

 <b>SNAM RETE GAS</b>	<b>PROGETTISTA</b> 	<b>COMMESSA</b> <b>NR/13167</b>	<b>COD.TECNICO</b> <b>16153</b>
	<b>LOCALITA'</b> <b>REGIONE PUGLIA</b>	<b>RE-MEC-613</b>	
	<b>PROGETTO/IMPIANTO</b> <b>Metanodotto: INTERCONNESSIONE TAP DN1400 (56")</b> <b>DP 75 bar</b>	Pagina 1 di 21	<b>Rev.</b> <b>1</b>

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**METANODOTTO:**  
**INTERCONNESSIONE TAP DN 1400(56"), DP 75 bar**  
**IMPIANTO DI BRINDISI (LOC. MASS.MATAGIOLA)**

**RELAZIONE DI CALCOLO STRESS ANALYSIS**

1	Emissione per appalto	A.PIERRO	M.BEGINI	H.D. AIUDI F. FERRINI	23/06/17
0	Emissione per commenti	A.PIERRO	M.BEGINI	H.D. AIUDI F. FERRINI	05/05/17
<b>Rev.</b>	<b>Descrizione</b>	<b>Elaborato</b>	<b>Verificato</b>	<b>Approvato Autorizzato</b>	<b>Data</b>

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## 1. GENERALE

### 1.1. Introduzione

La relazione di stress analysis cui si riferisce il presente documento, rientra nell'ambito del progetto "Interconnessione TAP" per l'ampliamento dell'impianto di Brindisi, in località Masseria Matagiola.

### 1.2. Scopo

Scopo della relazione è la verifica delle sollecitazioni a stress dei componenti meccanici (tubazioni, fittings, valvole) all'interno dell'impianto di Matagiola. Nel caso i componenti meccanici non verificassero, verranno rieseguiti i calcoli in seguito ad apposite azioni correttive.

La verifica è stata eseguita con il programma di calcolo Caesar II sulla base delle indicazioni riportate nella ASME B31.8 "Gas Transmission and Distribution Piping Systems".

### 1.3. Abbreviazioni

ANSI	American National Standard Institute
API	American Petroleum Institute
ASME	American Society of Mechanical Engineers

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## 2. DOCUMENTI DI RIFERIMENTO

### 2.1. Documenti di progetto

/1/ IPR01-URS-000-Q-TRG-0001 Studio geotecnico e geofisico nell'area del Terminale di Ricezione del Gasdotto

#### Documentazione meccanica

/2/ 13167-MEC-604 Montaggio tubazioni  
 /3/ 13167-MEC-611 Schizzi assonometrici  
 /4/ 13167-SPC-MEC-609 Specifica di linea

Altri documenti di riferimento sono individuabili all'interno dei file sopracitati.

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## 2.2. Normativa di riferimento

### LEGGI

Decreto Ministeriale 17/04/2008: Regola tecnica per la progettazione, costruzione, collaudo, esercizio e sorveglianza delle opere e degli impianti di trasporto di gas naturale con densità non superiore a 0.8.

### ANSI/ASME

ASME B31.8                      Gas transmission and distribution piping system

### API

API 5L                              Specification for line pipe

### GASD

A.05.70.01                      Trappola bidirezionale (Tipo B)

A.02.23.xx                      Valvole a sfera

A.02.13.xx                      Valvole a rubinetto

A.03.01.xx                      Fittings (Curve, tee, ecc)

A.04.01.01                      Flange

A.01.01.xx                      Tubi di acciaio per gasdotti

A.01.20.01.03                  Curve di acciaio per gasdotti - Raggio di curvatura R=7D

C.04.01.00                      Manuale di progettazione gasdotti

Altre specifiche Snam Rete Gas e documentazione contrattuale.

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### 3. DATI BASE

#### 3.1. Temperatura e pressione di calcolo

I calcoli di stress analysis sono stati effettuati utilizzando le seguenti condizioni di pressione e temperatura di progetto:

- Temperatura di progetto: 60°C
- Temperatura di installazione: 15°C
- $\Delta T$  (progetto – installazione): 45°C
- Pressione di progetto: 75 bar
- Pressione di prova idraulica degli impianti concentrati: 124.7bar

#### 3.2. Caratteristiche meccaniche tubazioni

Nell'impianto in progetto si possono individuare tubazioni di diversi diametri. In questo paragrafo saranno descritte le proprietà meccaniche di queste tubazioni.

DN		Spessore (mm)	Materiale	Lim. Snerv. (MPa)	Lim. Rottura (MPa)
(in)	(mm)				
56"	1400	21.8	L450 NB/MB	450	535
42"	1050	16.6	L450 NB/MB	450	535
26"	660	11.1	L415 NB/MB	415	520
24"	600	11.1	L415 NB/MB	415	520
20"	500	11.1	L415 NB/MB	415	520
16"	400	11.1	L360 NB/MB	360	460
12"	300	9.5	L360 NB/MB	360	460
8"	200	7.0	L360 NB/MB	360	460
6"	150	7.1	L360 NB/MB	360	460
4"	100	5.2	L360 NB/MB	360	460

Tab. 3.2.1 – Caratteristiche meccaniche tubazioni in progetto

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### 3.3. Coefficienti di attrito

Per i coefficienti di attrito sono stati assunti i seguenti valori:

- Metallo – Neoprene 0,35
- Metallo – Cemento 0,45
- Metallo – Teflon 0,10
- Metallo – Terreno 0,50

### 3.4. Caratteristiche del suolo

Dalla relazione generale sulle indagini geognostiche /1/, sono stati ricavati i parametri geotecnici del terreno relativi all'impianto in oggetto.

Tali parametri sono stati impiegati per determinare le caratteristiche di resistenza del terreno (rigidezza e carico ultimo), necessarie per procedere alla stress analysis.

Per la modellazione del terreno si è utilizzato il "Caesar II Basic Model" basato sulle teorie di Peng. I valori inseriti nel modello sono stati presi come media di quelli ottenuti dai sondaggi geologici nella zona del terminale.

#### 3.4.1 Impianto in località Masseria Matagiola: Soil model N°2

Parametri geotecnici: Soil model N°2		
Peso specifico	kg/m <sup>3</sup>	1950
Angolo di attrito interno	gradi	32.5
Coesione non drenata (Cu)	kg/cm <sup>2</sup>	0,00
Profondità min. di interrimento del tubo	mm	2089

Tab. 3.4.1 – Soil model N°2: caratteristiche geotecniche del terreno

La profondità minima di interrimento si riferisce alla distanza dalla quota 0.00 impianto al top of pipe.

Caratteristiche di resistenza: Soil model N°2			
Resistenza longitudinale		Resistenza trasversale	
Rigidezza N/mm/mm	Carico ultimo N/mm	Rigidezza N/mm/mm	Carico ultimo N/mm
1.15	55	36	1800

Tab. 3.4.2 – Soil model N°2: caratteristiche di resistenza del terreno

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## 4. METODOLOGIA

### 4.1. Criteri generali di stress analysis

La verifica è stata effettuata mediante l'impiego del software di stress analysis CAESAR II (COADE-USA), in accordo alla norma ASME B31.8, ed ha incluso l'analisi dei carichi, il calcolo delle sollecitazioni e delle deformazioni sulla condotta per temperatura e pressione di progetto ed il loro confronto con i valori ammissibili. In particolare, l'analisi è stata condotta attraverso le seguenti fasi:

- calcolo degli spostamenti della tubazione in corrispondenza delle sezioni più critiche;
- calcolo delle sollecitazioni lungo il metanodotto;
- confronto delle sollecitazioni calcolate con i valori ammissibili, ed implementazioni delle eventuali azioni correttive (se necessario)
- rifacimento del calcolo con l'implementazioni delle eventuali azioni correttive (se necessario)

Secondo quanto prescritto dalla normativa ASME B.31.8, l'analisi delle sollecitazioni e deformazioni è stata eseguita considerando le seguenti condizioni di carico:

- espansione termica (T) in cui si considera l'effetto della differenza tra la temperatura di progetto e quella di posa;
- condizione di test idraulico (WW+HP) in cui si considera l'effetto combinato del peso della condotta e della pressione di test idraulico;
- condizione operativa (T+P+W) in cui si considera l'effetto combinato della espansione termica, della pressione di progetto e del peso della condotta e del suo contenuto;
- carico esercitato sulla condotta dalla pressione di progetto e dal peso della condotta e del suo contenuto (P+W).

Un'ulteriore verifica ha riguardato il valore dello stress (3D max intensity) calcolato secondo il metodo di Tresca. Tale sollecitazione è stata confrontata, per ciascuno dei tre casi in oggetto di verifica, con il limite di snervamento dell'acciaio, dovendo risultare inferiore al 90% di quest'ultimo al fine di garantire l'integrità strutturale della condotta.

### 4.2. Verifica tenuta degli accoppiamenti flangiati

Il software Caesar II permette la verifica di tenuta degli accoppiamenti flangiati. Tale verifica viene realizzata con il metodo della pressione equivalente di Kellog. L'equazione di verifica è la seguente:

$$P_{eq} = \frac{16M}{\pi G^3} + \frac{4F}{\pi G^2} + P_D \leq \textit{Pressure rating della flangia}$$



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dove  $P_{eq}$  è la pressione equivalente di Kellog,  $M$  è il momento flettente agente sulla flangia,  $F$  è la forza assiale agente sulla flangia,  $P_D$  è la pressione di progetto e  $G$  è il diametro effettivo di reazione della guarnizione.

Nel caso in cui il software restituisca valori non accettabili col metodo di Kellog, verrà realizzata una verifica più accurata tramite la metodologia proposta nell'ASME VIII Div.1 ed implementata in un apposito modulo di Caesar II.

### 4.3. Modellazione Tie-in

Per modellare correttamente un tie-in in Caesar II è necessario modellare la rigidità della linea a cui ci si connette.

Per ottenere una modellazione più realistica possibile è stata inserita, dopo di ogni tie-in, un porzione di tubazione impiantistica esistente. Al termine di ogni sezione esistente è stato posto un punto fisso che serve a simulare la rigidità della tubazione a valle.

Allo stesso modo un punto fisso è stato inserito al termine del tratto di Metanodotto Interconnessione TAP interno all'area impiantistica in esame, così da modellare la rigidità della tubazione completa.

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## 5. STRESS ANALYSIS

### 5.1. Modello di calcolo

Il modello di calcolo assunto definisce l'entità delle sollecitazioni e degli spostamenti cui sono sottoposte le tubazioni all'interno dell'impianto di Matagiola (BR).

Per la visualizzazione del modello si rimanda alle Fig. 5.1.1, Fig. 5.1.2 e Fig. 5.1.3.

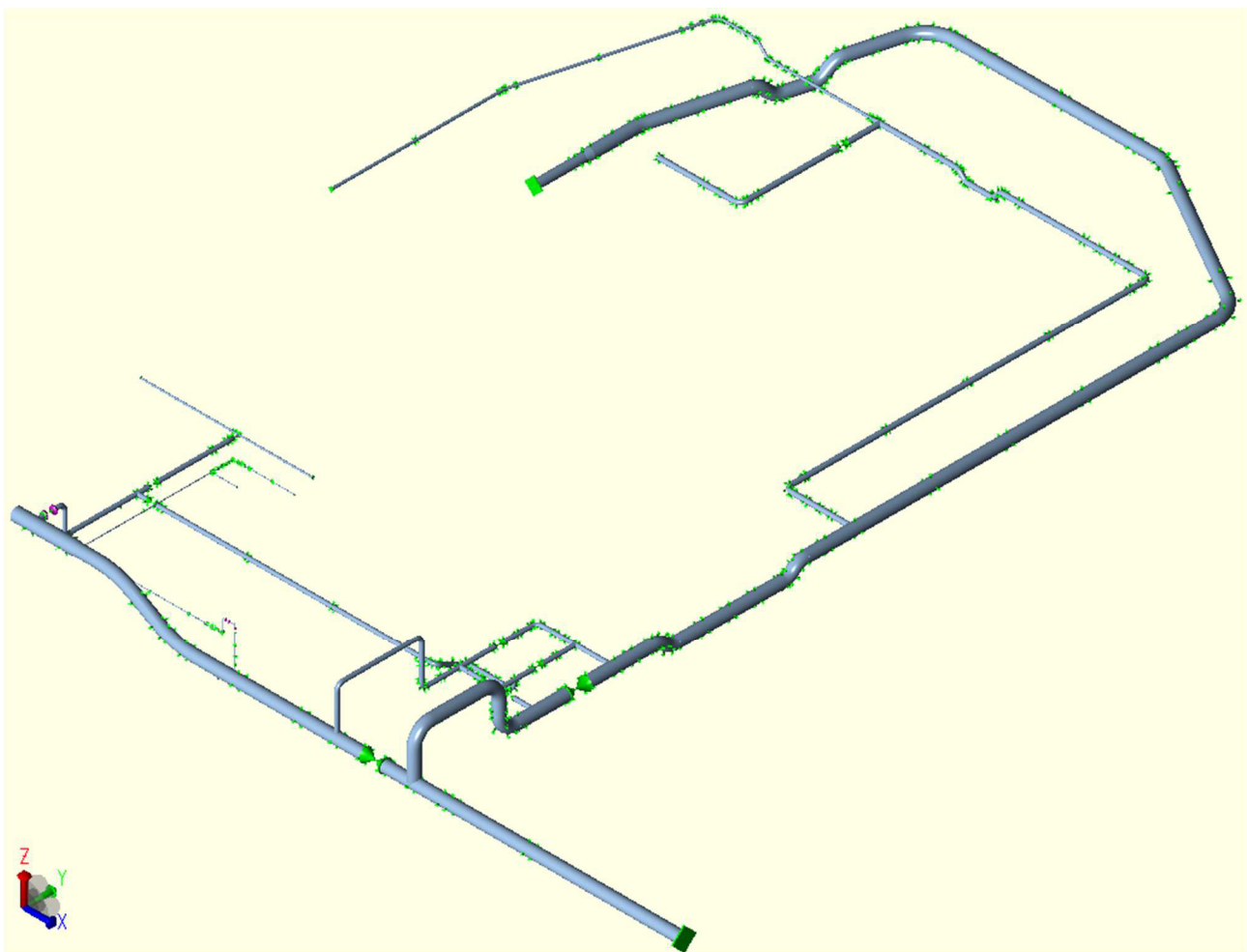


Fig. 5.1.1 – Impianto di Matagiola: modello di calcolo completo

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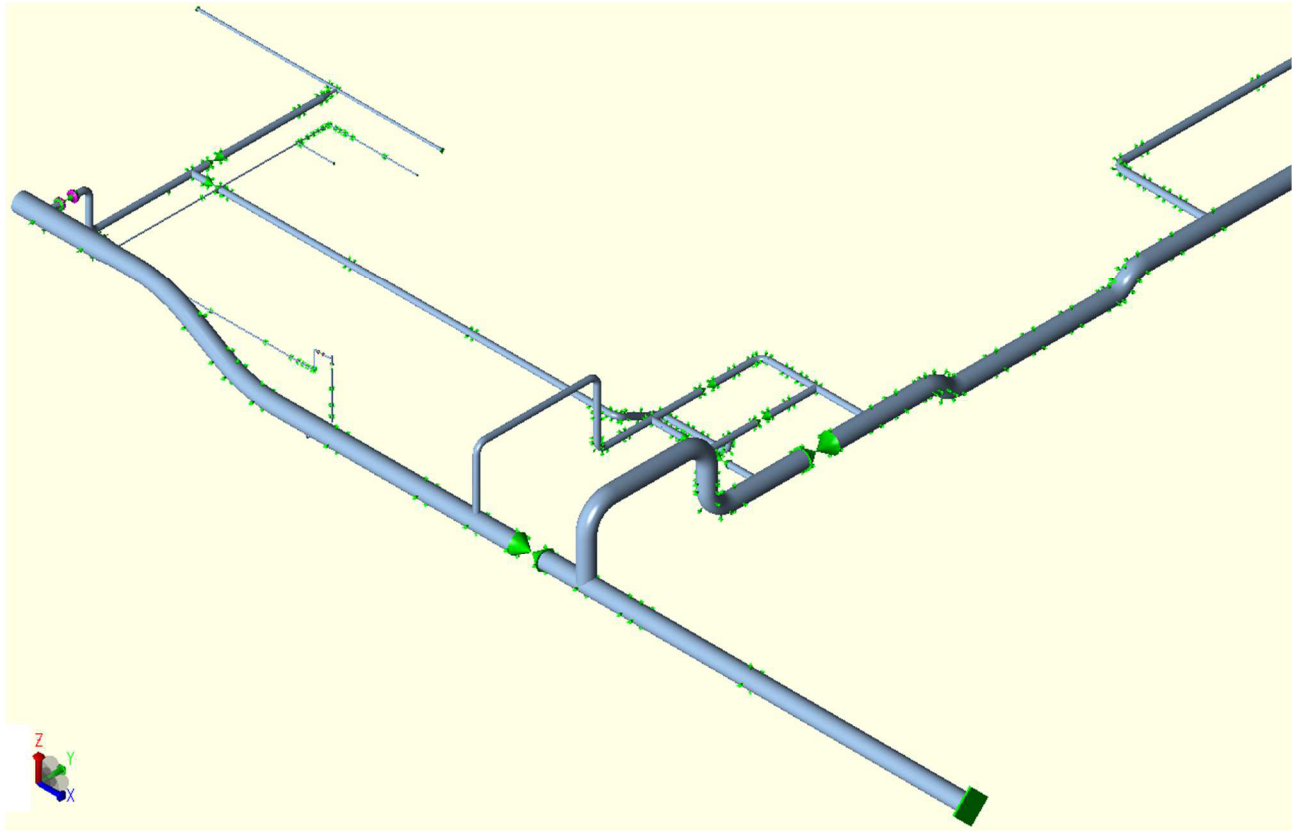
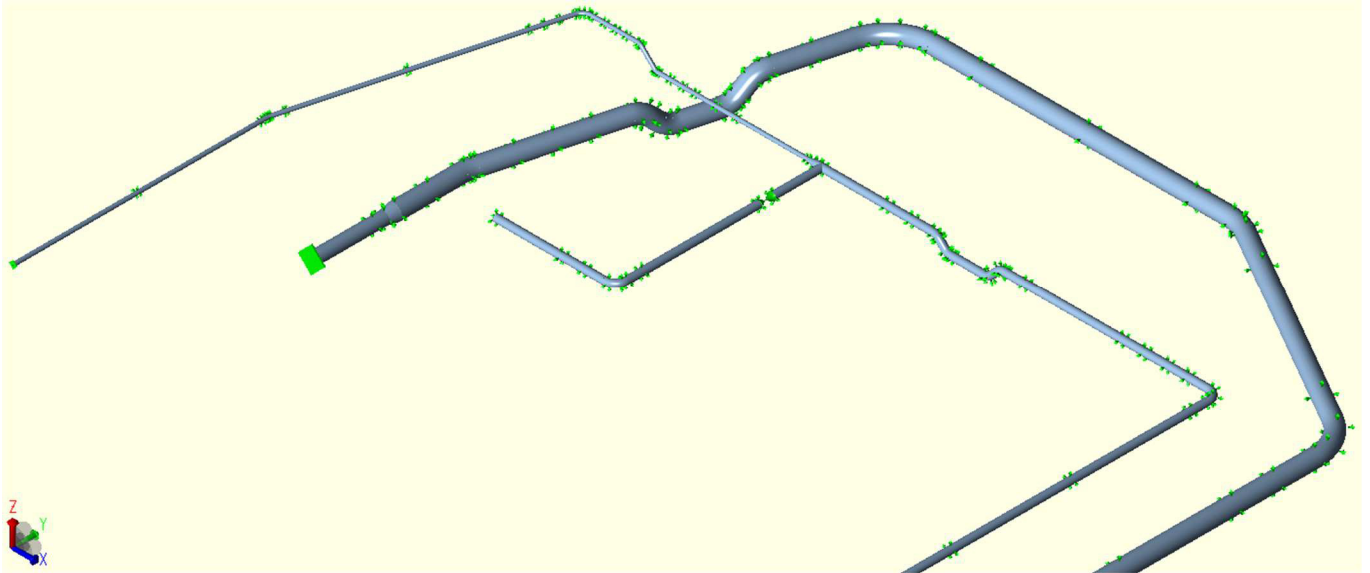


Fig. 5.1.2 – Impianto di Matagiola: dettaglio zona trappola e tie-in 04/05

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*Fig. 5.1.3 – impianto di Matagiola: dettaglio zona tie-in 01/02/03*

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## 5.2. Definizione "LOAD CASES"

Sono stati analizzati i seguenti "LOAD CASES":

- L1 (HYD) WW+HP (test idrostatico);
- L2 (OPE) W+T1+P1 (condizione operativa);
- L3 (SUS) W+P1 (condizione sostenuta);
- L4 (EXP) L2–L3 (condizione di espansione termica);

Dove:

WW = peso della tubazione piena d'acqua;  
 HP = pressione idrostatica;  
 W = peso della tubazione;  
 T1 = temperatura di progetto;  
 P1 = pressione di progetto;

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### 5.3. Risultati

#### 5.3.1 Analisi delle sollecitazioni

Di seguito sono riportate le sollecitazioni massime (o stress massimi) calcolate per ognuna delle condizioni di carico indicate al paragrafo 5.2 e prescritte dalla ASME B31.8.

```

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CODE COMPLIANCE REPORT: Code Stresses on Elements
CASE 1 (HYD) WW+HP
LOAD CASE DEFINITION KEY

CASE 1 (HYD) WW+HP

Piping Code: B31.8      = B31.8 -2014, Sep 30, 2014

*** CODE COMPLIANCE EVALUATION PASSED ***

Highest Stresses: (   KPa   )
Ratio (%):                90.8      @Node   400  LOADCASE: 1 (HYD) WW+HP
Code Stress:              406705.1  Allowable Stress:  448159.2
Axial Stress:             121165.7  @Node   350  LOADCASE: 1 (HYD) WW+HP
Bending Stress:          137578.4  @Node  1950  LOADCASE: 1 (HYD) WW+HP
Torsion Stress:           0.0       @Node    50  LOADCASE: 1 (HYD) WW+HP
Hoop Stress:              406705.1  @Node   350  LOADCASE: 1 (HYD) WW+HP

```

Fig. 5.3.1 – Stress massimi caso test idrostatico (HYD)

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CODE COMPLIANCE REPORT: Code Stresses on Elements

CASE 2 (OPE) W+T1+P1

LOAD CASE DEFINITION KEY

CASE 2 (OPE) W+T1+P1

Piping Code: B31.8 = B31.8 -2014, Sep 30, 2014

\*\*\* CODE COMPLIANCE EVALUATION PASSED \*\*\*

Highest Stresses: ( KPa )

Ratio (%):	98.9	@Node	1950	LOADCASE: 2 (OPE) W+T1+P1
Code Stress:	368151.9	Allowable Stress:	372316.9	
Axial Stress:	94100.1	@Node	8900	LOADCASE: 2 (OPE) W+T1+P1
Bending Stress:	326930.3	@Node	1950	LOADCASE: 2 (OPE) W+T1+P1
Torsion Stress:	0.0	@Node	50	LOADCASE: 2 (OPE) W+T1+P1
Hoop Stress:	244610.1	@Node	350	LOADCASE: 2 (OPE) W+T1+P1

Fig. 5.3.2 – Stress massimi condizione operativa (OPE)

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	<b>LOCALITA'</b> <b>REGIONE PUGLIA</b>	<b>RE-MEC-613</b>	
	<b>PROGETTO/IMPIANTO</b> <b>Metanodotto: INTERCONNESSIONE TAP DN1400 (56")</b> <b>DP 75 bar</b>	Pagina 16 di 21	<b>Rev.</b> <b>1</b>

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 CODE COMPLIANCE REPORT: Code Stresses on Elements  
 CASE 3 (SUS) W+P1  
 LOAD CASE DEFINITION KEY

CASE 3 (SUS) W+P1

Piping Code: B31.8 = B31.8 -2014, Sep 30, 2014

\*\*\* CODE COMPLIANCE EVALUATION PASSED \*\*\*

Highest Stresses: ( KPa )			
Ratio (%):	60.6	@Node 400	LOADCASE: 3 (SUS) W+P1
Code Stress:	244610.1	Allowable Stress:	403343.3
Axial Stress:	73121.8	@Node 1548	LOADCASE: 3 (SUS) W+P1
Bending Stress:	84517.8	@Node 1950	LOADCASE: 3 (SUS) W+P1
Torsion Stress:	0.0	@Node 50	LOADCASE: 3 (SUS) W+P1
Hoop Stress:	244610.1	@Node 350	LOADCASE: 3 (SUS) W+P1

Fig. 5.3.3 – Stress massimi condizione sostenuta (SUS)



 <b>SNAM RETE GAS</b>	<b>PROGETTISTA</b> 	<b>COMMESSA</b> <b>NR/13167</b>	<b>COD.TECNICO</b> <b>16153</b>
	<b>LOCALITA'</b> <b>REGIONE PUGLIA</b>	<b>RE-MEC-613</b>	
	<b>PROGETTO/IMPIANTO</b> <b>Metanodotto: INTERCONNESSIONE TAP DN1400 (56")</b> <b>DP 75 bar</b>	Pagina 17 di 21	<b>Rev.</b> <b>1</b>

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 CODE COMPLIANCE REPORT: Code Stresses on Elements  
 CASE 4 (EXP) L4=L2-L3  
 LOAD CASE DEFINITION KEY

CASE 4 (EXP) L4=L2-L3

Piping Code: B31.8 = B31.8 -2014, Sep 30, 2014

\*\*\* NO CODE COMPLIANCE EVALUATION DONE \*\*\*

Highest Stresses: ( KPa )			
Ratio:			""
Code Stress:	0.0	Allowable Stress:	0.0
Axial Stress:	107643.5	@Node 8900	LOADCASE: 4 (EXP) L4=L2-L3
Bending Stress:	323255.4	@Node 1950	LOADCASE: 4 (EXP) L4=L2-L3
Torsion Stress:	103471.4	@Node 100	LOADCASE: 4 (EXP) L4=L2-L3
Hoop Stress:	0.0	@Node 50	LOADCASE: 4 (EXP) L4=L2-L3

Fig. 5.3.4 – Stress massimi condizione di espansione termica (EXP)

Da notare che il caso di espansione termica (EXP) per una tubazione interrata, considerata in condizione "restrained", non è previsto dalla normativa ASME B31.8. Il caso è stato comunque analizzato per completezza.

 <b>SNAM RETE GAS</b>	<b>PROGETTISTA</b> 	<b>COMMESSA</b> <b>NR/13167</b>	<b>COD.TECNICO</b> <b>16153</b>
	<b>LOCALITA'</b> <b>REGIONE PUGLIA</b>	<b>RE-MEC-613</b>	
	<b>PROGETTO/IMPIANTO</b> <b>Metanodotto: INTERCONNESSIONE TAP DN1400 (56")</b> <b>DP 75 bar</b>	Pagina 18 di 21	<b>Rev.</b> <b>1</b>

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### 5.3.2 Analisi degli spostamenti

Nella Tab. 5.3.1 sono indicati gli spostamenti calcolati in corrispondenza della trappola e nei punti di connessione con l'impianto esistente. Per il sistema di riferimento utilizzato per le aree in analisi si rimanda alla **Errore. L'origine riferimento non è stata trovata.**

Elemento	Spostamenti (mm)			
	$\Delta x$	$\Delta y$	$\Delta z$	$\Delta S$
Trappola	-51.234	0.051	7.119	<b>51.71</b>
TIE-IN 01	-0.039	1.482	-0.026	<b>1.483</b>
TIE-IN 02	-7.671	0.307	0.000	<b>7.675</b>
TIE-IN 03	0.014	6.091	0.000	<b>6.090</b>
TIE-IN 04	-0.103	0.161	-0.004	<b>0.195</b>
TIE-IN 05	-0.741	3.197	0.000	<b>3.276</b>

Tab. 5.3.1 – Spostamenti calcolati

Gli spostamenti calcolati risultano accettabili.

### 5.3.3 Analisi delle forze

Nella Tab. 5.3.2 sono indicate le forze che si generano in corrispondenza dei tie-in.

