

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 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 : 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

*** 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

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,
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

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

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

From B01 to B02, DZ= -152.00 mm Redu

COMPONENT DATA (Reducer):

Length= 152.00 mm, SIF= 1.00

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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):

Length= 136.95 mm, SIF= 1.00

POINT DATA:

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

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

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

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

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:

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

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 -----COORDINATE (mm) -----
NAME 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	0.02653 -3.8459
AL	150MX6.0	2707.1	0.30	20.0 -196.0	0.06899 0.07646	0.02653 -3.8459
AL	200MX6,4	2707.1	0.30	20.0 -196.0	0.06899 0.07646	0.02653 -3.8459
AL	PIPE0001	2707.1	0.30	20.0 -196.0	0.06899 0.07646	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	
NAME	ALLOW	USED	USED	ALLOW	USED	USED	ALLOW	USED	
	USED			USED			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	-19.164	25.261	-1.211	0.311	-0.247	-0.502
A02 N	T1	-14.570	32.630	-5.901	0.192	-0.173	-0.215
A02 F	T1	-14.088	33.522	-6.551	0.083	-0.040	0.077
A03	T1	-13.718	34.302	-6.811	0.061	-0.001	0.141
A04	T1	-13.348	34.841	-6.953	0.053	0.013	0.169
A05 N	T1	-13.348	34.841	-6.953	0.053	0.013	0.169
A05 F	T1	-12.243	35.657	-6.348	-0.048	-0.050	0.360
A06	T1	-12.220	35.659	-6.311	-0.049	-0.050	0.362
A07	T1	-11.677	35.697	-5.445	-0.049	-0.049	0.362
A08	T1	-12.971	34.831	-5.407	-0.049	-0.050	0.362
A09 N	T1	-19.426	30.947	-5.436	-0.066	-0.092	0.437
A09 F	T1	-20.099	28.336	-6.030	-0.094	-0.172	0.402
A10 N	T1	-9.620	11.229	-15.302	-0.066	-0.175	0.297
A10 F	T1	-9.355	10.965	-15.463	-0.068	-0.154	0.270
A11 N	T1	-7.337	9.576	-16.348	-0.063	-0.132	0.248
A11 F	T1	-6.732	9.121	-16.420	-0.058	-0.070	0.198
A12 N	T1	-3.054	6.086	-15.208	-0.056	-0.029	0.140
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	-0.040	0.002	7.928	0.002	0.014	0.011
B02	T1	-0.095	0.007	8.513	0.003	0.024	0.021
B03 N	T1	-0.095	0.007	8.513	0.003	0.024	0.021

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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	-1.078	-0.771	9.558	0.052	0.225	0.196
B04	T1	-2.332	-2.118	9.880	0.047	0.260	0.209
B05 N	T1	-3.612	-3.434	10.144	0.043	0.292	0.213
B05 F	T1	-5.782	-4.164	11.178	0.040	0.364	0.217
B06	T1	-5.801	-4.162	11.190	0.040	0.365	0.217
B07	T1	-6.690	-4.067	11.716	0.041	0.373	0.204
B08 N	T1	-10.736	-3.537	14.087	0.062	0.345	0.092
B08 F	T1	-10.859	-3.355	15.134	0.145	0.085	-0.031
B09 N	T1	-0.004	11.306	10.073	0.349	-0.205	-0.615
B09 F	T1	-1.502	14.056	8.665	0.404	-0.183	-0.944
B10 N	T1	-19.005	19.254	1.767	0.397	-0.203	-0.941
B10 F	T1	-20.499	21.921	0.279	0.346	-0.239	-0.599
A01	T1	-19.164	25.261	-1.211	0.311	-0.247	-0.502
*** Segment B end *** Line #							
*** Segment C begin *** Line #							
B04	T1	-2.332	-2.118	9.880	0.047	0.260	0.209
C01	T1	-1.832	-2.589	10.477	0.039	0.258	0.205
*** 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	-0.427	-4.037	29.092	-0.018	0.163	0.008
D02 N	T1	-1.681	-3.947	24.704	0.099	0.217	0.045
D02 F	T1	-1.806	-3.560	23.624	0.153	0.154	0.006
D03 N	T1	-1.687	-2.847	22.891	0.155	0.118	0.013
D03 F	T1	-1.454	-2.659	22.020	0.075	0.040	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	-1.270	-3.370	12.033	0.013	0.083	0.177
D04 F	T1	-1.454	-2.936	10.918	0.033	0.251	0.201
C01	T1	-1.832	-2.589	10.477	0.039	0.258	0.205

