

REBIS
AutoPIPE 6.20 MODEL PAGE 1

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 : 79319815_ 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 # 79319815

From A00 to A01, DX= -485.07 mm, DY= 485.07 mm, L= 685.99 mm Run

PIPE DATA:

Pipe Id= 450MX6.0, Material= AL, Poisson= 0.300, Nom Size= 450 mm,
OD= 457.00 mm, Sch= NS, Wall Thk= 6.000 mm, Mill= 0.750 mm, Cor= 0 mm,
Pipe Density= 2707.12 kg/m3, Pipe Unit Wgt= 225.69 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:

A00, Coordinates, X= 0.00 mm, Y= 0.00 mm, Z= 0.00 mm

From A01 to A02, DX= -686.00 mm, DY= -686.00 mm, L= 970.15 mm Bend

COMPONENT DATA (Bend, TIP= A01, Near= A01 N, Far= A01 F):

Elbow, Radius= 685.99 mm, Bend angle= 90.00 deg, End flanges= 0,
Flex= 20.385, SIFI= 4.81, SIFO= 4.01

POINT DATA:

A01, Coordinates, X= -485.07 mm, Y= 485.07 mm, Z= 0.00 mm
A01 N, Coordinates, X= 0.00 mm, Y= 0.00 mm, Z= 0.00 mm
A01 F, Coordinates, X= -970.14 mm, Y= 0.00 mm, Z= 0.00 mm

SUPPORT DATA:

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

From A02 to A03, DY= -287.20 mm Bend

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

Elbow, Radius= 685.99 mm, Bend angle= 45.00 deg, End flanges= 0,
Flex= 20.385, SIFI= 4.81, SIFO= 4.01

POINT DATA:

A02, Coordinates, X= -1171.07 mm, Y= -200.93 mm, Z= 0.00 mm
A02 N, Coordinates, X= -970.15 mm, Y= -0.01 mm, Z= 0.00 mm
A02 F, Coordinates, X= -1171.07 mm, Y= -485.08 mm, Z= 0.00 mm

From A03 to A04, DY= -496.95 mm Redu

COMPONENT DATA (Reducer):

Length= 496.95 mm, SIF= 1.00

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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:

A03, Coordinates, X= -1171.07 mm, Y= -488.13 mm, Z= 0.00 mm

From A04 to A05, DY= -315.63 mm

Run

PIPE DATA:

Pipe Id= 500MX6.0, Nom Size= 500 mm, OD= 508.00 mm

POINT DATA:

A04, Coordinates, X= -1171.07 mm, Y= -985.08 mm, Z= 0.00 mm

From A05 to A06, DX= 886.11 mm, DY= -886.11 mm, L= 1253.15 mm

Bend

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

Elbow, Radius= 761.99 mm, Bend angle= 45.00 deg, End flanges= 0,
Flex= 22.737, SIFI= 5.17, SIFO= 4.31

POINT DATA:

A05, Coordinates, X= -1171.07 mm, Y= -1300.71 mm, Z= 0.00 mm

A05 N, Coordinates, X= -1171.07 mm, Y= -985.08 mm, Z= 0.00 mm

A05 F, Coordinates, X= -947.89 mm, Y= -1523.89 mm, Z= 0.00 mm

From A06 to A07, DX= 889.21 mm, DY= -889.21 mm, L= 1257.53 mm

Tee

COMPONENT DATA (Tee Header, Center= A06):

B16.9 welding tee, SIFI= 4.08, SIFO= 5.10

POINT DATA:

A06, Coordinates, X= -284.96 mm, Y= -2186.82 mm, Z= 0.00 mm

From A07 to A08, DX= 318.68 mm

Bend

COMPONENT DATA (Bend, TIP= A07, Near= A07 N, Far= A07 F):

Elbow, Radius= 761.99 mm, Bend angle= 45.00 deg, End flanges= 0,
Flex= 22.737, SIFI= 5.17, SIFO= 4.31

POINT DATA:

A07, Coordinates, X= 604.25 mm, Y= -3076.03 mm, Z= 0.00 mm

A07 N, Coordinates, X= 381.07 mm, Y= -2852.85 mm, Z= 0.00 mm

A07 F, Coordinates, X= 919.88 mm, Y= -3076.03 mm, Z= 0.00 mm

From A08 to A09, DX= 496.95 mm

Redu

COMPONENT DATA (Reducer):

Length= 496.95 mm, SIF= 1.00

POINT DATA:

A08, Coordinates, X= 922.93 mm, Y= -3076.03 mm, Z= 0.00 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 A09 to A10, DX= 284.15 mm

Run

PIPE DATA:

Pipe Id= 450MX6.0, Nom Size= 450 mm, OD= 457.00 mm

POINT DATA:

A09, Coordinates, X= 1419.88 mm, Y= -3076.03 mm, Z= 0.00 mm

From A10 to A11, DX= 686.00 mm, DY= 686.00 mm, L= 970.15 mm

Bend

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

Elbow, Radius= 685.99 mm, Bend angle= 45.00 deg, End flanges= 0,
Flex= 20.385, SIFI= 4.81, SIFO= 4.01

POINT DATA:

A10, Coordinates, X= 1704.03 mm, Y= -3076.03 mm, Z= 0.00 mm

A10 N, Coordinates, X= 1419.88 mm, Y= -3076.03 mm, Z= 0.00 mm

A10 F, Coordinates, X= 1904.95 mm, Y= -2875.11 mm, Z= 0.00 mm

From A11 to A12, DX= -485.08 mm, DY= 485.08 mm, L= 686.01 mm

Bend

COMPONENT DATA (Bend, TIP= A11, Near= A11 N, Far= A11 F):

Elbow, Radius= 685.99 mm, Bend angle= 90.00 deg, End flanges= 0,
Flex= 20.385, SIFI= 4.81, SIFO= 4.01

POINT DATA:

A11, Coordinates, X= 2390.03 mm, Y= -2390.03 mm, Z= 0.00 mm

A11 N, Coordinates, X= 1904.96 mm, Y= -2875.10 mm, Z= 0.00 mm

A11 F, Coordinates, X= 1904.96 mm, Y= -1904.96 mm, Z= 0.00 mm

A12, Coordinates, X= 1904.95 mm, Y= -1904.95 mm, Z= 0.00 mm

SUPPORT DATA:

