

REBIS
AutoPIPE 6.20 MODEL PAGE 1

[illegible]

Pipe Stress Analysis and Design Program

Version: 6.20.09

Edition: Win

Developed and Maintained by

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

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AutoPIPE 6.20 MODEL PAGE 2

**
** AUTOPIPE SYSTEM INFORMATION **
**

SYSTEM NAME : 79319857_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 : 1

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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 # 79319857

From A01 to A02, DX= -1350.00 mm

Junc

PIPE DATA:

Pipe Id= 100MX6.0, Material= AL, Poisson= 0.300, Nom Size= 100 mm,
OD= 114.30 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= 54.19 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, Exp1= -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

From A02 to A03, DY= -355.06 mm

Bend

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

Elbow, Radius= 151.99 mm, Bend angle= 90.00 deg, End flanges= 0,
Flex= 5.305, SIFI= 1.96, SIFO= 1.63

POINT DATA:

A02, Coordinates, X= -1350.00 mm, Y= 0.00 mm, Z= 0.00 mm
A02 N, Coordinates, X= -1198.01 mm, Y= 0.00 mm, Z= 0.00 mm
A02 F, Coordinates, X= -1350.00 mm, Y= -151.99 mm, Z= 0.00 mm

From A03 to A04, DY= -140.00 mm

Redu

COMPONENT DATA (Reducer):

Length= 140.00 mm, SIF= 1.00

POINT DATA:

A03, Coordinates, X= -1350.00 mm, Y= -355.06 mm, Z= 0.00 mm

From A04 to A05, DY= -175.72 mm

Run

PIPE DATA:

Pipe Id= 150MX6.0, Nom Size= 150 mm, OD= 168.30 mm, Sch= NS

POINT DATA:

A04, Coordinates, X= -1350.00 mm, Y= -495.06 mm, Z= 0.00 mm

From A05 to A06, DY= -47.91 mm, DZ= -178.80 mm, L= 185.11 mm

Bend

COMPONENT DATA (Bend, TIP= A05, Near= A05 N, Far= A05 F):

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Elbow, Radius= 228.99 mm, Bend angle= 75.00 deg, End flanges= 0,
Flex= 7.908, SIFI= 2.56, SIFO= 2.13

POINT DATA:

A05, Coordinates, X= -1350.00 mm, Y= -670.78 mm, Z= 0.00 mm
A05 N, Coordinates, X= -1350.00 mm, Y= -495.07 mm, Z= 0.00 mm
A05 F, Coordinates, X= -1350.00 mm, Y= -716.26 mm, Z= -169.72 mm

From A06 to A07, DY= -56.94 mm, DZ= -212.50 mm, L= 220.00 mm Valv

COMPONENT DATA (Valve):

NS, Rating= 40, Length= 220.00 mm, Weight= 65 kg, Surface factor= 0.00,
End cond= Butt welded, SIF= 1.00, Without taper, Offset= 0.000 mm

POINT DATA:

A06, Coordinates, X= -1350.00 mm, Y= -718.69 mm, Z= -178.80 mm

From A07 to A08, DY= 212.50 mm, DZ= -56.94 mm, L= 220.00 mm Valv

COMPONENT DATA (Valve):

NS, Rating= 40, Length= 220.00 mm, Weight= 65 kg, Surface factor= 0.00,
End cond= Butt welded, SIF= 1.00, Without taper, Offset= 0.000 mm

POINT DATA:

A07, Coordinates, X= -1350.00 mm, Y= -775.63 mm, Z= -391.30 mm

SUPPORT DATA:

A07, Anchor, KTX= Rigid, KTY= Rigid, KTZ= Rigid, KRX= Rigid, KRY= Rigid,
KRZ= Rigid

From A08 to A09, DY= 1161.67 mm, DZ= -311.27 mm, L= 1202.65 mm Run

POINT DATA:

A08, Coordinates, X= -1350.00 mm, Y= -563.13 mm, Z= -448.24 mm

From A09 to A10, DX= -2989.03 mm Bend

COMPONENT DATA (Bend, TIP= A09, Near= A09 N, Far= A09 F):

Elbow, Radius= 228.99 mm, Bend angle= 90.00 deg, End flanges= 0,
Flex= 7.908, SIFI= 2.56, SIFO= 2.13

POINT DATA:

A09, Coordinates, X= -1350.00 mm, Y= 598.54 mm, Z= -759.51 mm
A09 N, Coordinates, X= -1350.00 mm, Y= 377.35 mm, Z= -700.24 mm
A09 F, Coordinates, X= -1578.99 mm, Y= 598.54 mm, Z= -759.51 mm

From A10 to A11, DX= -494.94 mm, DY= -132.62 mm, L= 512.40 mm Bend

COMPONENT DATA (Bend, TIP= A10, Near= A10 N, Far= A10 F):

Elbow, Radius= 228.98 mm, Bend angle= 15.00 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= 7.909, SIFI= 2.56, SIFO= 2.13

POINT DATA:

A10, Coordinates, X= -4339.03 mm, Y= 598.54 mm, Z= -759.51 mm
A10 N, Coordinates, X= -4308.88 mm, Y= 598.54 mm, Z= -759.51 mm
A10 F, Coordinates, X= -4368.15 mm, Y= 590.74 mm, Z= -759.51 mm

From A11 to A12, DX= -1049.67 mm, DZ= -606.03 mm, L= 1212.06 mm Bend

COMPONENT DATA (Bend, TIP= A11, Near= A11 N, Far= A11 F):
Elbow, Radius= 228.99 mm, Bend angle= 33.23 deg, End flanges= 0,
Flex= 7.908, SIFI= 2.56, SIFO= 2.13

