.00
E06	-373.88	1415.39	4460.00
E06 F	-445.06	1219.82	4460.00
C01	-699.71	520.18	4460.00

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PIPE DATA LISTING

Pipe ID/ Material	Nom/ Sch	O.D. mm	-----Thickness (mm)----- W.Th. Corr Mill Insu Ling	Spec Grav	Weight (N/m) Pipe Other Total	ZL/ ZC
400MX6.0 AL	400 6.0	406.00	6.000 0 0.75 0 0	0	200 0 200	1.00 1.00
350MX6.0 AL	350 6.0	355.00	6.000 0 0.75 0 0	0	175 0 175	1.00 1.00
50MMX3.9 AL	50 3.9	60.300	3.900 0 0.49 0 0	0	18.35 0 18.35	1.00 1.00
250MX3.9 AL	250 4.0	273.00	4.000 0 0.50 0 0	0	89.74 0 89.74	1.00 1.00
80MMX3.9 AL	80 5.5	88.900	5.500 0 0.69 0 0	0	38.26 0 38.26	1.00 1.00
250MX4.0 AL	250 4.0	273.00	4.000 0 0.50 0 0	0	89.74 0 89.74	1.00 1.00

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M A T E R I A L D A T A L I S T I N G

Material Name	Pipe ID	Density kg/m3	Pois. Ratio	Temper. deg C	Modulus x10^6 N/			Expans. mm/m
					Axial	Hoop	Shear	
AL	400MX6.0	2707.1	0.30	20.0 -196.0	0.06899 0.07646	0.06899	0.02653	-3.8459
AL	350MX6.0	2707.1	0.30	20.0 -196.0	0.06899 0.07646	0.06899	0.02653	-3.8459
AL	50MMX3.9	2707.1	0.30	20.0 -196.0	0.06899 0.07646	0.06899	0.02653	-3.8459
AL	250MX3.9	2707.1	0.30	20.0 -196.0	0.06899 0.07646	0.06899	0.02653	-3.8459
AL	80MMX3.9	2707.1	0.30	20.0 -196.0	0.06899 0.07646	0.06899	0.02653	-3.8459
AL	250MX4.0	2707.1	0.30	20.0 -196.0	0.06899 0.07646	0.06899	0.02653	-3.8459

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M A T E R I A L A L L O W A B L E D A T A L I S T I N G

Material Name	Pipe ID	Temper. deg C	Allow. N/mm2	Yield N/mm2
AL	400MX6.0	20.0 -196.0	103.42 71.00	0.00
AL	350MX6.0	20.0 -196.0	103.42 71.00	0.00
AL	50MMX3.9	20.0 -196.0	103.42 71.00	0.00
AL	250MX3.9	20.0 -196.0	103.42 71.00	0.00
AL	80MMX3.9	20.0 -196.0	103.42 71.00	0.00
AL	250MX4.0	20.0 -196.0	103.42 71.00	0.00

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TEMPERATURE AND PRESSURE DATA

-----C A S E 1-----				-----C A S E 2-----				-----C A S E 3-----			
POINT	PRESS.	TEMPER	EXPAN.	PRESS.	TEMPER	EXPAN.	PRESS.	TEMPER	EXPAN.		
NAME	N/mm2	deg C	mm/m	N/mm2	deg C	mm/m	N/mm2	deg C	mm/m		

*** SEGMENT A , LINE # 79319820

A01	0	-196	-3.846
A08	0	-196	-3.846

*** SEGMENT B , LINE # 79319820

A05	0	-196	-3.846
B01	0	-196	-3.846

*** SEGMENT C , LINE # 79319820

A06	0	-196	-3.846
C01	0	-196	-3.846

*** SEGMENT D , LINE # 79319820

D00	0	-196	-3.846
B01	0	-196	-3.846

*** SEGMENT E , LINE # 79319820

E08	0	-196	-3.846
C01	0	-196	-3.846

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H O T M O D U L U S ($\times 10^6$ N/)

POINT

NAME	CASE 1	CASE 2	CASE 3
------	--------	--------	--------

*** SEGMENT A , LINE # 79319820

A01 0.07646

A08 0.07646

*** SEGMENT B , LINE # 79319820

A05 0.07646

B01 0.07646

*** SEGMENT C , LINE # 79319820

A06 0.07646

C01 0.07646

*** SEGMENT D , LINE # 79319820

D00 0.07646

B01 0.07646

*** SEGMENT E , LINE # 79319820

E08 0.07646

C01 0.07646

* Non-standard material

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	H O T			A L L O W A B L E S (N/mm2)					
	-----C A S E 1-----			-----C A S E 2-----			-----C A S E 3-----		
POINT	NOT	NOT		NOT	NOT		NOT	NOT	
NAME	ALLOW	USED	USED	ALLOW	USED	USED	ALLOW	USED	
	-----	-----	-----	-----	-----	-----	-----	-----	