A11 F, Anchor, KTX= Rigid, KTY= Rigid, KTZ= Rigid, KRX= Rigid,
KRY= Rigid, KRZ= Rigid

*** SEGMENT B , LINE # 79319815

From A06 to B01, DZ= -510.00 mm

Tee

COMPONENT DATA (Tee Branch, Center= A06):

B16.9 welding tee, SIFI= 4.08, SIFO= 5.10

PIPE DATA:

Pipe Id= 500MX6.0, Nom Size= 500 mm, OD= 508.00 mm

POINT DATA:

A06, Coordinates, X= -284.96 mm, Y= -2186.82 mm, Z= 0.00 mm

From B01 to B02, DZ= -1262.00 mm

Run

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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:

B01, Coordinates, X= -284.96 mm, Y= -2186.82 mm, Z= -510.00 mm

From B02 to B03, DX= 1419.78 mm, DY= -820.42 mm, L= 1639.78 mm Bend

COMPONENT DATA (Bend, TIP= B02, Near= B02 N, Far= B02 F):

Elbow, Radius= 761.99 mm, Bend angle= 90.00 deg, End flanges= 0,
Flex= 22.737, SIFI= 5.17, SIFO= 4.31

POINT DATA:

B02, Coordinates, X= -284.96 mm, Y= -2186.82 mm, Z= -1772.00 mm
B02 N, Coordinates, X= -284.96 mm, Y= -2186.82 mm, Z= -1010.01 mm
B02 F, Coordinates, X= 374.80 mm, Y= -2568.06 mm, Z= -1772.00 mm

From B03 to B04, DX= 706.03 mm, DY= 706.03 mm, L= 998.48 mm Bend

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

Elbow, Radius= 761.99 mm, Bend angle= 75.02 deg, End flanges= 0,
Flex= 22.737, SIFI= 5.17, SIFO= 4.31

POINT DATA:

B03, Coordinates, X= 1134.82 mm, Y= -3007.24 mm, Z= -1772.00 mm
B03 N, Coordinates, X= 628.37 mm, Y= -2714.59 mm, Z= -1772.00 mm
B03 F, Coordinates, X= 1548.42 mm, Y= -2593.64 mm, Z= -1772.00 mm

From B04 to B05, DX= 750.95 mm, DY= 750.95 mm, L= 1062.00 mm Tee

COMPONENT DATA (Tee Header, Center= B04):

B16.9 welding tee, SIFI= 4.08, SIFO= 5.10

POINT DATA:

B04, Coordinates, X= 1840.85 mm, Y= -2301.21 mm, Z= -1772.00 mm

From B05 to B06, DZ= -6762.00 mm Bend

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

Elbow, Radius= 761.99 mm, Bend angle= 90.00 deg, End flanges= 0,
Flex= 22.737, SIFI= 5.17, SIFO= 4.31

POINT DATA:

B05, Coordinates, X= 2591.80 mm, Y= -1550.26 mm, Z= -1772.00 mm
B05 N, Coordinates, X= 2052.99 mm, Y= -2089.07 mm, Z= -1772.00 mm
B05 F, Coordinates, X= 2591.80 mm, Y= -1550.26 mm, Z= -2533.99 mm

From B06 to B07, DZ= -250.00 mm Run

POINT DATA:

B06, Coordinates, X= 2591.80 mm, Y= -1550.26 mm, Z= -8534.00 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 B07 to B08, DZ= -3988.00 mm

Tee

COMPONENT DATA (Tee Header, Center= B07):

B16.9 welding tee, SIFI= 4.08, SIFO= 5.10

POINT DATA:

B07, Coordinates, X= 2591.80 mm, Y= -1550.26 mm, Z= -8784.00 mm

From B08 to B09, DX= -667.00 mm, DY= -1430.38 mm, L= 1578.25 mm

Bend

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

Elbow, Radius= 761.99 mm, Bend angle= 90.00 deg, End flanges= 0,
Flex= 22.737, SIFI= 5.17, SIFO= 4.31

POINT DATA:

B08, Coordinates, X= 2591.80 mm, Y= -1550.26 mm, Z= -12772.00 mm

B08 N, Coordinates, X= 2591.80 mm, Y= -1550.26 mm, Z= -12010.01 mm

B08 F, Coordinates, X= 2269.77 mm, Y= -2240.86 mm, Z= -12772.00 mm

From B09 to B10, DX= -2392.46 mm

Bend

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

Elbow, Radius= 761.99 mm, Bend angle= 65.00 deg, End flanges= 0,
Flex= 22.737, SIFI= 5.17, SIFO= 4.31

POINT DATA:

B09, Coordinates, X= 1924.80 mm, Y= -2980.64 mm, Z= -12772.00 mm

B09 N, Coordinates, X= 2129.96 mm, Y= -2540.68 mm, Z= -12772.00 mm

B09 F, Coordinates, X= 1439.36 mm, Y= -2980.64 mm, Z= -12772.00 mm

From B10 to B11, DZ= -6762.00 mm

Bend

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

Elbow, Radius= 761.99 mm, Bend angle= 90.00 deg, End flanges= 0,
Flex= 22.737, SIFI= 5.17, SIFO= 4.31

POINT DATA:

B10, Coordinates, X= -467.66 mm, Y= -2980.64 mm, Z= -12772.00 mm

B10 N, Coordinates, X= 294.33 mm, Y= -2980.64 mm, Z= -12772.00 mm

B10 F, Coordinates, X= -467.66 mm, Y= -2980.64 mm, Z= -13533.99 mm

From B11 to B12, DZ= -6000.00 mm

Run

POINT DATA:

B11, Coordinates, X= -467.66 mm, Y= -2980.64 mm, Z= -19534.00 mm

From B12 to B13, DZ= -6000.00 mm

Run

POINT DATA:

B12, Coordinates, X= -467.66 mm, Y= -2980.64 mm, Z= -25534.00 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 B13 to B14, DZ= -5445.68 mm Run

POINT DATA:

B13, Coordinates, X= -467.66 mm, Y= -2980.64 mm, Z= -31534.00 mm

From B14 to B15, DX= 316.00 mm, DY= 451.30 mm, DZ= -2056.11 mm,
L= 2128.64 mm

Bend

COMPONENT DATA (Bend, TIP= B14, Near= B14 N, Far= B14 F):