*** 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
A12 F	Anchor T1	1552	174	401	1612	-204	-253	1003	1054
B00	Anchor T1	-1185	-353	1284	1783	117	1705	952	1956
D01 N	Anchor T1	-367	179	-1685	1734	86	967	243	1001

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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	1552	174	401	1612	276	15	-972	1011
A02 N	T1	1552	174	401	1612	276	-466	-764	937
A02 F	T1	1552	174	401	1612	337	-527	-974	1157
A03	T1	1552	174	401	1612	419	-527	-1289	1454
A04	T1	1552	174	401	1612	475	-527	-1506	1665
A05 N	T1	1552	174	401	1612	475	-527	-1506	1665
A05 F	T1	1552	174	401	1612	534	-263	-1849	1943
A06	T1	1552	174	401	1612	534	-249	-1853	1944
A07	T1	1552	174	401	1612	520	81	-1942	2011
A08	T1	1552	174	401	1612	424	169	-1612	1675
A09 N	T1	1552	174	401	1612	3	560	-152	580
A09 F	T1	1552	174	401	1612	-96	560	231	613
A10 N	T1	1552	174	401	1612	-96	-535	704	890
A10 F	T1	1552	174	401	1612	-92	-559	703	902
A11 N	T1	1552	174	401	1612	-50	-719	606	942
A11 F	T1	1552	174	401	1612	-48	-716	600	936
A12 N	T1	1552	174	401	1612	-134	-293	749	815
A12 F-	T1	1552	174	401	1612	-204	-253	1003	1054
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	1185	353	-1284	1783	-117	-1705	-952	1956
B01	T1	1185	353	-1284	1783	-211	-1388	-952	1696
B02	T1	1185	353	-1284	1783	-265	-1208	-952	1561

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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
B03 N	T1	1185	353	-1284	1783	-265	-1208	-952	1560
B03 F	T1	1185	353	-1284	1783	-51	-937	-680	1159
B04 -	T1	1185	353	-1284	1783	398	-937	-265	1052
B04 +	T1	1552	174	401	1612	225	-888	-382	992
B05 N	T1	1552	174	401	1612	87	-888	149	904
B05 F	T1	1552	174	401	1612	-44	-533	504	735
B06	T1	1552	174	401	1612	-45	-528	504	731
B07	T1	1552	174	401	1612	-68	-315	504	599
B08 N	T1	1552	174	401	1612	-176	642	504	835
B08 F	T1	1552	174	401	1612	-202	820	529	997
B09 N	T1	1552	174	401	1612	-227	-61	1007	1034
B09 F	T1	1552	174	401	1612	-172	-73	801	822
B10 N	T1	1552	174	401	1612	220	179	-826	873
B10 F	T1	1552	174	401	1612	276	155	-1033	1080
A01	T1	1552	174	401	1612	276	15	-972	1011
*** Segment B end *** Line #									
*** Segment C begin *** Line #									
B04	T1	-367	179	-1685	1734	173	-49	116	214
C01	T1	-367	179	-1685	1734	173	170	140	280
*** 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	367	-179	1685	1734	-86	-967	-243	1001
D01 F	T1	367	-179	1685	1734	-356	-773	-164	867
D02 N	T1	367	-179	1685	1734	-432	313	-32	535

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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	F O R C E S (N)				M O M E N T S (N m)			
		X	Y	Z	Result	X	Y	Z	Result
D02 F	T1	367	-179	1685	1734	-218	482	-61	532
D03 N	T1	367	-179	1685	1734	133	468	-138	506
D03 F	T1	367	-179	1685	1734	318	413	-185	553
D04 N	T1	367	-179	1685	1734	-146	-536	-185	585
D04 F	T1	367	-179	1685	1734	-173	-335	-157	409
C01	T1	367	-179	1685	1734	-173	-170	-140	280