Elemento	$F_x$ [N]	$F_y$ [N]	$F_z$ [N]	$M_x$ [N*m]	$M_y$ [N*m]	$M_z$ [N*m]
TIE-IN 01	-8838/HYD	4453/OPE	-4387/OPE	0	0	0
TIE-IN 02	-14613/OPE	47839/OPE	33/OPE	0	0	0
TIE-IN 03	3503/OPE	13384/OPE	17/OPE	0	0	0
TIE-IN 04	-168/OPE	39932/OPE	-875/OPE	0	0	0
TIE-IN 05	4174/OPE	48017/OPE	-20/OPE	0	0	0

Tab. 5.3.2 – Forze calcolate in corrispondenza dei punti di consegna

 <b>SNAM RETE GAS</b>	<b>PROGETTISTA</b> 	<b>COMMESSA</b> <b>NR/13167</b>	<b>COD.TECNICO</b> <b>16153</b>
	<b>LOCALITA'</b> <b>REGIONE PUGLIA</b>	<b>RE-MEC-613</b>	
	<b>PROGETTO/IMPIANTO</b> <b>Metanodotto: INTERCONNESSIONE TAP DN1400 (56")</b> <b>DP 75 bar</b>	Pagina 19 di 21	<b>Rev.</b> <b>1</b>

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#### 5.3.4 *Verifica tenuta degli accoppiamenti flangiati*

La tenuta delle flange è stata verificata in accordo alla metodologia indicata al paragrafo 4.2.

Tutti gli accoppiamenti flangiati danno risultati inferiori rispetto al valore ammissibile, come riassunto nell' "Allegato 1".

#### 5.4. **Analisi dei risultati**

Le sollecitazioni calcolate non risultano eccedere i valori ammissibili, e gli spostamenti calcolati non risultano eccessivamente ampi.

Una descrizione dettagliata dei dati di INPUT / OUTPUT è riportata nell' "Allegato 1".

 <b>SNAM RETE GAS</b>	<b>PROGETTISTA</b> 	<b>COMMESSA</b> <b>NR/13167</b>	<b>COD.TECNICO</b> <b>16153</b>
	<b>LOCALITA'</b> <b>REGIONE PUGLIA</b>	<b>RE-MEC-613</b>	
	<b>PROGETTO/IMPIANTO</b> <b>Metanodotto: INTERCONNESSIONE TAP DN1400 (56")</b> <b>DP 75 bar</b>	Pagina 20 di 21	<b>Rev.</b> <b>1</b>

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## 6. CONCLUSIONI

Dalla verifica delle sollecitazioni a stress dei componenti meccanici (tubazioni, fittings, valvole) dell'impianto di Brindisi, in località Masseria Matagiola, nell'ambito del progetto della condotta Trans Adriatic Pipeline, non sono state individuate evidenti criticità e pertanto si considera verificata la progettazione eseguita.

 <b>SNAM RETE GAS</b>	<b>PROGETTISTA</b> 	<b>COMMESSA</b> <b>NR/13167</b>	<b>COD.TECNICO</b> <b>16153</b>
	<b>LOCALITA'</b> <b>REGIONE PUGLIA</b>	<b>RE-MEC-613</b>	
	<b>PROGETTO/IMPIANTO</b> <b>Metanodotto: INTERCONNESSIONE TAP DN1400 (56")</b> <b>DP 75 bar</b>	Pagina 21 di 21	<b>Rev.</b> <b>1</b>

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## 7. ALLEGATO 1

Output di calcolo: Impianto di Brindisi in località Masseria Matagiola (SOLO FILE)

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Impianto di Brindisi - Loc. Mass. Matagiola  
Allegato 1

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LISTING OF STATIC LOAD CASES FOR THIS ANALYSIS

- 1 (HYD) WW+HP
- 2 (OPE) W+T1+P1
- 3 (SUS) W+P1
- 4 (EXP) L4=L2-L3

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Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1  
 INPUT LISTING

Job Description:

PROJECT:

CLIENT :

ANALYST:

NOTES :  
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#### PIPE DATA

-----  
 From 10 To 50 DX= 1,100.000 mm.

##### PIPE

Dia= 1,600.000 mm. Wall= 31.750 mm.

##### GENERAL

T1= 60 C P1= 7,500.0000 KPa PHyd=12,470.0000 KPa Mat= (306)API-5L X65

E= 205,463,760 KPa EH1= 200,913,216 KPa EH2= 203,444,560 KPa

EH3= 203,444,560 KPa EH4= 203,444,560 KPa EH5= 203,444,560 KPa

EH6= 203,444,560 KPa EH7= 203,444,560 KPa EH8= 203,444,560 KPa

EH9= 203,444,560 KPa v = .300 Pipe Den= .0078334 kg./cu.cm.

Fluid Den= .0000000 kg./cu.cm. Insul Thk= .000 mm.

##### ALLOWABLE STRESSES

B31.8 (2014) Restrained = ON Sh1= 448,159 KPa Sh2= 448,159 KPa

Sh3= 448,159 KPa Sh4= 448,159 KPa Sh5= 448,159 KPa Sh6= 448,159 KPa

Sh7= 448,159 KPa Sh8= 448,159 KPa Sh9= 448,159 KPa Sy= 448,159 KPa

-----  
 From 50 To 100 DX= 300.000 mm.

##### GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa

EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa

EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa

EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa

v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

-----  
 From 100 To 150 DX= 600.000 mm.

##### GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa

EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa

EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa

EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa

v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

-----  
 From 150 To 8000 DY= 1,441.400 mm.

##### PIPE

Dia= 508.000 mm. Wall= 11.100 mm.

##### GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa

EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa

EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa

EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa

v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.



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#### INPUT LISTING

Insul Thk= .000 mm.

#### ALLOWABLE STRESSES

B31.8 (2014) Restrained = --- Sh1= 413,685 KPa Sh2= 413,685 KPa  
 Sh3= 413,685 KPa Sh4= 413,685 KPa Sh5= 413,685 KPa Sh6= 413,685 KPa  
 Sh7= 413,685 KPa Sh8= 413,685 KPa Sh9= 413,685 KPa Sy= 413,685 KPa

-----  
 From 8000 To 8050 DY= 196.850 mm.

#### PIPE

Dia= 508.000 mm. Wall= 11.100 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Insul Thk= .000 mm.

RIGID Weight= 3,940.00 N.

-----  
 From 8050 To 8100 DY= 1,193.800 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

RIGID Weight=16,000.00 N.

#### FLANGES

Location= Both Method= Peq Class/Grade= ASME-2009-600-1.1  
 G/C= 566.380 mm. T/P table ( 1)= 37.8 C -> 10,204.2 KPa ( 2)= 93.3 C  
 -> 9,376.9 KPa ( 3)= 148.9 C -> 9,032.1 KPa ( 4)= 204.4 C  
 -> 8,721.9 KPa ( 5)= 260.0 C -> 8,308.2 KPa ( 6)= 315.6 C  
 -> 7,825.5 KPa ( 7)= 343.3 C -> 7,584.2 KPa ( 8)= 371.1 C  
 -> 7,308.4 KPa ( 9)= 398.9 C -> 6,998.2 KPa (10)= 426.7 C  
 -> 5,688.2 KPa (11)= 454.4 C -> 4,412.6 KPa (12)= 482.2 C  
 -> 3,171.6 KPa (13)= 510.0 C -> 1,896.1 KPa (14)= 537.8 C  
 -> 1,172.1 KPa

-----  
 From 150 To 200 DX= 200.000 mm.

#### PIPE

Dia= 1,600.000 mm. Wall= 31.750 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Insul Thk= .000 mm.

#### RESTRAINTS

Node 200 +Z Mu = .30  
 Node 200 Guide Mu = .30

-----  
 From 200 To 250 DX= 4,400.000 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa

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INPUT LISTING

EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

RESTRAINTS

Node 250 +Z Mu = .30  
 Node 250 Guide Mu = .30

ALLOWABLE STRESSES

B31.8 (2014) Restrained = --- Sh1= 448,159 KPa Sh2= 448,159 KPa  
 Sh3= 448,159 KPa Sh4= 448,159 KPa Sh5= 448,159 KPa Sh6= 448,159 KPa  
 Sh7= 448,159 KPa Sh8= 448,159 KPa Sh9= 448,159 KPa Sy= 448,159 KPa

-----  
 From 250 To 300 DX= 1,000.000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

-----  
 From 300 To 350 DX= 900.000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

REDUCER

Diam2= 1,422.000 mm. Wall2= 21.800 mm.

-----  
 From 350 To 400 DX= 1,300.000 mm.

PIPE

Dia= 1,422.000 mm. Wall= 21.800 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Insul Thk= .000 mm.

-----  
 From 400 To 450 DX= 3,267.200 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

BEND at "TO" end

Radius= 9,954.000 mm. (user) Bend Angle= 30.000 Angle/Node @1= 15.00 449  
 Angle/Node @2= .00 448

-----  
 From 450 To 500 DX= 2,814.600 mm. DZ= -1,625.000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa

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#### INPUT LISTING

EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

-----  
 From 500 To 501 DX= 2,539.854 mm. DY= .000 mm. DZ= -1,466.398 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 500 X2 K= 16,858 N./cm. Yield K= 1 N./cm.  
 Yield Force= 88,785 N. Dir Vec= .8660 .0000 -.5000  
 Node 500 Y2 K= 872,294 N./cm. Yield K= 1 N./cm.  
 Yield Force= 4,593,935 N.  
 Node 500 X2 K= 872,294 N./cm. Yield K= 1 N./cm.  
 Yield Force= 4,593,935 N. Dir Vec= .5000 .0000 .8660

-----  
 From 501 To 502 DX= 1,134.905 mm. DY= .000 mm. DZ= -655.243 mm.

#### BEND at "TO" end

Radius= 9,954.000 mm. (user) Bend Angle= 15.000

#### RESTRAINTS

Node 501 X2 K= 31,838 N./cm. Yield K= 1 N./cm.  
 Yield Force= 167,676 N. Dir Vec= .8660 .0000 -.5000  
 Node 501 Y2 K= 1,647,385 N./cm. Yield K= 1 N./cm.  
 Yield Force= 8,675,954 N.  
 Node 501 X2 K= 1,647,385 N./cm. Yield K= 1 N./cm.  
 Yield Force= 8,675,954 N. Dir Vec= .5000 .0000 .8660

-----  
 From 502 To 550 DX= 2,531.649 mm. DY= .000 mm. DZ= -678.358 mm.

#### BEND at "TO" end

Radius= 9,954.000 mm. (user) Bend Angle= 15.000

#### RESTRAINTS

Node 502 X2 K= 29,960 N./cm. Yield K= 1 N./cm.  
 Yield Force= 157,782 N. Dir Vec= .9659 .0000 -.2588  
 Node 502 Y2 K= 1,550,183 N./cm. Yield K= 1 N./cm.  
 Yield Force= 8,164,039 N.  
 Node 502 X2 K= 1,550,183 N./cm. Yield K= 1 N./cm.  
 Yield Force= 8,164,039 N. Dir Vec= .2588 .0000 .9659

-----  
 From 550 To 569 DX= 2,010.246 mm. DY= .000 mm. DZ= .000 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 550 X2 K= 30,558 N./cm. Yield K= 1 N./cm.  
 Yield Force= 160,932 N.

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Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1

#### INPUT LISTING

Node 550 Y2 K= 1,581,129 N./cm. Yield K= 1 N./cm.  
 Yield Force= 8,327,018 N.  
 Node 550 Z2 K= 1,581,129 N./cm. Yield K= 1 N./cm.  
 Yield Force= 8,327,018 N.

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 From 569 To 570 DX= 2,010.246 mm. DY= .000 mm. DZ= .000 mm.  
 SIF's & TEE's

Node 570 Welding Tee Use Notes 6,9,10 = ---

-----  
 From 570 To 575 DX= .000 mm. DY= .000 mm. DZ= -768.000 mm.  
 PIPE

Dia= 168.275 mm. Wall= 7.100 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Thk= .000 mm.  
 Insul Den= .0000000 kg./cu.cm. Clad Den= .0000000 kg./cu.cm.  
 Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 570 Z2 K= 779 N./cm. Yield K= 1 N./cm. Yield Force= 2,637 N.  
 Node 570 X2 K= 146,858 N./cm. Yield K= 1 N./cm.  
 Yield Force= 497,249 N.  
 Node 570 Y2 K= 146,858 N./cm. Yield K= 1 N./cm.  
 Yield Force= 497,249 N.

#### ALLOWABLE STRESSES

B31.8 (2014) Restrained = --- Sh1= 358,527 KPa Sh2= 358,527 KPa  
 Sh3= 358,527 KPa Sh4= 358,527 KPa Sh5= 358,527 KPa Sh6= 358,527 KPa  
 Sh7= 358,527 KPa Sh8= 358,527 KPa Sh9= 358,527 KPa Sy= 358,527 KPa

-----  
 From 575 To 590 DX= .000 mm. DY= .000 mm. DZ= -140.000 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

#### REDUCER

Diam2= 114.300 mm. Wall2= 5.200 mm.

-----  
 From 590 To 591 DX= .000 mm. DY= .000 mm. DZ= -199.600 mm.

#### PIPE

Dia= 114.300 mm. Wall= 5.200 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Thk= .000 mm.  
 Insul Den= .0000000 kg./cu.cm. Clad Den= .0000000 kg./cu.cm.

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INPUT LISTING

Insul/Clad Unit Wt= .00 N./cm.

-----  
 From 591 To 592 DX= .000 mm. DY= .000 mm. DZ= -63.126 mm.

BEND at "TO" end

Radius= 152.400 mm. (LONG) Bend Angle= 45.000

-----  
 From 592 To 10500 DX= .000 mm. DY= 89.274 mm. DZ= -89.274 mm.

BEND at "TO" end

Radius= 152.400 mm. (LONG) Bend Angle= 45.000

-----  
 From 10500 To 10501 DX= .000 mm. DY= 449.409 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

-----  
 From 10501 To 10502 DX= .000 mm. DY= 386.283 mm. DZ= .000 mm.

-----  
 From 10502 To 10503 DX= .000 mm. DY= 450.069 mm. DZ= .000 mm.

-----  
 From 10503 To 10504 DX= .000 mm. DY= 386.283 mm. DZ= .000 mm.

-----  
 From 10504 To 10505 DX= .000 mm. DY= 386.283 mm. DZ= .000 mm.

-----  
 From 10505 To 10506 DX= .000 mm. DY= 63.126 mm. DZ= .000 mm.

BEND at "TO" end

Radius= 152.400 mm. (LONG) Bend Angle= 45.000

RESTRAINTS

Node 10505 Y2 K= 355 N./cm. Yield K= 1 N./cm. Yield Force= 1,173 N.  
 Node 10505 X2 K= 94,440 N./cm. Yield K= 1 N./cm.  
 Yield Force= 312,121 N.  
 Node 10505 Z2 K= 94,440 N./cm. Yield K= 1 N./cm.  
 Yield Force= 312,121 N.

-----  
 From 10506 To 10550 DX= .000 mm. DY= 89.274 mm. DZ= 89.274 mm.

BEND at "TO" end

Radius= 152.400 mm. (LONG) Bend Angle= 45.000

RESTRAINTS

Node 10506 X2 K= 168 N./cm. Yield K= 1 N./cm. Yield Force= 555 N.  
 Dir Vec= .0000 .7071 .7071  
 Node 10506 X2 K= 44,682 N./cm. Yield K= 1 N./cm.  
 Yield Force= 147,671 N.  
 Node 10506 X2 K= 44,682 N./cm. Yield K= 1 N./cm.  
 Yield Force= 147,671 N. Dir Vec= .0000 -.7071 .7071

-----  
 From 10550 To 10551 DX= .000 mm. DY= .000 mm. DZ= 449.409 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa

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#### INPUT LISTING

v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 10550 Z2 K= 355 N./cm. Yield K= 1 N./cm. Yield Force= 1,173 N.  
 Node 10550 X2 K= 94,440 N./cm. Yield K= 1 N./cm.  
 Yield Force= 312,121 N.  
 Node 10550 Y2 K= 94,440 N./cm. Yield K= 1 N./cm.  
 Yield Force= 312,121 N.

-----  
 From 10551 To 10552 DX= .000 mm. DY= .000 mm. DZ= 386.283 mm.

#### RESTRAINTS

Node 10551 Z2 K= 542 N./cm. Yield K= 1 N./cm. Yield Force= 1,791 N.  
 Node 10551 X2 K= 144,199 N./cm. Yield K= 1 N./cm.  
 Yield Force= 476,570 N.  
 Node 10551 Y2 K= 144,199 N./cm. Yield K= 1 N./cm.  
 Yield Force= 476,570 N.

-----  
 From 10552 To 10553 DX= .000 mm. DY= .000 mm. DZ= 386.283 mm.

#### RESTRAINTS

Node 10552 Z2 K= 542 N./cm. Yield K= 1 N./cm. Yield Force= 1,791 N.  
 Node 10552 X2 K= 144,199 N./cm. Yield K= 1 N./cm.  
 Yield Force= 476,570 N.  
 Node 10552 Y2 K= 144,199 N./cm. Yield K= 1 N./cm.  
 Yield Force= 476,570 N.

-----  
 From 10553 To 10554 DX= .000 mm. DY= .000 mm. DZ= 1,374.376 mm.

#### RESTRAINTS

Node 10553 Z2 K= 1,235 N./cm. Yield K= 1 N./cm. Yield Force= 4,083 N.  
 Node 10553 X2 K= 328,626 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,086,092 N.  
 Node 10553 Y2 K= 328,626 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,086,092 N.

-----  
 From 10554 To 10599 DX= .000 mm. DY= .000 mm. DZ= 687.188 mm.

#### RESTRAINTS

Node 10554 Z2 K= 1,929 N./cm. Yield K= 1 N./cm. Yield Force= 6,374 N.  
 Node 10554 X2 K= 513,053 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,695,613 N.  
 Node 10554 Y2 K= 513,053 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,695,613 N.

-----  
 From 10599 To 10600 DX= .000 mm. DY= .000 mm. DZ= 687.188 mm.

#### RESTRAINTS

Node 10600 Z2 K= 964 N./cm. Yield K= 1 N./cm. Yield Force= 3,187 N.  
 Node 10600 X2 K= 256,526 N./cm. Yield K= 1 N./cm.  
 Yield Force= 847,807 N.  
 Node 10600 Y2 K= 256,526 N./cm. Yield K= 1 N./cm.  
 Yield Force= 847,807 N.

-----  
 From 10600 To 10650 DZ= 184.100 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa

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INPUT LISTING

EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

-----  
 From 10650 To 10700 DZ= 431.800 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

RIGID Weight= 1,050.00 N.

FLANGES

Location= To Method= Peq

-----  
 From 10700 To 10750 DZ= 111.200 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

RIGID Weight= 270.00 N.

-----  
 From 10750 To 10800 DZ= 241.900 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

SIF's & TEE's

Node 10800 Welding Tee Use Notes 6,9,10 = ---

-----  
 From 10800 To 11000 DX= -672.900 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

-----  
 From 11000 To 11050 DX= -111.200 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

RIGID Weight= 270.00 N.

-----  
 From 11050 To 11100 DX= -431.800 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa

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INPUT LISTING

EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

RIGID Weight= 550.00 N.

FLANGES

Location= Both Method= Peq

-----  
 From 10800 To 10850 DZ= 300.000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

-----  
 From 570 To 600 DX= 2,762.200 mm. DY= .000 mm. DZ= .000 mm.

PIPE

Dia= 1,422.000 mm. Wall= 21.800 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Thk= .000 mm.  
 Insul Den= .0000000 kg./cu.cm. Clad Den= .0000000 kg./cu.cm.  
 Insul/Clad Unit Wt= .00 N./cm.

ALLOWABLE STRESSES

B31.8 (2014) Restrained = --- Sh1= 448,159 KPa Sh2= 448,159 KPa  
 Sh3= 448,159 KPa Sh4= 448,159 KPa Sh5= 448,159 KPa Sh6= 448,159 KPa  
 Sh7= 448,159 KPa Sh8= 448,159 KPa Sh9= 448,159 KPa Sy= 448,159 KPa

-----  
 From 600 To 650 DX= 8,139.400 mm. DY= .000 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 600 X2 K= 62,665 N./cm. Yield K= 1 N./cm.  
 Yield Force= 330,027 N.  
 Node 600 Y2 K= 3,242,455 N./cm. Yield K= 1 N./cm.  
 Yield Force= 17,076,388 N.  
 Node 600 Z2 K= 3,242,455 N./cm. Yield K= 1 N./cm.  
 Yield Force= 17,076,388 N.

-----  
 From 650 To 699 DX= 2,300.000 mm. DY= .000 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.



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Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 650 X2 K= 73,230 N./cm. Yield K= 1 N./cm.  
 Yield Force= 385,663 N.  
 Node 650 Y2 K= 3,789,071 N./cm. Yield K= 1 N./cm.  
 Yield Force= 19,955,138 N.  
 Node 650 Z2 K= 3,789,071 N./cm. Yield K= 1 N./cm.  
 Yield Force= 19,955,138 N.

-----  
 From 699 To 700 DX= 2,300.000 mm. DY= .000 mm. DZ= .000 mm.

#### RESTRAINTS

Node 700 X2 K= 26,442 N./cm. Yield K= 1 N./cm.  
 Yield Force= 139,257 N.  
 Node 700 Y2 K= 1,368,175 N./cm. Yield K= 1 N./cm.  
 Yield Force= 7,205,491 N.  
 Node 700 Z2 K= 1,368,175 N./cm. Yield K= 1 N./cm.  
 Yield Force= 7,205,491 N.

#### SIF's & TEE's

Node 700 Welding Tee Use Notes 6,9,10 = ---

-----  
 From 700 To 3999 DX= .000 mm. DY= .000 mm. DZ= 1,400.000 mm.

#### PIPE

Dia= 508.000 mm. Wall= 11.100 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Thk= .000 mm.  
 Insul Den= .0000000 kg./cu.cm. Clad Den= .0000000 kg./cu.cm.  
 Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 700 Z2 K= 7,538 N./cm. Yield K= 1 N./cm. Yield Force= 29,364 N.  
 Node 700 X2 K= 616,003 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,399,640 N.  
 Node 700 Y2 K= 616,003 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,399,640 N.

#### ALLOWABLE STRESSES

B31.8 (2014) Restrained = --- Sh1= 413,685 KPa Sh2= 413,685 KPa  
 Sh3= 413,685 KPa Sh4= 413,685 KPa Sh5= 413,685 KPa Sh6= 413,685 KPa  
 Sh7= 413,685 KPa Sh8= 413,685 KPa Sh9= 413,685 KPa Sy= 413,685 KPa

-----  
 From 3999 To 4000 DX= .000 mm. DY= .000 mm. DZ= 1,400.000 mm.

-----  
 From 4000 To 4050 DZ= 3,200.000 mm.

#### PIPE

Dia= 508.000 mm. Wall= 11.100 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

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INPUT LISTING

Insul Thk= .000 mm.

BEND at "TO" end

Radius= 762.000 mm. (LONG) Bend Angle= 90.000 Angle/Node @1= 45.00 4049  
 Angle/Node @2= .00 4048

-----  
 From 4050 To 4100 DY= 11,000.000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

BEND at "TO" end

Radius= 762.000 mm. (LONG) Bend Angle= 90.000 Angle/Node @1= 45.00 4099  
 Angle/Node @2= .00 4098

-----  
 From 4100 To 4150 DZ= -3,200.000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

-----  
 From 4150 To 4151 DX= .000 mm. DY= .000 mm. DZ= -1,019.000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 4150 Z2 K= 2,743 N./cm. Yield K= 1 N./cm.  
 Yield Force= 10,686 N.  
 Node 4150 X2 K= 224,181 N./cm. Yield K= 1 N./cm.  
 Yield Force= 873,297 N.  
 Node 4150 Y2 K= 224,181 N./cm. Yield K= 1 N./cm.  
 Yield Force= 873,297 N.

-----  
 From 4151 To 4152 DX= .000 mm. DY= .000 mm. DZ= -1,019.000 mm.

RESTRAINTS

Node 4151 Z2 K= 5,486 N./cm. Yield K= 1 N./cm.  
 Yield Force= 21,372 N.  
 Node 4151 X2 K= 448,362 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,746,595 N.  
 Node 4151 Y2 K= 448,362 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,746,595 N.

-----  
 From 4152 To 4153 DX= .000 mm. DY= .000 mm. DZ= -315.631 mm.

BEND at "TO" end

Radius= 762.000 mm. (LONG) Bend Angle= 45.000

RESTRAINTS

Node 4152 Z2 K= 4,354 N./cm. Yield K= 1 N./cm.

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#### INPUT LISTING

Yield Force= 16,962 N.  
 Node 4152 X2 K= 355,846 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,386,198 N.  
 Node 4152 Y2 K= 355,846 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,386,198 N.

-----  
 From 4153 To 4200 DX= .000 mm. DY= 446.369 mm. DZ= -446.369 mm.  
 BEND at "TO" end

Radius= 762.000 mm. (LONG) Bend Angle= 45.000

#### RESTRAINTS

Node 4153 X2 K= 3,222 N./cm. Yield K= 1 N./cm.  
 Yield Force= 12,552 N. Dir Vec= .0000 .7071 -.7071  
 Node 4153 X2 K= 263,330 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,025,800 N.  
 Node 4153 X2 K= 263,330 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,025,800 N. Dir Vec= .0000 .7071 .7071

-----  
 From 4200 To 4250 DX= .000 mm. DY= 2,053.631 mm. DZ= .000 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 4200 Y2 K= 6,290 N./cm. Yield K= 1 N./cm.  
 Yield Force= 24,503 N.  
 Node 4200 X2 K= 514,027 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,002,391 N.  
 Node 4200 Z2 K= 514,027 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,002,391 N.

-----  
 From 4250 To 4300 DX= .000 mm. DY= 2,444.000 mm. DZ= .000 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 4250 Y2 K= 11,258 N./cm. Yield K= 1 N./cm.  
 Yield Force= 43,857 N.  
 Node 4250 X2 K= 920,045 N./cm. Yield K= 1 N./cm.  
 Yield Force= 3,584,034 N.  
 Node 4250 Z2 K= 920,045 N./cm. Yield K= 1 N./cm.  
 Yield Force= 3,584,034 N.

#### SIF's & TEE's

Node 4300 Welding Tee Use Notes 6,9,10 = ---

-----  
 From 4300 To 4350 DX= .000 mm. DY= 4,407.200 mm. DZ= .000 mm.

#### GENERAL

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#### INPUT LISTING

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 4300 Y2 K= 18,444 N./cm. Yield K= 1 N./cm.  
 Yield Force= 71,848 N.  
 Node 4300 X2 K= 1,507,271 N./cm. Yield K= 1 N./cm.  
 Yield Force= 5,871,576 N.  
 Node 4300 Z2 K= 1,507,271 N./cm. Yield K= 1 N./cm.  
 Yield Force= 5,871,576 N.

-----  
 From 4350 To 4400 DX= .000 mm. DY= 1,193.800 mm. DZ= .000 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RIGID Weight= .01 N.

#### RESTRAINTS

Node 4350 Y2 K= 15,078 N./cm. Yield K= 1 N./cm.  
 Yield Force= 58,738 N.  
 Node 4350 X2 K= 1,232,226 N./cm. Yield K= 1 N./cm.  
 Yield Force= 4,800,137 N.  
 Node 4350 Z2 K= 1,232,226 N./cm. Yield K= 1 N./cm.  
 Yield Force= 4,800,137 N.

-----  
 From 4400 To 4450 DX= .000 mm. DY= 1,903.000 mm. DZ= .000 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 4400 Y2 K= 8,337 N./cm. Yield K= 1 N./cm.  
 Yield Force= 32,476 N.  
 Node 4400 X2 K= 681,299 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,654,002 N.  
 Node 4400 Z2 K= 681,299 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,654,002 N.

-----  
 From 4450 To 4451 DX= .000 mm. DY= 1,733.900 mm. DZ= .000 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa

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INPUT LISTING

EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 4450 Y2 K= 9,791 N./cm. Yield K= 1 N./cm.  
 Yield Force= 38,140 N.  
 Node 4450 X2 K= 800,122 N./cm. Yield K= 1 N./cm.  
 Yield Force= 3,116,875 N.  
 Node 4450 Z2 K= 800,122 N./cm. Yield K= 1 N./cm.  
 Yield Force= 3,116,875 N.

-----  
 From 4451 To 4452 DX= .000 mm. DY= 315.631 mm. DZ= .000 mm.