Elbow, Radius= 761.99 mm, Bend angle= 15.00 deg, End flanges= 0,
Flex= 22.737, SIFI= 5.17, SIFO= 4.31

POINT DATA:

B14, Coordinates, X= -467.66 mm, Y= -2980.64 mm, Z= -36979.68 mm

B14 N, Coordinates, X= -467.66 mm, Y= -2980.64 mm, Z= -36879.36 mm

B14 F, Coordinates, X= -452.77 mm, Y= -2959.37 mm, Z= -37076.58 mm

From B15 to B16, DZ= -6100.32 mm

Bend

COMPONENT DATA (Bend, TIP= B15, Near= B15 N, Far= B15 F):

Elbow, Radius= 761.99 mm, Bend angle= 15.00 deg, End flanges= 0,
Flex= 22.737, SIFI= 5.17, SIFO= 4.31

POINT DATA:

B15, Coordinates, X= -151.66 mm, Y= -2529.34 mm, Z= -39035.79 mm

B15 N, Coordinates, X= -166.55 mm, Y= -2550.61 mm, Z= -38938.89 mm

B15 F, Coordinates, X= -151.66 mm, Y= -2529.34 mm, Z= -39136.11 mm

From B16 to B17, DZ= -6000.00 mm

Run

POINT DATA:

B16, Coordinates, X= -151.66 mm, Y= -2529.34 mm, Z= -45136.11 mm

From B17 to B18, DZ= -2741.67 mm

Run

POINT DATA:

B17, Coordinates, X= -151.66 mm, Y= -2529.34 mm, Z= -51136.11 mm

From B18 to B19, DX= 967.81 mm, DY= -451.30 mm, L= 1067.86 mm

Bend

COMPONENT DATA (Bend, TIP= B18, Near= B18 N, Far= B18 F):

Elbow, Radius= 761.99 mm, Bend angle= 90.00 deg, End flanges= 0,
Flex= 22.737, SIFI= 5.17, SIFO= 4.31

POINT DATA:

B18, Coordinates, X= -151.66 mm, Y= -2529.34 mm, Z= -53877.78 mm

B18 N, Coordinates, X= -151.66 mm, Y= -2529.34 mm, Z= -53115.79 mm

B18 F, Coordinates, X= 538.94 mm, Y= -2851.37 mm, Z= -53877.78 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 B19 to B20, DX= 6711.34 mm

Bend

COMPONENT DATA (Bend, TIP= B19, Near= B19 N, Far= B19 F):
Elbow, Radius= 761.98 mm, Bend angle= 25.00 deg, End flanges= 0,
Flex= 22.737, SIFI= 5.17, SIFO= 4.31

POINT DATA:

B19, Coordinates, X= 816.15 mm, Y= -2980.64 mm, Z= -53877.78 mm
B19 N, Coordinates, X= 663.05 mm, Y= -2909.25 mm, Z= -53877.78 mm
B19 F, Coordinates, X= 985.08 mm, Y= -2980.64 mm, Z= -53877.78 mm
B20, Coordinates, X= 7527.49 mm, Y= -2980.64 mm, Z= -53877.78 mm

SUPPORT DATA:

B20, Anchor, KTX= Rigid, KTY= Rigid, KTZ= Rigid, KRX= Rigid, KRY= Rigid,
KRZ= Rigid

*** SEGMENT C , LINE # 79319815

From B04 to C01, DX= 239.71 mm, DY= -239.71 mm, L= 339.00 mm

Tee

COMPONENT DATA (Tee Branch, Center= B04):
B16.9 welding tee, SIFI= 4.08, SIFO= 5.10
Rigid, Include weight= Yes, Include expansion= Yes

PIPE DATA:

Pipe Id= 10MMX3.4, Nom Size= 10 mm, OD= 17.200 mm, Wall Thk= 1.000 mm,
Mill= 0.125 mm

POINT DATA:

B04, Coordinates, X= 1840.85 mm, Y= -2301.21 mm, Z= -1772.00 mm
C01, Coordinates, X= 2080.56 mm, Y= -2540.92 mm, Z= -1772.00 mm
C01, Added Weight= 0.10 kg

*** SEGMENT D , LINE # 79319815

From B07 to D01, DX= 250.32 mm, DY= -250.32 mm, L= 354.01 mm

Tee

COMPONENT DATA (Tee Branch, Center= B07):
B16.9 welding tee, SIFI= 4.08, SIFO= 5.10

PIPE DATA:

Pipe Id= 80MMX5,5, Nom Size= 80 mm, OD= 88.900 mm, Sch= 5.5,
Wall Thk= 5.500 mm, Mill= 0.688 mm

POINT DATA:

B07, Coordinates, X= 2591.80 mm, Y= -1550.26 mm, Z= -8784.00 mm
D01, Coordinates, X= 2842.12 mm, Y= -1800.58 mm, Z= -8784.00 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

Number of points in the system: 70

Weight of Empty Pipes + Weight of Contents = Total Weight of System
1907.6 kg + 0.0 kg = 1907.6 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 # 79319815
A00 0.00 0.00 0.00
A01 N 0.00 0.00 0.00
A01 -485.07 485.07 0.00
A01 F -970.14 0.00 0.00
A02 N -970.15 -0.01 0.00
A02 -1171.07 -200.93 0.00
A02 F -1171.07 -485.08 0.00
A03 -1171.07 -488.13 0.00
A04 -1171.07 -985.08 0.00
A05 N -1171.07 -985.08 0.00
A05 -1171.07 -1300.71 0.00
A05 F -947.89 -1523.89 0.00
A06 -284.96 -2186.82 0.00
A07 N 381.07 -2852.85 0.00
A07 604.25 -3076.03 0.00
A07 F 919.88 -3076.03 0.00
A08 922.93 -3076.03 0.00
A09 1419.88 -3076.03 0.00
A10 N 1419.88 -3076.03 0.00
A10 1704.03 -3076.03 0.00
A10 F 1904.95 -2875.11 0.00
A11 N 1904.96 -2875.10 0.00
A11 2390.03 -2390.03 0.00
A11 F 1904.96 -1904.96 0.00
A12 1904.95 -1904.95 0.00