*** 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	15	972	276	1.00 1.00	(17) DISP	19	147	
A02 N-	Max P					(3a) HOOP	0	71	
	Max P	0	0		1.00 1.00	(18) SUST	0	71	
	Cold to T1	466	764	276	1.00 1.00	(17) DISP	18	147	
A02 N+	Max P					(3a) HOOP	0	71	
	Max P	0	0		1.96 1.63	(18) SUST	0	71	
	Cold to T1	764	466	276	1.96 1.63	(17) DISP	32	147	
A02 F-	Max P					(3a) HOOP	0	71	
	Max P	0	0		1.96 1.63	(18) SUST	0	71	
	Cold to T1	974	337	527	1.96 1.63	(17) DISP	39	147	
A02 F+	Max P					(3a) HOOP	0	71	
	Max P	0	0		1.00 1.00	(18) SUST	0	71	
	Cold to T1	337	974	527	1.00 1.00	(17) DISP	22	147	
A03	Max P					(3a) HOOP	0	71	
	Max P	0	0		1.00 1.00	(18) SUST	0	71	
	Cold to T1	419	1289	527	1.00 1.00	(17) DISP	28	147	
A04	Max P					(3a) HOOP	0	71	
	Max P	0	0		1.00 1.00	(18) SUST	0	71	
	Cold to T1	475	1506	527	1.00 1.00	(17) DISP	14	147	
A05 N-	Max P					(3a) HOOP	0	71	
	Max P	0	0		1.00 1.00	(18) SUST	0	71	
	Cold to T1	475	1506	527	1.00 1.00	(17) DISP	14	147	
A05 N+	Max P					(3a) HOOP	0	71	
	Max P	0	0		2.56 2.13	(18) SUST	0	71	
	Cold to T1	475	1506	527	2.56 2.13	(17) DISP	29	147	
A05 F-	Max P					(3a) HOOP	0	71	
	Max P	0	0		2.56 2.13	(18) SUST	0	71	
	Cold to T1	534	224	1854	2.56 2.13	(17) DISP	20	147	
A05 F+	Max P					(3a) HOOP	0	71	
	Max P	0	0		1.00 1.00	(18) SUST	0	71	
	Cold to T1	534	224	1854	1.00 1.00	(17) DISP	16	147	
A06	Max P					(3a) HOOP	0	71	
	Max P	0	0		1.00 1.00	(18) SUST	0	71	
	Cold to T1	534	239	1854	1.00 1.00	(17) DISP	16	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)		Eq. Load no. type	Code Stress	Code Allow.
		In-Pl. Moment	Out-Pl. Moment	Torsion Moment	In	Out					
A08	Max P								(3a) HOOP	0	71
	Max P	0	0		1.00	1.00			(18) SUST	0	71
	Cold to T1	424	1513	580	1.00	1.00			(17) DISP	14	147
A09 N-	Max P								(3a) HOOP	0	71
	Max P	0	0		1.00	1.00			(18) SUST	0	71
	Cold to T1	3	2	580	1.00	1.00			(17) DISP	5	147
A09 N+	Max P								(3a) HOOP	0	71
	Max P	0	0		2.56	2.13			(18) SUST	0	71
	Cold to T1	2	3	580	2.56	2.13			(17) DISP	5	147
A09 F-	Max P								(3a) HOOP	0	71
	Max P	0	0		2.56	2.13			(18) SUST	0	71
	Cold to T1	368	481	96	2.56	2.13			(17) DISP	12	147
A09 F+	Max P								(3a) HOOP	0	71
	Max P	0	0		1.00	1.00			(18) SUST	0	71
	Cold to T1	560	231	96	1.00	1.00			(17) DISP	5	147
A10 N-	Max P								(3a) HOOP	0	71
	Max P	0	0		1.00	1.00			(18) SUST	0	71
	Cold to T1	535	704	96	1.00	1.00			(17) DISP	7	147
A10 N+	Max P								(3a) HOOP	0	71
	Max P	0	0		2.56	2.13			(18) SUST	0	71
	Cold to T1	704	535	96	2.56	2.13			(17) DISP	18	147
A10 F-	Max P								(3a) HOOP	0	71
	Max P	0	0		2.56	2.13			(18) SUST	0	71
	Cold to T1	703	516	234	2.56	2.13			(17) DISP	18	147
A10 F+	Max P								(3a) HOOP	0	71
	Max P	0	0		1.00	1.00			(18) SUST	0	71
	Cold to T1	516	703	234	1.00	1.00			(17) DISP	8	147
A11 N-	Max P								(3a) HOOP	0	71
	Max P	0	0		1.00	1.00			(18) SUST	0	71
	Cold to T1	682	606	234	1.00	1.00			(17) DISP	8	147
A11 N+	Max P								(3a) HOOP	0	71
	Max P	0	0		2.56	2.13			(18) SUST	0	71
	Cold to T1	374	832	234	2.56	2.13			(17) DISP	17	147
A11 F-	Max P								(3a) HOOP	0	71
	Max P	0	0		2.56	2.13			(18) SUST	0	71
	Cold to T1	374	818	258	2.56	2.13			(17) DISP	17	147
A11 F+	Max P								(3a) HOOP	0	71
	Max P	0	0		1.00	1.00			(18) SUST	0	71
	Cold to T1	716	544	258	1.00	1.00			(17) DISP	8	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.	
A12 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	293	715	258	1.00	1.00	(17) DISP	7	147
A12 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		2.56	2.13	(18) SUST	0	71
	Cold to T1	763	123	258	2.56	2.13	(17) DISP	17	147
A12 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		2.56	2.13	(18) SUST	0	71
	Cold to T1	1003	293	143	2.56	2.13	(17) DISP	22	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	1705	117	952	1.00	1.00	(17) DISP	9	147
B01	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	1388	211	952	1.00	1.00	(17) DISP	8	147
B02	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	1208	265	952	1.00	1.00	(17) DISP	13	147
B03 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	1208	265	952	1.00	1.00	(17) DISP	13	147
B03 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		2.56	2.13	(18) SUST	0	71
	Cold to T1	265	1208	952	2.56	2.13	(17) DISP	24	147
B03 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		2.56	2.13	(18) SUST	0	71
	Cold to T1	51	680	937	2.56	2.13	(17) DISP	14	147
B03 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	51	680	937	1.00	1.00	(17) DISP	10	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 Allow.
		In-Pl. Moment	Out-Pl. Moment	Torsion Moment	In	Out	Eq. Load no. type	Code	Code	
B04	- Max P						(3a) HOOP	0	71	