*** SEGMENT A , LINE # 79319820

A01 71.00*

A08 71.00*

*** SEGMENT B , LINE # 79319820

A05 71.00*

B01 71.00*

*** SEGMENT C , LINE # 79319820

A06 71.00*

C01 71.00*

*** SEGMENT D , LINE # 79319820

D00 71.00*

B01 71.00*

*** SEGMENT E , LINE # 79319820

E08 71.00*

C01 71.00*

< User-defined code allowable

* Non-code material

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THERMAL ANCHOR MOVEMENTS AND DISPLACEMENTS

POINT NAME	LOAD CASE	DX (mm)	DY (mm)	DZ (mm)	RX (deg)	RY (deg)	RZ (deg)
A01	Thermal 1	5.40	-2.00	-59.20	0.000	0.000	0.000
A07 F	Thermal 1	6.50	-2.40	-87.60	0.000	0.000	0.000
D00	Thermal 1	0.00	0.00	0.70	0.000	0.000	0.000

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AutoPIPE 6.20 RESULT PAGE 1

D I S P L A C E M E N T S

Point name	Load combination	TRANSLATIONS (mm)			ROTATIONS (deg)		
		X	Y	Z	X	Y	Z
*** Segment A begin *** Line # 79319820							
A01	T1	5.400	-2.000	-59.200	0.000	0.000	0.000
A02 N	T1	6.215	-2.297	-59.195	0.000	0.001	0.001
A02 F	T1	8.515	-3.271	-61.399	0.001	0.006	0.017
A03	T1	8.516	-3.271	-61.411	0.001	0.006	0.017
A04	T1	8.553	-3.272	-62.744	0.000	0.005	0.018
A05	T1	8.607	-3.250	-65.818	-0.003	0.001	0.023
A06	T1	8.183	-3.203	-76.195	0.001	-0.024	0.037
A07 N	T1	8.201	-3.249	-85.427	0.000	0.013	0.026
A07 F	T1	6.500	-2.400	-87.600	0.000	0.000	0.000
A08	T1	6.500	-2.400	-87.600	0.000	0.000	0.000
*** Segment A end *** Line # 79319820							
*** Segment B begin *** Line # 79319820							
A05	T1	8.607	-3.250	-65.818	-0.003	0.001	0.023
B01	T1	8.764	-2.366	-65.134	-0.329	-0.210	0.054
*** Segment B end *** Line # 79319820							
*** Segment C begin *** Line # 79319820							
A06	T1	8.183	-3.203	-76.195	0.001	-0.024	0.037
C01	T1	7.686	-4.043	-76.120	-0.002	-0.066	0.043
*** Segment C end *** Line # 79319820							
*** Segment D begin *** Line # 79319820							
D00	T1	0.000	0.000	0.700	0.000	0.000	0.000
D01	T1	-0.346	0.000	0.707	-0.004	-0.011	-0.001
D02 N	T1	-0.646	-0.002	0.738	-0.012	-0.038	-0.003
D02 F	T1	-1.050	-0.485	0.998	0.010	-0.197	-0.028
D03 N	T1	-0.683	-1.781	1.242	0.050	-0.400	-0.046

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AutoPIPE 6.20 RESULT PAGE 2

D I S P L A C E M E N T S

Point name	Load combination	TRANSLATIONS (mm)			ROTATIONS (deg)		
		X	Y	Z	X	Y	Z
D03 F	T1	0.088	-2.029	0.488	0.123	-0.541	-0.107
D04	T1	3.457	-0.161	-6.887	0.409	-0.641	-0.144
D05 N	T1	3.457	-0.161	-6.887	0.409	-0.641	-0.144
D05 F	T1	3.659	0.027	-7.462	0.429	-0.630	-0.151
D06 N	T1	4.427	1.080	-10.340	0.512	-0.575	-0.153
D06 F	T1	5.734	2.687	-11.222	0.583	-0.437	-0.181
D07	T1	5.739	2.694	-11.220	0.583	-0.436	-0.181
D08 N	T1	9.748	68.548	7.301	0.691	-0.064	-0.135
D08 F	T1	10.434	69.820	8.477	0.617	-0.144	-0.134
D09 N	T1	12.024	69.769	10.498	0.607	-0.162	-0.133
D09 F	T1	12.456	69.925	10.676	0.619	-0.145	-0.134
D10 N	T1	13.845	71.058	10.084	0.652	-0.073	-0.129
D10 F	T1	14.193	72.700	10.525	0.675	0.110	-0.124
D11	T1	13.431	75.927	11.565	0.690	0.211	-0.112
D12 N	T1	-55.781	114.596	34.611	-0.402	0.484	0.160
D12 F	T1	-56.919	113.281	34.252	-0.574	0.392	0.146
D13 N	T1	-58.408	110.872	30.731	-0.661	0.258	0.157
D13 F	T1	-59.051	109.132	30.121	-0.696	0.154	0.127
D14 N	T1	-52.521	82.430	37.443	-0.955	-0.611	0.075
D14 F	T1	-50.773	80.228	36.440	-1.034	-0.827	0.079
D15 N	T1	-46.766	76.592	27.095	-1.145	-0.976	0.073
D15 F	T1	-44.407	74.012	25.678	-1.199	-1.016	0.088
D16 N	T1	0.505	19.903	34.073	-1.698	-1.422	0.135
D16 F	T1	3.728	15.718	30.020	-1.847	-1.566	0.141
D17 N	T1	10.188	1.512	-49.811	-1.440	-1.147	0.129
D17 F	T1	10.220	0.998	-52.474	-1.238	-1.012	0.123