*** SEGMENT B , LINE # 79319815
A06 -284.96 -2186.82 0.00
B01 -284.96 -2186.82 -510.00
B02 N -284.96 -2186.82 -1010.01
B02 -284.96 -2186.82 -1772.00
B02 F 374.80 -2568.06 -1772.00
B03 N 628.37 -2714.59 -1772.00
B03 1134.82 -3007.24 -1772.00
B03 F 1548.42 -2593.64 -1772.00
B04 1840.85 -2301.21 -1772.00
B05 N 2052.99 -2089.07 -1772.00
B05 2591.80 -1550.26 -1772.00
B05 F 2591.80 -1550.26 -2533.99
B06 2591.80 -1550.26 -8534.00
B07 2591.80 -1550.26 -8784.00
B08 N 2591.80 -1550.26 -12010.01
B08 2591.80 -1550.26 -12772.00
B08 F 2269.77 -2240.86 -12772.00
B09 N 2129.96 -2540.68 -12772.00
B09 1924.80 -2980.64 -12772.00
B09 F 1439.36 -2980.64 -12772.00
B10 N 294.33 -2980.64 -12772.00
B10 -467.66 -2980.64 -12772.00
B10 F -467.66 -2980.64 -13533.99
B11 -467.66 -2980.64 -19534.00

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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
B12	-467.66	-2980.64	-25534.00
B13	-467.66	-2980.64	-31534.00
B14 N	-467.66	-2980.64	-36879.36
B14	-467.66	-2980.64	-36979.68
B14 F	-452.77	-2959.37	-37076.58
B15 N	-166.55	-2550.61	-38938.89
B15	-151.66	-2529.34	-39035.79
B15 F	-151.66	-2529.34	-39136.11
B16	-151.66	-2529.34	-45136.11
B17	-151.66	-2529.34	-51136.11
B18 N	-151.66	-2529.34	-53115.79
B18	-151.66	-2529.34	-53877.78
B18 F	538.94	-2851.37	-53877.78
B19 N	663.05	-2909.25	-53877.78
B19	816.15	-2980.64	-53877.78
B19 F	985.08	-2980.64	-53877.78
B20	7527.49	-2980.64	-53877.78
*** SEGMENT C , LINE # 79319815			
B04	1840.85	-2301.21	-1772.00
C01	2080.56	-2540.92	-1772.00
*** SEGMENT D , LINE # 79319815			
B07	2591.80	-1550.26	-8784.00
D01	2842.12	-1800.58	-8784.00

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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
450MX6.0 AL	450 NS	457.00	6.000 0 0.75 0 0	0	226 0 226	1.00 1.00
500MX6.0 AL	500 NS	508.00	6.000 0 0.75 0 0	0	251 0 251	1.00 1.00
10MMX3.4 AL	10 NS	17.200	1.000 0 0.13 0 0	0	1.35 0 1.35	1.00 1.00
80MMX5,5 AL	80 5.5	88.900	5.500 0 0.69 0 0	0	38.26 0 38.26	1.00 1.00

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REBIS
AutoPIPE 6.20 MODEL PAGE 14

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	450MX6.0	2707.1	0.30	20.0 -196.0	0.06899 0.07646	0.02653 -3.8459
AL	500MX6.0	2707.1	0.30	20.0 -196.0	0.06899 0.07646	0.02653 -3.8459
AL	10MMX3.4	2707.1	0.30	20.0 -196.0	0.06899 0.07646	0.02653 -3.8459
AL	80MMX5,5	2707.1	0.30	20.0 -196.0	0.06899 0.07646	0.02653 -3.8459

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REBIS
AutoPIPE 6.20 MODEL PAGE 15

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	450MX6.0	20.0 -196.0	103.42 71.00	0.00
AL	500MX6.0	20.0 -196.0	103.42 71.00	0.00
AL	10MMX3.4	20.0 -196.0	103.42 71.00	0.00
AL	80MMX5,5	20.0 -196.0	103.42 71.00	0.00

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REBIS
AutoPIPE 6.20 MODEL PAGE 16

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 # 79319815

A00	0	-196	-3.846
A12	0	-196	-3.846

*** SEGMENT B , LINE # 79319815

A06	0	-196	-3.846
B20	0	-196	-3.846

*** SEGMENT C , LINE # 79319815

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

*** SEGMENT D , LINE # 79319815

B07	0	-196	-3.846
D01	0	-196	-3.846

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REBIS
AutoPIPE 6.20 MODEL PAGE 17

H O T M O D U L U S (x10⁶ N/)

POINT

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

*** SEGMENT A , LINE # 79319815

A00 0.07646

A12 0.07646

*** SEGMENT B , LINE # 79319815

A06 0.07646

B20 0.07646

*** SEGMENT C , LINE # 79319815

B04 0.07646

C01 0.07646

*** SEGMENT D , LINE # 79319815

B07 0.07646

D01 0.07646

* Non-standard material

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REBIS

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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 # 79319815

A00 71.00*

A12 71.00*

*** SEGMENT B , LINE # 79319815

A06 71.00*

B20 71.00*

*** SEGMENT C , LINE # 79319815

B04 71.00*

C01 71.00*

*** SEGMENT D , LINE # 79319815

B07 71.00*

D01 71.00*

< User-defined code allowable

* Non-code material

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REBIS
AutoPIPE 6.20 MODEL PAGE 19