BEND at "TO" end

Radius= 762.000 mm. (LONG) Bend Angle= 45.000

RESTRAINTS

Node 4451 Y2 K= 6,279 N./cm. Yield K= 1 N./cm.  
 Yield Force= 24,460 N.  
 Node 4451 X2 K= 513,125 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,998,877 N.  
 Node 4451 Z2 K= 513,125 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,998,877 N.

-----  
 From 4452 To 4500 DX= 446.369 mm. DY= 446.369 mm. DZ= .000 mm.

BEND at "TO" end

Radius= 762.000 mm. (LONG) Bend Angle= 45.000

RESTRAINTS

Node 4452 X2 K= 3,222 N./cm. Yield K= 1 N./cm.  
 Yield Force= 12,552 N. Dir Vec= .7071 .7071 .0000  
 Node 4452 X2 K= 263,330 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,025,800 N. Dir Vec= .7071 -.7071 .0000  
 Node 4452 Z2 K= 263,330 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,025,800 N.

-----  
 From 4500 To 4501 DX= 1,712.085 mm. DY= .000 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 4500 X2 K= 5,370 N./cm. Yield K= 1 N./cm.  
 Yield Force= 20,921 N.  
 Node 4500 Y2 K= 438,886 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,709,681 N.  
 Node 4500 Z2 K= 438,886 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,709,681 N.

-----  
 From 4501 To 4502 DX= 1,396.454 mm. DY= .000 mm. DZ= .000 mm.

RESTRAINTS

Node 4501 X2 K= 7,519 N./cm. Yield K= 1 N./cm.  
 Yield Force= 29,289 N.

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#### INPUT LISTING

Node 4501 Y2 K= 614,443 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,393,562 N.  
 Node 4501 Z2 K= 614,443 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,393,562 N.

-----  
 From 4502 To 4550 DX= 1,445.092 mm. DY= .000 mm. DZ= .000 mm.  
 SIF's & TEE's  
 Node 4550 Welding Tee Use Notes 6,9,10 = ---

-----  
 From 4550 To 1949 DX= 2,500.000 mm. DY= .000 mm. DZ= .000 mm.  
 GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

-----  
 From 1949 To 1950 DX= 2,500.000 mm. DY= .000 mm. DZ= .000 mm.  
 RESTRAINTS

Node 1950 X2 K= 13,460 N./cm. Yield K= 1 N./cm.  
 Yield Force= 52,435 N.  
 Node 1950 Y2 K= 1,100,005 N./cm. Yield K= 1 N./cm.  
 Yield Force= 4,285,071 N.  
 Node 1950 Z2 K= 1,100,005 N./cm. Yield K= 1 N./cm.  
 Yield Force= 4,285,071 N.

-----  
 From 700 To 750 DX= 3,712.500 mm. DY= .000 mm. DZ= .000 mm.  
 PIPE

Dia= 1,422.000 mm. Wall= 21.800 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Thk= .000 mm.  
 Insul Den= .0000000 kg./cu.cm. Clad Den= .0000000 kg./cu.cm.  
 Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 700 X2 K= 21,340 N./cm. Yield K= 1 N./cm.  
 Yield Force= 112,390 N.  
 Node 700 Y2 K= 1,104,206 N./cm. Yield K= 1 N./cm.  
 Yield Force= 5,815,302 N.  
 Node 700 Z2 K= 1,104,206 N./cm. Yield K= 1 N./cm.  
 Yield Force= 5,815,302 N.

#### ALLOWABLE STRESSES

B31.8 (2014) Restrained = --- Sh1= 448,159 KPa Sh2= 448,159 KPa  
 Sh3= 448,159 KPa Sh4= 448,159 KPa Sh5= 448,159 KPa Sh6= 448,159 KPa  
 Sh7= 448,159 KPa Sh8= 448,159 KPa Sh9= 448,159 KPa Sy= 448,159 KPa

-----  
 From 750 To 800 DX= 2,575.000 mm. DY= .000 mm. DZ= .000 mm.  
 GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa

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#### INPUT LISTING

EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RIGID Weight= .01 N.

#### RESTRAINTS

Node 750 X2 K= 36,142 N./cm. Yield K= 1 N./cm.  
 Yield Force= 190,343 N.  
 Node 750 Y2 K= 1,870,087 N./cm. Yield K= 1 N./cm.  
 Yield Force= 9,848,810 N.  
 Node 750 Z2 K= 1,870,087 N./cm. Yield K= 1 N./cm.  
 Yield Force= 9,848,810 N.

-----  
 From 800 To 849 DX= 1,857.750 mm. DY= .000 mm. DZ= .000 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 800 X2 K= 36,160 N./cm. Yield K= 1 N./cm.  
 Yield Force= 190,434 N.  
 Node 800 Y2 K= 1,870,979 N./cm. Yield K= 1 N./cm.  
 Yield Force= 9,853,509 N.  
 Node 800 Z2 K= 1,870,979 N./cm. Yield K= 1 N./cm.  
 Yield Force= 9,853,509 N.

-----  
 From 849 To 850 DX= 1,857.750 mm. DY= .000 mm. DZ= .000 mm.

#### RESTRAINTS

Node 850 X2 K= 21,358 N./cm. Yield K= 1 N./cm.  
 Yield Force= 112,480 N.  
 Node 850 Y2 K= 1,105,098 N./cm. Yield K= 1 N./cm.  
 Yield Force= 5,820,001 N.  
 Node 850 Z2 K= 1,105,098 N./cm. Yield K= 1 N./cm.  
 Yield Force= 5,820,001 N.

#### SIF's & TEE's

Node 850 Welding Tee Use Notes 6,9,10 = ---

-----  
 From 850 To 1499 DX= .000 mm. DY= .000 mm. DZ= 1,400.000 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 850 Z2 K= 16,095 N./cm. Yield K= 1 N./cm.  
 Yield Force= 84,765 N.

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INPUT LISTING

Node 850 X2 K= 832,802 N./cm. Yield K= 1 N./cm.  
 Yield Force= 4,385,951 N.  
 Node 850 Y2 K= 832,802 N./cm. Yield K= 1 N./cm.  
 Yield Force= 4,385,951 N.

-----  
 From 1499 To 1500 DX= .000 mm. DY= .000 mm. DZ= 1,400.000 mm.

RESTRAINTS

Node 1500 Z2 K= 16,095 N./cm. Yield K= 1 N./cm.  
 Yield Force= 84,765 N.  
 Node 1500 X2 K= 832,802 N./cm. Yield K= 1 N./cm.  
 Yield Force= 4,385,951 N.  
 Node 1500 Y2 K= 832,802 N./cm. Yield K= 1 N./cm.  
 Yield Force= 4,385,951 N.

-----  
 From 1500 To 1550 DZ= 3,200.000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

BEND at "TO" end

Radius= 2,133.000 mm. (LONG) Bend Angle= 90.000 Angle/Node @1= 45.00  
 1549 Angle/Node @2= .00 1548

-----  
 From 1550 To 1600 DY= 11,000.000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

BEND at "TO" end

Radius= 2,133.000 mm. (LONG) Bend Angle= 90.000 Angle/Node @1= 45.00  
 1599 Angle/Node @2= .00 1598

-----  
 From 1600 To 1650 DZ= -3,200.000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

-----  
 From 1650 To 1651 DX= .000 mm. DY= .000 mm. DZ= -667.000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 1650 Z2 K= 3,834 N./cm. Yield K= 1 N./cm.



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INPUT LISTING

Yield Force= 20,192 N.  
 Node 1650 X2 K= 198,385 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,044,797 N.  
 Node 1650 Y2 K= 198,385 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,044,797 N.

-----  
 From 1651 To 1652 DX= .000 mm. DY= .000 mm. DZ= -883.517 mm.  
 BEND at "TO" end

Radius= 2,133.000 mm. (LONG) Bend Angle= 45.000

RESTRAINTS

Node 1651 Z2 K= 13,464 N./cm. Yield K= 1 N./cm.  
 Yield Force= 70,908 N.  
 Node 1651 X2 K= 696,655 N./cm. Yield K= 1 N./cm.  
 Yield Force= 3,668,934 N.  
 Node 1651 Y2 K= 696,655 N./cm. Yield K= 1 N./cm.  
 Yield Force= 3,668,934 N.

-----  
 From 1652 To 1700 DX= .000 mm. DY= 1,249.482 mm. DZ= -1,249.482 mm.  
 BEND at "TO" end

Radius= 2,133.000 mm. (LONG) Bend Angle= 45.000

RESTRAINTS

Node 1652 X2 K= 19,260 N./cm. Yield K= 1 N./cm.  
 Yield Force= 101,431 N. Dir Vec= .0000 .7071 -.7071  
 Node 1652 X2 K= 996,539 N./cm. Yield K= 1 N./cm.  
 Yield Force= 5,248,274 N.  
 Node 1652 X2 K= 996,539 N./cm. Yield K= 1 N./cm.  
 Yield Force= 5,248,274 N. Dir Vec= .0000 .7071 .7071

-----  
 From 1700 To 1750 DX= .000 mm. DY= 1,250.518 mm. DZ= .000 mm.  
 GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 1700 Y2 K= 11,739 N./cm. Yield K= 1 N./cm.  
 Yield Force= 61,826 N.  
 Node 1700 X2 K= 607,426 N./cm. Yield K= 1 N./cm.  
 Yield Force= 3,199,010 N.  
 Node 1700 Z2 K= 607,426 N./cm. Yield K= 1 N./cm.  
 Yield Force= 3,199,010 N.

-----  
 From 1750 To 1799 DX= .000 mm. DY= 1,222.000 mm. DZ= .000 mm.  
 GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

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#### INPUT LISTING

From 1799 To 1800 DX= .000 mm. DY= 1,222.000 mm. DZ= .000 mm.

SIF's & TEE's

Node 1800 Welding Tee Use Notes 6,9,10 = ---

-----  
 From 1800 To 4800 DX= -2,300.000 mm. DY= .000 mm. DZ= .000 mm.

PIPE

Dia= 508.000 mm. Wall= 11.100 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Thk= .000 mm.  
 Insul Den= .0000000 kg./cu.cm. Clad Den= .0000000 kg./cu.cm.  
 Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 1800 X2 K= 6,192 N./cm. Yield K= 1 N./cm.

Yield Force= 24,120 N.

Node 1800 Y2 K= 506,002 N./cm. Yield K= 1 N./cm.

Yield Force= 1,971,133 N.

Node 1800 Z2 K= 506,002 N./cm. Yield K= 1 N./cm.

Yield Force= 1,971,133 N.

ALLOWABLE STRESSES

B31.8 (2014) Restrained = --- Sh1= 413,685 KPa Sh2= 413,685 KPa  
 Sh3= 413,685 KPa Sh4= 413,685 KPa Sh5= 413,685 KPa Sh6= 413,685 KPa  
 Sh7= 413,685 KPa Sh8= 413,685 KPa Sh9= 413,685 KPa Sy= 413,685 KPa

-----  
 From 4800 To 4850 DX= -603.100 mm. DY= .000 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

-----  
 From 4850 To 4900 DX= -1,193.800 mm. DY= .000 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RIGID Weight= .01 N.

-----  
 From 4900 To 4949 DX= -451.550 mm. DY= .000 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa

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INPUT LISTING

v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

-----  
 From 4949 To 4950 DX= -451.550 mm. DY= .000 mm. DZ= .000 mm.  
 SIF's & TEE's

Node 4950 Welding Tee Use Notes 6,9,10 = ---

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 From 4950 To 5199 DX= .000 mm. DY= 998.000 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

-----  
 From 5199 To 5200 DX= .000 mm. DY= 998.000 mm. DZ= .000 mm.  
 SIF's & TEE's

Node 5200 Welding Tee Use Notes 6,9,10 = ---

-----  
 From 5200 To 5201 DX= .000 mm. DY= .000 mm. DZ= -381.000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

-----  
 From 5201 To 5202 DX= .000 mm. DY= .000 mm. DZ= -315.631 mm.  
 BEND at "TO" end

Radius= 762.000 mm. (LONG) Bend Angle= 45.000

RESTRAINTS

Node 5201 Z2 K= 2,637 N./cm. Yield K= 1 N./cm.  
 Yield Force= 10,272 N.  
 Node 5201 X2 K= 215,485 N./cm. Yield K= 1 N./cm.  
 Yield Force= 839,423 N.  
 Node 5201 Y2 K= 215,485 N./cm. Yield K= 1 N./cm.  
 Yield Force= 839,423 N.

-----  
 From 5202 To 9500 DX= -446.369 mm. DY= .000 mm. DZ= -446.369 mm.  
 BEND at "TO" end

Radius= 762.000 mm. (LONG) Bend Angle= 45.000

-----  
 From 9500 To 9501 DX= -1,712.085 mm. DY= .000 mm. DZ= .000 mm.  
 GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.

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INPUT LISTING

Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 9500 X2 K= 5,370 N./cm. Yield K= 1 N./cm.  
 Yield Force= 20,921 N.  
 Node 9500 Y2 K= 438,886 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,709,681 N.  
 Node 9500 Z2 K= 438,886 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,709,681 N.

-----  
 From 9501 To 9502 DX= -1,683.092 mm. DY= .000 mm. DZ= .000 mm.

RESTRAINTS

Node 9501 X2 K= 8,290 N./cm. Yield K= 1 N./cm.  
 Yield Force= 32,295 N.  
 Node 9501 Y2 K= 677,503 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,639,215 N.  
 Node 9501 Z2 K= 677,503 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,639,215 N.

-----  
 From 9502 To 9503 DX= -1,396.454 mm. DY= .000 mm. DZ= .000 mm.

RESTRAINTS

Node 9502 X2 K= 8,290 N./cm. Yield K= 1 N./cm.  
 Yield Force= 32,295 N.  
 Node 9502 Y2 K= 677,503 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,639,215 N.  
 Node 9502 Z2 K= 677,503 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,639,215 N.

-----  
 From 9503 To 9504 DX= -315.631 mm. DY= .000 mm. DZ= .000 mm.

BEND at "TO" end

Radius= 762.000 mm. (LONG) Bend Angle= 45.000

RESTRAINTS

Node 9503 X2 K= 5,370 N./cm. Yield K= 1 N./cm.  
 Yield Force= 20,921 N.  
 Node 9503 Y2 K= 438,886 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,709,681 N.  
 Node 9503 Z2 K= 438,886 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,709,681 N.

-----  
 From 9504 To 9550 DX= -446.369 mm. DY= -404.563 mm. DZ= 188.612 mm.

BEND at "TO" end

Radius= 762.000 mm. (LONG) Bend Angle= 45.000

RESTRAINTS

Node 9504 X2 K= 3,222 N./cm. Yield K= 1 N./cm.  
 Yield Force= 12,552 N. Dir Vec= -.7071 -.6409 .2988  
 Node 9504 X2 K= 263,330 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,025,800 N. Dir Vec= -.6716 .7410 .0000  
 Node 9504 X2 K= 263,330 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,025,800 N. Dir Vec= .2214 .2007 .9543

-----  
 From 9550 To 9551 DX= .000 mm. DY= -1,718.937 mm. DZ= 801.388 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa

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INPUT LISTING

v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 9550 X2 K= 5,867 N./cm. Yield K= 1 N./cm.  
 Yield Force= 22,855 N. Dir Vec= .0000 -.9063 .4225  
 Node 9550 X2 K= 479,473 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,867,785 N.  
 Node 9550 X2 K= 479,473 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,867,785 N. Dir Vec= .0000 .4225 .9063

-----  
 From 9551 To 9552 DX= .000 mm. DY= -1,432.868 mm. DZ= 668.019 mm.

RESTRAINTS

Node 9551 X2 K= 8,512 N./cm. Yield K= 1 N./cm.  
 Yield Force= 33,158 N. Dir Vec= .0000 -.9063 .4225  
 Node 9551 X2 K= 695,616 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,709,771 N.  
 Node 9551 X2 K= 695,616 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,709,771 N. Dir Vec= .0000 .4225 .9063

-----  
 From 9552 To 9553 DX= .000 mm. DY= -286.069 mm. DZ= 133.369 mm.

BEND at "TO" end

Radius= 762.000 mm. (LONG) Bend Angle= 45.000

RESTRAINTS

Node 9552 X2 K= 5,867 N./cm. Yield K= 1 N./cm.  
 Yield Force= 22,855 N. Dir Vec= .0000 -.9063 .4225  
 Node 9552 X2 K= 479,473 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,867,785 N.  
 Node 9552 X2 K= 479,473 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,867,785 N. Dir Vec= .0000 .4225 .9063

-----  
 From 9553 To 9600 DX= -446.369 mm. DY= -404.563 mm. DZ= 188.612 mm.

BEND at "TO" end

Radius= 762.000 mm. (LONG) Bend Angle= 45.000

RESTRAINTS

Node 9553 X2 K= 3,222 N./cm. Yield K= 1 N./cm.  
 Yield Force= 12,552 N. Dir Vec= -.7071 -.6409 .2988  
 Node 9553 X2 K= 263,330 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,025,800 N. Dir Vec= -.6716 .7410 .0000  
 Node 9553 X2 K= 263,330 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,025,800 N. Dir Vec= .2214 .2007 .9543

-----  
 From 9600 To 9650 DX= -1,553.631 mm. DY= .000 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 9600 X2 K= 4,944 N./cm. Yield K= 1 N./cm.  
 Yield Force= 19,259 N.  
 Node 9600 Y2 K= 404,026 N./cm. Yield K= 1 N./cm.

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INPUT LISTING

Yield Force= 1,573,884 N.  
 Node 9600 Z2 K= 404,026 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,573,884 N.

-----  
 From 9650 To 9700 DX= -11,138.667 mm. DY= .000 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 9650 X2 K= 33,319 N./cm. Yield K= 1 N./cm.  
 Yield Force= 129,794 N.  
 Node 9650 Y2 K= 2,722,880 N./cm. Yield K= 1 N./cm.  
 Yield Force= 10,606,978 N.  
 Node 9650 Z2 K= 2,722,880 N./cm. Yield K= 1 N./cm.  
 Yield Force= 10,606,978 N.

-----  
 From 9700 To 9750 DX= -11,138.667 mm. DY= .000 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 9700 X2 K= 59,972 N./cm. Yield K= 1 N./cm.  
 Yield Force= 233,622 N.  
 Node 9700 Y2 K= 4,901,038 N./cm. Yield K= 1 N./cm.  
 Yield Force= 19,091,990 N.  
 Node 9700 Z2 K= 4,901,038 N./cm. Yield K= 1 N./cm.  
 Yield Force= 19,091,990 N.

-----  
 From 9750 To 9800 DX= -11,138.667 mm. DY= .000 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 9750 X2 K= 59,972 N./cm. Yield K= 1 N./cm.  
 Yield Force= 233,622 N.  
 Node 9750 Y2 K= 4,901,038 N./cm. Yield K= 1 N./cm.  
 Yield Force= 19,091,990 N.  
 Node 9750 Z2 K= 4,901,038 N./cm. Yield K= 1 N./cm.  
 Yield Force= 19,091,990 N.

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#### INPUT LISTING

From 9800 To 9850 DX= -603.100 mm. DY= .000 mm. DZ= .000 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 9800 X2 K= 31,610 N./cm. Yield K= 1 N./cm.  
 Yield Force= 123,136 N.  
 Node 9800 Y2 K= 2,583,202 N./cm. Yield K= 1 N./cm.  
 Yield Force= 10,062,860 N.  
 Node 9800 Z2 K= 2,583,202 N./cm. Yield K= 1 N./cm.  
 Yield Force= 10,062,860 N.

-----  
 From 9850 To 9900 DX= -1,193.800 mm. DY= .000 mm. DZ= .000 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RIGID Weight= .01 N.

#### RESTRAINTS

Node 9850 X2 K= 4,837 N./cm. Yield K= 1 N./cm.  
 Yield Force= 18,844 N.  
 Node 9850 Y2 K= 395,320 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,539,969 N.  
 Node 9850 Z2 K= 395,320 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,539,969 N.

-----  
 From 9900 To 8499 DX= -700.000 mm. DY= .000 mm. DZ= .000 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 9900 X2 K= 6,983 N./cm. Yield K= 1 N./cm.  
 Yield Force= 27,201 N.  
 Node 9900 Y2 K= 570,639 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,222,924 N.  
 Node 9900 Z2 K= 570,639 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,222,924 N.

-----  
 From 8499 To 8500 DX= -700.000 mm. DY= .000 mm. DZ= .000 mm.

#### RESTRAINTS

Node 8500 X2 K= 3,769 N./cm. Yield K= 1 N./cm.

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INPUT LISTING

Yield Force= 14,682 N.  
 Node 8500 Y2 K= 308,002 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,199,820 N.  
 Node 8500 Z2 K= 308,002 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,199,820 N.

-----  
 From 5200 To 5250 DX= .000 mm. DY= 2,411.200 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

-----  
 From 5250 To 5300 DX= .000 mm. DY= 1,193.800 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RIGID Weight= .01 N.

RESTRAINTS

Node 5250 Y2 K= 9,705 N./cm. Yield K= 1 N./cm.  
 Yield Force= 37,806 N.  
 Node 5250 X2 K= 793,104 N./cm. Yield K= 1 N./cm.  
 Yield Force= 3,089,536 N.  
 Node 5250 Z2 K= 793,104 N./cm. Yield K= 1 N./cm.  
 Yield Force= 3,089,536 N.

-----  
 From 5300 To 5350 DX= .000 mm. DY= 1,903.100 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 5300 Y2 K= 8,337 N./cm. Yield K= 1 N./cm.  
 Yield Force= 32,477 N.  
 Node 5300 X2 K= 681,321 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,654,087 N.  
 Node 5300 Z2 K= 681,321 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,654,087 N.

-----  
 From 5350 To 4549 DX= .000 mm. DY= 1,247.950 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa



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#### INPUT LISTING

EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

-----  
 From 4549 To 4550 DX= .000 mm. DY= 1,247.950 mm. DZ= .000 mm.

-----  
 From 4950 To 4999 DX= -451.550 mm. DY= .000 mm. DZ= .000 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

-----  
 From 4999 To 5000 DX= -451.550 mm. DY= .000 mm. DZ= .000 mm.

-----  
 From 1800 To 1850 DX= .000 mm. DY= 3,712.500 mm. DZ= .000 mm.

#### PIPE

Dia= 1,422.000 mm. Wall= 21.800 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Thk= .000 mm.  
 Insul Den= .0000000 kg./cu.cm. Clad Den= .0000000 kg./cu.cm.  
 Insul/Clad Unit Wt= .00 N./cm.

#### ALLOWABLE STRESSES

B31.8 (2014) Restrained = --- Sh1= 448,159 KPa Sh2= 448,159 KPa  
 Sh3= 448,159 KPa Sh4= 448,159 KPa Sh5= 448,159 KPa Sh6= 448,159 KPa  
 Sh7= 448,159 KPa Sh8= 448,159 KPa Sh9= 448,159 KPa Sy= 448,159 KPa

-----  
 From 1850 To 1900 DX= .000 mm. DY= 2,575.000 mm. DZ= .000 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RIGID Weight= .01 N.

-----  
 From 1900 To 1950 DX= .000 mm. DY= 3,712.500 mm. DZ= .000 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

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INPUT LISTING

Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

SIF's & TEE's

Node 1950 Welding Tee Use Notes 6,9,10 = ---

-----  
 From 1950 To 2000 DX= .000 mm. DY= 2,290.000 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

-----  
 From 2000 To 2001 DX= .000 mm. DY= 2,654.482 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

-----  
 From 2001 To 2002 DX= .000 mm. DY= 424.280 mm. DZ= .000 mm.

BEND at "TO" end

Radius= 2,133.000 mm. (LONG) Bend Angle= 22.500

RESTRAINTS

Node 2001 Y2 K= 20,074 N./cm. Yield K= 1 N./cm.

Yield Force= 105,718 N.

Node 2001 X2 K= 1,038,656 N./cm. Yield K= 1 N./cm.

Yield Force= 5,470,079 N.

Node 2001 Z2 K= 1,038,656 N./cm. Yield K= 1 N./cm.

Yield Force= 5,470,079 N.

-----  
 From 2002 To 2050 DX= .000 mm. DY= 783.967 mm. DZ= -324.730 mm.

BEND at "TO" end

Radius= 2,133.000 mm. (LONG) Bend Angle= 22.500

RESTRAINTS

Node 2002 X2 K= 9,630 N./cm. Yield K= 1 N./cm.

Yield Force= 50,715 N. Dir Vec= .0000 .9239 -.3827

Node 2002 X2 K= 498,270 N./cm. Yield K= 1 N./cm.

Yield Force= 2,624,137 N.

Node 2002 X2 K= 498,270 N./cm. Yield K= 1 N./cm.

Yield Force= 2,624,137 N. Dir Vec= .0000 .3827 .9239

-----  
 From 2050 To 2051 DX= .000 mm. DY= 600.023 mm. DZ= -600.023 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.

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INPUT LISTING

Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

BEND at "TO" end

Radius= 2,133.000 mm. (LONG) Bend Angle= 22.500

RESTRAINTS

Node 2050 X2 K= 9,630 N./cm. Yield K= 1 N./cm.  
 Yield Force= 50,715 N. Dir Vec= .0000 .7071 -.7071  
 Node 2050 X2 K= 498,270 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,624,137 N.  
 Node 2050 X2 K= 498,270 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,624,137 N. Dir Vec= .0000 .7071 .7071

-----  
 From 2051 To 2100 DX= .000 mm. DY= 783.967 mm. DZ= -324.730 mm.

BEND at "TO" end

Radius= 2,133.000 mm. (LONG) Bend Angle= 22.500

RESTRAINTS

Node 2051 X2 K= 9,630 N./cm. Yield K= 1 N./cm.  
 Yield Force= 50,715 N. Dir Vec= .0000 .9239 -.3827  
 Node 2051 X2 K= 498,270 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,624,137 N.  
 Node 2051 X2 K= 498,270 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,624,137 N. Dir Vec= .0000 .3827 .9239

-----  
 From 2100 To 2101 DX= .000 mm. DY= 3,758.416 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 2100 Y2 K= 23,980 N./cm. Yield K= 1 N./cm.  
 Yield Force= 126,293 N.  
 Node 2100 X2 K= 1,240,804 N./cm. Yield K= 1 N./cm.  
 Yield Force= 6,534,696 N.  
 Node 2100 Z2 K= 1,240,804 N./cm. Yield K= 1 N./cm.  
 Yield Force= 6,534,696 N.

-----  
 From 2101 To 2150 DX= .000 mm. DY= 3,535.847 mm. DZ= .000 mm.

RESTRAINTS

Node 2101 Y2 K= 39,491 N./cm. Yield K= 1 N./cm.  
 Yield Force= 207,977 N.  
 Node 2101 X2 K= 2,043,334 N./cm. Yield K= 1 N./cm.  
 Yield Force= 10,761,217 N.  
 Node 2101 Z2 K= 2,043,334 N./cm. Yield K= 1 N./cm.  
 Yield Force= 10,761,217 N.

-----  
 From 2150 To 2151 DX= .000 mm. DY= 3,535.847 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

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INPUT LISTING

Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 2150 Y2 K= 40,650 N./cm. Yield K= 1 N./cm.  
 Yield Force= 214,083 N.  
 Node 2150 X2 K= 2,103,329 N./cm. Yield K= 1 N./cm.  
 Yield Force= 11,077,180 N.  
 Node 2150 Z2 K= 2,103,329 N./cm. Yield K= 1 N./cm.  
 Yield Force= 11,077,180 N.

-----  
 From 2151 To 2152 DX= .000 mm. DY= 3,334.135 mm. DZ= .000 mm.

RESTRAINTS

Node 2151 Y2 K= 39,491 N./cm. Yield K= 1 N./cm.  
 Yield Force= 207,977 N.  
 Node 2151 X2 K= 2,043,334 N./cm. Yield K= 1 N./cm.  
 Yield Force= 10,761,217 N.  
 Node 2151 Z2 K= 2,043,334 N./cm. Yield K= 1 N./cm.  
 Yield Force= 10,761,217 N.

-----  
 From 2152 To 2153 DX= .000 mm. DY= 424.280 mm. DZ= .000 mm.