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AutoPIPE 6.20 RESULT PAGE 3

D I S P L A C E M E N T S

Point name	Load combination	TRANSLATIONS (mm)			ROTATIONS (deg)		
		X	Y	Z	X	Y	Z
B01	T1	8.764	-2.366	-65.134	-0.329	-0.210	0.054

*** Segment D end *** Line # 79319820

*** Segment E begin *** Line # 79319820

E08	T1	0.000	0.000	0.000	0.000	0.000	0.000
E00	T1	0.002	0.423	-0.006	0.002	-0.005	0.000
E01 N	T1	0.002	0.423	-0.006	0.002	-0.005	0.000
E01 F	T1	1.346	2.166	-1.249	0.165	-0.191	-0.082
E02 N	T1	1.877	2.364	-1.717	0.165	-0.193	-0.083
E02 F	T1	1.690	2.250	-4.722	0.125	-0.269	-0.155
E03 N	T1	-10.228	-2.682	-13.647	0.116	-0.342	-0.192
E03 F	T1	-12.400	-3.816	-17.738	-0.095	-0.791	-0.089
E04 N	T1	-8.967	-5.959	-27.056	-0.067	-0.844	-0.088
E04 F	T1	-7.930	-6.306	-30.529	-0.048	-0.861	-0.029
E05 N	T1	-1.852	-7.145	-53.942	0.055	-0.851	-0.008
E05 F	T1	-1.202	-7.194	-56.208	0.070	-0.703	0.041
E06 N	T1	4.809	-7.171	-73.786	0.177	-0.575	0.053
E06 F	T1	6.104	-6.515	-75.678	-0.026	-0.187	0.052
C01	T1	7.686	-4.043	-76.120	-0.002	-0.066	0.043

*** Segment E end *** Line # 79319820

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R E S T R A I N T R E A C T I O N S

Point name	Load combination	FORCES (N)				MOMENTS (Nm)			
		X	Y	Z	Result	X	Y	Z	Result
A01	Anchor T1	443	12	1370	1440	2	1048	411	1126
A07 F	Anchor T1	-1211	75	388	1274	247	415	611	779
D00	Anchor T1	-35	25	-229	233	-26	-85	-5	89
E08	Anchor T1	803	-112	-1529	1731	781	-1292	42	1510

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G L O B A L F O R C E S & M O M E N T S

Point name	Load combination	FORCES (N)				MOMENTS (Nm)				
		X	Y	Z	Result	X	Y	Z	Result	

*** Segment A begin *** Line # 79319820										
A01	T1	-443	-12	-1370	1440	-2	-1048	-411	1126	
A02 N	T1	-443	-12	-1370	1440	104	-758	-447	886	
A02 F	T1	-443	-12	-1370	1440	383	297	-546	730	
A03	T1	-443	-12	-1370	1440	383	298	-546	731	
A04	T1	-443	-12	-1370	1440	379	452	-546	804	
A05 -	T1	-443	-12	-1370	1440	369	807	-546	1042	
A05 +	T1	-408	-37	-1141	1212	-129	572	-497	769	
A06 -	T1	-408	-37	-1141	1212	-227	1675	-497	1762	
A06 +	T1	-1211	75	388	1274	-45	-3332	428	3360	
A07 N	T1	-1211	75	388	1274	136	-425	428	618	
A07 F-	T1	-1211	75	388	1274	247	415	611	779	
A07 F+	T1	0	0	0	0	0	0	0	0	
A08	T1	0	0	0	0	0	0	0	0	
*** Segment A end *** Line # 79319820										
*** Segment B begin *** Line # 79319820										
A05	T1	-35	25	-229	233	498	234	-49	553	
B01	T1	-35	25	-229	233	446	234	-41	505	
*** Segment B end *** Line # 79319820										
*** Segment C begin *** Line # 79319820										
A06	T1	803	-112	-1529	1731	-183	5007	-925	5095	
C01	T1	803	-112	-1529	1731	176	4876	-727	4933	
*** Segment C end *** Line # 79319820										
*** Segment D begin *** Line # 79319820										
D00	T1	35	-25	229	233	26	85	5	89	
D01	T1	35	-25	229	233	26	106	7	109	