THERMAL ANCHOR MOVEMENTS AND DISPLACEMENTS

POINT NAME	LOAD CASE	DX (mm)	DY (mm)	DZ (mm)	RX (deg)	RY (deg)	RZ (deg)
A01 N	Thermal 1	4.40	-4.40	-250.40	0.000	0.000	0.000
A11 F	Thermal 1	-4.40	4.40	-250.40	0.000	0.000	0.000
B20	Thermal 1	0.00	1.60	38.40	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 # 79319815							
A00	T1	4.400	-4.400	-250.400	0.000	0.000	0.000
A01 N	T1	4.400	-4.400	-250.400	0.000	0.000	0.000
A01 F	T1	8.027	-3.952	-250.694	-0.002	-0.039	-0.042
A02 N	T1	8.027	-3.952	-250.694	-0.002	-0.039	-0.042
A02 F	T1	8.455	-1.938	-250.870	0.007	-0.047	-0.035
A03	T1	8.453	-1.926	-250.871	0.007	-0.047	-0.035
A04	T1	8.146	-0.015	-250.931	0.008	-0.050	-0.035
A05 N	T1	8.146	-0.015	-250.931	0.008	-0.050	-0.035
A05 F	T1	7.100	2.005	-250.884	0.022	-0.049	-0.002
A06	T1	4.545	4.552	-250.572	0.026	-0.051	0.001
A07 N	T1	2.004	7.135	-250.370	0.022	-0.038	0.003
A07 F	T1	-0.016	8.176	-250.362	0.034	0.011	0.033
A08	T1	-0.028	8.178	-250.363	0.034	0.011	0.033
A09	T1	-1.939	8.469	-250.480	0.029	0.012	0.034
A10 N	T1	-1.939	8.469	-250.480	0.029	0.012	0.034
A10 F	T1	-3.949	8.030	-250.508	0.022	0.012	0.041
A11 N	T1	-3.949	8.030	-250.508	0.022	0.012	0.041
A11 F	T1	-4.400	4.400	-250.400	0.000	0.000	0.000
A12	T1	-4.400	4.400	-250.400	0.000	0.000	0.000
*** Segment A end *** Line # 79319815							
*** Segment B begin *** Line # 79319815							
A06	T1	4.545	4.552	-250.572	0.026	-0.051	0.001
B01	T1	5.038	4.795	-248.607	0.028	-0.059	0.001
B02 N	T1	5.590	5.051	-246.681	0.030	-0.067	0.002
B02 F	T1	6.196	8.017	-240.909	0.058	-0.348	0.100

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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 N	T1	5.476	9.022	-239.508	0.062	-0.350	0.100
B03 F	T1	1.712	10.204	-233.620	0.083	-0.362	0.105
B04	T1	0.053	9.614	-231.335	0.086	-0.358	0.105
B05 N	T1	-1.151	9.186	-229.682	0.088	-0.354	0.105
B05 F	T1	-2.162	8.374	-223.863	-0.044	-0.016	0.189
B06	T1	-6.337	2.404	-200.749	-0.072	0.096	0.189
B07	T1	-6.768	2.089	-199.786	-0.073	0.101	0.189
B08 N	T1	-14.231	-2.521	-187.358	-0.091	0.164	0.190
B08 F	T1	-16.084	-2.535	-179.596	-0.264	0.488	0.065
B09 N	T1	-15.206	-1.540	-177.007	-0.262	0.495	0.065
B09 F	T1	-12.051	-0.634	-168.478	-0.287	0.577	0.066
B10 N	T1	-7.647	-1.948	-156.890	-0.271	0.577	0.066
B10 F	T1	-9.779	-5.242	-147.617	-0.126	0.235	-0.012
B11	T1	-29.566	-15.360	-124.504	-0.069	0.144	-0.008
B12	T1	-40.134	-19.898	-101.390	-0.019	0.059	-0.004
B13	T1	-42.132	-19.724	-78.276	0.021	-0.020	0.000
B14 N	T1	-37.217	-16.307	-57.684	0.051	-0.085	0.004
B14 F	T1	-36.893	-16.175	-56.869	0.073	-0.137	0.001
B15 N	T1	-33.230	-15.270	-48.419	0.077	-0.156	0.003
B15 F	T1	-32.693	-15.092	-47.587	0.073	-0.190	-0.001
B16	T1	-10.545	-7.831	-24.473	0.064	-0.232	0.004
B17	T1	15.740	-2.016	-1.360	0.046	-0.269	0.008
B18 N	T1	25.211	-0.563	6.267	0.038	-0.279	0.009
B18 F	T1	26.872	0.781	13.421	-0.017	-0.350	0.002
B19 N	T1	26.396	1.007	14.201	-0.017	-0.350	0.002
B19 F	T1	25.161	1.297	16.079	-0.008	-0.304	0.004

REBIS
AutoPIPE 6.20 RESULT PAGE 3

Point name	Load combination	TRANSLATIONS (mm)			ROTATIONS (deg)		
		X	Y	Z	X	Y	Z
B20	T1	0.000	1.600	38.400	0.000	0.000	0.000
*** Segment B end		*** Line # 79319815					
*** Segment C begin		*** Line # 79319815					
B04	T1	0.053	9.614	-231.335	0.086	-0.358	0.105
C01	T1	-0.431	10.974	-230.199	0.086	-0.358	0.105
*** Segment C end		*** Line # 79319815					
*** Segment D begin		*** Line # 79319815					
B07	T1	-6.768	2.089	-199.786	-0.073	0.101	0.189
D01	T1	-6.903	3.879	-199.910	-0.073	0.101	0.189
*** Segment D end		*** Line # 79319815					

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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
A01 N	Anchor T1	-686	672	1019	1400	-414	-60	-737	847
A11 F	Anchor T1	747	-589	3176	3315	-1232	1603	776	2165
B20	Anchor T1	-62	-83	-4195	4196	-343	-30387	467	30392

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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 # 79319815									
A00	T1	0	0	0	0	0	0	0	0
A01 N-	T1	0	0	0	0	0	0	0	0
A01 N+	T1	686	-672	-1019	1400	414	60	737	847
A01 F	T1	686	-672	-1019	1400	414	1049	84	1131
A02 N	T1	686	-672	-1019	1400	414	1049	84	1131
A02 F	T1	686	-672	-1019	1400	-80	1254	-383	1313
A03	T1	686	-672	-1019	1400	-83	1254	-385	1314
A04	T1	686	-672	-1019	1400	-589	1254	-726	1564
A05 N	T1	686	-672	-1019	1400	-589	1254	-726	1564
A05 F	T1	686	-672	-1019	1400	-1138	1026	-945	1801
A06 -	T1	686	-672	-1019	1400	-1814	351	-954	2079
A06 +	T1	747	-589	3176	3315	-337	-5352	-726	5411
A07 N	T1	747	-589	3176	3315	1778	-3237	-831	3785
A07 F	T1	747	-589	3176	3315	2487	-1526	-680	2996
A08	T1	747	-589	3176	3315	2487	-1516	-678	2991
A09	T1	747	-589	3176	3315	2487	62	-385	2518
A10 N	T1	747	-589	3176	3315	2487	62	-385	2518
A10 F	T1	747	-589	3176	3315	1849	1603	51	2448
A11 N	T1	747	-589	3176	3315	1849	1603	51	2448
A11 F-	T1	747	-589	3176	3315	-1232	1603	776	2165
A11 F+	T1	0	0	0	0	0	0	0	0
A12	T1	0	0	0	0	0	0	0	0
*** Segment A end *** Line # 79319815									
*** Segment B begin *** Line # 79319815									
A06	T1	-62	-83	-4195	4196	-1477	5703	-229	5895