	Max P	0	0		2.05	2.40	(18) SUST	0	71	
	Cold to T1	265	398	937	2.05	2.40	(17) DISP	12	147	
B04	+ Max P						(3a) HOOP	0	71	
	Max P	0	0		2.05	2.40	(18) SUST	0	71	
	Cold to T1	382	225	888	2.05	2.40	(17) DISP	11	147	
B05	N- Max P						(3a) HOOP	0	71	
	Max P	0	0		1.00	1.00	(18) SUST	0	71	
	Cold to T1	87	149	888	1.00	1.00	(17) DISP	8	147	
B05	N+ Max P						(3a) HOOP	0	71	
	Max P	0	0		2.56	2.13	(18) SUST	0	71	
	Cold to T1	87	149	888	2.56	2.13	(17) DISP	8	147	
B05	F- Max P						(3a) HOOP	0	71	
	Max P	0	0		2.56	2.13	(18) SUST	0	71	
	Cold to T1	44	532	504	2.56	2.13	(17) DISP	10	147	
B05	F+ Max P						(3a) HOOP	0	71	
	Max P	0	0		1.00	1.00	(18) SUST	0	71	
	Cold to T1	533	44	504	1.00	1.00	(17) DISP	6	147	
B06	Max P						(3a) HOOP	0	71	
	Max P	0	0		1.00	1.00	(18) SUST	0	71	
	Cold to T1	528	45	504	1.00	1.00	(17) DISP	6	147	
B07	Max P						(3a) HOOP	0	71	
	Max P	0	0		1.00	1.00	(18) SUST	0	71	
	Cold to T1	315	68	504	1.00	1.00	(17) DISP	11	147	
B08	N- Max P						(3a) HOOP	0	71	
	Max P	0	0		1.00	1.00	(18) SUST	0	71	
	Cold to T1	642	176	504	1.00	1.00	(17) DISP	16	147	
B08	N+ Max P						(3a) HOOP	0	71	
	Max P	0	0		1.96	1.63	(18) SUST	0	71	
	Cold to T1	642	176	504	1.96	1.63	(17) DISP	26	147	
B08	F- Max P						(3a) HOOP	0	71	
	Max P	0	0		1.96	1.63	(18) SUST	0	71	
	Cold to T1	820	539	174	1.96	1.63	(17) DISP	35	147	
B08	F+ Max P						(3a) HOOP	0	71	
	Max P	0	0		1.00	1.00	(18) SUST	0	71	
	Cold to T1	820	539	174	1.00	1.00	(17) DISP	19	147	
B09	N- Max P						(3a) HOOP	0	71	
	Max P	0	0		1.00	1.00	(18) SUST	0	71	
	Cold to T1	61	1018	174	1.00	1.00	(17) DISP	20	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	1015	96	174	1.95	1.63	(17) DISP	38	147
B09 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.95	1.63	(18) SUST	0	71
	Cold to T1	810	130	50	1.95	1.63	(17) DISP	30	147
B09 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	172	802	50	1.00	1.00	(17) DISP	16	147
B10 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	220	844	50	1.00	1.00	(17) DISP	17	147
B10 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.96	1.63	(18) SUST	0	71
	Cold to T1	844	220	50	1.96	1.63	(17) DISP	32	147
B10 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.96	1.63	(18) SUST	0	71
	Cold to T1	1044	6	276	1.96	1.63	(17) DISP	39	147
B10 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	155	1033	276	1.00	1.00	(17) DISP	21	147
A01	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	15	972	276	1.00	1.00	(17) DISP	19	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	116	49	173	2.05	2.40	(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	170	140	173	1.00	1.00	(17) DISP	5	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									
Point name	Load combination	(Moments in Nm)			S.I.F		(Stress in N/mm2)		
		In-Pl. Moment	Out-Pl. Moment	Torsion Moment	In	Out	Eq. Load no. type	Code Stress	Code 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	168	196	967	1.96	1.63	(17) DISP	20	147
D01 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.96	1.63	(18) SUST	0	71
	Cold to T1	36	773	390	1.96	1.63	(17) DISP	25	147
D01 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	773	36	390	1.00	1.00	(17) DISP	16	147
D02 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	313	188	390	1.00	1.00	(17) DISP	10	147
D02 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.96	1.63	(18) SUST	0	71
	Cold to T1	234	281	390	1.96	1.63	(17) DISP	14	147
D02 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.96	1.63	(18) SUST	0	71
	Cold to T1	129	178	485	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	218	24	485	1.00	1.00	(17) DISP	10	147
D03 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	133	55	485	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	133	55	485	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	318	413	185	1.96	1.63	(17) DISP	18	147
D03 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	413	318	185	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	536	146	185	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	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	536	146	185	1.96	1.63	(17) DISP	21	147
D04 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.96	1.63	(18) SUST	0	71
	Cold to T1	335	157	173	1.96	1.63	(17) DISP	14	147
D04 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	335	157	173	1.00	1.00	(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	170	140	173	1.00	1.00	(17) DISP	5	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 :	-20.499	Point : B10 F	Load Comb.: T1
Maximum Y :	35.697	Point : A07	Load Comb.: T1
Maximum Z :	29.600	Point : D00	Load Comb.: T1
Max. total:	38.231	Point : A05 F	Load Comb.: T1