BEND at "TO" end

Radius= 2,133.000 mm. (LONG) Bend Angle= 22.500

RESTRAINTS

Node 2152 Y2 K= 23,980 N./cm. Yield K= 1 N./cm.  
 Yield Force= 126,293 N.  
 Node 2152 X2 K= 1,240,804 N./cm. Yield K= 1 N./cm.  
 Yield Force= 6,534,696 N.  
 Node 2152 Z2 K= 1,240,804 N./cm. Yield K= 1 N./cm.  
 Yield Force= 6,534,696 N.

-----  
 From 2153 To 2200 DX= .000 mm. DY= 783.967 mm. DZ= 324.730 mm.

BEND at "TO" end

Radius= 2,133.000 mm. (LONG) Bend Angle= 22.500

RESTRAINTS

Node 2153 X2 K= 9,630 N./cm. Yield K= 1 N./cm.  
 Yield Force= 50,715 N. Dir Vec= .0000 .9239 .3827  
 Node 2153 X2 K= 498,270 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,624,137 N.  
 Node 2153 X2 K= 498,270 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,624,137 N. Dir Vec= .0000 -.3827 .9239

-----  
 From 2200 To 2201 DX= .000 mm. DY= 600.023 mm. DZ= 600.023 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

BEND at "TO" end

Radius= 2,133.000 mm. (LONG) Bend Angle= 22.500

RESTRAINTS

Node 2200 X2 K= 9,630 N./cm. Yield K= 1 N./cm.  
 Yield Force= 50,715 N. Dir Vec= .0000 .7071 .7071

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INPUT LISTING

Node 2200 X2 K= 498,270 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,624,137 N.  
 Node 2200 X2 K= 498,270 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,624,137 N. Dir Vec= .0000 -.7071 .7071

-----  
 From 2201 To 2250 DX= .000 mm. DY= 783.967 mm. DZ= 324.730 mm.  
 BEND at "TO" end

Radius= 2,133.000 mm. (LONG) Bend Angle= 22.500

RESTRAINTS

Node 2201 X2 K= 9,630 N./cm. Yield K= 1 N./cm.  
 Yield Force= 50,715 N. Dir Vec= .0000 .9239 .3827  
 Node 2201 X2 K= 498,270 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,624,137 N.  
 Node 2201 X2 K= 498,270 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,624,137 N. Dir Vec= .0000 -.3827 .9239

-----  
 From 2250 To 2300 DX= .000 mm. DY= 3,107.763 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 2250 Y2 K= 20,240 N./cm. Yield K= 1 N./cm.  
 Yield Force= 106,596 N.  
 Node 2250 X2 K= 1,047,281 N./cm. Yield K= 1 N./cm.  
 Yield Force= 5,515,505 N.  
 Node 2250 Z2 K= 1,047,281 N./cm. Yield K= 1 N./cm.  
 Yield Force= 5,515,505 N.

-----  
 From 2300 To 2349 DX= .000 mm. DY= 1,900.000 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 2300 Y2 K= 37,269 N./cm. Yield K= 1 N./cm.  
 Yield Force= 196,276 N.  
 Node 2300 X2 K= 1,928,378 N./cm. Yield K= 1 N./cm.  
 Yield Force= 10,155,799 N.  
 Node 2300 Z2 K= 1,928,378 N./cm. Yield K= 1 N./cm.  
 Yield Force= 10,155,799 N.

-----  
 From 2349 To 2350 DX= .000 mm. DY= 1,900.000 mm. DZ= .000 mm.

RESTRAINTS

Node 2350 Y2 K= 21,843 N./cm. Yield K= 1 N./cm.  
 Yield Force= 115,038 N.  
 Node 2350 X2 K= 1,130,231 N./cm. Yield K= 1 N./cm.

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#### INPUT LISTING

Yield Force= 5,952,363 N.  
 Node 2350 Z2 K= 1,130,231 N./cm. Yield K= 1 N./cm.  
 Yield Force= 5,952,363 N.

#### SIF's & TEE's

Node 2350 Welding Tee Use Notes 6,9,10 = ---

-----  
 From 2350 To 5600 DX= -864.000 mm. DY= .000 mm. DZ= .000 mm.

#### PIPE

Dia= 660.400 mm. Wall= 11.100 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Thk= .000 mm.  
 Insul Den= .0000000 kg./cu.cm. Clad Den= .0000000 kg./cu.cm.  
 Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 2350 X2 K= 2,856 N./cm. Yield K= 1 N./cm.  
 Yield Force= 11,779 N.  
 Node 2350 Y2 K= 201,235 N./cm. Yield K= 1 N./cm.  
 Yield Force= 829,915 N.  
 Node 2350 Z2 K= 201,235 N./cm. Yield K= 1 N./cm.  
 Yield Force= 829,915 N.

#### ALLOWABLE STRESSES

B31.8 (2014) Restrained = --- Sh1= 413,685 KPa Sh2= 413,685 KPa  
 Sh3= 413,685 KPa Sh4= 413,685 KPa Sh5= 413,685 KPa Sh6= 413,685 KPa  
 Sh7= 413,685 KPa Sh8= 413,685 KPa Sh9= 413,685 KPa Sy= 413,685 KPa

-----  
 From 5600 To 5650 DX= -610.000 mm. DY= .000 mm. DZ= .000 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

#### REDUCER

Diam2= 609.600 mm. Wall2= 11.100 mm.

-----  
 From 5650 To 5651 DX= -1,715.645 mm. DY= .000 mm. DZ= .000 mm.

#### PIPE

Dia= 609.600 mm. Wall= 11.100 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Thk= .000 mm.  
 Insul Den= .0000000 kg./cu.cm. Clad Den= .0000000 kg./cu.cm.  
 Insul/Clad Unit Wt= .00 N./cm.

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INPUT LISTING

From 5651 To 5652 DX= -1,715.645 mm. DY= .000 mm. DZ= .000 mm.

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 From 5652 To 5653 DX= -1,590.155 mm. DY= .000 mm. DZ= .000 mm.

RESTRAINTS

Node 5652 X2 K= 10,277 N./cm. Yield K= 1 N./cm.  
 Yield Force= 41,601 N.

Node 5652 Y2 K= 755,732 N./cm. Yield K= 1 N./cm.  
 Yield Force= 3,059,128 N.

Node 5652 Z2 K= 755,732 N./cm. Yield K= 1 N./cm.  
 Yield Force= 3,059,128 N.

-----  
 From 5653 To 5654 DX= -1,590.155 mm. DY= .000 mm. DZ= .000 mm.

RESTRAINTS

Node 5653 X2 K= 9,887 N./cm. Yield K= 1 N./cm.  
 Yield Force= 40,022 N.

Node 5653 Y2 K= 727,044 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,943,003 N.

Node 5653 Z2 K= 727,044 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,943,003 N.

-----  
 From 5654 To 5655 DX= -378.757 mm. DY= .000 mm. DZ= .000 mm.

BEND at "TO" end

Radius= 914.400 mm. (LONG) Bend Angle= 45.000

RESTRAINTS

Node 5654 X2 K= 7,176 N./cm. Yield K= 1 N./cm.  
 Yield Force= 29,049 N.

Node 5654 Y2 K= 527,701 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,136,081 N.

Node 5654 Z2 K= 527,701 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,136,081 N.

-----  
 From 5655 To 5700 DX= -535.643 mm. DY= 535.643 mm. DZ= .000 mm.

BEND at "TO" end

Radius= 914.400 mm. (LONG) Bend Angle= 45.000

RESTRAINTS

Node 5655 X2 K= 4,465 N./cm. Yield K= 1 N./cm.  
 Yield Force= 18,075 N. Dir Vec= -.7071 .7071 .0000

Node 5655 X2 K= 328,358 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,329,160 N. Dir Vec= .7071 .7071 .0000

Node 5655 Z2 K= 328,358 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,329,160 N.

-----  
 From 5700 To 5750 DX= .000 mm. DY= 1,964.357 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 5700 Y2 K= 7,162 N./cm. Yield K= 1 N./cm.  
 Yield Force= 28,991 N.

Node 5700 X2 K= 526,660 N./cm. Yield K= 1 N./cm.

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INPUT LISTING

Yield Force= 2,131,866 N.  
 Node 5700 Z2 K= 526,660 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,131,866 N.

-----  
 From 5750 To 5800 DX= .000 mm. DY= 10,564.700 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 5750 Y2 K= 37,774 N./cm. Yield K= 1 N./cm.  
 Yield Force= 152,904 N.  
 Node 5750 X2 K= 2,777,655 N./cm. Yield K= 1 N./cm.  
 Yield Force= 11,243,671 N.  
 Node 5750 Z2 K= 2,777,655 N./cm. Yield K= 1 N./cm.  
 Yield Force= 11,243,671 N.

-----  
 From 5800 To 5850 DX= .000 mm. DY= 10,564.700 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 5800 Y2 K= 65,688 N./cm. Yield K= 1 N./cm.  
 Yield Force= 265,900 N.  
 Node 5800 X2 K= 4,830,349 N./cm. Yield K= 1 N./cm.  
 Yield Force= 19,552,770 N.  
 Node 5800 Z2 K= 4,830,349 N./cm. Yield K= 1 N./cm.  
 Yield Force= 19,552,770 N.

-----  
 From 5850 To 5900 DX= .000 mm. DY= 10,564.700 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 5850 Y2 K= 65,688 N./cm. Yield K= 1 N./cm.  
 Yield Force= 265,900 N.  
 Node 5850 X2 K= 4,830,349 N./cm. Yield K= 1 N./cm.  
 Yield Force= 19,552,770 N.  
 Node 5850 Z2 K= 4,830,349 N./cm. Yield K= 1 N./cm.  
 Yield Force= 19,552,770 N.

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#### INPUT LISTING

From 5900 To 5950 DX= .000 mm. DY= 10,564.700 mm. DZ= .000 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 5900 Y2 K= 65,688 N./cm. Yield K= 1 N./cm.  
 Yield Force= 265,900 N.  
 Node 5900 X2 K= 4,830,349 N./cm. Yield K= 1 N./cm.  
 Yield Force= 19,552,770 N.  
 Node 5900 Z2 K= 4,830,349 N./cm. Yield K= 1 N./cm.  
 Yield Force= 19,552,770 N.

-----  
 From 5950 To 5951 DX= .000 mm. DY= 1,585.600 mm. DZ= .000 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 5950 Y2 K= 37,774 N./cm. Yield K= 1 N./cm.  
 Yield Force= 152,904 N.  
 Node 5950 X2 K= 2,777,655 N./cm. Yield K= 1 N./cm.  
 Yield Force= 11,243,671 N.  
 Node 5950 Z2 K= 2,777,655 N./cm. Yield K= 1 N./cm.  
 Yield Force= 11,243,671 N.

-----  
 From 5951 To 5952 DX= .000 mm. DY= 378.757 mm. DZ= .000 mm.

#### BEND at "TO" end

Radius= 914.400 mm. (LONG) Bend Angle= 45.000

#### RESTRAINTS

Node 5951 Y2 K= 7,162 N./cm. Yield K= 1 N./cm.  
 Yield Force= 28,991 N.  
 Node 5951 X2 K= 526,660 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,131,866 N.  
 Node 5951 Z2 K= 526,660 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,131,866 N.

-----  
 From 5952 To 6000 DX= -535.643 mm. DY= 535.643 mm. DZ= .000 mm.

#### BEND at "TO" end

Radius= 914.400 mm. (LONG) Bend Angle= 45.000

#### RESTRAINTS

Node 5952 X2 K= 4,465 N./cm. Yield K= 1 N./cm.  
 Yield Force= 18,075 N. Dir Vec= -.7071 .7071 .0000  
 Node 5952 X2 K= 328,358 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,329,160 N. Dir Vec= .7071 .7071 .0000  
 Node 5952 Z2 K= 328,358 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,329,160 N.

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 INPUT LISTING

-----  
 From 6000 To 6001 DX= -1,968.912 mm. DY= .000 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 6000 X2 K= 7,176 N./cm. Yield K= 1 N./cm.  
 Yield Force= 29,049 N.  
 Node 6000 Y2 K= 527,701 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,136,081 N.  
 Node 6000 Z2 K= 527,701 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,136,081 N.

-----  
 From 6001 To 6002 DX= -1,590.155 mm. DY= .000 mm. DZ= .000 mm.

RESTRAINTS

Node 6001 X2 K= 9,887 N./cm. Yield K= 1 N./cm.  
 Yield Force= 40,022 N.  
 Node 6001 Y2 K= 727,044 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,943,003 N.  
 Node 6001 Z2 K= 727,044 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,943,003 N.

-----  
 From 6002 To 6003 DX= -1,590.155 mm. DY= .000 mm. DZ= .000 mm.

RESTRAINTS

Node 6002 X2 K= 9,887 N./cm. Yield K= 1 N./cm.  
 Yield Force= 40,022 N.  
 Node 6002 Y2 K= 727,044 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,943,003 N.  
 Node 6002 Z2 K= 727,044 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,943,003 N.

-----  
 From 6003 To 6050 DX= -2,815.134 mm. DY= .000 mm. DZ= .000 mm.

RESTRAINTS

Node 6003 X2 K= 13,695 N./cm. Yield K= 1 N./cm.  
 Yield Force= 55,438 N.  
 Node 6003 Y2 K= 1,007,084 N./cm. Yield K= 1 N./cm.  
 Yield Force= 4,076,576 N.  
 Node 6003 Z2 K= 1,007,084 N./cm. Yield K= 1 N./cm.  
 Yield Force= 4,076,576 N.

-----  
 From 6050 To 6100 DX= -8,500.000 mm. DY= .000 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

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Node 6050 X2 K= 35,177 N./cm. Yield K= 1 N./cm.  
 Yield Force= 142,394 N.  
 Node 6050 Y2 K= 2,586,730 N./cm. Yield K= 1 N./cm.  
 Yield Force= 10,470,823 N.  
 Node 6050 Z2 K= 2,586,730 N./cm. Yield K= 1 N./cm.  
 Yield Force= 10,470,823 N.

-----  
 From 6100 To 6101 DX= -1,833.243 mm. DY= .000 mm. DZ= .000 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 6100 X2 K= 32,125 N./cm. Yield K= 1 N./cm.  
 Yield Force= 130,037 N.  
 Node 6100 Y2 K= 2,362,262 N./cm. Yield K= 1 N./cm.  
 Yield Force= 9,562,198 N.  
 Node 6100 Z2 K= 2,362,262 N./cm. Yield K= 1 N./cm.  
 Yield Force= 9,562,198 N.

-----  
 From 6101 To 6102 DX= -181.885 mm. DY= .000 mm. DZ= .000 mm.

#### BEND at "TO" end

Radius= 914.400 mm. (LONG) Bend Angle= 22.500

#### RESTRAINTS

Node 6101 X2 K= 6,816 N./cm. Yield K= 1 N./cm.  
 Yield Force= 27,589 N.  
 Node 6101 Y2 K= 501,183 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,028,741 N.  
 Node 6101 Z2 K= 501,183 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,028,741 N.

-----  
 From 6102 To 6150 DX= -336.081 mm. DY= .000 mm. DZ= -139.209 mm.

#### BEND at "TO" end

Radius= 914.400 mm. (LONG) Bend Angle= 22.500

#### RESTRAINTS

Node 6102 X2 K= 2,233 N./cm. Yield K= 1 N./cm. Yield Force= 9,038 N.  
 Dir Vec= -.9239 .0000 -.3827  
 Node 6102 Y2 K= 164,179 N./cm. Yield K= 1 N./cm.  
 Yield Force= 664,580 N.  
 Node 6102 X2 K= 164,179 N./cm. Yield K= 1 N./cm.  
 Yield Force= 664,580 N. Dir Vec= -.3827 .0000 .9239

-----  
 From 6150 To 6151 DX= -694.069 mm. DY= .000 mm. DZ= -694.069 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

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#### INPUT LISTING

##### RESTRAINTS

Node 6150 X2 K= 3,602 N./cm. Yield K= 1 N./cm.  
 Yield Force= 14,582 N. Dir Vec= -.7071 .0000 -.7071  
 Node 6150 Y2 K= 264,902 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,072,297 N.  
 Node 6150 X2 K= 264,902 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,072,297 N. Dir Vec= -.7071 .0000 .7071

-----  
 From 6151 To 6152 DX= -128.612 mm. DY= .000 mm. DZ= -128.612 mm.

BEND at "TO" end

Radius= 914.400 mm. (LONG) Bend Angle= 22.500

##### RESTRAINTS

Node 6151 X2 K= 3,602 N./cm. Yield K= 1 N./cm.  
 Yield Force= 14,582 N. Dir Vec= -.7071 .0000 -.7071  
 Node 6151 Y2 K= 264,902 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,072,297 N.  
 Node 6151 X2 K= 264,902 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,072,297 N. Dir Vec= -.7071 .0000 .7071

-----  
 From 6152 To 6200 DX= -336.081 mm. DY= .000 mm. DZ= -139.209 mm.

BEND at "TO" end

Radius= 914.400 mm. (LONG) Bend Angle= 22.500

##### RESTRAINTS

Node 6152 X2 K= 2,233 N./cm. Yield K= 1 N./cm. Yield Force= 9,038 N.  
 Dir Vec= -.9239 .0000 -.3827  
 Node 6152 Y2 K= 164,179 N./cm. Yield K= 1 N./cm.  
 Yield Force= 664,580 N.  
 Node 6152 X2 K= 164,179 N./cm. Yield K= 1 N./cm.  
 Yield Force= 664,580 N. Dir Vec= -.3827 .0000 .9239

-----  
 From 6200 To 6201 DX= -2,968.372 mm. DY= .000 mm. DZ= .000 mm.

##### GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

##### RESTRAINTS

Node 6200 X2 K= 9,779 N./cm. Yield K= 1 N./cm.  
 Yield Force= 39,585 N.  
 Node 6200 Y2 K= 719,102 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,910,855 N.  
 Node 6200 Z2 K= 719,102 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,910,855 N.

-----  
 From 6201 To 6202 DX= -181.885 mm. DY= .000 mm. DZ= .000 mm.

BEND at "TO" end

Radius= 914.400 mm. (LONG) Bend Angle= 22.500

##### RESTRAINTS

Node 6201 X2 K= 9,779 N./cm. Yield K= 1 N./cm.  
 Yield Force= 39,585 N.  
 Node 6201 Y2 K= 719,102 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,910,855 N.

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INPUT LISTING

Node 6201 Z2 K= 719,102 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,910,855 N.

-----  
 From 6202 To 6250 DX= -336.081 mm. DY= .000 mm. DZ= 139.209 mm.  
 BEND at "TO" end

Radius= 914.400 mm. (LONG) Bend Angle= 22.500

RESTRAINTS

Node 6202 X2 K= 2,233 N./cm. Yield K= 1 N./cm. Yield Force= 9,038 N.

Dir Vec= -.9239 .0000 .3827

Node 6202 Y2 K= 164,179 N./cm. Yield K= 1 N./cm.

Yield Force= 664,580 N.

Node 6202 X2 K= 164,179 N./cm. Yield K= 1 N./cm.

Yield Force= 664,580 N. Dir Vec= .3827 .0000 .9239

-----  
 From 6250 To 6251 DX= -594.069 mm. DY= .000 mm. DZ= 594.069 mm.  
 GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 6250 X2 K= 3,163 N./cm. Yield K= 1 N./cm.

Yield Force= 12,803 N. Dir Vec= -.7071 .0000 .7071

Node 6250 Y2 K= 232,572 N./cm. Yield K= 1 N./cm.

Yield Force= 941,428 N.

Node 6250 X2 K= 232,572 N./cm. Yield K= 1 N./cm.

Yield Force= 941,428 N. Dir Vec= .7071 .0000 .7071

-----  
 From 6251 To 6252 DX= -128.612 mm. DY= .000 mm. DZ= 128.612 mm.  
 BEND at "TO" end

Radius= 914.400 mm. (LONG) Bend Angle= 22.500

RESTRAINTS

Node 6251 X2 K= 3,163 N./cm. Yield K= 1 N./cm.

Yield Force= 12,803 N. Dir Vec= -.7071 .0000 .7071

Node 6251 Y2 K= 232,572 N./cm. Yield K= 1 N./cm.

Yield Force= 941,428 N.

Node 6251 X2 K= 232,572 N./cm. Yield K= 1 N./cm.

Yield Force= 941,428 N. Dir Vec= .7071 .0000 .7071

-----  
 From 6252 To 6300 DX= -336.081 mm. DY= .000 mm. DZ= 139.209 mm.  
 BEND at "TO" end

Radius= 914.400 mm. (LONG) Bend Angle= 22.500

RESTRAINTS

Node 6252 X2 K= 2,233 N./cm. Yield K= 1 N./cm. Yield Force= 9,038 N.

Dir Vec= -.9239 .0000 .3827

Node 6252 Y2 K= 164,179 N./cm. Yield K= 1 N./cm.

Yield Force= 664,580 N.

Node 6252 X2 K= 164,179 N./cm. Yield K= 1 N./cm.

Yield Force= 664,580 N. Dir Vec= .3827 .0000 .9239

-----  
 From 6300 To 6301 DX= -1,772.041 mm. DY= .000 mm. DZ= .000 mm.  
 GENERAL

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#### INPUT LISTING

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 6300 X2 K= 6,060 N./cm. Yield K= 1 N./cm.  
 Yield Force= 24,530 N.  
 Node 6300 Y2 K= 445,612 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,803,791 N.  
 Node 6300 Z2 K= 445,612 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,803,791 N.

-----  
 From 6301 To 6302 DX= -1,171.544 mm. DY= .000 mm. DZ= .000 mm.

#### RESTRAINTS

Node 6301 X2 K= 8,586 N./cm. Yield K= 1 N./cm.  
 Yield Force= 34,754 N.  
 Node 6301 Y2 K= 631,346 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,555,627 N.  
 Node 6301 Z2 K= 631,346 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,555,627 N.

-----  
 From 6302 To 6350 DX= -1,171.544 mm. DY= .000 mm. DZ= .000 mm.

#### RESTRAINTS

Node 6302 X2 K= 7,284 N./cm. Yield K= 1 N./cm.  
 Yield Force= 29,486 N.  
 Node 6302 Y2 K= 535,648 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,168,251 N.  
 Node 6302 Z2 K= 535,648 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,168,251 N.

-----  
 From 6350 To 6399 DX= -2,885.450 mm. DY= .000 mm. DZ= .000 mm.

#### PIPE

Dia= 609.600 mm. Wall= 11.100 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Thk= .000 mm.  
 Insul Den= .0000000 kg./cu.cm. Clad Den= .0000000 kg./cu.cm.  
 Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 6350 X2 K= 21,583 N./cm. Yield K= 1 N./cm.  
 Yield Force= 87,366 N.  
 Node 6350 Y2 K= 1,587,098 N./cm. Yield K= 1 N./cm.  
 Yield Force= 6,424,413 N.  
 Node 6350 Z2 K= 1,587,098 N./cm. Yield K= 1 N./cm.  
 Yield Force= 6,424,413 N.

-----  
 From 6399 To 6400 DX= -2,885.450 mm. DY= .000 mm. DZ= .000 mm.

#### RESTRAINTS

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#### INPUT LISTING

Node 6400 X2 K= 17,941 N./cm. Yield K= 1 N./cm.  
 Yield Force= 72,623 N.  
 Node 6400 Y2 K= 1,319,274 N./cm. Yield K= 1 N./cm.  
 Yield Force= 5,340,288 N.  
 Node 6400 Z2 K= 1,319,274 N./cm. Yield K= 1 N./cm.  
 Yield Force= 5,340,288 N.

#### SIF's & TEE's

Node 6400 Welding Tee Use Notes 6,9,10 = ---

-----  
 From 6400 To 7500 DX= .000 mm. DY= -4,403.100 mm. DZ= .000 mm.  
 PIPE

Dia= 508.000 mm. Wall= 11.100 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Thk= .000 mm.  
 Insul Den= .0000000 kg./cu.cm. Clad Den= .0000000 kg./cu.cm.  
 Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 6400 Y2 K= 11,853 N./cm. Yield K= 1 N./cm.  
 Yield Force= 46,175 N.  
 Node 6400 X2 K= 968,687 N./cm. Yield K= 1 N./cm.  
 Yield Force= 3,773,519 N.  
 Node 6400 Z2 K= 968,687 N./cm. Yield K= 1 N./cm.  
 Yield Force= 3,773,519 N.

-----  
 From 7500 To 7550 DX= .000 mm. DY= -1,193.800 mm. DZ= .000 mm.  
 GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RIGID Weight= .01 N.

#### RESTRAINTS

Node 7500 Y2 K= 15,067 N./cm. Yield K= 1 N./cm.  
 Yield Force= 58,695 N.  
 Node 7500 X2 K= 1,231,324 N./cm. Yield K= 1 N./cm.  
 Yield Force= 4,796,623 N.  
 Node 7500 Z2 K= 1,231,324 N./cm. Yield K= 1 N./cm.  
 Yield Force= 4,796,623 N.

-----  
 From 7550 To 7600 DX= .000 mm. DY= -10,274.900 mm. DZ= .000 mm.  
 GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.

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INPUT LISTING

Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 7550 Y2 K= 30,875 N./cm. Yield K= 1 N./cm.

Yield Force= 120,272 N.

Node 7550 X2 K= 2,523,126 N./cm. Yield K= 1 N./cm.

Yield Force= 9,828,839 N.

Node 7550 Z2 K= 2,523,126 N./cm. Yield K= 1 N./cm.

Yield Force= 9,828,839 N.

-----  
 From 7600 To 7601 DX= .000 mm. DY= -1,237.700 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa

EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa

EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa

EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa

v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.

Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 7600 Y2 K= 30,993 N./cm. Yield K= 1 N./cm.

Yield Force= 120,732 N.

Node 7600 X2 K= 2,532,784 N./cm. Yield K= 1 N./cm.

Yield Force= 9,866,461 N.

Node 7600 Z2 K= 2,532,784 N./cm. Yield K= 1 N./cm.

Yield Force= 9,866,461 N.

-----  
 From 7601 To 7602 DX= .000 mm. DY= -315.631 mm. DZ= .000 mm.

BEND at "TO" end

Radius= 762.000 mm. (LONG) Bend Angle= 45.000

RESTRAINTS

Node 7601 Y2 K= 4,943 N./cm. Yield K= 1 N./cm.

Yield Force= 19,256 N.

Node 7601 X2 K= 403,960 N./cm. Yield K= 1 N./cm.

Yield Force= 1,573,627 N.

Node 7601 Z2 K= 403,960 N./cm. Yield K= 1 N./cm.

Yield Force= 1,573,627 N.

-----  
 From 7602 To 7650 DX= -446.369 mm. DY= -446.369 mm. DZ= .000 mm.

BEND at "TO" end

Radius= 762.000 mm. (LONG) Bend Angle= 45.000

RESTRAINTS

Node 7602 X2 K= 3,222 N./cm. Yield K= 1 N./cm.

Yield Force= 12,552 N. Dir Vec= -.7071 -.7071 .0000

Node 7602 X2 K= 263,330 N./cm. Yield K= 1 N./cm.

Yield Force= 1,025,800 N. Dir Vec= -.7071 .7071 .0000

Node 7602 Z2 K= 263,330 N./cm. Yield K= 1 N./cm.

Yield Force= 1,025,800 N.

-----  
 From 7650 To 7651 DX= -1,712.085 mm. DY= .000 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa

EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa

EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa

EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa

v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.



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INPUT LISTING

Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 7650 X2 K= 5,370 N./cm. Yield K= 1 N./cm.  
 Yield Force= 20,921 N.  
 Node 7650 Y2 K= 438,886 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,709,681 N.  
 Node 7650 Z2 K= 438,886 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,709,681 N.

-----  
 From 7651 To 7652 DX= -1,274.073 mm. DY= .000 mm. DZ= .000 mm.

RESTRAINTS

Node 7651 X2 K= 7,189 N./cm. Yield K= 1 N./cm.  
 Yield Force= 28,006 N.  
 Node 7651 Y2 K= 587,519 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,288,680 N.  
 Node 7651 Z2 K= 587,519 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,288,680 N.

-----  
 From 7652 To 7700 DX= -1,274.073 mm. DY= .000 mm. DZ= .000 mm.

RESTRAINTS

Node 7652 X2 K= 6,860 N./cm. Yield K= 1 N./cm.  
 Yield Force= 26,722 N.  
 Node 7652 Y2 K= 560,595 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,183,798 N.  
 Node 7652 Z2 K= 560,595 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,183,798 N.