POINT DATA:

A11, Coordinates, X= -4833.97 mm, Y= 465.92 mm, Z= -759.51 mm
A11 N, Coordinates, X= -4767.98 mm, Y= 483.60 mm, Z= -759.51 mm
A11 F, Coordinates, X= -4893.14 mm, Y= 465.92 mm, Z= -793.67 mm

From A12 to A13, DX= -65.93 mm, DY= 141.39 mm, L= 156.01 mm Bend

COMPONENT DATA (Bend, TIP= A12, Near= A12 N, Far= A12 F):
Elbow, Radius= 228.99 mm, Bend angle= 68.53 deg, End flanges= 0,
Flex= 7.908, SIFI= 2.56, SIFO= 2.13

POINT DATA:

A12, Coordinates, X= -5883.64 mm, Y= 465.92 mm, Z= -1365.54 mm
A12 N, Coordinates, X= -5748.54 mm, Y= 465.92 mm, Z= -1287.54 mm
A12 F, Coordinates, X= -5949.57 mm, Y= 607.31 mm, Z= -1365.54 mm
A13, Coordinates, X= -5949.57 mm, Y= 607.31 mm, Z= -1365.54 mm

SUPPORT DATA:

A12 F, Anchor, KTX= Rigid, KTY= Rigid, KTZ= Rigid, KRX= Rigid,
KRY= Rigid, KRZ= Rigid

*** SEGMENT B , LINE #

From B00 to B01, DZ= -267.00 mm Run

PIPE DATA:

Pipe Id= 200MX6,4, Nom Size= 200 mm, OD= 219.10 mm, Sch= 6.4,
Wall Thk= 6.400 mm, Mill= 0.800 mm

POINT DATA:

B00, Coordinates, X= 3550.00 mm, Y= 198.55 mm, Z= 2147.58 mm

SUPPORT DATA:

B00, Anchor, KTX= Rigid, KTY= Rigid, KTZ= Rigid, KRX= Rigid, KRY= Rigid,
KRZ= Rigid

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From B01 to B02, DZ= -152.00 mm

Redu

COMPONENT DATA (Reducer):

Length= 152.00 mm, SIF= 1.00

POINT DATA:

B01, Coordinates, X= 3550.00 mm, Y= 198.55 mm, Z= 1880.58 mm

From B02 to B03, DZ= -229.00 mm

Run

PIPE DATA:

Pipe Id= 150MX6.0, Nom Size= 150 mm, OD= 168.30 mm, Sch= NS,
Wall Thk= 6.000 mm, Mill= 0.750 mm

POINT DATA:

B02, Coordinates, X= 3550.00 mm, Y= 198.55 mm, Z= 1728.58 mm

From B03 to B04, DY= 579.00 mm

Bend

COMPONENT DATA (Bend, TIP= B03, Near= B03 N, Far= B03 F):

Elbow, Radius= 228.99 mm, Bend angle= 90.00 deg, End flanges= 0,
Flex= 7.908, SIFI= 2.56, SIFO= 2.13

POINT DATA:

B03, Coordinates, X= 3550.00 mm, Y= 198.55 mm, Z= 1499.58 mm
B03 N, Coordinates, X= 3550.00 mm, Y= 198.55 mm, Z= 1728.57 mm
B03 F, Coordinates, X= 3550.00 mm, Y= 427.54 mm, Z= 1499.58 mm

From B04 to B05, DY= 571.00 mm

Tee

COMPONENT DATA (Tee Header, Center= B04):

B16.9 welding tee, SIFI= 2.05, SIFO= 2.40

POINT DATA:

B04, Coordinates, X= 3550.00 mm, Y= 777.55 mm, Z= 1499.58 mm

From B05 to B06, DZ= -232.05 mm

Bend

COMPONENT DATA (Bend, TIP= B05, Near= B05 N, Far= B05 F):

Elbow, Radius= 228.99 mm, Bend angle= 90.00 deg, End flanges= 0,
Flex= 7.908, SIFI= 2.56, SIFO= 2.13

POINT DATA:

B05, Coordinates, X= 3550.00 mm, Y= 1348.55 mm, Z= 1499.58 mm
B05 N, Coordinates, X= 3550.00 mm, Y= 1119.56 mm, Z= 1499.58 mm
B05 F, Coordinates, X= 3550.00 mm, Y= 1348.55 mm, Z= 1270.59 mm

From B06 to B07, DZ= -136.95 mm

Redu

COMPONENT DATA (Reducer):

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

Length= 136.95 mm, SIF= 1.00

POINT DATA:

B06, Coordinates, X= 3550.00 mm, Y= 1348.55 mm, Z= 1267.53 mm

From B07 to B08, DZ= -761.17 mm

Run

PIPE DATA:

Pipe Id= 100MX6.0, Nom Size= 100 mm, OD= 114.30 mm, Sch= 6.0

POINT DATA:

B07, Coordinates, X= 3550.00 mm, Y= 1348.55 mm, Z= 1130.58 mm

From B08 to B09, DX= -3049.96 mm, DZ= -159.84 mm, L= 3054.15 mm

Bend

COMPONENT DATA (Bend, TIP= B08, Near= B08 N, Far= B08 F):

Elbow, Radius= 151.99 mm, Bend angle= 87.00 deg, End flanges= 0,
Flex= 5.305, SIFI= 1.96, SIFO= 1.63