Maximum rotations (deg)

Maximum X :	0.404	Point : B09 F	Load Comb.: T1
Maximum Y :	0.373	Point : B07	Load Comb.: T1
Maximum Z :	-0.944	Point : B09 F	Load Comb.: T1
Max. total:	1.043	Point : B09 F	Load Comb.: T1

Maximum restraint forces (N)

Maximum X :	1552	Point : A12 F	Load Comb.: T1
Maximum Y :	-353	Point : B00	Load Comb.: T1
Maximum Z :	-1685	Point : D01 N	Load Comb.: T1
Max. total:	1783	Point : B00	Load Comb.: T1

Maximum restraint moments (Nm)

Maximum X :	-204	Point : A12 F	Load Comb.: T1
Maximum Y :	1705	Point : B00	Load Comb.: T1
Maximum Z :	1003	Point : A12 F	Load Comb.: T1
Max. total:	1956	Point : B00	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 :	1552	Point : A01	Load Comb.: T1
Maximum Y :	353	Point : B00	Load Comb.: T1
Maximum Z :	-1685	Point : B04	Load Comb.: T1
Max. total:	1783	Point : B00	Load Comb.: T1

Maximum pipe moments (Nm)

Maximum X :	534	Point : A05 F	Load Comb.: T1
Maximum Y :	-1705	Point : B00	Load Comb.: T1
Maximum Z :	-1942	Point : A07	Load Comb.: T1
Max. total:	2011	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 : B10 F
Stress N/mm2 : 39
Allowable N/mm2 : 147
Ratio : 0.27
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 : B10 F
Stress N/mm2 : 39
Allowable N/mm2 : 147
Ratio : 0.27
Load combination : Cold to T1

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