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G L O B A L F O R C E S & M O M E N T S

Point name	Load combination	FORCES (N)				MOMENTS (Nm)			
		X	Y	Z	Result	X	Y	Z	Result
D02 N	T1	35	-25	229	233	26	124	9	127
D02 F	T1	35	-25	229	233	-1	152	16	153
D03 N	T1	35	-25	229	233	-78	153	28	174
D03 F	T1	35	-25	229	233	-105	126	29	167
D04	T1	35	-25	229	233	-104	-32	11	109
D05 N	T1	35	-25	229	233	-104	-32	11	109
D05 F	T1	35	-25	229	233	-101	-43	10	110
D06 N	T1	35	-25	229	233	-80	-90	2	121
D06 F	T1	35	-25	229	233	-68	-109	-2	129
D07	T1	35	-25	229	233	-68	-109	-2	129
D08 N	T1	35	-25	229	233	53	58	-2	78
D08 F	T1	35	-25	229	233	38	44	-2	58
D09 N	T1	35	-25	229	233	-17	-11	1	20
D09 F	T1	35	-25	229	233	-25	-30	0	39
D10 N	T1	35	-25	229	233	-24	-108	-9	111
D10 F	T1	35	-25	229	233	-21	-129	-12	131
D11	T1	35	-25	229	233	-14	-119	-12	121
D12 N	T1	35	-25	229	233	135	89	-12	162
D12 F	T1	35	-25	229	233	118	93	-8	150
D13 N	T1	35	-25	229	233	39	96	4	104
D13 F	T1	35	-25	229	233	21	100	7	103
D14 N	T1	35	-25	229	233	69	166	7	180
D14 F	T1	35	-25	229	233	68	150	5	165
D15 N	T1	35	-25	229	233	50	40	-4	64
D15 F	T1	35	-25	229	233	49	24	-6	55
D16 N	T1	35	-25	229	233	103	100	-6	144

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Point name	Load combination	FORCES (N)				MOMENTS (Nm)			
		X	Y	Z	Result	X	Y	Z	Result
D16 F	T1	35	-25	229	233	88	86	-5	123
D17 N	T1	35	-25	229	233	-226	-226	9	320
D17 F	T1	35	-25	229	233	-245	-234	11	340
B01	T1	35	-25	229	233	-446	-234	41	505
*** Segment D end		*** Line # 79319820							
*** Segment E begin		*** Line # 79319820							
E08	T1	-803	112	1529	1731	-781	1292	-42	1510
E00	T1	-803	112	1529	1731	-612	1292	46	1430
E01 N	T1	-803	112	1529	1731	-612	1292	46	1430
E01 F	T1	-803	112	1529	1731	-30	709	395	812
E02 N	T1	-803	112	1529	1731	-30	498	410	646
E02 F	T1	-803	112	1529	1731	13	221	453	504
E03 N	T1	-803	112	1529	1731	272	2082	453	2148
E03 F	T1	-803	112	1529	1731	-158	2047	230	2066
E04 N	T1	-803	112	1529	1731	-1366	1177	-341	1835
E04 F	T1	-803	112	1529	1731	-1593	832	-435	1850
E05 N	T1	-803	112	1529	1731	-2128	-1537	-542	2680
E05 F	T1	-803	112	1529	1731	-2128	-1793	-523	2831
E06 N	T1	-803	112	1529	1731	-1615	-4068	-88	4377
E06 F	T1	-803	112	1529	1731	-1246	-4487	137	4659
C01	T1	-803	112	1529	1731	-176	-4876	727	4933
*** Segment E end		*** Line # 79319820							