POINT DATA:

B08, Coordinates, X= 3550.00 mm, Y= 1348.55 mm, Z= 369.41 mm

B08 N, Coordinates, X= 3550.00 mm, Y= 1348.55 mm, Z= 513.64 mm

B08 F, Coordinates, X= 3405.96 mm, Y= 1348.55 mm, Z= 361.86 mm

From B09 to B10, DY= -1348.55 mm, DZ= -209.57 mm, L= 1364.74 mm

Bend

COMPONENT DATA (Bend, TIP= B09, Near= B09 N, Far= B09 F):

Elbow, Radius= 153.21 mm, Bend angle= 89.54 deg, End flanges= 0,
Flex= 5.263, SIFI= 1.95, SIFO= 1.63

POINT DATA:

B09, Coordinates, X= 500.04 mm, Y= 1348.55 mm, Z= 209.57 mm

B09 N, Coordinates, X= 651.82 mm, Y= 1348.55 mm, Z= 217.52 mm

B09 F, Coordinates, X= 500.04 mm, Y= 1198.37 mm, Z= 186.23 mm

From B10 to A01, DX= -500.04 mm

Bend

COMPONENT DATA (Bend, TIP= B10, Near= B10 N, Far= B10 F):

Elbow, Radius= 151.99 mm, Bend angle= 90.00 deg, End flanges= 0,
Flex= 5.305, SIFI= 1.96, SIFO= 1.63

POINT DATA:

B10, Coordinates, X= 500.04 mm, Y= 0.00 mm, Z= 0.00 mm

B10 N, Coordinates, X= 500.04 mm, Y= 150.19 mm, Z= 23.34 mm

B10 F, Coordinates, X= 348.05 mm, Y= 0.00 mm, Z= 0.00 mm

*** SEGMENT C , LINE #

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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 B04 to C01, DX= -129.95 mm Tee

COMPONENT DATA (Tee Branch, Center= B04):
B16.9 welding tee, SIFI= 2.05, SIFO= 2.40

PIPE DATA:
Pipe Id= 100MX6.0, Nom Size= 100 mm

POINT DATA:
B04, Coordinates, X= 3550.00 mm, Y= 777.55 mm, Z= 1499.58 mm

*** SEGMENT D , LINE #

From D00 to D01, DY= 152.00 mm Run

PIPE DATA:
Pipe Id= PIPE0001, Nom Size= 100 mm, Sch= NS

POINT DATA:
D00, Coordinates, X= 2180.94 mm, Y= 1100.59 mm, Z= -2023.47 mm

From D01 to D02, DX= 989.11 mm, DZ= 571.06 mm, L= 1142.12 mm Bend

COMPONENT DATA (Bend, TIP= D01, Near= D01 N, Far= D01 F):
Elbow, Radius= 151.99 mm, Bend angle= 90.00 deg, End flanges= 0,
Flex= 5.305, SIFI= 1.96, SIFO= 1.63

POINT DATA:
D01, Coordinates, X= 2180.94 mm, Y= 1252.59 mm, Z= -2023.47 mm
D01 N, Coordinates, X= 2180.94 mm, Y= 1100.60 mm, Z= -2023.47 mm
D01 F, Coordinates, X= 2312.57 mm, Y= 1252.59 mm, Z= -1947.48 mm

SUPPORT DATA:
D01 N, Anchor, KTX= Rigid, KTY= Rigid, KTZ= Rigid, KRX= Rigid,
KRY= Rigid, KRZ= Rigid

From D02 to D03, DY= -475.04 mm, DZ= 83.76 mm, L= 482.37 mm Bend

COMPONENT DATA (Bend, TIP= D02, Near= D02 N, Far= D02 F):
Elbow, Radius= 151.99 mm, Bend angle= 85.02 deg, End flanges= 0,
Flex= 5.305, SIFI= 1.96, SIFO= 1.63

POINT DATA:
D02, Coordinates, X= 3170.05 mm, Y= 1252.59 mm, Z= -1452.41 mm
D02 N, Coordinates, X= 3049.40 mm, Y= 1252.59 mm, Z= -1522.07 mm
D02 F, Coordinates, X= 3170.05 mm, Y= 1115.39 mm, Z= -1428.22 mm

From D03 to D04, DZ= 2868.23 mm Bend

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

COMPONENT DATA (Bend, TIP= D03, Near= D03 N, Far= D03 F):
Elbow, Radius= 151.99 mm, Bend angle= 80.00 deg, End flanges= 0,
Flex= 5.305, SIFI= 1.96, SIFO= 1.63

POINT DATA:

D03, Coordinates, X= 3170.05 mm, Y= 777.55 mm, Z= -1368.65 mm
D03 N, Coordinates, X= 3170.05 mm, Y= 903.15 mm, Z= -1390.80 mm
D03 F, Coordinates, X= 3170.05 mm, Y= 777.55 mm, Z= -1241.11 mm

From D04 to C01, DX= 250.00 mm

Bend

COMPONENT DATA (Bend, TIP= D04, Near= D04 N, Far= D04 F):
Elbow, Radius= 151.99 mm, Bend angle= 90.00 deg, End flanges= 0,
Flex= 5.305, SIFI= 1.96, SIFO= 1.63

POINT DATA:

D04, Coordinates, X= 3170.05 mm, Y= 777.55 mm, Z= 1499.58 mm
D04 N, Coordinates, X= 3170.05 mm, Y= 777.55 mm, Z= 1347.59 mm
D04 F, Coordinates, X= 3322.04 mm, Y= 777.55 mm, Z= 1499.58 mm