-----  
 From 7700 To 7749 DX= -2,901.350 mm. DY= .000 mm. DZ= .000 mm.

GENERAL

P Hyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 7700 X2 K= 19,051 N./cm. Yield K= 1 N./cm.  
 Yield Force= 74,214 N.  
 Node 7700 Y2 K= 1,556,898 N./cm. Yield K= 1 N./cm.  
 Yield Force= 6,064,895 N.  
 Node 7700 Z2 K= 1,556,898 N./cm. Yield K= 1 N./cm.  
 Yield Force= 6,064,895 N.

-----  
 From 7749 To 7750 DX= -2,901.350 mm. DY= .000 mm. DZ= .000 mm.

RESTRAINTS

Node 7750 X2 K= 15,621 N./cm. Yield K= 1 N./cm.  
 Yield Force= 60,853 N.  
 Node 7750 Y2 K= 1,276,600 N./cm. Yield K= 1 N./cm.  
 Yield Force= 4,972,996 N.  
 Node 7750 Z2 K= 1,276,600 N./cm. Yield K= 1 N./cm.  
 Yield Force= 4,972,996 N.

-----  
 From 6400 To 6450 DX= -432.000 mm. DY= .000 mm. DZ= .000 mm.

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#### INPUT LISTING

##### PIPE

Dia= 609.600 mm. Wall= 11.100 mm.

##### GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Thk= .000 mm.  
 Insul Den= .0000000 kg./cu.cm. Clad Den= .0000000 kg./cu.cm.  
 Insul/Clad Unit Wt= .00 N./cm.

##### RESTRAINTS

Node 6400 X2 K= 1,343 N./cm. Yield K= 1 N./cm. Yield Force= 5,436 N.  
 Node 6400 Y2 K= 98,759 N./cm. Yield K= 1 N./cm.  
 Yield Force= 399,765 N.  
 Node 6400 Z2 K= 98,759 N./cm. Yield K= 1 N./cm.  
 Yield Force= 399,765 N.

-----  
 From 6450 To 6500 DX= -508.000 mm. DY= .000 mm. DZ= .000 mm.

##### PIPE

Dia= 609.600 mm. Wall= 11.100 mm.

##### GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Thk= .000 mm.  
 Insul Den= .0000000 kg./cu.cm. Clad Den= .0000000 kg./cu.cm.  
 Insul/Clad Unit Wt= .00 N./cm.

##### RESTRAINTS

Node 6450 X2 K= 2,922 N./cm. Yield K= 1 N./cm.  
 Yield Force= 11,829 N.  
 Node 6450 Y2 K= 214,891 N./cm. Yield K= 1 N./cm.  
 Yield Force= 869,859 N.  
 Node 6450 Z2 K= 214,891 N./cm. Yield K= 1 N./cm.  
 Yield Force= 869,859 N.

##### REDUCER

Diam2= 406.400 mm. Wall2= 11.100 mm.

-----  
 From 6500 To 6550 DX= -356.000 mm. DY= .000 mm. DZ= .000 mm.

##### PIPE

Dia= 406.400 mm. Wall= 11.100 mm.

##### GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Thk= .000 mm.  
 Insul Den= .0000000 kg./cu.cm. Clad Den= .0000000 kg./cu.cm.  
 Insul/Clad Unit Wt= .00 N./cm.

##### RESTRAINTS

Node 6500 X2 K= 2,377 N./cm. Yield K= 1 N./cm. Yield Force= 9,380 N.  
 Node 6500 Y2 K= 191,389 N./cm. Yield K= 1 N./cm.

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#### INPUT LISTING

Yield Force= 751,786 N.  
 Node 6500 Z2 K= 191,389 N./cm. Yield K= 1 N./cm.  
 Yield Force= 751,786 N.

#### ALLOWABLE STRESSES

B31.8 (2014) Restrained = --- Sh1= 358,527 KPa Sh2= 358,527 KPa  
 Sh3= 358,527 KPa Sh4= 358,527 KPa Sh5= 358,527 KPa Sh6= 358,527 KPa  
 Sh7= 358,527 KPa Sh8= 358,527 KPa Sh9= 358,527 KPa Sy= 358,527 KPa

#### REDUCER

Diam2= 323.850 mm. Wall2= 9.500 mm.

-----  
 From 6550 To 6600 DX= -6,204.000 mm. DY= .000 mm. DZ= .000 mm.

#### PIPE

Dia= 323.850 mm. Wall= 9.500 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Thk= .000 mm.  
 Insul Den= .0000000 kg./cu.cm. Clad Den= .0000000 kg./cu.cm.  
 Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 6550 X2 K= 12,204 N./cm. Yield K= 1 N./cm.  
 Yield Force= 44,269 N.  
 Node 6550 Y2 K= 1,343,361 N./cm. Yield K= 1 N./cm.  
 Yield Force= 4,871,310 N.  
 Node 6550 Z2 K= 1,343,361 N./cm. Yield K= 1 N./cm.  
 Yield Force= 4,871,310 N.

-----  
 From 6600 To 6601 DX= -2,002.594 mm. DY= .000 mm. DZ= .000 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 6600 X2 K= 15,088 N./cm. Yield K= 1 N./cm.  
 Yield Force= 54,608 N.  
 Node 6600 Y2 K= 1,677,437 N./cm. Yield K= 1 N./cm.  
 Yield Force= 6,071,104 N.  
 Node 6600 Z2 K= 1,677,437 N./cm. Yield K= 1 N./cm.  
 Yield Force= 6,071,104 N.

-----  
 From 6601 To 6602 DX= -2,002.594 mm. DY= .000 mm. DZ= .000 mm.

#### RESTRAINTS

Node 6601 X2 K= 7,364 N./cm. Yield K= 1 N./cm.  
 Yield Force= 26,651 N.  
 Node 6601 Y2 K= 818,665 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,962,972 N.  
 Node 6601 Z2 K= 818,665 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,962,972 N.

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-----  
 From 6602 To 6603 DX= -970.545 mm. DY= .000 mm. DZ= .000 mm.

RESTRAINTS

Node 6602 X2 K= 5,466 N./cm. Yield K= 1 N./cm.  
 Yield Force= 19,784 N.  
 Node 6602 Y2 K= 607,713 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,199,479 N.  
 Node 6602 Z2 K= 607,713 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,199,479 N.

-----  
 From 6603 To 6604 DX= -970.545 mm. DY= .000 mm. DZ= .000 mm.

RESTRAINTS

Node 6603 X2 K= 3,569 N./cm. Yield K= 1 N./cm.  
 Yield Force= 12,916 N.  
 Node 6603 Y2 K= 396,761 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,435,986 N.  
 Node 6603 Z2 K= 396,761 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,435,986 N.

-----  
 From 6604 To 6605 DX= -970.545 mm. DY= .000 mm. DZ= .000 mm.

RESTRAINTS

Node 6604 X2 K= 3,569 N./cm. Yield K= 1 N./cm.  
 Yield Force= 12,916 N.  
 Node 6604 Y2 K= 396,761 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,435,986 N.  
 Node 6604 Z2 K= 396,761 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,435,986 N.

-----  
 From 6605 To 6606 DX= -90.943 mm. DY= .000 mm. DZ= .000 mm.

BEND at "TO" end

Radius= 457.200 mm. (LONG) Bend Angle= 22.500

RESTRAINTS

Node 6605 X2 K= 2,114 N./cm. Yield K= 1 N./cm. Yield Force= 7,653 N.  
 Node 6605 Y2 K= 235,079 N./cm. Yield K= 1 N./cm.  
 Yield Force= 850,815 N.  
 Node 6605 Z2 K= 235,079 N./cm. Yield K= 1 N./cm.  
 Yield Force= 850,815 N.

-----  
 From 6606 To 6650 DX= -168.040 mm. DY= .000 mm. DZ= 69.605 mm.

BEND at "TO" end

Radius= 457.200 mm. (LONG) Bend Angle= 22.500

RESTRAINTS

Node 6606 X2 K= 660 N./cm. Yield K= 1 N./cm. Yield Force= 2,389 N.  
 Dir Vec= -.9239 .0000 .3827  
 Node 6606 Y2 K= 73,397 N./cm. Yield K= 1 N./cm.  
 Yield Force= 265,644 N.  
 Node 6606 X2 K= 73,397 N./cm. Yield K= 1 N./cm.  
 Yield Force= 265,644 N. Dir Vec= .3827 .0000 .9239

-----  
 From 6650 To 6651 DX= -1,196.485 mm. DY= .000 mm. DZ= 1,196.485 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa

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INPUT LISTING

v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 6650 X2 K= 3,274 N./cm. Yield K= 1 N./cm.  
 Yield Force= 11,849 N. Dir Vec= -.7071 .0000 .7071  
 Node 6650 Y2 K= 363,974 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,317,321 N.  
 Node 6650 X2 K= 363,974 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,317,321 N. Dir Vec= .7071 .0000 .7071

-----  
 From 6651 To 6652 DX= -64.306 mm. DY= .000 mm. DZ= 64.306 mm.

BEND at "TO" end

Radius= 457.200 mm. (LONG) Bend Angle= 22.500

RESTRAINTS

Node 6651 X2 K= 3,274 N./cm. Yield K= 1 N./cm.  
 Yield Force= 11,849 N. Dir Vec= -.7071 .0000 .7071  
 Node 6651 Y2 K= 363,974 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,317,321 N.  
 Node 6651 X2 K= 363,974 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,317,321 N. Dir Vec= .7071 .0000 .7071

-----  
 From 6652 To 6700 DX= -168.040 mm. DY= .000 mm. DZ= 69.605 mm.

BEND at "TO" end

Radius= 457.200 mm. (LONG) Bend Angle= 22.500

RESTRAINTS

Node 6652 X2 K= 660 N./cm. Yield K= 1 N./cm. Yield Force= 2,389 N.  
 Dir Vec= -.9239 .0000 .3827  
 Node 6652 Y2 K= 73,397 N./cm. Yield K= 1 N./cm.  
 Yield Force= 265,644 N.  
 Node 6652 X2 K= 73,397 N./cm. Yield K= 1 N./cm.  
 Yield Force= 265,644 N. Dir Vec= .3827 .0000 .9239

-----  
 From 6700 To 6701 DX= -600.073 mm. DY= .000 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 6700 X2 K= 1,266 N./cm. Yield K= 1 N./cm. Yield Force= 4,583 N.  
 Node 6700 Y2 K= 140,765 N./cm. Yield K= 1 N./cm.  
 Yield Force= 509,469 N.  
 Node 6700 Z2 K= 140,765 N./cm. Yield K= 1 N./cm.  
 Yield Force= 509,469 N.

-----  
 From 6701 To 6702 DX= -193.283 mm. DY= .000 mm. DZ= .000 mm.

BEND at "TO" end

Radius= 971.700 mm. (user) Bend Angle= 22.500

RESTRAINTS

Node 6701 X2 K= 1,638 N./cm. Yield K= 1 N./cm. Yield Force= 5,927 N.  
 Node 6701 Y2 K= 182,063 N./cm. Yield K= 1 N./cm.

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INPUT LISTING

Yield Force= 658,937 N.  
 Node 6701 Z2 K= 182,063 N./cm. Yield K= 1 N./cm.  
 Yield Force= 658,937 N.

-----  
 From 6702 To 6800 DX= -357.141 mm. DY= -147.933 mm. DZ= .000 mm.  
 BEND at "TO" end

Radius= 971.700 mm. (user) Bend Angle= 22.500

RESTRAINTS

Node 6702 X2 K= 1,403 N./cm. Yield K= 1 N./cm. Yield Force= 5,078 N.  
 Dir Vec= -.9239 -.3827 .0000  
 Node 6702 X2 K= 155,993 N./cm. Yield K= 1 N./cm.  
 Yield Force= 564,582 N. Dir Vec= -.3827 .9239 .0000  
 Node 6702 Z2 K= 155,993 N./cm. Yield K= 1 N./cm.  
 Yield Force= 564,582 N.

-----  
 From 6800 To 6801 DX= -215.798 mm. DY= -215.798 mm. DZ= .000 mm.  
 GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

BEND at "TO" end

Radius= 850.000 mm. (user) Bend Angle= 15.000

RESTRAINTS

Node 6800 X2 K= 1,111 N./cm. Yield K= 1 N./cm. Yield Force= 4,020 N.  
 Dir Vec= -.7071 -.7071 .0000  
 Node 6800 X2 K= 123,481 N./cm. Yield K= 1 N./cm.  
 Yield Force= 446,911 N. Dir Vec= -.7071 .7071 .0000  
 Node 6800 Z2 K= 123,481 N./cm. Yield K= 1 N./cm.  
 Yield Force= 446,911 N.

-----  
 From 6801 To 6850 DX= -111.903 mm. DY= -193.819 mm. DZ= .000 mm.  
 BEND at "TO" end

Radius= 850.000 mm. (user) Bend Angle= 15.000

RESTRAINTS

Node 6801 X2 K= 818 N./cm. Yield K= 1 N./cm. Yield Force= 2,961 N.  
 Dir Vec= -.5000 -.8660 .0000  
 Node 6801 X2 K= 90,968 N./cm. Yield K= 1 N./cm.  
 Yield Force= 329,240 N. Dir Vec= -.8660 .5000 .0000  
 Node 6801 Z2 K= 90,968 N./cm. Yield K= 1 N./cm.  
 Yield Force= 329,240 N.

-----  
 From 6850 To 6851 DX= -280.170 mm. DY= -1,045.560 mm. DZ= .000 mm.  
 GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

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INPUT LISTING

Node 6850 X2 K= 2,194 N./cm. Yield K= 1 N./cm. Yield Force= 7,939 N.  
 Dir Vec= -.2588 -.9659 .0000  
 Node 6850 X2 K= 243,865 N./cm. Yield K= 1 N./cm.  
 Yield Force= 882,613 N. Dir Vec= -.9659 .2588 .0000  
 Node 6850 Z2 K= 243,865 N./cm. Yield K= 1 N./cm.  
 Yield Force= 882,613 N.

-----  
 From 6851 To 6852 DX= -236.274 mm. DY= -881.744 mm. DZ= .000 mm.

RESTRAINTS

Node 6851 X2 K= 3,463 N./cm. Yield K= 1 N./cm.  
 Yield Force= 12,532 N. Dir Vec= -.2588 -.9659 .0000  
 Node 6851 X2 K= 384,968 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,393,306 N. Dir Vec= -.9659 .2588 .0000  
 Node 6851 Z2 K= 384,968 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,393,306 N.

-----  
 From 6852 To 6900 DX= -236.274 mm. DY= -881.744 mm. DZ= .000 mm.

RESTRAINTS

Node 6852 X2 K= 3,357 N./cm. Yield K= 1 N./cm.  
 Yield Force= 12,149 N. Dir Vec= -.2588 -.9659 .0000  
 Node 6852 X2 K= 373,176 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,350,626 N. Dir Vec= -.9659 .2588 .0000  
 Node 6852 Z2 K= 373,176 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,350,626 N.

-----  
 From 6900 To 6950 DX= -1,820.613 mm. DY= -6,794.301 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 6900 X2 K= 14,611 N./cm. Yield K= 1 N./cm.  
 Yield Force= 52,880 N. Dir Vec= -.2588 -.9659 .0000  
 Node 6900 X2 K= 1,624,345 N./cm. Yield K= 1 N./cm.  
 Yield Force= 5,878,951 N. Dir Vec= -.9659 .2588 .0000  
 Node 6900 Z2 K= 1,624,345 N./cm. Yield K= 1 N./cm.  
 Yield Force= 5,878,951 N.

-----  
 From 6950 To 7000 DX= -1,820.613 mm. DY= -6,794.301 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 6950 X2 K= 25,865 N./cm. Yield K= 1 N./cm.  
 Yield Force= 93,611 N. Dir Vec= -.2588 -.9659 .0000  
 Node 6950 X2 K= 2,875,514 N./cm. Yield K= 1 N./cm.

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INPUT LISTING

Yield Force= 10,407,276 N. Dir Vec= -.9659 .2588 .0000  
 Node 6950 Z2 K= 2,875,514 N./cm. Yield K= 1 N./cm.  
 Yield Force= 10,407,276 N.

-----  
 From 7000 To 7001 DX= -292.755 mm. DY= -1,092.524 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 7000 X2 K= 15,012 N./cm. Yield K= 1 N./cm.  
 Yield Force= 54,332 N. Dir Vec= -.2588 -.9659 .0000  
 Node 7000 X2 K= 1,668,949 N./cm. Yield K= 1 N./cm.  
 Yield Force= 6,040,383 N. Dir Vec= -.9659 .2588 .0000  
 Node 7000 Z2 K= 1,668,949 N./cm. Yield K= 1 N./cm.  
 Yield Force= 6,040,383 N.

-----  
 From 7001 To 7002 DX= -16.485 mm. DY= -61.521 mm. DZ= .000 mm.

BEND at "TO" end

Radius= 971.700 mm. (user) Bend Angle= 7.500

RESTRAINTS

Node 7001 X2 K= 2,313 N./cm. Yield K= 1 N./cm. Yield Force= 8,373 N.  
 Dir Vec= -.2588 -.9659 .0000  
 Node 7001 X2 K= 257,191 N./cm. Yield K= 1 N./cm.  
 Yield Force= 930,846 N. Dir Vec= -.9659 .2588 .0000  
 Node 7001 Z2 K= 257,191 N./cm. Yield K= 1 N./cm.  
 Yield Force= 930,846 N.

-----  
 From 7002 To 7050 DX= -16.628 mm. DY= -126.293 mm. DZ= .000 mm.

BEND at "TO" end

Radius= 971.700 mm. (user) Bend Angle= 7.500

RESTRAINTS

Node 7002 X2 K= 468 N./cm. Yield K= 1 N./cm. Yield Force= 1,693 N.  
 Dir Vec= -.1305 -.9914 .0000  
 Node 7002 X2 K= 52,000 N./cm. Yield K= 1 N./cm.  
 Yield Force= 188,202 N. Dir Vec= -.9914 .1305 .0000  
 Node 7002 Z2 K= 52,000 N./cm. Yield K= 1 N./cm.  
 Yield Force= 188,202 N.

-----  
 From 7050 To 7051 DX= .000 mm. DY= -1,034.236 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 7050 Y2 K= 2,018 N./cm. Yield K= 1 N./cm. Yield Force= 7,305 N.  
 Node 7050 X2 K= 224,380 N./cm. Yield K= 1 N./cm.



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INPUT LISTING

Yield Force= 812,094 N.  
 Node 7050 Z2 K= 224,380 N./cm. Yield K= 1 N./cm.  
 Yield Force= 812,094 N.

-----  
 From 7051 To 7052 DX= .000 mm. DY= -970.545 mm. DZ= .000 mm.

RESTRAINTS

Node 7051 Y2 K= 3,569 N./cm. Yield K= 1 N./cm.  
 Yield Force= 12,916 N.  
 Node 7051 X2 K= 396,761 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,435,986 N.  
 Node 7051 Z2 K= 396,761 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,435,986 N.

-----  
 From 7052 To 7053 DX= .000 mm. DY= -1,041.989 mm. DZ= .000 mm.

RESTRAINTS

Node 7052 Y2 K= 3,700 N./cm. Yield K= 1 N./cm.  
 Yield Force= 13,392 N.  
 Node 7052 X2 K= 411,364 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,488,839 N.  
 Node 7052 Z2 K= 411,364 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,488,839 N.

-----  
 From 7053 To 7100 DX= .000 mm. DY= -1,041.989 mm. DZ= .000 mm.

RESTRAINTS

Node 7053 Y2 K= 3,831 N./cm. Yield K= 1 N./cm.  
 Yield Force= 13,867 N.  
 Node 7053 X2 K= 425,967 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,541,693 N.  
 Node 7053 Z2 K= 425,967 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,541,693 N.

-----  
 From 7100 To 7150 DX= .000 mm. DY= -10,910.200 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 7100 Y2 K= 21,975 N./cm. Yield K= 1 N./cm.  
 Yield Force= 79,532 N.  
 Node 7100 X2 K= 2,443,040 N./cm. Yield K= 1 N./cm.  
 Yield Force= 8,842,034 N.  
 Node 7100 Z2 K= 2,443,040 N./cm. Yield K= 1 N./cm.  
 Yield Force= 8,842,034 N.

-----  
 From 7150 To 7199 DX= .000 mm. DY= -5,455.100 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

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#### INPUT LISTING

Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 7150 Y2 K= 40,118 N./cm. Yield K= 1 N./cm.  
 Yield Force= 145,197 N.  
 Node 7150 X2 K= 4,460,113 N./cm. Yield K= 1 N./cm.  
 Yield Force= 16,142,375 N.  
 Node 7150 Z2 K= 4,460,113 N./cm. Yield K= 1 N./cm.  
 Yield Force= 16,142,375 N.

-----  
 From 7199 To 7200 DX= .000 mm. DY= -5,455.100 mm. DZ= .000 mm.

#### RESTRAINTS

Node 7200 ANC

-----  
 From 2350 To 2400 DX= .000 mm. DY= 9,758.500 mm. DZ= .000 mm.

#### PIPE

Dia= 1,422.000 mm. Wall= 21.800 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Thk= .000 mm.  
 Insul Den= .0000000 kg./cu.cm. Clad Den= .0000000 kg./cu.cm.  
 Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 2350 Y2 K= 56,095 N./cm. Yield K= 1 N./cm.  
 Yield Force= 295,422 N.  
 Node 2350 X2 K= 2,902,464 N./cm. Yield K= 1 N./cm.  
 Yield Force= 15,285,823 N.  
 Node 2350 Z2 K= 2,902,464 N./cm. Yield K= 1 N./cm.  
 Yield Force= 15,285,823 N.

#### ALLOWABLE STRESSES

B31.8 (2014) Restrained = --- Sh1= 448,159 KPa Sh2= 448,159 KPa  
 Sh3= 448,159 KPa Sh4= 448,159 KPa Sh5= 448,159 KPa Sh6= 448,159 KPa  
 Sh7= 448,159 KPa Sh8= 448,159 KPa Sh9= 448,159 KPa Sy= 448,159 KPa

-----  
 From 2400 To 2450 DX= .000 mm. DY= 9,758.500 mm. DZ= .000 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 2400 Y2 K= 112,189 N./cm. Yield K= 1 N./cm.  
 Yield Force= 590,844 N.  
 Node 2400 X2 K= 5,804,927 N./cm. Yield K= 1 N./cm.  
 Yield Force= 30,571,646 N.  
 Node 2400 Z2 K= 5,804,927 N./cm. Yield K= 1 N./cm.  
 Yield Force= 30,571,646 N.

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#### INPUT LISTING

From 2450 To 2500 DX= .000 mm. DY= 7,300.000 mm. DZ= .000 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 2450 Y2 K= 98,057 N./cm. Yield K= 1 N./cm.  
 Yield Force= 516,417 N.  
 Node 2450 X2 K= 5,073,697 N./cm. Yield K= 1 N./cm.  
 Yield Force= 26,720,624 N.  
 Node 2450 Z2 K= 5,073,697 N./cm. Yield K= 1 N./cm.  
 Yield Force= 26,720,624 N.

-----  
 From 2500 To 2550 DX= .000 mm. DY= 11,181.000 mm. DZ= .000 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 2500 Y2 K= 106,234 N./cm. Yield K= 1 N./cm.  
 Yield Force= 559,480 N.  
 Node 2500 X2 K= 5,496,790 N./cm. Yield K= 1 N./cm.  
 Yield Force= 28,948,844 N.  
 Node 2500 Z2 K= 5,496,790 N./cm. Yield K= 1 N./cm.  
 Yield Force= 28,948,844 N.

-----  
 From 2550 To 2551 DX= .000 mm. DY= 2,691.962 mm. DZ= .000 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 2550 Y2 K= 79,746 N./cm. Yield K= 1 N./cm.  
 Yield Force= 419,980 N.  
 Node 2550 X2 K= 4,126,225 N./cm. Yield K= 1 N./cm.  
 Yield Force= 21,730,760 N.  
 Node 2550 Z2 K= 4,126,225 N./cm. Yield K= 1 N./cm.  
 Yield Force= 21,730,760 N.

-----  
 From 2551 To 2552 DX= .000 mm. DY= 2,691.962 mm. DZ= .000 mm.

#### RESTRAINTS

Node 2551 Y2 K= 30,948 N./cm. Yield K= 1 N./cm.  
 Yield Force= 162,989 N.

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Node 2551 X2 K= 1,601,337 N./cm. Yield K= 1 N./cm.  
 Yield Force= 8,433,438 N.  
 Node 2551 Z2 K= 1,601,337 N./cm. Yield K= 1 N./cm.  
 Yield Force= 8,433,438 N.

-----  
 From 2552 To 2553 DX= .000 mm. DY= 3,334.135 mm. DZ= .000 mm.

RESTRAINTS

Node 2552 Y2 K= 34,640 N./cm. Yield K= 1 N./cm.  
 Yield Force= 182,430 N.  
 Node 2552 X2 K= 1,792,338 N./cm. Yield K= 1 N./cm.  
 Yield Force= 9,439,346 N.  
 Node 2552 Z2 K= 1,792,338 N./cm. Yield K= 1 N./cm.  
 Yield Force= 9,439,346 N.

-----  
 From 2553 To 2554 DX= .000 mm. DY= 1,143.057 mm. DZ= .000 mm.

BEND at "TO" end

Radius= 4,266.000 mm. (user) Bend Angle= 30.000

RESTRAINTS

Node 2553 Y2 K= 32,005 N./cm. Yield K= 1 N./cm.  
 Yield Force= 168,555 N.  
 Node 2553 X2 K= 1,656,021 N./cm. Yield K= 1 N./cm.  
 Yield Force= 8,721,434 N.  
 Node 2553 Z2 K= 1,656,021 N./cm. Yield K= 1 N./cm.  
 Yield Force= 8,721,434 N.

-----  
 From 2554 To 2600 DX= -1,143.044 mm. DY= 1,979.840 mm. DZ= .000 mm.

BEND at "TO" end

Radius= 4,266.000 mm. (user) Bend Angle= 30.000

RESTRAINTS

Node 2554 X2 K= 25,679 N./cm. Yield K= 1 N./cm.  
 Yield Force= 135,240 N. Dir Vec= -.5000 .8660 .0000  
 Node 2554 X2 K= 1,328,703 N./cm. Yield K= 1 N./cm.  
 Yield Force= 6,997,615 N. Dir Vec= .8660 .5000 .0000  
 Node 2554 Z2 K= 1,328,703 N./cm. Yield K= 1 N./cm.  
 Yield Force= 6,997,615 N.

-----  
 From 2600 To 2650 DX= -3,186.956 mm. DY= 1,840.044 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 2600 X2 K= 27,423 N./cm. Yield K= 1 N./cm.  
 Yield Force= 144,422 N. Dir Vec= -.8660 .5000 .0000  
 Node 2600 X2 K= 1,418,915 N./cm. Yield K= 1 N./cm.  
 Yield Force= 7,472,714 N. Dir Vec= .5000 .8660 .0000  
 Node 2600 Z2 K= 1,418,915 N./cm. Yield K= 1 N./cm.  
 Yield Force= 7,472,714 N.

-----  
 From 2650 To 2700 DX= -12,491.459 mm. DY= 7,212.160 mm. DZ= .000 mm.

GENERAL

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#### INPUT LISTING

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 2650 X2 K= 97,496 N./cm. Yield K= 1 N./cm.  
 Yield Force= 513,464 N. Dir Vec= -.8660 .5000 .0000  
 Node 2650 X2 K= 5,044,683 N./cm. Yield K= 1 N./cm.  
 Yield Force= 26,567,824 N. Dir Vec= .5000 .8660 .0000  
 Node 2650 Z2 K= 5,044,683 N./cm. Yield K= 1 N./cm.  
 Yield Force= 26,567,824 N.

-----  
 From 2700 To 2701 DX= -3,340.149 mm. DY= 1,928.492 mm. DZ= .000 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 2700 X2 K= 105,084 N./cm. Yield K= 1 N./cm.  
 Yield Force= 553,423 N. Dir Vec= -.8660 .5000 .0000  
 Node 2700 X2 K= 5,437,275 N./cm. Yield K= 1 N./cm.  
 Yield Force= 28,635,408 N. Dir Vec= .5000 .8660 .0000  
 Node 2700 Z2 K= 5,437,275 N./cm. Yield K= 1 N./cm.  
 Yield Force= 28,635,408 N.