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ASME B31.3b (2001) CODE COMPLIANCE									
			(Moments in Nm)			(Stress in N/mm2)			
Point	Load	In-Pl.	Out-Pl.	Torsion	S.I.F		Eq. Load	Code	Code
name	combination	Moment	Moment	Moment	In	Out	no. type	Stress	Allow.
*** Segment A begin *** Line # 79319820									
A01	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	986	411	357	1.00	1.00	(17) DISP	2	147
A02 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	677	447	357	1.00	1.00	(17) DISP	1	147
A02 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		4.43	3.69	(18) SUST	0	71
	Cold to T1	677	447	357	4.43	3.69	(17) DISP	5	147
A02 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		4.43	3.69	(18) SUST	0	71
	Cold to T1	410	258	546	4.43	3.69	(17) DISP	3	147
A02 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	297	383	546	1.00	1.00	(17) DISP	1	147
A03	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	298	383	546	1.00	1.00	(17) DISP	1	147
A04	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	452	379	546	1.00	1.00	(17) DISP	1	147
A05 -	Max P						(3a) HOOP	0	71
	Max P	0	0		3.25	4.00	(18) SUST	0	71
	Cold to T1	369	807	546	3.25	4.00	(17) DISP	6	147
A05 +	Max P						(3a) HOOP	0	71
	Max P	0	0		3.25	4.00	(18) SUST	0	71
	Cold to T1	129	572	497	3.25	4.00	(17) DISP	4	147
A06 -	Max P						(3a) HOOP	0	71
	Max P	0	0		3.25	4.00	(18) SUST	0	71
	Cold to T1	786	1496	497	3.25	4.00	(17) DISP	12	147
A06 +	Max P						(3a) HOOP	0	71
	Max P	0	0		3.25	4.00	(18) SUST	0	71
	Cold to T1	1098	3146	428	3.25	4.00	(17) DISP	23	147
A07 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	425	136	428	1.00	1.00	(17) DISP	1	147

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ASME B31.3b (2001) CODE COMPLIANCE										
			(Moments in Nm)			(Stress in N/mm2)				
Point name	Load combination	In-Pl. Moment	Out-Pl. Moment	Torsion Moment	S.I.F		Eq. Load no.	Load type	Code Stress	Code Allow.
A07 N+	Max P						(3a)	HOOP	0	71
	Max P	0	0		4.04	3.37	(18)	SUST	0	71
	Cold to T1	353	274	428	4.04	3.37	(17)	DISP	3	147
A07 F-	Max P						(3a)	HOOP	0	71
	Max P	0	0		4.04	3.37	(18)	SUST	0	71
	Cold to T1	474	611	91	4.04	3.37	(17)	DISP	5	147
A07 F+	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.00	1.00	(18)	SUST	0	71
	Cold to T1	0	0	0	1.00	1.00	(17)	DISP	0	147
A08	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.00	1.00	(18)	SUST	0	71
	Cold to T1	0	0	0	1.00	1.00	(17)	DISP	0	147
*** Segment A end *** Line # 79319820										
*** Segment B begin *** Line # 79319820										
A05	Max P						(3a)	HOOP	0	71
	Max P	0	0		3.25	4.00	(18)	SUST	0	71
	Cold to T1	498	49	234	3.25	4.00	(17)	DISP	112	147
B01	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.00	1.00	(18)	SUST	0	71
	Cold to T1	446	41	234	1.00	1.00	(17)	DISP	55	147
*** Segment B end *** Line # 79319820										
*** Segment C begin *** Line # 79319820										
A06	Max P						(3a)	HOOP	0	71
	Max P	0	0		3.25	4.00	(18)	SUST	0	71
	Cold to T1	1884	925	4642	3.25	4.00	(17)	DISP	29	147
C01	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.00	1.00	(18)	SUST	0	71
	Cold to T1	1503	727	4642	1.00	1.00	(17)	DISP	22	147
*** Segment C end *** Line # 79319820										
*** Segment D begin *** Line # 79319820										
D00	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.00	1.00	(18)	SUST	0	71
	Cold to T1	85	5	26	1.00	1.00	(17)	DISP	3	147
D01	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.00	1.00	(18)	SUST	0	71
	Cold to T1	106	7	26	1.00	1.00	(17)	DISP	12	147

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ASME B31.3b (2001) CODE COMPLIANCE									
Point name	Load combination	(Moments in Nm)			S.I.F		(Stress in N/mm2)		Code Stress
		In-Pl. Moment	Out-Pl. Moment	Torsion Moment	In	Out	Eq. Load no. type	Code Allow.	
D02 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	124	9	26	1.00	1.00	(17) DISP	14	147
D02 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.27	1.06	(18) SUST	0	71
	Cold to T1	20	123	26	1.27	1.06	(17) DISP	15	147
D02 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.27	1.06	(18) SUST	0	71
	Cold to T1	29	1	150	1.27	1.06	(17) DISP	17	147
D02 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	1	29	150	1.00	1.00	(17) DISP	17	147
D03 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	78	41	150	1.00	1.00	(17) DISP	19	147
D03 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.27	1.06	(18) SUST	0	71
	Cold to T1	48	74	150	1.27	1.06	(17) DISP	20	147
D03 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.27	1.06	(18) SUST	0	71
	Cold to T1	49	123	102	1.27	1.06	(17) DISP	19	147
D03 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	126	38	102	1.00	1.00	(17) DISP	18	147
D04	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	32	11	104	1.00	1.00	(17) DISP	12	147
D05 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	32	11	104	1.00	1.00	(17) DISP	12	147
D05 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.27	1.06	(18) SUST	0	71
	Cold to T1	21	32	102	1.27	1.06	(17) DISP	12	147
D05 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.27	1.06	(18) SUST	0	71
	Cold to T1	19	1	109	1.27	1.06	(17) DISP	12	147
D05 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	0	19	109	1.00	1.00	(17) DISP	12	147