Number of points in the system: 63

Weight of Empty Pipes + Weight of Contents = Total Weight of System
265.8 kg + 0.0 kg = 265.8 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	-----COORDINATE (mm) X	Y	Z
*** SEGMENT A , LINE # 79319857			
A01	0.00	0.00	0.00
A02 N	-1198.01	0.00	0.00
A02	-1350.00	0.00	0.00
A02 F	-1350.00	-151.99	0.00
A03	-1350.00	-355.06	0.00
A04	-1350.00	-495.06	0.00
A05 N	-1350.00	-495.07	0.00
A05	-1350.00	-670.78	0.00
A05 F	-1350.00	-716.26	-169.72
A06	-1350.00	-718.69	-178.80
A07	-1350.00	-775.63	-391.30
A08	-1350.00	-563.13	-448.24
A09 N	-1350.00	377.35	-700.24
A09	-1350.00	598.54	-759.51
A09 F	-1578.99	598.54	-759.51
A10 N	-4308.88	598.54	-759.51
A10	-4339.03	598.54	-759.51
A10 F	-4368.15	590.74	-759.51
A11 N	-4767.98	483.60	-759.51
A11	-4833.97	465.92	-759.51
A11 F	-4893.14	465.92	-793.67
A12 N	-5748.54	465.92	-1287.54
A12	-5883.64	465.92	-1365.54
A12 F	-5949.57	607.31	-1365.54
A13	-5949.57	607.31	-1365.54
*** SEGMENT B , LINE #			
B00	3550.00	198.55	2147.58
B01	3550.00	198.55	1880.58
B02	3550.00	198.55	1728.58
B03 N	3550.00	198.55	1728.57
B03	3550.00	198.55	1499.58
B03 F	3550.00	427.54	1499.58
B04	3550.00	777.55	1499.58
B05 N	3550.00	1119.56	1499.58
B05	3550.00	1348.55	1499.58
B05 F	3550.00	1348.55	1270.59
B06	3550.00	1348.55	1267.53
B07	3550.00	1348.55	1130.58
B08 N	3550.00	1348.55	513.64
B08	3550.00	1348.55	369.41
B08 F	3405.96	1348.55	361.86
B09 N	651.82	1348.55	217.52
B09	500.04	1348.55	209.57
B09 F	500.04	1198.37	186.23
B10 N	500.04	150.19	23.34
B10	500.04	0.00	0.00
B10 F	348.05	0.00	0.00
A01	0.00	0.00	0.00

*** SEGMENT C , LINE #

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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
B04	3550.00	777.55	1499.58
C01	3420.05	777.55	1499.58

*** SEGMENT D , LINE #

D00	2180.94	1100.59	-2023.47
D01 N	2180.94	1100.60	-2023.47
D01	2180.94	1252.59	-2023.47
D01 F	2312.57	1252.59	-1947.48
D02 N	3049.40	1252.59	-1522.07
D02	3170.05	1252.59	-1452.41
D02 F	3170.05	1115.39	-1428.22
D03 N	3170.05	903.15	-1390.80
D03	3170.05	777.55	-1368.65
D03 F	3170.05	777.55	-1241.11
D04 N	3170.05	777.55	1347.59
D04	3170.05	777.55	1499.58
D04 F	3322.04	777.55	1499.58
C01	3420.05	777.55	1499.58

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P I P E D A T A L I S T I N G

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
100MX6.0 AL	100 6.0	114.30	6.000 0 0.75 0 0	0	54.19 0 54.19	1.00 1.00
150MX6.0 AL	150 NS	168.30	6.000 0 0.75 0 0	0	81.22 0 81.22	1.00 1.00
200MX6,4 AL	200 6.4	219.10	6.400 0 0.80 0 0	0	114 0 114	1.00 1.00
PIPE0001 AL	100 NS	114.30	6.000 0 0.75 0 0	0	54.19 0 54.19	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/ Axial Hoop Shear			Expans. mm/m
AL	100MX6.0	2707.1	0.30	20.0 -196.0	0.06899 0.07646	0.06899	0.02653	-3.8459
AL	150MX6.0	2707.1	0.30	20.0 -196.0	0.06899 0.07646	0.06899	0.02653	-3.8459
AL	200MX6,4	2707.1	0.30	20.0 -196.0	0.06899 0.07646	0.06899	0.02653	-3.8459
AL	PIPE0001	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	100MX6.0	20.0 -196.0	103.42 71.00	0.00
AL	150MX6.0	20.0 -196.0	103.42 71.00	0.00
AL	200MX6,4	20.0 -196.0	103.42 71.00	0.00
AL	PIPE0001	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 # 79319857

A01	0	-196	-3.846
A13	0	-196	-3.846

*** SEGMENT B , LINE #

B00	0	-196	-3.846
A01	0	-196	-3.846

*** SEGMENT C , LINE #

B04	0	-196	-3.846
C01	0	-196	-3.846

*** SEGMENT D , LINE #

D00	0	-196	-3.846
C01	0	-196	-3.846

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H O T M O D U L U S (x10⁶ N/)

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

*** SEGMENT A , LINE # 79319857

A01	0.07646		
A13	0.07646		

*** SEGMENT B , LINE #

B00	0.07646		
A01	0.07646		

*** SEGMENT C , LINE #

B04	0.07646		
C01	0.07646		

*** SEGMENT D , LINE #

D00	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	NOT	NOT
NAME	ALLOW	USED	USED	ALLOW	USED	USED	ALLOW	USED
-----	-----	-----	-----	-----	-----	-----	-----	-----