-----  
 From 2701 To 2702 DX= -486.394 mm. DY= 280.828 mm. DZ= .000 mm.

#### BEND at "TO" end

Radius= 4,266.000 mm. (user) Bend Angle= 15.000

#### RESTRAINTS

Node 2701 X2 K= 28,591 N./cm. Yield K= 1 N./cm.  
 Yield Force= 150,572 N. Dir Vec= -.8660 .5000 .0000  
 Node 2701 X2 K= 1,479,343 N./cm. Yield K= 1 N./cm.  
 Yield Force= 7,790,958 N. Dir Vec= .5000 .8660 .0000  
 Node 2701 Z2 K= 1,479,343 N./cm. Yield K= 1 N./cm.  
 Yield Force= 7,790,958 N.

-----  
 From 2702 To 2750 DX= -1,085.010 mm. DY= 290.735 mm. DZ= .000 mm.

#### BEND at "TO" end

Radius= 4,266.000 mm. (user) Bend Angle= 15.000

#### RESTRAINTS

Node 2702 X2 K= 12,840 N./cm. Yield K= 1 N./cm.  
 Yield Force= 67,622 N. Dir Vec= -.9659 .2588 .0000  
 Node 2702 X2 K= 664,376 N./cm. Yield K= 1 N./cm.  
 Yield Force= 3,498,934 N. Dir Vec= .2588 .9659 .0000  
 Node 2702 Z2 K= 664,376 N./cm. Yield K= 1 N./cm.  
 Yield Force= 3,498,934 N.

-----  
 From 2750 To 2800 DX= -4,410.543 mm. DY= .000 mm. DZ= .000 mm.

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#### INPUT LISTING

##### GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

##### RESTRAINTS

Node 2750 X2 K= 28,545 N./cm. Yield K= 1 N./cm.  
 Yield Force= 150,330 N.  
 Node 2750 Y2 K= 1,476,963 N./cm. Yield K= 1 N./cm.  
 Yield Force= 7,778,426 N.  
 Node 2750 Z2 K= 1,476,963 N./cm. Yield K= 1 N./cm.  
 Yield Force= 7,778,426 N.

-----  
 From 2800 To 2850 DX= -10,113.000 mm. DY= .000 mm. DZ= .000 mm.

##### GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

##### RESTRAINTS

Node 2800 X2 K= 80,257 N./cm. Yield K= 1 N./cm.  
 Yield Force= 422,672 N.  
 Node 2800 Y2 K= 4,152,677 N./cm. Yield K= 1 N./cm.  
 Yield Force= 21,870,076 N.  
 Node 2800 Z2 K= 4,152,677 N./cm. Yield K= 1 N./cm.  
 Yield Force= 21,870,076 N.

-----  
 From 2850 To 2900 DX= -10,113.000 mm. DY= .000 mm. DZ= .000 mm.

##### GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

##### RESTRAINTS

Node 2850 X2 K= 116,265 N./cm. Yield K= 1 N./cm.  
 Yield Force= 612,307 N.  
 Node 2850 Y2 K= 6,015,804 N./cm. Yield K= 1 N./cm.  
 Yield Force= 31,682,232 N.  
 Node 2850 Z2 K= 6,015,804 N./cm. Yield K= 1 N./cm.  
 Yield Force= 31,682,232 N.

-----  
 From 2900 To 2901 DX= -2,623.530 mm. DY= .000 mm. DZ= .000 mm.

##### GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa

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EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 2900 X2 K= 73,213 N./cm. Yield K= 1 N./cm.  
 Yield Force= 385,576 N.  
 Node 2900 Y2 K= 3,788,217 N./cm. Yield K= 1 N./cm.  
 Yield Force= 19,950,642 N.  
 Node 2900 Z2 K= 3,788,217 N./cm. Yield K= 1 N./cm.  
 Yield Force= 19,950,642 N.

-----  
 From 2901 To 2902 DX= -424.259 mm. DY= .000 mm. DZ= .000 mm.

BEND at "TO" end

Radius= 2,133.000 mm. (LONG) Bend Angle= 22.499

RESTRAINTS

Node 2901 X2 K= 19,895 N./cm. Yield K= 1 N./cm.  
 Yield Force= 104,779 N.  
 Node 2901 Y2 K= 1,029,437 N./cm. Yield K= 1 N./cm.  
 Yield Force= 5,421,532 N.  
 Node 2901 Z2 K= 1,029,437 N./cm. Yield K= 1 N./cm.  
 Yield Force= 5,421,532 N.

-----  
 From 2902 To 3000 DX= -783.935 mm. DY= -324.699 mm. DZ= .000 mm.

BEND at "TO" end

Radius= 2,133.000 mm. (LONG) Bend Angle= 22.499

RESTRAINTS

Node 2902 X2 K= 9,629 N./cm. Yield K= 1 N./cm.  
 Yield Force= 50,713 N. Dir Vec= -.9239 -.3827 .0000  
 Node 2902 X2 K= 498,246 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,624,011 N. Dir Vec= -.3827 .9239 .0000  
 Node 2902 Z2 K= 498,246 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,624,011 N.

-----  
 From 3000 To 3001 DX= -1,328.847 mm. DY= -1,328.746 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 3000 X2 K= 13,178 N./cm. Yield K= 1 N./cm.  
 Yield Force= 69,402 N. Dir Vec= -.7071 -.7071 .0000  
 Node 3000 X2 K= 681,866 N./cm. Yield K= 1 N./cm.  
 Yield Force= 3,591,044 N. Dir Vec= -.7071 .7071 .0000  
 Node 3000 Z2 K= 681,866 N./cm. Yield K= 1 N./cm.  
 Yield Force= 3,591,044 N.

-----  
 From 3001 To 3002 DX= -198.591 mm. DY= -198.576 mm. DZ= .000 mm.

BEND at "TO" end

Radius= 2,133.000 mm. (LONG) Bend Angle= 15.001

RESTRAINTS

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INPUT LISTING

Node 3001 X2 K= 11,574 N./cm. Yield K= 1 N./cm.  
 Yield Force= 60,952 N. Dir Vec= -.7071 -.7071 .0000  
 Node 3001 X2 K= 598,847 N./cm. Yield K= 1 N./cm.  
 Yield Force= 3,153,826 N. Dir Vec= -.7071 .7071 .0000  
 Node 3001 Z2 K= 598,847 N./cm. Yield K= 1 N./cm.  
 Yield Force= 3,153,826 N.

-----  
 From 3002 To 3055 DX= -280.846 mm. DY= -486.423 mm. DZ= .000 mm.  
 BEND at "TO" end

Radius= 2,133.000 mm. (LONG) Bend Angle= 15.001

RESTRAINTS

Node 3002 X2 K= 6,420 N./cm. Yield K= 1 N./cm.  
 Yield Force= 33,813 N. Dir Vec= -.5000 -.8660 .0000  
 Node 3002 X2 K= 332,208 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,749,573 N. Dir Vec= -.8660 .5000 .0000  
 Node 3002 Z2 K= 332,208 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,749,573 N.

-----  
 From 3055 To 3050 DX= -990.541 mm. DY= -3,696.849 mm. DZ= .000 mm.  
 GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 3055 X2 K= 23,596 N./cm. Yield K= 1 N./cm.  
 Yield Force= 124,268 N. Dir Vec= -.2588 -.9659 .0000  
 Node 3055 X2 K= 1,220,911 N./cm. Yield K= 1 N./cm.  
 Yield Force= 6,429,928 N. Dir Vec= -.9659 .2588 .0000  
 Node 3055 Z2 K= 1,220,911 N./cm. Yield K= 1 N./cm.  
 Yield Force= 6,429,928 N.

-----  
 From 3050 To 3051 DX= -783.556 mm. DY= -2,924.348 mm. DZ= .000 mm.  
 GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 3050 X2 K= 37,789 N./cm. Yield K= 1 N./cm.  
 Yield Force= 199,014 N. Dir Vec= -.2588 -.9659 .0000  
 Node 3050 X2 K= 1,955,275 N./cm. Yield K= 1 N./cm.  
 Yield Force= 10,297,456 N. Dir Vec= -.9659 .2588 .0000  
 Node 3050 Z2 K= 1,955,275 N./cm. Yield K= 1 N./cm.  
 Yield Force= 10,297,456 N.

-----  
 From 3051 To 3052 DX= -109.807 mm. DY= -409.815 mm. DZ= .000 mm.  
 BEND at "TO" end

Radius= 2,133.000 mm. (LONG) Bend Angle= 22.500



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#### INPUT LISTING

##### RESTRAINTS

Node 3051 X2 K= 22,218 N./cm. Yield K= 1 N./cm.  
 Yield Force= 117,010 N. Dir Vec= -.2588 -.9659 .0000  
 Node 3051 X2 K= 1,149,598 N./cm. Yield K= 1 N./cm.  
 Yield Force= 6,054,356 N. Dir Vec= -.9659 .2588 .0000  
 Node 3051 Z2 K= 1,149,598 N./cm. Yield K= 1 N./cm.  
 Yield Force= 6,054,356 N.

-----  
 From 3052 To 3100 DX= -202.893 mm. DY= -757.244 mm. DZ= -324.717 mm.

BEND at "TO" end

Radius= 2,133.000 mm. (LONG) Bend Angle= 22.500

##### RESTRAINTS

Node 3052 X2 K= 9,630 N./cm. Yield K= 1 N./cm.  
 Yield Force= 50,714 N. Dir Vec= -.2391 -.8924 -.3827  
 Node 3052 X2 K= 498,259 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,624,084 N. Dir Vec= -.9659 .2588 .0000  
 Node 3052 X2 K= 498,259 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,624,084 N. Dir Vec= -.0990 -.3696 .9239

-----  
 From 3100 To 3101 DX= -231.779 mm. DY= -865.083 mm. DZ= -895.566 mm.

##### GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

##### RESTRAINTS

Node 3100 X2 K= 9,656 N./cm. Yield K= 1 N./cm.  
 Yield Force= 50,856 N. Dir Vec= -.1830 -.6830 -.7071  
 Node 3100 X2 K= 499,646 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,631,384 N. Dir Vec= -.9659 .2588 .0000  
 Node 3100 X2 K= 499,646 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,631,384 N. Dir Vec= -.1830 -.6830 .7071

-----  
 From 3101 To 3102 DX= -77.642 mm. DY= -289.789 mm. DZ= -300.000 mm.

BEND at "TO" end

Radius= 2,133.000 mm. (LONG) Bend Angle= 22.500

##### RESTRAINTS

Node 3101 X2 K= 9,656 N./cm. Yield K= 1 N./cm.  
 Yield Force= 50,855 N. Dir Vec= -.1830 -.6830 -.7071  
 Node 3101 X2 K= 499,646 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,631,384 N. Dir Vec= -.9659 .2588 .0000  
 Node 3101 X2 K= 499,646 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,631,384 N. Dir Vec= -.1830 -.6830 .7071

-----  
 From 3102 To 3150 DX= -202.897 mm. DY= -757.242 mm. DZ= -324.717 mm.

BEND at "TO" end

Radius= 2,133.000 mm. (LONG) Bend Angle= 22.500

##### RESTRAINTS

Node 3102 X2 K= 9,630 N./cm. Yield K= 1 N./cm.  
 Yield Force= 50,714 N. Dir Vec= -.2391 -.8924 -.3827  
 Node 3102 X2 K= 498,259 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,624,083 N. Dir Vec= -.9659 .2588 .0000

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INPUT LISTING

Node 3102 X2 K= 498,259 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,624,083 N. Dir Vec= -.0990 -.3696 .9239

-----  
 From 3150 To 3151 DX= -863.376 mm. DY= -3,222.135 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 3150 X2 K= 21,551 N./cm. Yield K= 1 N./cm.  
 Yield Force= 113,499 N. Dir Vec= -.2588 -.9659 .0000  
 Node 3150 X2 K= 1,115,104 N./cm. Yield K= 1 N./cm.  
 Yield Force= 5,872,696 N. Dir Vec= -.9659 .2588 .0000  
 Node 3150 Z2 K= 1,115,104 N./cm. Yield K= 1 N./cm.  
 Yield Force= 5,872,696 N.

-----  
 From 3151 To 3152 DX= -109.810 mm. DY= -409.812 mm. DZ= .000 mm.

BEND at "TO" end

Radius= 2,133.000 mm. (LONG) Bend Angle= 22.499

RESTRAINTS

Node 3151 X2 K= 21,551 N./cm. Yield K= 1 N./cm.  
 Yield Force= 113,499 N. Dir Vec= -.2588 -.9659 .0000  
 Node 3151 X2 K= 1,115,103 N./cm. Yield K= 1 N./cm.  
 Yield Force= 5,872,688 N. Dir Vec= -.9659 .2588 .0000  
 Node 3151 Z2 K= 1,115,103 N./cm. Yield K= 1 N./cm.  
 Yield Force= 5,872,688 N.

-----  
 From 3152 To 3200 DX= -202.910 mm. DY= -757.234 mm. DZ= 324.713 mm.

BEND at "TO" end

Radius= 2,133.000 mm. (LONG) Bend Angle= 22.499

RESTRAINTS

Node 3152 X2 K= 9,630 N./cm. Yield K= 1 N./cm.  
 Yield Force= 50,714 N. Dir Vec= -.2391 -.8924 .3827  
 Node 3152 X2 K= 498,256 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,624,067 N. Dir Vec= -.9659 .2588 .0000  
 Node 3152 X2 K= 498,256 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,624,067 N. Dir Vec= .0990 .3696 .9239

-----  
 From 3200 To 3201 DX= -205.938 mm. DY= -768.496 mm. DZ= 795.578 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 3200 X2 K= 8,844 N./cm. Yield K= 1 N./cm.  
 Yield Force= 46,575 N. Dir Vec= -.1830 -.6830 .7071  
 Node 3200 X2 K= 457,588 N./cm. Yield K= 1 N./cm.

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INPUT LISTING

Yield Force= 2,409,887 N. Dir Vec= -.9659 .2588 .0000  
 Node 3200 X2 K= 457,588 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,409,887 N. Dir Vec= .1830 .6830 .7071

-----  
 From 3201 To 3202 DX= -77.655 mm. DY= -289.785 mm. DZ= 299.997 mm.  
 BEND at "TO" end

Radius= 2,133.000 mm. (LONG) Bend Angle= 22.499

RESTRAINTS

Node 3201 X2 K= 8,844 N./cm. Yield K= 1 N./cm.  
 Yield Force= 46,575 N. Dir Vec= -.1830 -.6830 .7071  
 Node 3201 X2 K= 457,588 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,409,887 N. Dir Vec= -.9659 .2588 .0000  
 Node 3201 X2 K= 457,588 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,409,887 N. Dir Vec= .1830 .6830 .7071

-----  
 From 3202 To 3250 DX= -202.910 mm. DY= -757.234 mm. DZ= 324.713 mm.  
 BEND at "TO" end

Radius= 2,133.000 mm. (LONG) Bend Angle= 22.499

RESTRAINTS

Node 3202 X2 K= 9,630 N./cm. Yield K= 1 N./cm.  
 Yield Force= 50,714 N. Dir Vec= -.2391 -.8924 .3827  
 Node 3202 X2 K= 498,256 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,624,067 N. Dir Vec= -.9659 .2588 .0000  
 Node 3202 X2 K= 498,256 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,624,067 N. Dir Vec= .0990 .3696 .9239

-----  
 From 3250 To 3251 DX= -821.627 mm. DY= -3,066.318 mm. DZ= .000 mm.  
 GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 3250 X2 K= 20,624 N./cm. Yield K= 1 N./cm.  
 Yield Force= 108,615 N. Dir Vec= -.2588 -.9659 .0000  
 Node 3250 X2 K= 1,067,124 N./cm. Yield K= 1 N./cm.  
 Yield Force= 5,620,009 N. Dir Vec= -.9659 .2588 .0000  
 Node 3250 Z2 K= 1,067,124 N./cm. Yield K= 1 N./cm.  
 Yield Force= 5,620,009 N.

-----  
 From 3251 To 3300 DX= -711.817 mm. DY= -2,656.507 mm. DZ= .000 mm.  
 RESTRAINTS

Node 3251 X2 K= 31,618 N./cm. Yield K= 1 N./cm.  
 Yield Force= 166,516 N. Dir Vec= -.2588 -.9659 .0000  
 Node 3251 X2 K= 1,635,992 N./cm. Yield K= 1 N./cm.  
 Yield Force= 8,615,951 N. Dir Vec= -.9659 .2588 .0000  
 Node 3251 Z2 K= 1,635,992 N./cm. Yield K= 1 N./cm.  
 Yield Force= 8,615,951 N.

-----  
 From 3300 To 3301 DX= -728.774 mm. DY= -2,719.912 mm. DZ= .000 mm.  
 GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa

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INPUT LISTING

EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 3300 X2 K= 31,995 N./cm. Yield K= 1 N./cm.  
 Yield Force= 168,503 N. Dir Vec= -.2588 -.9659 .0000  
 Node 3300 X2 K= 1,655,513 N./cm. Yield K= 1 N./cm.  
 Yield Force= 8,718,760 N. Dir Vec= -.9659 .2588 .0000  
 Node 3300 Z2 K= 1,655,513 N./cm. Yield K= 1 N./cm.  
 Yield Force= 8,718,760 N.

-----  
 From 3301 To 3302 DX= -728.774 mm. DY= -2,719.912 mm. DZ= .000 mm.

RESTRAINTS

Node 3301 X2 K= 32,373 N./cm. Yield K= 1 N./cm.  
 Yield Force= 170,490 N. Dir Vec= -.2588 -.9659 .0000  
 Node 3301 X2 K= 1,675,035 N./cm. Yield K= 1 N./cm.  
 Yield Force= 8,821,569 N. Dir Vec= -.9659 .2588 .0000  
 Node 3301 Z2 K= 1,675,035 N./cm. Yield K= 1 N./cm.  
 Yield Force= 8,821,569 N.

-----  
 From 3302 To 3303 DX= -72.363 mm. DY= -270.073 mm. DZ= .000 mm.

BEND at "TO" end

Radius= 4,266.000 mm. (user) Bend Angle= 7.500

RESTRAINTS

Node 3302 X2 K= 19,396 N./cm. Yield K= 1 N./cm.  
 Yield Force= 102,150 N. Dir Vec= -.2588 -.9659 .0000  
 Node 3302 X2 K= 1,003,602 N./cm. Yield K= 1 N./cm.  
 Yield Force= 5,285,469 N. Dir Vec= -.9659 .2588 .0000  
 Node 3302 Z2 K= 1,003,602 N./cm. Yield K= 1 N./cm.  
 Yield Force= 5,285,469 N.

-----  
 From 3303 To 3350 DX= -72.988 mm. DY= -554.415 mm. DZ= .000 mm.

BEND at "TO" end

Radius= 4,266.000 mm. (user) Bend Angle= 7.500

RESTRAINTS

Node 3303 X2 K= 6,420 N./cm. Yield K= 1 N./cm.  
 Yield Force= 33,809 N. Dir Vec= -.1305 -.9914 .0000  
 Node 3303 X2 K= 332,169 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,749,370 N. Dir Vec= -.9914 .1305 .0000  
 Node 3303 Z2 K= 332,169 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,749,370 N.

-----  
 From 3350 To 3351 DX= .000 mm. DY= -3,195.644 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

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#### INPUT LISTING

Node 3350 Y2 K= 19,972 N./cm. Yield K= 1 N./cm.  
 Yield Force= 105,183 N.  
 Node 3350 X2 K= 1,033,402 N./cm. Yield K= 1 N./cm.  
 Yield Force= 5,442,408 N.  
 Node 3350 Z2 K= 1,033,402 N./cm. Yield K= 1 N./cm.  
 Yield Force= 5,442,408 N.

-----  
 From 3351 To 3400 DX= .000 mm. DY= -2,916.044 mm. DZ= .000 mm.

#### RESTRAINTS

Node 3351 Y2 K= 33,524 N./cm. Yield K= 1 N./cm.  
 Yield Force= 176,556 N.  
 Node 3351 X2 K= 1,734,634 N./cm. Yield K= 1 N./cm.  
 Yield Force= 9,135,447 N.  
 Node 3351 Z2 K= 1,734,634 N./cm. Yield K= 1 N./cm.  
 Yield Force= 9,135,447 N.

-----  
 From 3400 To 3450 DX= .000 mm. DY= -914.000 mm. DZ= .000 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 3400 Y2 K= 22,016 N./cm. Yield K= 1 N./cm.  
 Yield Force= 115,948 N.  
 Node 3400 X2 K= 1,139,167 N./cm. Yield K= 1 N./cm.  
 Yield Force= 5,999,423 N.  
 Node 3400 Z2 K= 1,139,167 N./cm. Yield K= 1 N./cm.  
 Yield Force= 5,999,423 N.

#### REDUCER

Diam2= 1,066.800 mm. Wall2= 16.600 mm.

-----  
 From 3450 To 3500 DX= .000 mm. DY= -1,000.000 mm. DZ= .000 mm.

#### PIPE

Dia= 1,066.800 mm. Wall= 16.600 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Thk= .000 mm.  
 Insul Den= .0000000 kg./cu.cm. Clad Den= .0000000 kg./cu.cm.  
 Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 3450 Y2 K= 9,981 N./cm. Yield K= 1 N./cm.  
 Yield Force= 50,046 N.  
 Node 3450 X2 K= 539,189 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,697,203 N.  
 Node 3450 Z2 K= 539,189 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,697,203 N.

-----

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#### INPUT LISTING

From 3500 To 3549 DX= .000 mm. DY= -2,664.000 mm. DZ= .000 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 3500 Y2 K= 29,913 N./cm. Yield K= 1 N./cm.  
 Yield Force= 141,599 N.  
 Node 3500 X2 K= 1,691,721 N./cm. Yield K= 1 N./cm.  
 Yield Force= 8,008,100 N.  
 Node 3500 Z2 K= 1,691,721 N./cm. Yield K= 1 N./cm.  
 Yield Force= 8,008,100 N.

-----  
 From 3549 To 3550 DX= .000 mm. DY= -2,664.000 mm. DZ= .000 mm.

#### RESTRAINTS

Node 3550 ANC

-----  
 From 850 To 899 DX= 2,000.000 mm. DY= .000 mm. DZ= .000 mm.

#### PIPE

Dia= 1,422.000 mm. Wall= 21.800 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Thk= .000 mm.  
 Insul Den= .0000000 kg./cu.cm. Clad Den= .0000000 kg./cu.cm.  
 Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 850 X2 K= 22,993 N./cm. Yield K= 1 N./cm.  
 Yield Force= 121,093 N.  
 Node 850 Y2 K= 1,189,717 N./cm. Yield K= 1 N./cm.  
 Yield Force= 6,265,645 N.  
 Node 850 Z2 K= 1,189,717 N./cm. Yield K= 1 N./cm.  
 Yield Force= 6,265,645 N.

-----  
 From 899 To 900 DX= 2,000.000 mm. DY= .000 mm. DZ= .000 mm.

#### RESTRAINTS

Node 900 X2 K= 22,993 N./cm. Yield K= 1 N./cm.  
 Yield Force= 121,093 N.  
 Node 900 Y2 K= 1,189,717 N./cm. Yield K= 1 N./cm.  
 Yield Force= 6,265,645 N.  
 Node 900 Z2 K= 1,189,717 N./cm. Yield K= 1 N./cm.  
 Yield Force= 6,265,645 N.

-----  
 From 950 To 970 DX= 10,000.000 mm. DY= .000 mm. DZ= .000 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa

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INPUT LISTING

EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 950 X2 K= 57,483 N./cm. Yield K= 1 N./cm.  
 Yield Force= 302,733 N.  
 Node 950 Y2 K= 2,974,293 N./cm. Yield K= 1 N./cm.  
 Yield Force= 15,664,111 N.  
 Node 950 Z2 K= 2,974,293 N./cm. Yield K= 1 N./cm.  
 Yield Force= 15,664,111 N.

-----  
 From 970 To 1000 DX= 10,000.000 mm. DY= .000 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 970 X2 K= 114,965 N./cm. Yield K= 1 N./cm.  
 Yield Force= 605,466 N.  
 Node 970 Y2 K= 5,948,585 N./cm. Yield K= 1 N./cm.  
 Yield Force= 31,328,222 N.  
 Node 970 Z2 K= 5,948,585 N./cm. Yield K= 1 N./cm.  
 Yield Force= 31,328,222 N.

-----  
 From 1000 To 1050 DX= 10,000.000 mm. DY= .000 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 1000 X2 K= 114,965 N./cm. Yield K= 1 N./cm.  
 Yield Force= 605,466 N.  
 Node 1000 Y2 K= 5,948,585 N./cm. Yield K= 1 N./cm.  
 Yield Force= 31,328,222 N.  
 Node 1000 Z2 K= 5,948,585 N./cm. Yield K= 1 N./cm.  
 Yield Force= 31,328,222 N.

-----  
 From 1050 To 1100 DX= 10,000.000 mm. DY= .000 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

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#### INPUT LISTING

##### RESTRAINTS

Node 1050 X2 K= 114,965 N./cm. Yield K= 1 N./cm.  
 Yield Force= 605,466 N.  
 Node 1050 Y2 K= 5,948,585 N./cm. Yield K= 1 N./cm.  
 Yield Force= 31,328,222 N.  
 Node 1050 Z2 K= 5,948,585 N./cm. Yield K= 1 N./cm.  
 Yield Force= 31,328,222 N.

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 From 1100 To 1150 DX= 10,000.000 mm. DY= .000 mm. DZ= .000 mm.

##### GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

##### RESTRAINTS

Node 1100 X2 K= 114,965 N./cm. Yield K= 1 N./cm.  
 Yield Force= 605,466 N.  
 Node 1100 Y2 K= 5,948,585 N./cm. Yield K= 1 N./cm.  
 Yield Force= 31,328,222 N.  
 Node 1100 Z2 K= 5,948,585 N./cm. Yield K= 1 N./cm.  
 Yield Force= 31,328,222 N.

-----  
 From 1150 To 1175 DX= 10,000.000 mm. DY= .000 mm. DZ= .000 mm.

##### GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

##### RESTRAINTS

Node 1150 X2 K= 114,965 N./cm. Yield K= 1 N./cm.  
 Yield Force= 605,466 N.  
 Node 1150 Y2 K= 5,948,585 N./cm. Yield K= 1 N./cm.  
 Yield Force= 31,328,222 N.  
 Node 1150 Z2 K= 5,948,585 N./cm. Yield K= 1 N./cm.  
 Yield Force= 31,328,222 N.

-----  
 From 1175 To 1199 DX= 5,000.000 mm. DY= .000 mm. DZ= .000 mm.

##### GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

##### RESTRAINTS

Node 1175 X2 K= 114,965 N./cm. Yield K= 1 N./cm.  
 Yield Force= 605,466 N.  
 Node 1175 Y2 K= 5,948,585 N./cm. Yield K= 1 N./cm.



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INPUT LISTING

Yield Force= 31,328,222 N.  
 Node 1175 Z2 K= 5,948,585 N./cm. Yield K= 1 N./cm.  
 Yield Force= 31,328,222 N.

-----  
 From 1199 To 1200 DX= 5,000.000 mm. DY= .000 mm. DZ= .000 mm.

RESTRAINTS

Node 1200 ANC

-----  
 From 900 To 949 DX= 500.000 mm. DY= .000 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (306)API-5L X65 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 900 X2 K= 5,748 N./cm. Yield K= 1 N./cm. Yield Force= 30,273 N.  
 Node 900 Y2 K= 297,429 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,566,411 N.  
 Node 900 Z2 K= 297,429 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,566,411 N.

-----  
 From 949 To 950 DX= 500.000 mm. DY= .000 mm. DZ= .000 mm.

RESTRAINTS

Node 950 X2 K= 5,748 N./cm. Yield K= 1 N./cm. Yield Force= 30,273 N.  
 Node 950 Y2 K= 297,429 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,566,411 N.  
 Node 950 Z2 K= 297,429 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,566,411 N.

-----  
 From 5000 To 5050 DX= -1,193.800 mm. DY= .000 mm. DZ= .000 mm.

PIPE

Dia= 508.000 mm. Wall= 11.100 mm.