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ASME B31.3b (2001) CODE COMPLIANCE										
		(Moments in Nm)					(Stress in N/mm2)			
Point name	Load combination	In-Pl. Moment	Out-Pl. Moment	Torsion Moment	S.I.F		Eq. no.	Load type	Code Stress	Code Allow.
D06 N-	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.00	1.00	(18)	SUST	0	71
	Cold to T1	52	11	109	1.00	1.00	(17)	DISP	13	147
D06 N+	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.27	1.06	(18)	SUST	0	71
	Cold to T1	52	11	109	1.27	1.06	(17)	DISP	14	147
D06 F-	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.27	1.06	(18)	SUST	0	71
	Cold to T1	74	105	3	1.27	1.06	(17)	DISP	16	147
D06 F+	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.00	1.00	(18)	SUST	0	71
	Cold to T1	109	68	2	1.00	1.00	(17)	DISP	14	147
D07	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.00	1.00	(18)	SUST	0	71
	Cold to T1	109	68	2	1.00	1.00	(17)	DISP	14	147
D08 N-	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.00	1.00	(18)	SUST	0	71
	Cold to T1	58	53	2	1.00	1.00	(17)	DISP	9	147
D08 N+	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.27	1.06	(18)	SUST	0	71
	Cold to T1	78	4	2	1.27	1.06	(17)	DISP	11	147
D08 F-	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.27	1.06	(18)	SUST	0	71
	Cold to T1	58	1	5	1.27	1.06	(17)	DISP	8	147
D08 F+	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.00	1.00	(18)	SUST	0	71
	Cold to T1	58	1	5	1.00	1.00	(17)	DISP	6	147
D09 N-	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.00	1.00	(18)	SUST	0	71
	Cold to T1	20	1	5	1.00	1.00	(17)	DISP	2	147
D09 N+	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.27	1.06	(18)	SUST	0	71
	Cold to T1	2	20	5	1.27	1.06	(17)	DISP	2	147
D09 F-	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.27	1.06	(18)	SUST	0	71
	Cold to T1	1	30	25	1.27	1.06	(17)	DISP	4	147
D09 F+	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.00	1.00	(18)	SUST	0	71
	Cold to T1	30	2	25	1.00	1.00	(17)	DISP	4	147

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ASME B31.3b (2001) CODE COMPLIANCE									
Point name	Load combination	(Moments in Nm)			S.I.F		(Stress in N/mm2)		Code Stress
		In-Pl. Moment	Out-Pl. Moment	Torsion Moment	In	Out	Eq. Load no. type	Code Allow.	
D10 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	108	7	25	1.00	1.00	(17) DISP	12	147
D10 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.27	1.06	(18) SUST	0	71
	Cold to T1	108	7	25	1.27	1.06	(17) DISP	15	147
D10 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.27	1.06	(18) SUST	0	71
	Cold to T1	129	21	12	1.27	1.06	(17) DISP	18	147
D10 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	129	21	12	1.00	1.00	(17) DISP	14	147
D11	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	119	14	12	1.00	1.00	(17) DISP	13	147
D12 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	89	135	12	1.00	1.00	(17) DISP	18	147
D12 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.27	1.06	(18) SUST	0	71
	Cold to T1	135	89	12	1.27	1.06	(17) DISP	22	147
D12 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.27	1.06	(18) SUST	0	71
	Cold to T1	118	16	92	1.27	1.06	(17) DISP	19	147
D12 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	118	16	92	1.00	1.00	(17) DISP	16	147
D13 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	39	29	92	1.00	1.00	(17) DISP	11	147
D13 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.27	1.06	(18) SUST	0	71
	Cold to T1	39	29	92	1.27	1.06	(17) DISP	12	147
D13 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.27	1.06	(18) SUST	0	71
	Cold to T1	21	100	7	1.27	1.06	(17) DISP	12	147
D13 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	100	21	7	1.00	1.00	(17) DISP	11	147