*** SEGMENT A , LINE # 79319857

A01 71.00*

A13 71.00*

*** SEGMENT B , LINE #

B00 71.00*

A01 71.00*

*** SEGMENT C , LINE #

B04 71.00*

C01 71.00*

*** SEGMENT D , LINE #

D00 71.00*

C01 71.00*

< User-defined code allowable
* Non-code material

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REBIS
AutoPIPE 6.20 MODEL PAGE 18

THERMAL ANCHOR MOVEMENTS AND DISPLACEMENTS

POINT NAME	LOAD CASE	DX (mm)	DY (mm)	DZ (mm)	RX (deg)	RY (deg)	RZ (deg)
A12 F	Thermal 1	-2.40	5.20	-15.00	0.000	0.000	0.000
B00	Thermal 1	0.00	0.00	6.90	0.000	0.000	0.000
D01 N	Thermal 1	0.00	-3.50	29.60	0.000	0.000	0.000

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REBIS
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 # 79319857							
A01	T1	-4.343	-5.912	3.342	0.209	-0.200	-0.171
A02 N	T1	0.255	-3.310	-0.410	0.149	-0.137	-0.101
A02 F	T1	0.582	-2.463	-0.942	0.079	-0.035	-0.085
A03	T1	0.294	-1.682	-1.204	0.067	-0.004	-0.071
A04	T1	0.126	-1.144	-1.363	0.062	0.007	-0.062
A05 N	T1	0.126	-1.144	-1.363	0.062	0.007	-0.062
A05 F	T1	0.000	-0.228	-0.852	0.000	0.000	-0.001
A06	T1	0.000	-0.219	-0.817	0.000	0.000	0.000
A07	T1	0.000	0.000	0.000	0.000	0.000	0.000
A08	T1	-0.010	-0.817	0.218	0.000	0.001	0.004
A09 N	T1	-10.374	-4.625	0.450	-0.052	-0.028	0.906
A09 F	T1	-12.475	-7.966	-0.473	-0.092	-0.450	0.294
A10 N	T1	-2.260	-4.773	-25.612	0.215	-0.326	-0.342
A10 F	T1	-2.092	-4.351	-25.899	0.204	-0.167	-0.406
A11 N	T1	-1.389	-0.983	-26.944	0.255	0.005	-0.411
A11 F	T1	-1.221	0.012	-26.394	0.194	0.447	-0.313
A12 N	T1	-2.720	5.412	-16.390	0.262	0.505	-0.132
A12 F	T1	-2.400	5.200	-15.000	0.000	0.000	0.000
A13	T1	-2.400	5.200	-15.000	0.000	0.000	0.000
*** Segment A end *** Line # 79319857							
*** Segment B begin *** Line #							
B00	T1	0.000	0.000	6.900	0.000	0.000	0.000
B01	T1	-0.028	-0.001	7.928	0.001	0.010	0.012
B02	T1	-0.067	0.000	8.514	0.002	0.017	0.022
B03 N	T1	-0.067	0.000	8.514	0.002	0.017	0.022

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REBIS
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
B03 F	T1	-0.927	-0.802	9.522	0.039	0.186	0.196
B04	T1	-2.194	-2.149	9.754	0.031	0.212	0.216
B05 N	T1	-3.539	-3.465	9.906	0.021	0.233	0.230
B05 F	T1	-5.660	-4.395	10.788	-0.026	0.301	0.285
B06	T1	-5.676	-4.397	10.800	-0.026	0.301	0.285
B07	T1	-6.405	-4.463	11.326	-0.028	0.305	0.287
B08 N	T1	-9.647	-4.789	13.698	-0.025	0.273	0.300
B08 F	T1	-9.622	-5.570	14.639	0.001	0.062	0.294
B09 N	T1	1.198	-14.321	10.416	0.183	-0.171	-0.036
B09 F	T1	1.262	-13.235	9.530	0.237	-0.155	-0.334
B10 N	T1	-5.468	-8.496	5.582	0.248	-0.170	-0.389
B10 F	T1	-5.679	-7.074	4.554	0.226	-0.196	-0.215
A01	T1	-4.343	-5.912	3.342	0.209	-0.200	-0.171

*** Segment B end *** Line #

*** Segment C begin *** Line #

B04	T1	-2.194	-2.149	9.754	0.031	0.212	0.216
C01	T1	-1.694	-2.634	10.247	0.024	0.214	0.211

*** Segment C end *** Line #

*** Segment D begin *** Line #

D00	T1	0.000	-3.500	29.600	0.000	0.000	0.000
D01 N	T1	0.000	-3.500	29.600	0.000	0.000	0.000
D01 F	T1	-0.416	-4.041	29.076	-0.018	0.176	0.005
D02 N	T1	-1.532	-3.995	24.450	0.107	0.237	0.045
D02 F	T1	-1.625	-3.622	23.304	0.164	0.173	0.006
D03 N	T1	-1.491	-2.917	22.527	0.167	0.135	0.014
D03 F	T1	-1.217	-2.753	21.632	0.082	0.052	0.005

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REBIS
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
D04 N	T1	-1.063	-3.469	11.643	0.005	0.065	0.180
D04 F	T1	-1.317	-2.992	10.615	0.019	0.209	0.207
C01	T1	-1.694	-2.634	10.247	0.024	0.214	0.211