GENERAL

T1= 60 C P1= 7,500.0000 KPa PHyd=12,470.0000 KPa Mat= (322)API-5L X60  
 E= 205,463,760 KPa EH1= 200,913,216 KPa EH2= 203,444,560 KPa  
 EH3= 203,444,560 KPa EH4= 203,444,560 KPa EH5= 203,444,560 KPa  
 EH6= 203,444,560 KPa EH7= 203,444,560 KPa EH8= 203,444,560 KPa  
 EH9= 203,444,560 KPa v = .300 Pipe Den= .0000000 kg./cu.cm.  
 Fluid Den= .0000000 kg./cu.cm. Refract. Den= .0000000 kg./cu.cm.  
 Insul Thk= .000 mm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RIGID Weight= .01 N.

ALLOWABLE STRESSES

B31.8 (2014) Restrained = --- Sh1= 413,685 KPa Sh2= 413,685 KPa  
 Sh3= 413,685 KPa Sh4= 413,685 KPa Sh5= 413,685 KPa Sh6= 413,685 KPa  
 Sh7= 413,685 KPa Sh8= 413,685 KPa Sh9= 413,685 KPa Sy= 413,685 KPa

-----  
 From 5050 To 5100 DX= -603.100 mm. DY= .000 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa

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#### INPUT LISTING

EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 5050 X2 K= 4,837 N./cm. Yield K= 1 N./cm.  
 Yield Force= 18,844 N.  
 Node 5050 Y2 K= 395,320 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,539,969 N.  
 Node 5050 Z2 K= 395,320 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,539,969 N.

-----  
 From 5100 To 4299 DX= -1,150.000 mm. DY= .000 mm. DZ= .000 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

-----  
 From 4299 To 4300 DX= -1,150.000 mm. DY= .000 mm. DZ= .000 mm.

#### RESTRAINTS

Node 4300 X2 K= 6,192 N./cm. Yield K= 1 N./cm.  
 Yield Force= 24,120 N.  
 Node 4300 Y2 K= 506,002 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,971,133 N.  
 Node 4300 Z2 K= 506,002 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,971,133 N.

-----  
 From 8100 To 8150 DY= 196.850 mm.

#### PIPE

Dia= 508.000 mm. Wall= 11.100 mm.

#### GENERAL

T1= 60 C P1= 7,500.0000 KPa PHyd=12,470.0000 KPa Mat= (322)API-5L X60  
 E= 205,463,760 KPa EH1= 200,913,216 KPa EH2= 203,444,560 KPa  
 EH3= 203,444,560 KPa EH4= 203,444,560 KPa EH5= 203,444,560 KPa  
 EH6= 203,444,560 KPa EH7= 203,444,560 KPa EH8= 203,444,560 KPa  
 EH9= 203,444,560 KPa v = .300 Pipe Den= .0078334 kg./cu.cm.  
 Fluid Den= .0000000 kg./cu.cm. Insul Thk= .000 mm.

RIGID Weight= 3,940.00 N.

#### ALLOWABLE STRESSES

B31.8 (2014) Restrained = --- Sh1= 413,685 KPa Sh2= 413,685 KPa  
 Sh3= 413,685 KPa Sh4= 413,685 KPa Sh5= 413,685 KPa Sh6= 413,685 KPa  
 Sh7= 413,685 KPa Sh8= 413,685 KPa Sh9= 413,685 KPa Sy= 413,685 KPa

-----  
 From 8150 To 8200 DY= 1,271.900 mm.

#### PIPE

Dia= 508.000 mm. Wall= 11.100 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa

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INPUT LISTING

v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Insul Thk= .000 mm.

BEND at "TO" end

Radius= 762.000 mm. (LONG) Bend Angle= 90.000 Angle/Node @1= 45.00 8199  
 Angle/Node @2= .00 8198

-----  
 From 8200 To 8250 DZ= -1,625.000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

-----  
 From 8250 To 8251 DX= .000 mm. DY= .000 mm. DZ= -1,221.000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078300 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

-----  
 From 8251 To 8252 DX= .000 mm. DY= .000 mm. DZ= -315.631 mm.

BEND at "TO" end

Radius= 762.000 mm. (LONG) Bend Angle= 45.000

-----  
 From 8252 To 8300 DX= .000 mm. DY= 446.369 mm. DZ= -446.369 mm.

BEND at "TO" end

Radius= 762.000 mm. (LONG) Bend Angle= 45.000

-----  
 From 8300 To 8350 DX= .000 mm. DY= 553.631 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078300 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 8350 +Z Mu = .30

-----  
 From 8350 To 8400 DX= .000 mm. DY= 6,300.000 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078300 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

-----  
 From 8400 To 8450 DX= .000 mm. DY= 650.000 mm. DZ= .000 mm.

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#### INPUT LISTING

##### GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

##### RESTRAINTS

Node 8400 +Z Mu = .30

-----  
 From 8450 To 8500 DX= .000 mm. DY= 1,439.000 mm. DZ= .000 mm.

##### GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

##### RESTRAINTS

Node 8450 Y2 K= 5,624 N./cm. Yield K= 1 N./cm.  
 Yield Force= 21,907 N.  
 Node 8450 X2 K= 459,582 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,790,303 N.  
 Node 8450 Z2 K= 459,582 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,790,303 N.

##### SIF's & TEE's

Node 8500 Welding Tee Use Notes 6,9,10 = ---

-----  
 From 8500 To 8550 DX= .000 mm. DY= 1,397.000 mm. DZ= .000 mm.

##### GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

##### RESTRAINTS

Node 8500 Y2 K= 7,635 N./cm. Yield K= 1 N./cm.  
 Yield Force= 29,741 N.  
 Node 8500 X2 K= 623,923 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,430,492 N.  
 Node 8500 Z2 K= 623,923 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,430,492 N.

-----  
 From 8550 To 8600 DX= .000 mm. DY= 1,193.800 mm. DZ= .000 mm.

##### GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.

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INPUT LISTING

Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RIGID Weight= .01 N.

RESTRAINTS

Node 8550 Y2 K= 6,975 N./cm. Yield K= 1 N./cm.

Yield Force= 27,170 N.

Node 8550 X2 K= 569,979 N./cm. Yield K= 1 N./cm.

Yield Force= 2,220,352 N.

Node 8550 Z2 K= 569,979 N./cm. Yield K= 1 N./cm.

Yield Force= 2,220,352 N.

-----  
 From 8600 To 8650 DX= .000 mm. DY= 7,164.300 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa

EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa

EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa

EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa

v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.

Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 8600 Y2 K= 22,501 N./cm. Yield K= 1 N./cm.

Yield Force= 87,651 N.

Node 8600 X2 K= 1,838,791 N./cm. Yield K= 1 N./cm.

Yield Force= 7,163,010 N.

Node 8600 Z2 K= 1,838,791 N./cm. Yield K= 1 N./cm.

Yield Force= 7,163,010 N.

-----  
 From 8650 To 8700 DX= .000 mm. DY= 2,039.800 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa

EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa

EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa

EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa

v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.

Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 8650 Y2 K= 24,778 N./cm. Yield K= 1 N./cm.

Yield Force= 96,523 N.

Node 8650 X2 K= 2,024,912 N./cm. Yield K= 1 N./cm.

Yield Force= 7,888,044 N.

Node 8650 Z2 K= 2,024,912 N./cm. Yield K= 1 N./cm.

Yield Force= 7,888,044 N.

-----  
 From 8700 To 8750 DX= .000 mm. DY= 508.000 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa

EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa

EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa

EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa

v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.

Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 8700 Y2 K= 6,859 N./cm. Yield K= 1 N./cm.

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#### INPUT LISTING

Yield Force= 26,719 N.  
 Node 8700 X2 K= 560,519 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,183,501 N.  
 Node 8700 Z2 K= 560,519 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,183,501 N.

#### REDUCER

Diam2= 323.850 mm. Wall2= 9.500 mm.

-----  
 From 8750 To 8800 DX= .000 mm. DY= 203.000 mm. DZ= .000 mm.

#### PIPE

Dia= 323.850 mm. Wall= 9.500 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (322)API-5L X60 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Thk= .000 mm.  
 Insul Den= .0000000 kg./cu.cm. Clad Den= .0000000 kg./cu.cm.  
 Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 8750 Y2 K= 1,741 N./cm. Yield K= 1 N./cm. Yield Force= 6,678 N.  
 Node 8750 X2 K= 153,254 N./cm. Yield K= 1 N./cm.  
 Yield Force= 585,539 N.  
 Node 8750 Z2 K= 153,254 N./cm. Yield K= 1 N./cm.  
 Yield Force= 585,539 N.

#### REDUCER

Diam2= 219.075 mm. Wall2= 7.000 mm.

-----  
 From 8800 To 8849 DX= .000 mm. DY= 339.000 mm. DZ= .000 mm.

#### PIPE

Dia= 219.075 mm. Wall= 7.000 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Thk= .000 mm.  
 Insul Den= .0000000 kg./cu.cm. Clad Den= .0000000 kg./cu.cm.  
 Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 8800 Y2 K= 1,248 N./cm. Yield K= 1 N./cm. Yield Force= 4,380 N.  
 Node 8800 X2 K= 174,060 N./cm. Yield K= 1 N./cm.  
 Yield Force= 609,135 N.  
 Node 8800 Z2 K= 174,060 N./cm. Yield K= 1 N./cm.  
 Yield Force= 609,135 N.

#### ALLOWABLE STRESSES

B31.8 (2014) Restrained = --- Sh1= 358,527 KPa Sh2= 358,527 KPa  
 Sh3= 358,527 KPa Sh4= 358,527 KPa Sh5= 358,527 KPa Sh6= 358,527 KPa  
 Sh7= 358,527 KPa Sh8= 358,527 KPa Sh9= 358,527 KPa Sy= 358,527 KPa

-----  
 From 8849 To 8850 DX= .000 mm. DY= 339.000 mm. DZ= .000 mm.

#### RESTRAINTS

Node 8850 Y2 K= 875 N./cm. Yield K= 1 N./cm. Yield Force= 3,030 N.

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INPUT LISTING

Node 8850 X2 K= 132,566 N./cm. Yield K= 1 N./cm.  
 Yield Force= 458,959 N.  
 Node 8850 Z2 K= 132,566 N./cm. Yield K= 1 N./cm.  
 Yield Force= 458,959 N.

SIF's & TEE's

Node 8850 Welding Tee Use Notes 6,9,10 = ---

-----  
 From 8850 To 8999 DX= 4,800.000 mm. DY= .000 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 8850 X2 K= 12,390 N./cm. Yield K= 1 N./cm.  
 Yield Force= 42,896 N.  
 Node 8850 Y2 K= 1,877,042 N./cm. Yield K= 1 N./cm.  
 Yield Force= 6,498,531 N.  
 Node 8850 Z2 K= 1,877,042 N./cm. Yield K= 1 N./cm.  
 Yield Force= 6,498,531 N.

-----  
 From 8999 To 9000 DX= 4,800.000 mm. DY= .000 mm. DZ= .000 mm.

RESTRAINTS

Node 9000 ANC

-----  
 From 8850 To 8900 DX= -678.000 mm. DY= .000 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 8850 X2 K= 875 N./cm. Yield K= 1 N./cm. Yield Force= 3,030 N.  
 Node 8850 Y2 K= 132,566 N./cm. Yield K= 1 N./cm.  
 Yield Force= 458,959 N.  
 Node 8850 Z2 K= 132,566 N./cm. Yield K= 1 N./cm.  
 Yield Force= 458,959 N.

-----  
 From 8900 To 8949 DX= -6,000.000 mm. DY= .000 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 8900 X2 K= 16,363 N./cm. Yield K= 1 N./cm.

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INPUT LISTING

Yield Force= 56,649 N.  
 Node 8900 Y2 K= 2,478,869 N./cm. Yield K= 1 N./cm.  
 Yield Force= 8,582,122 N.  
 Node 8900 Z2 K= 2,478,869 N./cm. Yield K= 1 N./cm.  
 Yield Force= 8,582,122 N.

-----  
 From 8949 To 8950 DX= -6,000.000 mm. DY= .000 mm. DZ= .000 mm.

RESTRAINTS

Node 8950 ANC

-----  
 From 11100 To 11150 DX= -111.200 mm.

PIPE

Dia= 114.300 mm. Wall= 5.200 mm.

GENERAL

T1= 60 C P1= 7,500.0000 KPa PHyd=12,470.0000 KPa Mat= (331)API-5L X52  
 E= 205,463,760 KPa EH1= 200,913,216 KPa EH2= 203,444,560 KPa  
 EH3= 203,444,560 KPa EH4= 203,444,560 KPa EH5= 203,444,560 KPa  
 EH6= 203,444,560 KPa EH7= 203,444,560 KPa EH8= 203,444,560 KPa  
 EH9= 203,444,560 KPa v = .300 Pipe Den= .0078334 kg./cu.cm.  
 Fluid Den= .0000000 kg./cu.cm. Insul Thk= .000 mm.

RIGID Weight= 270.00 N.

ALLOWABLE STRESSES

B31.8 (2014) Restrained = --- Sh1= 358,527 KPa Sh2= 358,527 KPa  
 Sh3= 358,527 KPa Sh4= 358,527 KPa Sh5= 358,527 KPa Sh6= 358,527 KPa  
 Sh7= 358,527 KPa Sh8= 358,527 KPa Sh9= 358,527 KPa Sy= 358,527 KPa

-----  
 From 11150 To 11200 DX= -272.000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

BEND at "TO" end

Radius= 152.400 mm. (LONG) Bend Angle= 90.000 Angle/Node @1= 45.00 11199  
 Angle/Node @2= .00 11198

-----  
 From 11200 To 11250 DZ= -1,000.000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

-----  
 From 11250 To 11251 DX= .000 mm. DY= .000 mm. DZ= -519.899 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS



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INPUT LISTING

Node 11250 Z2 K= 365 N./cm. Yield K= 1 N./cm. Yield Force= 1,206 N.  
 Node 11250 X2 K= 97,039 N./cm. Yield K= 1 N./cm.  
 Yield Force= 320,708 N.  
 Node 11250 Y2 K= 97,039 N./cm. Yield K= 1 N./cm.  
 Yield Force= 320,708 N.

-----  
 From 11251 To 11252 DX= .000 mm. DY= .000 mm. DZ= -63.039 mm.  
 BEND at "TO" end

Radius= 152.400 mm. (LONG) Bend Angle= 44.944

RESTRAINTS

Node 11251 Z2 K= 449 N./cm. Yield K= 1 N./cm. Yield Force= 1,483 N.  
 Node 11251 X2 K= 119,352 N./cm. Yield K= 1 N./cm.  
 Yield Force= 394,452 N.  
 Node 11251 Y2 K= 119,352 N./cm. Yield K= 1 N./cm.  
 Yield Force= 394,452 N.

-----  
 From 11252 To 11300 DX= -89.062 mm. DY= .000 mm. DZ= -89.237 mm.  
 BEND at "TO" end

Radius= 152.400 mm. (LONG) Bend Angle= 44.944

RESTRAINTS

Node 11252 X2 K= 168 N./cm. Yield K= 1 N./cm. Yield Force= 554 N.  
 Dir Vec= -.7064 .0000 -.7078  
 Node 11252 Y2 K= 44,626 N./cm. Yield K= 1 N./cm.  
 Yield Force= 147,487 N.  
 Node 11252 X2 K= 44,626 N./cm. Yield K= 1 N./cm.  
 Yield Force= 147,487 N. Dir Vec= -.7078 .0000 .7064

-----  
 From 11300 To 11301 DX= -449.320 mm. DY= .000 mm. DZ= -.882 mm.  
 GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 11300 X2 K= 355 N./cm. Yield K= 1 N./cm. Yield Force= 1,173 N.  
 Dir Vec= -1.0000 .0000 -.0020  
 Node 11300 Y2 K= 94,412 N./cm. Yield K= 1 N./cm.  
 Yield Force= 312,028 N.  
 Node 11300 X2 K= 94,412 N./cm. Yield K= 1 N./cm.  
 Yield Force= 312,028 N. Dir Vec= -.0020 .0000 1.0000

-----  
 From 11301 To 11302 DX= -386.282 mm. DY= .000 mm. DZ= -.758 mm.  
 RESTRAINTS

Node 11301 X2 K= 542 N./cm. Yield K= 1 N./cm. Yield Force= 1,791 N.  
 Dir Vec= -1.0000 .0000 -.0020  
 Node 11301 Y2 K= 144,199 N./cm. Yield K= 1 N./cm.  
 Yield Force= 476,570 N.  
 Node 11301 X2 K= 144,199 N./cm. Yield K= 1 N./cm.  
 Yield Force= 476,570 N. Dir Vec= -.0020 .0000 1.0000

-----  
 From 11302 To 11303 DX= -386.282 mm. DY= .000 mm. DZ= -.758 mm.  
 RESTRAINTS

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INPUT LISTING

Node 11302 X2 K= 542 N./cm. Yield K= 1 N./cm. Yield Force= 1,791 N.  
 Dir Vec= -1.0000 .0000 -.0020  
 Node 11302 Y2 K= 144,199 N./cm. Yield K= 1 N./cm.  
 Yield Force= 476,570 N.  
 Node 11302 X2 K= 144,199 N./cm. Yield K= 1 N./cm.  
 Yield Force= 476,570 N. Dir Vec= -.0020 .0000 1.0000

-----  
 From 11303 To 11304 DX= -579.423 mm. DY= .000 mm. DZ= -1.137 mm.

RESTRAINTS

Node 11303 X2 K= 678 N./cm. Yield K= 1 N./cm. Yield Force= 2,239 N.  
 Dir Vec= -1.0000 .0000 -.0020  
 Node 11303 Y2 K= 180,249 N./cm. Yield K= 1 N./cm.  
 Yield Force= 595,712 N.  
 Node 11303 X2 K= 180,249 N./cm. Yield K= 1 N./cm.  
 Yield Force= 595,712 N. Dir Vec= -.0020 .0000 1.0000

-----  
 From 11304 To 11305 DX= -2,291.278 mm. DY= .000 mm. DZ= -4.497 mm.

RESTRAINTS

Node 11304 X2 K= 2,014 N./cm. Yield K= 1 N./cm. Yield Force= 6,657 N.  
 Dir Vec= -1.0000 .0000 -.0020  
 Node 11304 Y2 K= 535,816 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,770,844 N.  
 Node 11304 X2 K= 535,816 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,770,844 N. Dir Vec= -.0020 .0000 1.0000

-----  
 From 11305 To 11350 DX= -5,243.352 mm. DY= .000 mm. DZ= -10.292 mm.

RESTRAINTS

Node 11305 X2 K= 5,287 N./cm. Yield K= 1 N./cm.  
 Yield Force= 17,472 N. Dir Vec= -1.0000 .0000 -.0020  
 Node 11305 Y2 K= 1,406,336 N./cm. Yield K= 1 N./cm.  
 Yield Force= 4,647,871 N.  
 Node 11305 X2 K= 1,406,336 N./cm. Yield K= 1 N./cm.  
 Yield Force= 4,647,871 N. Dir Vec= -.0020 .0000 1.0000

-----  
 From 11350 To 11399 DX= -4,712.500 mm. DY= .000 mm. DZ= -9.250 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 11350 X2 K= 10,292 N./cm. Yield K= 1 N./cm.  
 Yield Force= 34,014 N. Dir Vec= -1.0000 .0000 -.0020  
 Node 11350 Y2 K= 2,737,844 N./cm. Yield K= 1 N./cm.  
 Yield Force= 9,048,435 N.  
 Node 11350 X2 K= 2,737,844 N./cm. Yield K= 1 N./cm.  
 Yield Force= 9,048,435 N. Dir Vec= -.0020 .0000 1.0000

-----  
 From 11399 To 11400 DX= -4,712.500 mm. DY= .000 mm. DZ= -9.250 mm.

RESTRAINTS

Node 11400 X2 K= 6,613 N./cm. Yield K= 1 N./cm.  
 Yield Force= 21,856 N. Dir Vec= -1.0000 .0000 -.0020

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#### INPUT LISTING

Node 11400 X2 K= 1,759,174 N./cm. Yield K= 1 N./cm.  
 Yield Force= 5,813,980 N.  
 Node 11400 X2 K= 1,759,174 N./cm. Yield K= 1 N./cm.  
 Yield Force= 5,813,980 N. Dir Vec= -.0020 .0000 1.0000

#### SIF's & TEE's

Node 11400 Welding Tee Use Notes 6,9,10 = ---

-----  
 From 11400 To 12000 DX= .000 mm. DY= 8,673.400 mm. DZ= -15.500 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 11400 X2 K= 6,086 N./cm. Yield K= 1 N./cm.  
 Yield Force= 20,113 N. Dir Vec= .0000 1.0000 -.0018  
 Node 11400 X2 K= 1,618,887 N./cm. Yield K= 1 N./cm.  
 Yield Force= 5,350,341 N.  
 Node 11400 X2 K= 1,618,887 N./cm. Yield K= 1 N./cm.  
 Yield Force= 5,350,341 N. Dir Vec= .0000 .0018 1.0000

-----  
 From 12000 To 12049 DX= .000 mm. DY= 4,336.700 mm. DZ= -7.750 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

#### RESTRAINTS

Node 12000 X2 K= 12,171 N./cm. Yield K= 1 N./cm.  
 Yield Force= 40,225 N. Dir Vec= .0000 1.0000 -.0018  
 Node 12000 X2 K= 3,237,774 N./cm. Yield K= 1 N./cm.  
 Yield Force= 10,700,681 N.  
 Node 12000 X2 K= 3,237,774 N./cm. Yield K= 1 N./cm.  
 Yield Force= 10,700,681 N. Dir Vec= .0000 .0018 1.0000

-----  
 From 12049 To 12050 DX= .000 mm. DY= 4,336.700 mm. DZ= -7.750 mm.

#### RESTRAINTS

Node 12050 X2 K= 6,086 N./cm. Yield K= 1 N./cm.  
 Yield Force= 20,113 N. Dir Vec= .0000 1.0000 -.0018  
 Node 12050 X2 K= 1,618,887 N./cm. Yield K= 1 N./cm.  
 Yield Force= 5,350,341 N.  
 Node 12050 X2 K= 1,618,887 N./cm. Yield K= 1 N./cm.  
 Yield Force= 5,350,341 N. Dir Vec= .0000 .0018 1.0000

#### SIF's & TEE's

Node 12050 Welding Tee Use Notes 6,9,10 = ---

-----  
 From 12050 To 12500 DX= 305.000 mm. DY= .000 mm. DZ= .000 mm.

#### GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa

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INPUT LISTING

EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 12050 X2 K= 214 N./cm. Yield K= 1 N./cm. Yield Force= 707 N.  
 Node 12050 Y2 K= 56,928 N./cm. Yield K= 1 N./cm.  
 Yield Force= 188,144 N.  
 Node 12050 Z2 K= 56,928 N./cm. Yield K= 1 N./cm.  
 Yield Force= 188,144 N.

-----  
 From 12500 To 12549 DX= 1,500.000 mm. DY= .000 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 12500 X2 K= 2,319 N./cm. Yield K= 1 N./cm. Yield Force= 7,664 N.  
 Node 12500 Y2 K= 616,876 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,038,745 N.  
 Node 12500 Z2 K= 616,876 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,038,745 N.

-----  
 From 12549 To 12550 DX= 1,500.000 mm. DY= .000 mm. DZ= .000 mm.

RESTRAINTS

Node 12550 ANC

-----  
 From 12050 To 12100 DX= .000 mm. DY= 305.000 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 12050 Y2 K= 214 N./cm. Yield K= 1 N./cm. Yield Force= 707 N.  
 Node 12050 X2 K= 56,928 N./cm. Yield K= 1 N./cm.  
 Yield Force= 188,144 N.  
 Node 12050 Z2 K= 56,928 N./cm. Yield K= 1 N./cm.  
 Yield Force= 188,144 N.

-----  
 From 12100 To 12101 DX= .000 mm. DY= 630.876 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa

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INPUT LISTING

v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 12100 Y2 K= 657 N./cm. Yield K= 1 N./cm. Yield Force= 2,170 N.  
 Node 12100 X2 K= 174,681 N./cm. Yield K= 1 N./cm.  
 Yield Force= 577,311 N.  
 Node 12100 Z2 K= 174,681 N./cm. Yield K= 1 N./cm.  
 Yield Force= 577,311 N.

-----  
 From 12101 To 12102 DX= .000 mm. DY= 630.876 mm. DZ= .000 mm.

RESTRAINTS

Node 12101 Y2 K= 885 N./cm. Yield K= 1 N./cm. Yield Force= 2,926 N.  
 Node 12101 X2 K= 235,505 N./cm. Yield K= 1 N./cm.  
 Yield Force= 778,333 N.  
 Node 12101 Z2 K= 235,505 N./cm. Yield K= 1 N./cm.  
 Yield Force= 778,333 N.

-----  
 From 12102 To 12103 DX= .000 mm. DY= 386.283 mm. DZ= .000 mm.

RESTRAINTS

Node 12102 Y2 K= 714 N./cm. Yield K= 1 N./cm. Yield Force= 2,359 N.  
 Node 12102 X2 K= 189,852 N./cm. Yield K= 1 N./cm.  
 Yield Force= 627,451 N.  
 Node 12102 Z2 K= 189,852 N./cm. Yield K= 1 N./cm.  
 Yield Force= 627,451 N.

-----  
 From 12103 To 12104 DX= .000 mm. DY= 386.283 mm. DZ= .000 mm.

RESTRAINTS

Node 12103 Y2 K= 542 N./cm. Yield K= 1 N./cm. Yield Force= 1,791 N.  
 Node 12103 X2 K= 144,199 N./cm. Yield K= 1 N./cm.  
 Yield Force= 476,570 N.  
 Node 12103 Z2 K= 144,199 N./cm. Yield K= 1 N./cm.  
 Yield Force= 476,570 N.

-----  
 From 12104 To 12105 DX= .000 mm. DY= 386.283 mm. DZ= .000 mm.

RESTRAINTS

Node 12104 Y2 K= 542 N./cm. Yield K= 1 N./cm. Yield Force= 1,791 N.  
 Node 12104 X2 K= 144,199 N./cm. Yield K= 1 N./cm.  
 Yield Force= 476,570 N.  
 Node 12104 Z2 K= 144,199 N./cm. Yield K= 1 N./cm.  
 Yield Force= 476,570 N.

-----  
 From 12105 To 12106 DX= .000 mm. DY= 63.126 mm. DZ= .000 mm.

BEND at "TO" end

Radius= 152.400 mm. (LONG) Bend Angle= 45.000

RESTRAINTS

Node 12105 Y2 K= 355 N./cm. Yield K= 1 N./cm. Yield Force= 1,173 N.  
 Node 12105 X2 K= 94,440 N./cm. Yield K= 1 N./cm.  
 Yield Force= 312,121 N.  
 Node 12105 Z2 K= 94,440 N./cm. Yield K= 1 N./cm.  
 Yield Force= 312,121 N.

-----  
 From 12106 To 12150 DX= 89.274 mm. DY= 89.274 mm. DZ= .000 mm.

BEND at "TO" end

Radius= 152.400 mm. (LONG) Bend Angle= 45.000

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#### INPUT LISTING

##### RESTRAINTS

Node 12106 X2 K= 168 N./cm. Yield K= 1 N./cm. Yield Force= 555 N.  
 Dir Vec= .7071 .7071 .0000  
 Node 12106 X2 K= 44,682 N./cm. Yield K= 1 N./cm.  
 Yield Force= 147,671 N. Dir Vec= .7071 -.7071 .0000  
 Node 12106 Z2 K= 44,682 N./cm. Yield K= 1 N./cm.  
 Yield Force= 147,671 N.

-----  
 From 12150 To 12151 DX= 449.409 mm. DY= .000 mm. DZ= .000 mm.

##### GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

##### RESTRAINTS

Node 12150 X2 K= 355 N./cm. Yield K= 1 N./cm. Yield Force= 1,173 N.  
 Node 12150 Y2 K= 94,440 N./cm. Yield K= 1 N./cm.  
 Yield Force= 312,121 N.  
 Node 12150 Z2 K= 94,440 N./cm. Yield K= 1 N./cm.  
 Yield Force= 312,121 N.

-----  
 From 12151 To 12152 DX= 386.283 mm. DY= .000 mm. DZ= .000 mm.

##### RESTRAINTS

Node 12151 X2 K= 542 N./cm. Yield K= 1 N./cm. Yield Force= 1,791 N.  
 Node 12151 Y2 K= 144,199 N./cm. Yield K= 1 N./cm.  
 Yield Force= 476,570 N.  
 Node 12151 Z2 K= 144,199 N./cm. Yield K= 1 N./cm.  
 Yield Force= 476,570 N.