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ASME B31.3b (2001) CODE COMPLIANCE									
		(Moments in Nm)			(Stress in N/mm2)				
Point name	Load combination	In-Pl. Moment	Out-Pl. Moment	Torsion Moment	S.I.F In	S.I.F Out	Eq. Load no. type	Code Stress	Code Allow.
D14 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	166	69	7	1.00	1.00	(17) DISP	20	147
D14 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.27	1.06	(18) SUST	0	71
	Cold to T1	176	37	7	1.27	1.06	(17) DISP	25	147
D14 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.27	1.06	(18) SUST	0	71
	Cold to T1	160	5	39	1.27	1.06	(17) DISP	23	147
D14 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	160	5	39	1.00	1.00	(17) DISP	18	147
D15 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	49	14	39	1.00	1.00	(17) DISP	7	147
D15 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.27	1.06	(18) SUST	0	71
	Cold to T1	49	14	39	1.27	1.06	(17) DISP	8	147
D15 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.27	1.06	(18) SUST	0	71
	Cold to T1	33	43	6	1.27	1.06	(17) DISP	7	147
D15 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	24	49	6	1.00	1.00	(17) DISP	6	147
D16 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	100	103	6	1.00	1.00	(17) DISP	16	147
D16 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.27	1.06	(18) SUST	0	71
	Cold to T1	144	2	6	1.27	1.06	(17) DISP	20	147
D16 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.27	1.06	(18) SUST	0	71
	Cold to T1	123	5	1	1.27	1.06	(17) DISP	17	147
D16 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	123	5	1	1.00	1.00	(17) DISP	13	147
D17 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	320	9	1	1.00	1.00	(17) DISP	35	147

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ASME B31.3b (2001) CODE COMPLIANCE									
		(Moments in Nm)					(Stress in N/mm2)		
Point	Load	In-Pl.	Out-Pl.	Torsion	S.I.F		Eq. Load	Code	Code
name	combination	Moment	Moment	Moment	In	Out	no. type	Stress	Allow.
D17 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.27	1.06	(18) SUST	0	71
	Cold to T1	36	318	1	1.27	1.06	(17) DISP	37	147
D17 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.27	1.06	(18) SUST	0	71
	Cold to T1	41	242	234	1.27	1.06	(17) DISP	38	147
D17 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	245	11	234	1.00	1.00	(17) DISP	37	147
B01	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	446	41	234	1.00	1.00	(17) DISP	55	147
*** Segment D end *** Line # 79319820									
*** Segment E begin *** Line # 79319820									
E08	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	781	42	1292	1.00	1.00	(17) DISP	7	147
E00	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	612	46	1292	1.00	1.00	(17) DISP	6	147
E01 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	612	46	1292	1.00	1.00	(17) DISP	6	147
E01 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		4.68	3.90	(18) SUST	0	71
	Cold to T1	46	612	1292	4.68	3.90	(17) DISP	12	147
E01 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		4.68	3.90	(18) SUST	0	71
	Cold to T1	395	709	30	4.68	3.90	(17) DISP	15	147
E01 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	709	395	30	1.00	1.00	(17) DISP	4	147
E02 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	498	410	30	1.00	1.00	(17) DISP	3	147
E02 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		4.68	3.90	(18) SUST	0	71
	Cold to T1	498	410	30	4.68	3.90	(17) DISP	13	147

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ASME B31.3b (2001) CODE COMPLIANCE										
		(Moments in Nm)						(Stress in N/mm2)		
Point name	Load combination	In-Pl. Moment	Out-Pl. Moment	Torsion Moment	S.I.F		Eq. Load no.	Load type	Code Stress	Code Allow.
E02 F-	Max P						(3a)	HOOP	0	71
	Max P	0	0		4.68	3.90	(18)	SUST	0	71
	Cold to T1	221	13	453	4.68	3.90	(17)	DISP	5	147
E02 F+	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.00	1.00	(18)	SUST	0	71
	Cold to T1	221	13	453	1.00	1.00	(17)	DISP	2	147
E03 N-	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.00	1.00	(18)	SUST	0	71
	Cold to T1	2082	272	453	1.00	1.00	(17)	DISP	10	147
E03 N+	Max P						(3a)	HOOP	0	71
	Max P	0	0		4.68	3.90	(18)	SUST	0	71
	Cold to T1	1438	1530	453	4.68	3.90	(17)	DISP	40	147
E03 F-	Max P						(3a)	HOOP	0	71
	Max P	0	0		4.68	3.90	(18)	SUST	0	71
	Cold to T1	1068	230	1753	4.68	3.90	(17)	DISP	24	147
E03 F+	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.00	1.00	(18)	SUST	0	71
	Cold to T1	1068	230	1753	1.00	1.00	(17)	DISP	9	147
E04 N-	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.00	1.00	(18)	SUST	0	71
	Cold to T1	420	341	1753	1.00	1.00	(17)	DISP	8	147
E04 N+	Max P						(3a)	HOOP	0	71
	Max P	0	0		4.68	3.90	(18)	SUST	0	71
	Cold to T1	341	420	1753	4.68	3.90	(17)	DISP	13	147
E04 F-	Max P						(3a)	HOOP	0	71
	Max P	0	0		4.68	3.90	(18)	SUST	0	71
	Cold to T1	435	462	1737	4.68	3.90	(17)	DISP	14	147
E04 F+	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.00	1.00	(18)	SUST	0	71
	Cold to T1	462	435	1737	1.00	1.00	(17)	DISP	8	147
E05 N-	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.00	1.00	(18)	SUST	0	71
	Cold to T1	1967	542	1737	1.00	1.00	(17)	DISP	12	147
E05 N+	Max P						(3a)	HOOP	0	71
	Max P	0	0		4.68	3.90	(18)	SUST	0	71
	Cold to T1	542	1967	1737	4.68	3.90	(17)	DISP	37	147
E05 F-	Max P						(3a)	HOOP	0	71
	Max P	0	0		4.68	3.90	(18)	SUST	0	71
	Cold to T1	523	1281	2470	4.68	3.90	(17)	DISP	27	147