*** Segment D end *** Line #

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REBIS
AutoPIPE 6.20 RESULT PAGE 4

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
A07	Anchor T1	-20842	1138	-2351	21005	-2058	4396	25212	25675
A12 F	Anchor T1	21952	-814	2663	22128	-578	4749	573	4819
B00	Anchor T1	-758	-500	1465	1724	-4	1201	1009	1569
D01 N	Anchor T1	-352	176	-1778	1821	101	1045	248	1079

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REBIS
AutoPIPE 6.20 RESULT PAGE 5

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 # 79319857									
A01	T1	1110	324	312	1198	139	-6	-404	427
A02 N	T1	1110	324	312	1198	139	-380	-16	405
A02 F	T1	1110	324	312	1198	186	-427	-136	485
A03	T1	1110	324	312	1198	250	-427	-361	612
A04	T1	1110	324	312	1198	293	-427	-516	732
A05 N	T1	1110	324	312	1198	293	-427	-516	732
A05 F	T1	1110	324	312	1198	307	-239	-762	856
A06	T1	1110	324	312	1198	305	-229	-765	854
A07 -	T1	1110	324	312	1198	254	7	-828	866
A07 +	T1	21952	-814	2663	22128	2312	-4388	-26040	26508
A08	T1	21952	-814	2663	22128	1792	-3138	-21375	21679
A09 N	T1	21952	-814	2663	22128	-507	2394	-730	2553
A09 F	T1	21952	-814	2663	22128	-1048	3085	3939	5112
A10 N	T1	21952	-814	2663	22128	-1048	-4185	1716	4643
A10 F	T1	21952	-814	2663	22128	-1027	-4343	1497	4707
A11 N	T1	21952	-814	2663	22128	-742	-5407	-1181	5584
A11 F	T1	21952	-814	2663	22128	-667	-4991	-1671	5305
A12 N	T1	21952	-814	2663	22128	-265	3572	-2368	4294
A12 F-	T1	21952	-814	2663	22128	-578	4749	573	4819
A12 F+	T1	0	0	0	0	0	0	0	0
A13	T1	0	0	0	0	0	0	0	0
*** Segment A end *** Line # 79319857									
*** Segment B begin *** Line #									
B00	T1	758	500	-1465	1724	4	-1201	-1009	1569
B01	T1	758	500	-1465	1724	-130	-999	-1009	1426

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REBIS
AutoPIPE 6.20 RESULT PAGE 6

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
B02	T1	758	500	-1465	1724	-206	-884	-1009	1357
B03 N	T1	758	500	-1465	1724	-206	-884	-1009	1357
B03 F	T1	758	500	-1465	1724	15	-710	-836	1097
B04 -	T1	758	500	-1465	1724	528	-710	-570	1053
B04 +	T1	1110	324	312	1198	382	-562	-692	970
B05 N	T1	1110	324	312	1198	275	-562	-312	700
B05 F	T1	1110	324	312	1198	130	-308	-58	339
B06	T1	1110	324	312	1198	129	-305	-58	336
B07	T1	1110	324	312	1198	84	-153	-58	184
B08 N	T1	1110	324	312	1198	-116	532	-58	548
B08 F	T1	1110	324	312	1198	-165	656	-11	676
B09 N	T1	1110	324	312	1198	-212	-44	882	908
B09 F	T1	1110	324	312	1198	-175	-56	764	786
B10 N	T1	1110	324	312	1198	99	124	-400	430
B10 F	T1	1110	324	312	1198	139	103	-517	545
A01	T1	1110	324	312	1198	139	-6	-404	427
*** Segment B end *** Line #									
*** Segment C begin *** Line #									
B04	T1	-352	176	-1778	1821	146	-148	121	241
C01	T1	-352	176	-1778	1821	146	83	144	222
*** Segment C end *** Line #									
*** Segment D begin *** Line #									
D00	T1	0	0	0	0	0	0	0	0
D01 N-	T1	0	0	0	0	0	0	0	0
D01 N+	T1	352	-176	1778	1821	-101	-1045	-248	1079
D01 F	T1	352	-176	1778	1821	-384	-838	-171	938

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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	352	-176	1778	1821	-459	322	-42	563
D02 F	T1	352	-176	1778	1821	-232	504	-69	559
D03 N	T1	352	-176	1778	1821	139	490	-144	530
D03 F	T1	352	-176	1778	1821	336	438	-188	583
D04 N	T1	352	-176	1778	1821	-120	-474	-188	524
D04 F	T1	352	-176	1778	1821	-146	-258	-161	337
C01	T1	352	-176	1778	1821	-146	-83	-144	222

*** Segment D end *** Line #

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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 # 79319857									
A01	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	6	404	139	1.00	1.00	(17) DISP	8	147
A02 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	380	16	139	1.00	1.00	(17) DISP	8	147
A02 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.96	1.63	(18) SUST	0	71
	Cold to T1	16	380	139	1.96	1.63	(17) DISP	12	147
A02 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.96	1.63	(18) SUST	0	71
	Cold to T1	136	186	427	1.96	1.63	(17) DISP	11	147
A02 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	186	136	427	1.00	1.00	(17) DISP	9	147
A03	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	250	361	427	1.00	1.00	(17) DISP	12	147
A04	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	293	516	427	1.00	1.00	(17) DISP	6	147
A05 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	293	516	427	1.00	1.00	(17) DISP	6	147
A05 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		2.56	2.13	(18) SUST	0	71
	Cold to T1	293	516	427	2.56	2.13	(17) DISP	12	147
A05 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		2.56	2.13	(18) SUST	0	71
	Cold to T1	307	33	798	2.56	2.13	(17) DISP	9	147
A05 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	307	33	798	1.00	1.00	(17) DISP	7	147
A06	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	305	23	798	1.00	1.00	(17) DISP	7	147