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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
B01	T1	-62	-83	-4195	4196	-1435	5671	-229	5855
B02 N	T1	-62	-83	-4195	4196	-1393	5641	-229	5815
B02 F	T1	-62	-83	-4195	4196	-2930	2826	-151	4073
B03 N	T1	-62	-83	-4195	4196	-3544	1762	-121	3960
B03 F	T1	-62	-83	-4195	4196	-3037	-2097	-52	3691
B04 -	T1	-62	-83	-4195	4196	-1810	-3324	-46	3785
B04 +	T1	-62	-83	-4195	4196	-1810	-3324	-46	3785
B05 N	T1	-62	-83	-4195	4196	-920	-4213	-41	4313
B05 F	T1	-62	-83	-4195	4196	1403	-6521	-30	6670
B06	T1	-62	-83	-4195	4196	1900	-6890	-30	7147
B07 -	T1	-62	-83	-4195	4196	1921	-6905	-30	7168
B07 +	T1	-62	-83	-4195	4196	1921	-6905	-30	7168
B08 N	T1	-62	-83	-4195	4196	2188	-7104	-30	7434
B08 F	T1	-62	-83	-4195	4196	-646	-5800	-14	5836
B09 N	T1	-62	-83	-4195	4196	-1903	-5214	-7	5550
B09 F	T1	-62	-83	-4195	4196	-3749	-2317	-37	4407
B10 N	T1	-62	-83	-4195	4196	-3749	2486	-132	4500
B10 F	T1	-62	-83	-4195	4196	-3686	5636	-195	6737
B11	T1	-62	-83	-4195	4196	-3189	5266	-195	6159
B12	T1	-62	-83	-4195	4196	-2692	4897	-195	5591
B13	T1	-62	-83	-4195	4196	-2194	4527	-195	5035
B14 N	T1	-62	-83	-4195	4196	-1752	4198	-195	4553
B14 F	T1	-62	-83	-4195	4196	-1646	4123	-195	4444
B15 N	T1	-62	-83	-4195	4196	223	2808	-197	2824
B15 F	T1	-62	-83	-4195	4196	329	2733	-197	2760
B16	T1	-62	-83	-4195	4196	826	2364	-197	2512

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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
B17	T1	-62	-83	-4195	4196	1323	1994	-197	2401
B18 N	T1	-62	-83	-4195	4196	1487	1873	-197	2399
B18 F	T1	-62	-83	-4195	4196	199	-1071	-120	1096
B19 N	T1	-62	-83	-4195	4196	-44	-1592	-106	1596
B19 F	T1	-62	-83	-4195	4196	-343	-2943	-75	2964
B20	T1	-62	-83	-4195	4196	-343	-30387	467	30392