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ASME B31.3b (2001) CODE COMPLIANCE									
		(Moments in Nm)					(Stress in N/mm2)		
Point	Load	In-Pl.	Out-Pl.	Torsion	S.I.F		Eq. Load	Code	Code
name	combination	Moment	Moment	Moment	In	Out	no. type	Stress	Allow.
E05 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	1281	523	2470	1.00	1.00	(17) DISP	13	147
E06 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	3613	88	2470	1.00	1.00	(17) DISP	20	147
E06 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		4.68	3.90	(18) SUST	0	71
	Cold to T1	88	3613	2470	4.68	3.90	(17) DISP	64	147
E06 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		4.68	3.90	(18) SUST	0	71
	Cold to T1	137	364	4642	4.68	3.90	(17) DISP	22	147
E06 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	364	137	4642	1.00	1.00	(17) DISP	21	147
C01	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	1503	727	4642	1.00	1.00	(17) DISP	22	147

*** Segment E end *** Line # 79319820

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S Y S T E M S U M M A R Y

Maximum displacements (mm)

Maximum X :	-59.051	Point : D13 F	Load Comb.: T1
Maximum Y :	114.596	Point : D12 N	Load Comb.: T1
Maximum Z :	-87.600	Point : A07 F	Load Comb.: T1
Max. total:	132.067	Point : D12 N	Load Comb.: T1

Maximum rotations (deg)

Maximum X :	-1.847	Point : D16 F	Load Comb.: T1
Maximum Y :	-1.566	Point : D16 F	Load Comb.: T1
Maximum Z :	-0.192	Point : E03 N	Load Comb.: T1
Max. total:	2.426	Point : D16 F	Load Comb.: T1

Maximum restraint forces (N)

Maximum X :	-1211	Point : A07 F	Load Comb.: T1
Maximum Y :	-112	Point : E08	Load Comb.: T1
Maximum Z :	-1529	Point : E08	Load Comb.: T1
Max. total:	1731	Point : E08	Load Comb.: T1

Maximum restraint moments (Nm)

Maximum X :	781	Point : E08	Load Comb.: T1
Maximum Y :	-1292	Point : E08	Load Comb.: T1
Maximum Z :	611	Point : A07 F	Load Comb.: T1
Max. total:	1510	Point : E08	Load Comb.: T1

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S Y S T E M S U M M A R Y

Maximum pipe forces (N)

Maximum X :	-1211	Point : A07 N	Load Comb.: T1
Maximum Y :	-112	Point : A06	Load Comb.: T1
Maximum Z :	1529	Point : E03 N	Load Comb.: T1
Max. total:	1731	Point : E03 N	Load Comb.: T1

Maximum pipe moments (Nm)

Maximum X :	-2128	Point : E05 N	Load Comb.: T1
Maximum Y :	5007	Point : A06	Load Comb.: T1
Maximum Z :	-925	Point : A06	Load Comb.: T1
Max. total:	5095	Point : A06	Load Comb.: T1

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S Y S T E M S U M M A R Y

Maximum displacement stress

Point	:	A05
Stress	N/mm2	: 112
Allowable	N/mm2	: 147
Ratio	:	0.76
Load combination	:	Cold to T1

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S Y S T E M S U M M A R Y

Maximum displacement stress ratio

Point : A05
Stress N/mm2 : 112
Allowable N/mm2 : 147
Ratio : 0.76
Load combination : Cold to T1

* * * The system satisfies ASME B31.3 code requirements * * *
* * * for the selected options * * *