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AutoPIPE 6.20 RESULT PAGE 9

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.
A08	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	1792	21459	2501	1.00	1.00	(17) DISP	181	147**
	with Sus. load margin						(17)	181	218
A09 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	507	86	2501	1.00	1.00	(17) DISP	21	147
A09 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		2.56	2.13	(18) SUST	0	71
	Cold to T1	86	507	2501	2.56	2.13	(17) DISP	23	147
A09 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		2.56	2.13	(18) SUST	0	71
	Cold to T1	4603	1960	1048	2.56	2.13	(17) DISP	105	147
A09 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	3085	3939	1048	1.00	1.00	(17) DISP	43	147
A10 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	4185	1716	1048	1.00	1.00	(17) DISP	39	147
A10 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		2.56	2.13	(18) SUST	0	71
	Cold to T1	1716	4185	1048	2.56	2.13	(17) DISP	83	147
A10 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		2.56	2.13	(18) SUST	0	71
	Cold to T1	1497	3929	2116	2.56	2.13	(17) DISP	79	147
A10 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	3929	1497	2116	1.00	1.00	(17) DISP	39	147
A11 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	5031	1181	2116	1.00	1.00	(17) DISP	47	147
A11 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		2.56	2.13	(18) SUST	0	71
	Cold to T1	5074	981	2116	2.56	2.13	(17) DISP	111	147
A11 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		2.56	2.13	(18) SUST	0	71
	Cold to T1	4925	1376	1413	2.56	2.13	(17) DISP	109	147
A11 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	4991	1114	1413	1.00	1.00	(17) DISP	44	147

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AutoPIPE 6.20 RESULT PAGE 10

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.
A12 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	3572	1918	1413	1.00	1.00	(17) DISP	36	147
A12 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		2.56	2.13	(18) SUST	0	71
	Cold to T1	2679	3044	1413	2.56	2.13	(17) DISP	80	147
A12 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		2.56	2.13	(18) SUST	0	71
	Cold to T1	314	1559	4549	2.56	2.13	(17) DISP	47	147
A12 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
A13	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 # 79319857									
*** Segment B begin *** Line #									
B00	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	1201	4	1009	1.00	1.00	(17) DISP	7	147
B01	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	999	130	1009	1.00	1.00	(17) DISP	6	147
B02	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	884	206	1009	1.00	1.00	(17) DISP	11	147
B03 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	884	206	1009	1.00	1.00	(17) DISP	11	147
B03 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		2.56	2.13	(18) SUST	0	71
	Cold to T1	206	884	1009	2.56	2.13	(17) DISP	18	147
B03 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		2.56	2.13	(18) SUST	0	71
	Cold to T1	15	836	710	2.56	2.13	(17) DISP	16	147
B03 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	15	836	710	1.00	1.00	(17) DISP	9	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.
B04 -	Max P						(3a) HOOP	0	71
	Max P	0	0		2.05	2.40	(18) SUST	0	71
	Cold to T1	570	528	710	2.05	2.40	(17) DISP	16	147
B04 +	Max P						(3a) HOOP	0	71
	Max P	0	0		2.05	2.40	(18) SUST	0	71
	Cold to T1	692	382	562	2.05	2.40	(17) DISP	15	147
B05 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	275	312	562	1.00	1.00	(17) DISP	6	147
B05 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		2.56	2.13	(18) SUST	0	71
	Cold to T1	275	312	562	2.56	2.13	(17) DISP	9	147
B05 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		2.56	2.13	(18) SUST	0	71
	Cold to T1	130	308	58	2.56	2.13	(17) DISP	6	147
B05 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	308	130	58	1.00	1.00	(17) DISP	3	147
B06	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	305	129	58	1.00	1.00	(17) DISP	3	147
B07	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	153	84	58	1.00	1.00	(17) DISP	3	147
B08 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	532	116	58	1.00	1.00	(17) DISP	10	147
B08 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.96	1.63	(18) SUST	0	71
	Cold to T1	532	116	58	1.96	1.63	(17) DISP	20	147
B08 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.96	1.63	(18) SUST	0	71
	Cold to T1	656	2	165	1.96	1.63	(17) DISP	25	147
B08 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	656	2	165	1.00	1.00	(17) DISP	13	147
B09 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	44	892	165	1.00	1.00	(17) DISP	17	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.
B09 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.95	1.63	(18) SUST	0	71
	Cold to T1	888	93	165	1.95	1.63	(17) DISP	33	147
B09 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.95	1.63	(18) SUST	0	71
	Cold to T1	772	135	62	1.95	1.63	(17) DISP	29	147
B09 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	175	764	62	1.00	1.00	(17) DISP	15	147
B10 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	99	414	62	1.00	1.00	(17) DISP	8	147
B10 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.96	1.63	(18) SUST	0	71
	Cold to T1	414	99	62	1.96	1.63	(17) DISP	16	147
B10 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.96	1.63	(18) SUST	0	71
	Cold to T1	527	22	139	1.96	1.63	(17) DISP	20	147
B10 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	103	517	139	1.00	1.00	(17) DISP	10	147
A01	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	6	404	139	1.00	1.00	(17) DISP	8	147
*** Segment B end *** Line #									
*** Segment C begin *** Line #									
B04	Max P						(3a) HOOP	0	71
	Max P	0	0		2.05	2.40	(18) SUST	0	71
	Cold to T1	121	148	146	2.05	2.40	(17) DISP	8	147
C01	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	83	144	146	1.00	1.00	(17) DISP	4	147
*** Segment C end *** Line #									
*** Segment D begin *** Line #									
D00	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