*** Segment B end *** Line # 79319815

*** Segment C begin *** Line # 79319815

B04	T1	0	0	0	0	0	0	0	0
C01	T1	0	0	0	0	0	0	0	0

*** Segment C end *** Line # 79319815

*** Segment D begin *** Line # 79319815

B07	T1	0	0	0	0	0	0	0	0
D01	T1	0	0	0	0	0	0	0	0

*** Segment D end *** Line # 79319815

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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 # 79319815									
A00	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	
A01 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	
A01 N+	Max P					(3a) HOOP	0	71	
	Max P	0	0		4.81 4.01	(18) SUST	0	71	
	Cold to T1	737	336	250	4.81 4.01	(17) DISP	4	147	
A01 F-	Max P					(3a) HOOP	0	71	
	Max P	0	0		4.81 4.01	(18) SUST	0	71	
	Cold to T1	84	449	1035	4.81 4.01	(17) DISP	2	147	
A01 F+	Max P					(3a) HOOP	0	71	
	Max P	0	0		1.00 1.00	(18) SUST	0	71	
	Cold to T1	451	84	1034	1.00 1.00	(17) DISP	1	147	
A02 N-	Max P					(3a) HOOP	0	71	
	Max P	0	0		1.00 1.00	(18) SUST	0	71	
	Cold to T1	451	84	1034	1.00 1.00	(17) DISP	1	147	
A02 N+	Max P					(3a) HOOP	0	71	
	Max P	0	0		4.81 4.01	(18) SUST	0	71	
	Cold to T1	84	449	1035	4.81 4.01	(17) DISP	2	147	
A02 F-	Max P					(3a) HOOP	0	71	
	Max P	0	0		4.81 4.01	(18) SUST	0	71	
	Cold to T1	383	80	1254	4.81 4.01	(17) DISP	2	147	
A02 F+	Max P					(3a) HOOP	0	71	
	Max P	0	0		1.00 1.00	(18) SUST	0	71	
	Cold to T1	80	383	1254	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	83	385	1254	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	589	726	1254	1.00 1.00	(17) DISP	1	147	
A05 N-	Max P					(3a) HOOP	0	71	
	Max P	0	0		1.00 1.00	(18) SUST	0	71	
	Cold to T1	589	726	1254	1.00 1.00	(17) DISP	1	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.	
A05 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		5.17	4.31	(18) SUST	0	71
	Cold to T1	726	589	1254	5.17	4.31	(17) DISP	4	147
A05 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		5.17	4.31	(18) SUST	0	71
	Cold to T1	945	79	1531	5.17	4.31	(17) DISP	4	147
A05 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	79	945	1531	1.00	1.00	(17) DISP	2	147
A06 -	Max P						(3a) HOOP	0	71
	Max P	0	0		4.08	5.10	(18) SUST	0	71
	Cold to T1	1035	954	1531	4.08	5.10	(17) DISP	6	147
A06 +	Max P						(3a) HOOP	0	71
	Max P	0	0		4.08	5.10	(18) SUST	0	71
	Cold to T1	4023	726	3546	4.08	5.10	(17) DISP	15	147
A07 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	1031	831	3546	1.00	1.00	(17) DISP	3	147
A07 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		5.17	4.31	(18) SUST	0	71
	Cold to T1	831	1031	3546	5.17	4.31	(17) DISP	6	147
A07 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		5.17	4.31	(18) SUST	0	71
	Cold to T1	680	1526	2487	5.17	4.31	(17) DISP	7	147
A07 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	1526	680	2487	1.00	1.00	(17) DISP	3	147
A08	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	1516	678	2487	1.00	1.00	(17) DISP	3	147
A09	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	62	385	2487	1.00	1.00	(17) DISP	3	147
A10 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	62	385	2487	1.00	1.00	(17) DISP	3	147
A10 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		4.81	4.01	(18) SUST	0	71
	Cold to T1	385	62	2487	4.81	4.01	(17) DISP	3	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.
					In	Out				
A10 F-	Max P						(3a)	HOOP	0	71
	Max P	0	0		4.81	4.01	(18)	SUST	0	71
	Cold to T1	51	174	2441	4.81	4.01	(17)	DISP	3	147
A10 F+	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.00	1.00	(18)	SUST	0	71
	Cold to T1	150	51	2443	1.00	1.00	(17)	DISP	3	147
A11 N-	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.00	1.00	(18)	SUST	0	71
	Cold to T1	150	51	2443	1.00	1.00	(17)	DISP	3	147
A11 N+	Max P						(3a)	HOOP	0	71
	Max P	0	0		4.81	4.01	(18)	SUST	0	71
	Cold to T1	51	174	2441	4.81	4.01	(17)	DISP	3	147
A11 F-	Max P						(3a)	HOOP	0	71
	Max P	0	0		4.81	4.01	(18)	SUST	0	71
	Cold to T1	776	262	2005	4.81	4.01	(17)	DISP	5	147
A11 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
A12	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 # 79319815										
*** Segment B begin *** Line # 79319815										
A06	Max P						(3a)	HOOP	0	71
	Max P	0	0		4.08	5.10	(18)	SUST	0	71
	Cold to T1	2988	5077	229	4.08	5.10	(17)	DISP	24	147
B01	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.00	1.00	(18)	SUST	0	71
	Cold to T1	5671	1435	229	1.00	1.00	(17)	DISP	5	147
B02 N-	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.00	1.00	(18)	SUST	0	71
	Cold to T1	5641	1393	229	1.00	1.00	(17)	DISP	5	147
B02 N+	Max P						(3a)	HOOP	0	71
	Max P	0	0		5.17	4.31	(18)	SUST	0	71
	Cold to T1	4187	4029	229	5.17	4.31	(17)	DISP	24	147
B02 F-	Max P						(3a)	HOOP	0	71
	Max P	0	0		5.17	4.31	(18)	SUST	0	71
	Cold to T1	981	151	3950	5.17	4.31	(17)	DISP	6	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	Code Allow.
		In-Pl. Moment	Out-Pl. Moment	Torsion Moment	In	Out	Eq. Load no. type			
B02 F+	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.00	1.00	(18)	SUST	0	71
	Cold to T1	981	151	3950	1.00	1.00	(17)	DISP	3	147
B03 N-	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.00	1.00	(18)	SUST	0	71
	Cold to T1	247	121	3950	1.00	1.00	(17)	DISP	3	147
B03 N+	Max P						(3a)	HOOP	0	71
	Max P	0	0		5.17	4.31	(18)	SUST	0	71
	Cold to T1	121	247	3950	5.17	4.31	(17)	DISP	4	147
B03 F-	Max P						(3a)	HOOP	0	71
	Max P	0	0		5.17	4.31	(18)	SUST	0	71
	Cold to T1	52	665	3630	5.17	4.31	(17)	DISP	4	147
B03 F+	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.00	1.00	(18)	SUST	0	71
	Cold to T1	665	52	3630	1.00	1.00	(17)	DISP	3	147
B04 -	Max P						(3a)	HOOP	0	71
	Max P	0	0		4.08	5.10	(18)	SUST	0	71
	Cold to T1	46	1070	3630	4.08	5.10	(17)	DISP	6	147
B04 +	Max P						(3a)	HOOP	0	71
	Max P	0	0		4.08	5.10	(18)	SUST	0	71
	Cold to T1	46	1070	3630	4.08	5.10	(17)	DISP	6	147
B05 N-	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.00	1.00	(18)	SUST	0	71
	Cold to T1	2329	41	3630	1.00	1.00	(17)	DISP	4	147
B05 N+	Max P						(3a)	HOOP	0	71
	Max P	0	0		5.17	4.31	(18)	SUST	0	71
	Cold to T1	2329	41	3630	5.17	4.31	(17)	DISP	11	147
B05 F-	Max P						(3a)	HOOP	0	71
	Max P	0	0		5.17	4.31	(18)	SUST	0	71
	Cold to T1	5603	3619	30	5.17	4.31	(17)	DISP	28	147
B05 F+	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.00	1.00	(18)	SUST	0	71
	Cold to T1	6521	1403	30	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	6890	1900	30	1.00	1.00	(17)	DISP	6	147
B07 -	Max P						(3a)	HOOP	0	71
	Max P	0	0		4.08	5.10	(18)	SUST	0	71
	Cold to T1	3525	6241	30	4.08	5.10	(17)	DISP	30	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.
B07 +	Max P						(3a)	HOOP	0	71
	Max P	0	0		4.08	5.10	(18)	SUST	0	71
	Cold to T1	3525	6241	30	4.08	5.10	(17)	DISP	30	147
B08 N-	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.00	1.00	(18)	SUST	0	71
	Cold to T1	7104	2188	30	1.00	1.00	(17)	DISP	6	147
B08 N+	Max P						(3a)	HOOP	0	71
	Max P	0	0		5.17	4.31	(18)	SUST	0	71
	Cold to T1	4985	5514	30	5.17	4.31	(17)	DISP	30	147
B08 F-	Max P						(3a)	HOOP	0	71
	Max P	0	0		5.17	4.31	(18)	SUST	0	71
	Cold to T1	1866	14	5530	5.17	4.31	(17)	DISP	9	147
B08 F+	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.00	1.00	(18)	SUST	0	71
	Cold to T1	1866	14	5530	1.00	1.00	(17)	DISP	5	147
B09 N-	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.00	1.00	(18)	SUST	0	71
	Cold to T1	478	7	5530	1.00	1.00	(17)	DISP	5	147
B09 N+	Max P						(3a)	HOOP	0	71
	Max P	0	0		5.17	4.31	(18)	SUST	0	71
	Cold to T1	7	478	5530	5.17	4.31	(17)	DISP	5	147
B09 F-	Max P						(3a)	HOOP	0	71
	Max P	0	0		5.17	4.31	(18)	SUST	0	71
	Cold to T1	37	2317	3749	5.17	4.31	(17)	DISP	9	147
B09 F+	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.00	1.00	(18)	SUST	0	71
	Cold to T1	2317	37	3749	1.00	1.00	(17)	DISP	4	147
B10 N-	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.00	1.00	(18)	SUST	0	71
	Cold to T1	2486	132	3749	1.00	1.00	(17)	DISP	4	147
B10 N+	Max P						(3a)	HOOP	0	71
	Max P	0	0		5.17	4.31	(18)	SUST	0	71
	Cold to T1	2486	132	3749	5.17	4.31	(17)	DISP	11	147
B10 F-	Max P						(3a)	HOOP	0	71
	Max P	0	0		5.17	4.31	(18)	SUST	0	71
	Cold to T1	5636	3686	195	5.17	4.31	(17)	DISP	28	147
B10 F+	Max P						(3a)	HOOP	0	71
	Max P	0	0		1.00	1.00	(18)	SUST	0	71
	Cold to T1	5636	3686	195	1.00	1.00	(17)	DISP	6	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.
B11	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	5266	3189	195	1.00	1.00	(17) DISP	5	147
B12	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	4897	2692	195	1.00	1.00	(17) DISP	5	147
B13	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	4527	2194	195	1.00	1.00	(17) DISP	4	147
B14 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	4198	1752	195	1.00	1.00	(17) DISP	4	147
B14 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		5.17	4.31	(18) SUST	0	71
	Cold to T1	3843	2434	195	5.17	4.31	(17) DISP	19	147
B14 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		5.17	4.31	(18) SUST	0	71
	Cold to T1	3713	2300	818	5.17	4.31	(17) DISP	18	147
B14 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	3713	2300	818	1.00	1.00	(17) DISP	4	147
B15 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	1428	2295	818	1.00	1.00	(17) DISP	2	147
B15 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		5.17	4.31	(18) SUST	0	71
	Cold to T1	1428	2295	818	5.17	4.31	(17) DISP	11	147
B15 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		5.17	4.31	(18) SUST	0	71
	Cold to T1	1299	2428	197	5.17	4.31	(17) DISP	11	147
B15 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	2733	329	197	1.00	1.00	(17) DISP	2	147
B16	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	2364	826	197	1.00	1.00	(17) DISP	2	147
B17	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	1994	1323	197	1.00	1.00	(17) DISP	2	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.
B18 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	1873	1487	197	1.00	1.00	(17) DISP	2	147
B18 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		5.17	4.31	(18) SUST	0	71
	Cold to T1	2325	556	197	5.17	4.31	(17) DISP	10	147
B18 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		5.17	4.31	(18) SUST	0	71
	Cold to T1	887	120	633	5.17	4.31	(17) DISP	4	147
B18 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	887	120	633	1.00	1.00	(17) DISP	1	147
B19 N-	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	1461	106	633	1.00	1.00	(17) DISP	1	147
B19 N+	Max P						(3a) HOOP	0	71
	Max P	0	0		5.17	4.31	(18) SUST	0	71
	Cold to T1	106	1461	633	5.17	4.31	(17) DISP	5	147
B19 F-	Max P						(3a) HOOP	0	71
	Max P	0	0		5.17	4.31	(18) SUST	0	71
	Cold to T1	75	2943	343	5.17	4.31	(17) DISP	11	147
B19 F+	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	2943	75	343	1.00	1.00	(17) DISP	3	147
B20	Max P						(3a) HOOP	0	71
	Max P	0	0		1.00	1.00	(18) SUST	0	71
	Cold to T1	30387	467	343	1.00	1.00	(17) DISP	26	147
***	Segment B end	***	Line # 79319815						
***	Segment C begin	***	Line # 79319815						
***	Segment C end	***	Line # 79319815						
***	Segment D begin	***	Line # 79319815						
B07	Max P						(3a) HOOP	0	71
	Max P	0	0		4.08	5.10	(18) SUST	0	71
	Cold to T1	0	0	0	4.08	5.10	(17) DISP	0	147
D01	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 D end	***	Line # 79319815						