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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.	
D01 N-	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	
D01 N+	Max P					(3a) HOOP	0	71	
	Max P	0	0		1.96 1.63	(18) SUST	0	71	
	Cold to T1	164	211	1045	1.96 1.63	(17) DISP	22	147	
D01 F-	Max P					(3a) HOOP	0	71	
	Max P	0	0		1.96 1.63	(18) SUST	0	71	
	Cold to T1	44	838	419	1.96 1.63	(17) DISP	27	147	
D01 F+	Max P					(3a) HOOP	0	71	
	Max P	0	0		1.00 1.00	(18) SUST	0	71	
	Cold to T1	838	44	419	1.00 1.00	(17) DISP	18	147	
D02 N-	Max P					(3a) HOOP	0	71	
	Max P	0	0		1.00 1.00	(18) SUST	0	71	
	Cold to T1	322	193	419	1.00 1.00	(17) DISP	11	147	
D02 N+	Max P					(3a) HOOP	0	71	
	Max P	0	0		1.96 1.63	(18) SUST	0	71	
	Cold to T1	240	289	419	1.96 1.63	(17) DISP	15	147	
D02 F-	Max P					(3a) HOOP	0	71	
	Max P	0	0		1.96 1.63	(18) SUST	0	71	
	Cold to T1	132	192	508	1.96 1.63	(17) DISP	12	147	
D02 F+	Max P					(3a) HOOP	0	71	
	Max P	0	0		1.00 1.00	(18) SUST	0	71	
	Cold to T1	232	20	508	1.00 1.00	(17) DISP	11	147	
D03 N-	Max P					(3a) HOOP	0	71	
	Max P	0	0		1.00 1.00	(18) SUST	0	71	
	Cold to T1	139	56	508	1.00 1.00	(17) DISP	10	147	
D03 N+	Max P					(3a) HOOP	0	71	
	Max P	0	0		1.96 1.63	(18) SUST	0	71	
	Cold to T1	139	56	508	1.96 1.63	(17) DISP	11	147	
D03 F-	Max P					(3a) HOOP	0	71	
	Max P	0	0		1.96 1.63	(18) SUST	0	71	
	Cold to T1	336	438	188	1.96 1.63	(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	438	336	188	1.00 1.00	(17) DISP	11	147	
D04 N-	Max P					(3a) HOOP	0	71	
	Max P	0	0		1.00 1.00	(18) SUST	0	71	
	Cold to T1	474	120	188	1.00 1.00	(17) DISP	10	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.
D04 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.96	1.63	(18) SUST	0	71
	Cold to T1	474	120	188	1.96	1.63	(17) DISP	18	147
D04 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.96	1.63	(18) SUST	0	71
	Cold to T1	258	161	146	1.96	1.63	(17) DISP	11	147
D04 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	258	161	146	1.00	1.00	(17) DISP	6	147
C01	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	83	144	146	1.00	1.00	(17) DISP	4	147

*** Segment D end *** Line #

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

Maximum displacements (mm)

Maximum X :	-12.475	Point : A09 F	Load Comb.: T1
Maximum Y :	-14.321	Point : B09 N	Load Comb.: T1
Maximum Z :	29.600	Point : D00	Load Comb.: T1
Max. total:	29.806	Point : D01 N	Load Comb.: T1

Maximum rotations (deg)

Maximum X :	0.262	Point : A12 N	Load Comb.: T1
Maximum Y :	0.505	Point : A12 N	Load Comb.: T1
Maximum Z :	0.906	Point : A09 N	Load Comb.: T1
Max. total:	0.908	Point : A09 N	Load Comb.: T1

Maximum restraint forces (N)

Maximum X :	21952	Point : A12 F	Load Comb.: T1
Maximum Y :	1138	Point : A07	Load Comb.: T1
Maximum Z :	2663	Point : A12 F	Load Comb.: T1
Max. total:	22128	Point : A12 F	Load Comb.: T1

Maximum restraint moments (Nm)

Maximum X :	-2058	Point : A07	Load Comb.: T1
Maximum Y :	4749	Point : A12 F	Load Comb.: T1
Maximum Z :	25212	Point : A07	Load Comb.: T1
Max. total:	25675	Point : A07	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 :	21952	Point : A07	Load Comb.: T1
Maximum Y :	-814	Point : A12 F	Load Comb.: T1
Maximum Z :	2663	Point : A12 N	Load Comb.: T1
Max. total:	22128	Point : A07	Load Comb.: T1

Maximum pipe moments (Nm)

Maximum X :	2312	Point : A07	Load Comb.: T1
Maximum Y :	-5407	Point : A11 N	Load Comb.: T1
Maximum Z :	-26040	Point : A07	Load Comb.: T1
Max. total:	26508	Point : A07	Load Comb.: T1

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

Maximum displacement stress

Point	:	A08
Stress	N/mm2	: 181
Allowable	N/mm2	: 218
Ratio	:	0.83
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 : A08
Stress N/mm2 : 181
Allowable N/mm2 : 218
Ratio : 0.83
Load combination : Cold to T1

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