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

Maximum displacements (mm)

Maximum X :	-42.132	Point : B13	Load Comb.: T1
Maximum Y :	-19.898	Point : B12	Load Comb.: T1
Maximum Z :	-250.931	Point : A04	Load Comb.: T1
Max. total:	251.063	Point : A04	Load Comb.: T1

Maximum rotations (deg)

Maximum X :	-0.287	Point : B09 F	Load Comb.: T1
Maximum Y :	0.577	Point : B09 F	Load Comb.: T1
Maximum Z :	0.190	Point : B08 N	Load Comb.: T1
Max. total:	0.647	Point : B09 F	Load Comb.: T1

Maximum restraint forces (N)

Maximum X :	747	Point : A11 F	Load Comb.: T1
Maximum Y :	672	Point : A01 N	Load Comb.: T1
Maximum Z :	-4195	Point : B20	Load Comb.: T1
Max. total:	4196	Point : B20	Load Comb.: T1

Maximum restraint moments (Nm)

Maximum X :	-1232	Point : A11 F	Load Comb.: T1
Maximum Y :	-30387	Point : B20	Load Comb.: T1
Maximum Z :	776	Point : A11 F	Load Comb.: T1
Max. total:	30392	Point : B20	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 :	747	Point : A07 N	Load Comb.: T1
Maximum Y :	-672	Point : A01 N	Load Comb.: T1
Maximum Z :	-4195	Point : A06	Load Comb.: T1
Max. total:	4196	Point : A06	Load Comb.: T1

Maximum pipe moments (Nm)

Maximum X :	-3749	Point : B09 F	Load Comb.: T1
Maximum Y :	-30387	Point : B20	Load Comb.: T1
Maximum Z :	-954	Point : A06	Load Comb.: T1
Max. total:	30392	Point : B20	Load Comb.: T1

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

Maximum displacement stress

Point : B08 N
Stress N/mm2 : 30
Allowable N/mm2 : 147
Ratio : 0.20
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	:	B08 N
Stress	N/mm2	: 30
Allowable	N/mm2	: 147
Ratio	:	0.20
Load combination	:	Cold to T1

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