-----  
 From 12152 To 12153 DX= 386.283 mm. DY= .000 mm. DZ= .000 mm.

##### RESTRAINTS

Node 12152 X2 K= 542 N./cm. Yield K= 1 N./cm. Yield Force= 1,791 N.  
 Node 12152 Y2 K= 144,199 N./cm. Yield K= 1 N./cm.  
 Yield Force= 476,570 N.  
 Node 12152 Z2 K= 144,199 N./cm. Yield K= 1 N./cm.  
 Yield Force= 476,570 N.

-----  
 From 12153 To 12154 DX= 579.424 mm. DY= .000 mm. DZ= .000 mm.

##### RESTRAINTS

Node 12153 X2 K= 678 N./cm. Yield K= 1 N./cm. Yield Force= 2,239 N.  
 Node 12153 Y2 K= 180,249 N./cm. Yield K= 1 N./cm.  
 Yield Force= 595,712 N.  
 Node 12153 Z2 K= 180,249 N./cm. Yield K= 1 N./cm.  
 Yield Force= 595,712 N.

-----  
 From 12154 To 12155 DX= 3,054.664 mm. DY= .000 mm. DZ= .000 mm.

##### RESTRAINTS

Node 12154 X2 K= 2,550 N./cm. Yield K= 1 N./cm. Yield Force= 8,427 N.  
 Node 12154 Y2 K= 678,300 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,241,748 N.  
 Node 12154 Z2 K= 678,300 N./cm. Yield K= 1 N./cm.  
 Yield Force= 2,241,748 N.

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-----  
 From 12155 To 12199 DX= 1,527.332 mm. DY= .000 mm. DZ= .000 mm.

RESTRAINTS

Node 12155 X2 K= 4,287 N./cm. Yield K= 1 N./cm.  
 Yield Force= 14,167 N.  
 Node 12155 Y2 K= 1,140,302 N./cm. Yield K= 1 N./cm.  
 Yield Force= 3,768,641 N.  
 Node 12155 Z2 K= 1,140,302 N./cm. Yield K= 1 N./cm.  
 Yield Force= 3,768,641 N.

-----  
 From 12199 To 12200 DX= 1,527.332 mm. DY= .000 mm. DZ= .000 mm.

RESTRAINTS

Node 12200 ANC

-----  
 From 11400 To 11401 DX= -2,367.328 mm. DY= .000 mm. DZ= .000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

RESTRAINTS

Node 11400 X2 K= 1,661 N./cm. Yield K= 1 N./cm. Yield Force= 5,490 N.  
 Node 11400 Y2 K= 441,860 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,460,326 N.  
 Node 11400 Z2 K= 441,860 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,460,326 N.

-----  
 From 11401 To 11402 DX= -579.424 mm. DY= .000 mm. DZ= .000 mm.

RESTRAINTS

Node 11401 X2 K= 2,068 N./cm. Yield K= 1 N./cm. Yield Force= 6,833 N.  
 Node 11401 Y2 K= 550,009 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,817,753 N.  
 Node 11401 Z2 K= 550,009 N./cm. Yield K= 1 N./cm.  
 Yield Force= 1,817,753 N.

-----  
 From 11402 To 11403 DX= -386.283 mm. DY= .000 mm. DZ= .000 mm.

RESTRAINTS

Node 11402 X2 K= 678 N./cm. Yield K= 1 N./cm. Yield Force= 2,239 N.  
 Node 11402 Y2 K= 180,249 N./cm. Yield K= 1 N./cm.  
 Yield Force= 595,712 N.  
 Node 11402 Z2 K= 180,249 N./cm. Yield K= 1 N./cm.  
 Yield Force= 595,712 N.

-----  
 From 11403 To 11404 DX= -386.283 mm. DY= .000 mm. DZ= .000 mm.

RESTRAINTS

Node 11403 X2 K= 542 N./cm. Yield K= 1 N./cm. Yield Force= 1,791 N.  
 Node 11403 Y2 K= 144,199 N./cm. Yield K= 1 N./cm.  
 Yield Force= 476,570 N.  
 Node 11403 Z2 K= 144,199 N./cm. Yield K= 1 N./cm.  
 Yield Force= 476,570 N.

-----  
 From 11404 To 11405 DX= -386.283 mm. DY= .000 mm. DZ= .000 mm.

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RESTRAINTS

Node 11404 X2 K= 542 N./cm. Yield K= 1 N./cm. Yield Force= 1,791 N.  
 Node 11404 Y2 K= 144,199 N./cm. Yield K= 1 N./cm.  
 Yield Force= 476,570 N.  
 Node 11404 Z2 K= 144,199 N./cm. Yield K= 1 N./cm.  
 Yield Force= 476,570 N.

-----  
 From 11405 To 11406 DX= -63.126 mm. DY= .000 mm. DZ= .000 mm.

BEND at "TO" end

Radius= 152.400 mm. (LONG) Bend Angle= 45.000

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 From 11406 To 11450 DX= -89.274 mm. DY= .000 mm. DZ= 89.274 mm.

BEND at "TO" end

Radius= 152.400 mm. (LONG) Bend Angle= 45.000

-----  
 From 11450 To 11451 DX= .000 mm. DY= .000 mm. DZ= 356.926 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0000000 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 Refract. Den= .0000000 kg./cu.cm. Insul Den= .0000000 kg./cu.cm.  
 Clad Den= .0000000 kg./cu.cm. Insul/Clad Unit Wt= .00 N./cm.

-----  
 From 11451 To 11499 DX= .000 mm. DY= .000 mm. DZ= 146.900 mm.

RESTRAINTS

Node 11451 Z2 K= 412 N./cm. Yield K= 1 N./cm. Yield Force= 1,363 N.  
 Node 11451 X2 K= 109,675 N./cm. Yield K= 1 N./cm.  
 Yield Force= 362,471 N.  
 Node 11451 Y2 K= 109,675 N./cm. Yield K= 1 N./cm.  
 Yield Force= 362,471 N.

-----  
 From 11499 To 11500 DX= .000 mm. DY= .000 mm. DZ= 146.900 mm.

-----  
 From 11500 To 11550 DZ= 712.000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

BEND at "TO" end

Radius= 152.400 mm. (LONG) Bend Angle= 90.000 Angle/Node @1= 45.00 11549  
 Angle/Node @2= .00 11548

-----  
 From 11550 To 11600 DY= -1,053.800 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

-----  
 From 11600 To 11650 DY= -111.200 mm.



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GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 RIGID Weight= 270.00 N.

-----  
 From 11650 To 11700 DY= -431.800 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
 RIGID Weight= 550.00 N.

FLANGES

Location= Both Method= Peq G/C= 144.600 mm.

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 From 11700 To 11750 DY= -111.200 mm.

PIPE

Dia= 114.300 mm. Wall= 5.200 mm.

GENERAL

T1= 60 C P1= 7,500.0000 KPa PHyd=12,470.0000 KPa Mat= (331)API-5L X52  
 E= 205,463,760 KPa EH1= 200,913,216 KPa EH2= 203,444,560 KPa  
 EH3= 203,444,560 KPa EH4= 203,444,560 KPa EH5= 203,444,560 KPa  
 EH6= 203,444,560 KPa EH7= 203,444,560 KPa EH8= 203,444,560 KPa  
 EH9= 203,444,560 KPa v = .300 Pipe Den= .0078334 kg./cu.cm.  
 Fluid Den= .0000000 kg./cu.cm. Insul Thk= .000 mm.  
 RIGID Weight= 270.00 N.

ALLOWABLE STRESSES

B31.8 (2014) Restrained = --- Sh1= 358,527 KPa Sh2= 358,527 KPa  
 Sh3= 358,527 KPa Sh4= 358,527 KPa Sh5= 358,527 KPa Sh6= 358,527 KPa  
 Sh7= 358,527 KPa Sh8= 358,527 KPa Sh9= 358,527 KPa Sy= 358,527 KPa

-----  
 From 11750 To 11800 DY= -592.000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

SIF's & TEE's

Node 11800 Use Notes 6,9,10 = ---

-----  
 From 11800 To 19000 DY= -700.000 mm.

GENERAL

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.

-----  
 From 11800 To 100 DZ= 913.000 mm.

GENERAL

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 Allegato 1

INPUT LISTING

PHyd=12,470.0000 KPa Mat= (331)API-5L X52 E= 205,463,760 KPa  
 EH1= 200,913,216 KPa EH2= 203,444,560 KPa EH3= 203,444,560 KPa  
 EH4= 203,444,560 KPa EH5= 203,444,560 KPa EH6= 203,444,560 KPa  
 EH7= 203,444,560 KPa EH8= 203,444,560 KPa EH9= 203,444,560 KPa  
 v = .300 Pipe Den= .0078334 kg./cu.cm. Fluid Den= .0000000 kg./cu.cm.  
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MATERIAL Changes:

10	50	Mat= (306)API-5L X65 E= 205,463,760 KPa v = .300 Density= .0078 kg./cu.cm.
50	100	Mat= (306)API-5L X65 E= 205,463,760 KPa v = .300 Density= .0078 kg./cu.cm.
100	150	Mat= (306)API-5L X65 E= 205,463,760 KPa v = .300 Density= .0078 kg./cu.cm.
150	8000	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0078 kg./cu.cm.
8000	8050	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0078 kg./cu.cm.
8050	8100	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0078 kg./cu.cm.
150	200	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0078 kg./cu.cm.
200	250	Mat= (306)API-5L X65 E= 205,463,760 KPa v = .300 Density= .0078 kg./cu.cm.
250	300	Mat= (306)API-5L X65 E= 205,463,760 KPa v = .300 Density= .0078 kg./cu.cm.
300	350	Mat= (306)API-5L X65 E= 205,463,760 KPa v = .300 Density= .0078 kg./cu.cm.
350	400	Mat= (306)API-5L X65 E= 205,463,760 KPa v = .300 Density= .0078 kg./cu.cm.
400	450	Mat= (306)API-5L X65 E= 205,463,760 KPa v = .300 Density= .0078 kg./cu.cm.
450	500	Mat= (306)API-5L X65 E= 205,463,760 KPa v = .300 Density= .0078 kg./cu.cm.
500	501	Mat= (306)API-5L X65 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
550	569	Mat= (306)API-5L X65 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
570	575	Mat= (331)API-5L X52 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
575	590	Mat= (331)API-5L X52 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
590	591	Mat= (331)API-5L X52 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
10500	10501	Mat= (331)API-5L X52 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
10550	10551	Mat= (331)API-5L X52 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
10600	10650	Mat= (331)API-5L X52 E= 205,463,760 KPa v = .300 Density= .0078 kg./cu.cm.
10650	10700	Mat= (331)API-5L X52 E= 205,463,760 KPa v = .300 Density= .0078 kg./cu.cm.
10700	10750	Mat= (331)API-5L X52 E= 205,463,760 KPa

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INPUT LISTING

		v = .300 Density= .0078 kg./cu.cm.
10750	10800	Mat= (331)API-5L X52 E= 205,463,760 KPa
		v = .300 Density= .0078 kg./cu.cm.
10800	11000	Mat= (331)API-5L X52 E= 205,463,760 KPa
		v = .300 Density= .0078 kg./cu.cm.
11000	11050	Mat= (331)API-5L X52 E= 205,463,760 KPa
		v = .300 Density= .0078 kg./cu.cm.
11050	11100	Mat= (331)API-5L X52 E= 205,463,760 KPa
		v = .300 Density= .0078 kg./cu.cm.
10800	10850	Mat= (331)API-5L X52 E= 205,463,760 KPa
		v = .300 Density= .0078 kg./cu.cm.
570	600	Mat= (306)API-5L X65 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
600	650	Mat= (306)API-5L X65 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
650	699	Mat= (306)API-5L X65 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
700	3999	Mat= (322)API-5L X60 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
4000	4050	Mat= (322)API-5L X60 E= 205,463,760 KPa
		v = .300 Density= .0078 kg./cu.cm.
4050	4100	Mat= (322)API-5L X60 E= 205,463,760 KPa
		v = .300 Density= .0078 kg./cu.cm.
4100	4150	Mat= (322)API-5L X60 E= 205,463,760 KPa
		v = .300 Density= .0078 kg./cu.cm.
4150	4151	Mat= (322)API-5L X60 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
4200	4250	Mat= (322)API-5L X60 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
4250	4300	Mat= (322)API-5L X60 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
4300	4350	Mat= (322)API-5L X60 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
4350	4400	Mat= (322)API-5L X60 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
4400	4450	Mat= (322)API-5L X60 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
4450	4451	Mat= (322)API-5L X60 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
4500	4501	Mat= (322)API-5L X60 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
4550	1949	Mat= (322)API-5L X60 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
700	750	Mat= (306)API-5L X65 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
750	800	Mat= (306)API-5L X65 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
800	849	Mat= (306)API-5L X65 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
850	1499	Mat= (306)API-5L X65 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
1500	1550	Mat= (306)API-5L X65 E= 205,463,760 KPa
		v = .300 Density= .0078 kg./cu.cm.
1550	1600	Mat= (306)API-5L X65 E= 205,463,760 KPa
		v = .300 Density= .0078 kg./cu.cm.

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Allegato 1

INPUT LISTING

1600	1650	Mat= (306)API-5L X65 E= 205,463,760 KPa v = .300 Density= .0078 kg./cu.cm.
1650	1651	Mat= (306)API-5L X65 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
1700	1750	Mat= (306)API-5L X65 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
1750	1799	Mat= (306)API-5L X65 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
1800	4800	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
4800	4850	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
4850	4900	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
4900	4949	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
4950	5199	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
5200	5201	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
9500	9501	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
9550	9551	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
9600	9650	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
9650	9700	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
9700	9750	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
9750	9800	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
9800	9850	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
9850	9900	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
9900	8499	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
5200	5250	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
5250	5300	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
5300	5350	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
5350	4549	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
4950	4999	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
1800	1850	Mat= (306)API-5L X65 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
1850	1900	Mat= (306)API-5L X65 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
1900	1950	Mat= (306)API-5L X65 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
1950	2000	Mat= (306)API-5L X65 E= 205,463,760 KPa

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INPUT LISTING

2000	2001	v = .300 Density= .0000 kg./cu.cm. Mat= (306)API-5L X65 E= 205,463,760 KPa
2050	2051	v = .300 Density= .0000 kg./cu.cm. Mat= (306)API-5L X65 E= 205,463,760 KPa
2100	2101	v = .300 Density= .0000 kg./cu.cm. Mat= (306)API-5L X65 E= 205,463,760 KPa
2150	2151	v = .300 Density= .0000 kg./cu.cm. Mat= (306)API-5L X65 E= 205,463,760 KPa
2200	2201	v = .300 Density= .0000 kg./cu.cm. Mat= (306)API-5L X65 E= 205,463,760 KPa
2250	2300	v = .300 Density= .0000 kg./cu.cm. Mat= (306)API-5L X65 E= 205,463,760 KPa
2300	2349	v = .300 Density= .0000 kg./cu.cm. Mat= (306)API-5L X65 E= 205,463,760 KPa
2350	5600	v = .300 Density= .0000 kg./cu.cm. Mat= (322)API-5L X60 E= 205,463,760 KPa
5600	5650	v = .300 Density= .0000 kg./cu.cm. Mat= (322)API-5L X60 E= 205,463,760 KPa
5650	5651	v = .300 Density= .0000 kg./cu.cm. Mat= (322)API-5L X60 E= 205,463,760 KPa
5700	5750	v = .300 Density= .0000 kg./cu.cm. Mat= (322)API-5L X60 E= 205,463,760 KPa
5750	5800	v = .300 Density= .0000 kg./cu.cm. Mat= (322)API-5L X60 E= 205,463,760 KPa
5800	5850	v = .300 Density= .0000 kg./cu.cm. Mat= (322)API-5L X60 E= 205,463,760 KPa
5850	5900	v = .300 Density= .0000 kg./cu.cm. Mat= (322)API-5L X60 E= 205,463,760 KPa
5900	5950	v = .300 Density= .0000 kg./cu.cm. Mat= (322)API-5L X60 E= 205,463,760 KPa
5950	5951	v = .300 Density= .0000 kg./cu.cm. Mat= (322)API-5L X60 E= 205,463,760 KPa
6000	6001	v = .300 Density= .0000 kg./cu.cm. Mat= (322)API-5L X60 E= 205,463,760 KPa
6050	6100	v = .300 Density= .0000 kg./cu.cm. Mat= (322)API-5L X60 E= 205,463,760 KPa
6100	6101	v = .300 Density= .0000 kg./cu.cm. Mat= (322)API-5L X60 E= 205,463,760 KPa
6150	6151	v = .300 Density= .0000 kg./cu.cm. Mat= (322)API-5L X60 E= 205,463,760 KPa
6200	6201	v = .300 Density= .0000 kg./cu.cm. Mat= (322)API-5L X60 E= 205,463,760 KPa
6250	6251	v = .300 Density= .0000 kg./cu.cm. Mat= (322)API-5L X60 E= 205,463,760 KPa
6300	6301	v = .300 Density= .0000 kg./cu.cm. Mat= (322)API-5L X60 E= 205,463,760 KPa
6350	6399	v = .300 Density= .0000 kg./cu.cm. Mat= (322)API-5L X60 E= 205,463,760 KPa
6400	7500	v = .300 Density= .0000 kg./cu.cm. Mat= (322)API-5L X60 E= 205,463,760 KPa
7500	7550	v = .300 Density= .0000 kg./cu.cm. Mat= (322)API-5L X60 E= 205,463,760 KPa
7550	7600	v = .300 Density= .0000 kg./cu.cm. Mat= (322)API-5L X60 E= 205,463,760 KPa

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INPUT LISTING

7600	7601	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
7650	7651	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
7700	7749	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
6400	6450	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
6450	6500	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
6500	6550	Mat= (331)API-5L X52 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
6550	6600	Mat= (331)API-5L X52 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
6600	6601	Mat= (331)API-5L X52 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
6650	6651	Mat= (331)API-5L X52 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
6700	6701	Mat= (331)API-5L X52 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
6800	6801	Mat= (331)API-5L X52 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
6850	6851	Mat= (331)API-5L X52 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
6900	6950	Mat= (331)API-5L X52 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
6950	7000	Mat= (331)API-5L X52 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
7000	7001	Mat= (331)API-5L X52 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
7050	7051	Mat= (331)API-5L X52 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
7100	7150	Mat= (331)API-5L X52 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
7150	7199	Mat= (331)API-5L X52 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
2350	2400	Mat= (306)API-5L X65 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
2400	2450	Mat= (306)API-5L X65 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
2450	2500	Mat= (306)API-5L X65 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
2500	2550	Mat= (306)API-5L X65 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
2550	2551	Mat= (306)API-5L X65 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
2600	2650	Mat= (306)API-5L X65 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
2650	2700	Mat= (306)API-5L X65 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
2700	2701	Mat= (306)API-5L X65 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
2750	2800	Mat= (306)API-5L X65 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
2800	2850	Mat= (306)API-5L X65 E= 205,463,760 KPa

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INPUT LISTING

		v = .300 Density= .0000 kg./cu.cm.
2850	2900	Mat= (306)API-5L X65 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
2900	2901	Mat= (306)API-5L X65 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
3000	3001	Mat= (306)API-5L X65 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
3055	3050	Mat= (306)API-5L X65 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
3050	3051	Mat= (306)API-5L X65 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
3100	3101	Mat= (306)API-5L X65 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
3150	3151	Mat= (306)API-5L X65 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
3200	3201	Mat= (306)API-5L X65 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
3250	3251	Mat= (306)API-5L X65 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
3300	3301	Mat= (306)API-5L X65 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
3350	3351	Mat= (306)API-5L X65 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
3400	3450	Mat= (306)API-5L X65 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
3450	3500	Mat= (306)API-5L X65 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
3500	3549	Mat= (306)API-5L X65 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
850	899	Mat= (306)API-5L X65 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
950	970	Mat= (306)API-5L X65 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
970	1000	Mat= (306)API-5L X65 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
1000	1050	Mat= (306)API-5L X65 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
1050	1100	Mat= (306)API-5L X65 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
1100	1150	Mat= (306)API-5L X65 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
1150	1175	Mat= (306)API-5L X65 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
1175	1199	Mat= (306)API-5L X65 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
900	949	Mat= (306)API-5L X65 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
5000	5050	Mat= (322)API-5L X60 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
5050	5100	Mat= (322)API-5L X60 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
5100	4299	Mat= (322)API-5L X60 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
8100	8150	Mat= (322)API-5L X60 E= 205,463,760 KPa
		v = .300 Density= .0078 kg./cu.cm.

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8150	8200	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0078 kg./cu.cm.
8200	8250	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0078 kg./cu.cm.
8250	8251	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0078 kg./cu.cm.
8300	8350	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0078 kg./cu.cm.
8350	8400	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0078 kg./cu.cm.
8400	8450	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
8450	8500	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
8500	8550	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
8550	8600	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
8600	8650	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
8650	8700	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
8700	8750	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
8750	8800	Mat= (322)API-5L X60 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
8800	8849	Mat= (331)API-5L X52 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
8850	8999	Mat= (331)API-5L X52 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
8850	8900	Mat= (331)API-5L X52 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
8900	8949	Mat= (331)API-5L X52 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
11100	11150	Mat= (331)API-5L X52 E= 205,463,760 KPa v = .300 Density= .0078 kg./cu.cm.
11150	11200	Mat= (331)API-5L X52 E= 205,463,760 KPa v = .300 Density= .0078 kg./cu.cm.
11200	11250	Mat= (331)API-5L X52 E= 205,463,760 KPa v = .300 Density= .0078 kg./cu.cm.
11250	11251	Mat= (331)API-5L X52 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
11300	11301	Mat= (331)API-5L X52 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
11350	11399	Mat= (331)API-5L X52 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
11400	12000	Mat= (331)API-5L X52 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
12000	12049	Mat= (331)API-5L X52 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
12050	12500	Mat= (331)API-5L X52 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
12500	12549	Mat= (331)API-5L X52 E= 205,463,760 KPa v = .300 Density= .0000 kg./cu.cm.
12050	12100	Mat= (331)API-5L X52 E= 205,463,760 KPa



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		v = .300 Density= .0000 kg./cu.cm.
12100	12101	Mat= (331)API-5L X52 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
12150	12151	Mat= (331)API-5L X52 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
11400	11401	Mat= (331)API-5L X52 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
11450	11451	Mat= (331)API-5L X52 E= 205,463,760 KPa
		v = .300 Density= .0000 kg./cu.cm.
11500	11550	Mat= (331)API-5L X52 E= 205,463,760 KPa
		v = .300 Density= .0078 kg./cu.cm.
11550	11600	Mat= (331)API-5L X52 E= 205,463,760 KPa
		v = .300 Density= .0078 kg./cu.cm.
11600	11650	Mat= (331)API-5L X52 E= 205,463,760 KPa
		v = .300 Density= .0078 kg./cu.cm.
11650	11700	Mat= (331)API-5L X52 E= 205,463,760 KPa
		v = .300 Density= .0078 kg./cu.cm.
11700	11750	Mat= (331)API-5L X52 E= 205,463,760 KPa
		v = .300 Density= .0078 kg./cu.cm.
11750	11800	Mat= (331)API-5L X52 E= 205,463,760 KPa
		v = .300 Density= .0078 kg./cu.cm.
11800	19000	Mat= (331)API-5L X52 E= 205,463,760 KPa
		v = .300 Density= .0078 kg./cu.cm.
11800	100	Mat= (331)API-5L X52 E= 205,463,760 KPa
		v = .300 Density= .0078 kg./cu.cm.

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ALLOWABLE STRESS Changes

10	50	B31.8 (2014)	Restrained = ON
		Sh1= 448,159 KPa	Sh2= 448,159 KPa
		Sh3= 448,159 KPa	Sh4= 448,159 KPa
		Sh5= 448,159 KPa	Sh6= 448,159 KPa
		Sh7= 448,159 KPa	Sh8= 448,159 KPa
		Sh9= 448,159 KPa	Sy= 448,159 KPa
150	8000	B31.8 (2014)	Restrained = ---
		Sh1= 413,685 KPa	Sh2= 413,685 KPa
		Sh3= 413,685 KPa	Sh4= 413,685 KPa
		Sh5= 413,685 KPa	Sh6= 413,685 KPa
		Sh7= 413,685 KPa	Sh8= 413,685 KPa
		Sh9= 413,685 KPa	Sy= 413,685 KPa
200	250	B31.8 (2014)	Restrained = ---
		Sh1= 448,159 KPa	Sh2= 448,159 KPa
		Sh3= 448,159 KPa	Sh4= 448,159 KPa
		Sh5= 448,159 KPa	Sh6= 448,159 KPa
		Sh7= 448,159 KPa	Sh8= 448,159 KPa
		Sh9= 448,159 KPa	Sy= 448,159 KPa
570	575	B31.8 (2014)	Restrained = ---
		Sh1= 358,527 KPa	Sh2= 358,527 KPa
		Sh3= 358,527 KPa	Sh4= 358,527 KPa
		Sh5= 358,527 KPa	Sh6= 358,527 KPa
		Sh7= 358,527 KPa	Sh8= 358,527 KPa
		Sh9= 358,527 KPa	Sy= 358,527 KPa
570	600	B31.8 (2014)	Restrained = ---
		Sh1= 448,159 KPa	Sh2= 448,159 KPa

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INPUT LISTING

		Sh3= 448,159 KPa	Sh4= 448,159 KPa
		Sh5= 448,159 KPa	Sh6= 448,159 KPa
		Sh7= 448,159 KPa	Sh8= 448,159 KPa
		Sh9= 448,159 KPa	Sy= 448,159 KPa
700	3999	B31.8 (2014)	Restrained = ---
		Sh1= 413,685 KPa	Sh2= 413,685 KPa
		Sh3= 413,685 KPa	Sh4= 413,685 KPa
		Sh5= 413,685 KPa	Sh6= 413,685 KPa
		Sh7= 413,685 KPa	Sh8= 413,685 KPa
		Sh9= 413,685 KPa	Sy= 413,685 KPa
700	750	B31.8 (2014)	Restrained = ---
		Sh1= 448,159 KPa	Sh2= 448,159 KPa
		Sh3= 448,159 KPa	Sh4= 448,159 KPa
		Sh5= 448,159 KPa	Sh6= 448,159 KPa
		Sh7= 448,159 KPa	Sh8= 448,159 KPa
		Sh9= 448,159 KPa	Sy= 448,159 KPa
1800	4800	B31.8 (2014)	Restrained = ---
		Sh1= 413,685 KPa	Sh2= 413,685 KPa
		Sh3= 413,685 KPa	Sh4= 413,685 KPa
		Sh5= 413,685 KPa	Sh6= 413,685 KPa
		Sh7= 413,685 KPa	Sh8= 413,685 KPa
		Sh9= 413,685 KPa	Sy= 413,685 KPa
1800	1850	B31.8 (2014)	Restrained = ---
		Sh1= 448,159 KPa	Sh2= 448,159 KPa
		Sh3= 448,159 KPa	Sh4= 448,159 KPa
		Sh5= 448,159 KPa	Sh6= 448,159 KPa
		Sh7= 448,159 KPa	Sh8= 448,159 KPa
		Sh9= 448,159 KPa	Sy= 448,159 KPa
2350	5600	B31.8 (2014)	Restrained = ---
		Sh1= 413,685 KPa	Sh2= 413,685 KPa
		Sh3= 413,685 KPa	Sh4= 413,685 KPa
		Sh5= 413,685 KPa	Sh6= 413,685 KPa
		Sh7= 413,685 KPa	Sh8= 413,685 KPa
		Sh9= 413,685 KPa	Sy= 413,685 KPa
6500	6550	B31.8 (2014)	Restrained = ---
		Sh1= 358,527 KPa	Sh2= 358,527 KPa
		Sh3= 358,527 KPa	Sh4= 358,527 KPa
		Sh5= 358,527 KPa	Sh6= 358,527 KPa
		Sh7= 358,527 KPa	Sh8= 358,527 KPa
		Sh9= 358,527 KPa	Sy= 358,527 KPa
2350	2400	B31.8 (2014)	Restrained = ---
		Sh1= 448,159 KPa	Sh2= 448,159 KPa
		Sh3= 448,159 KPa	Sh4= 448,159 KPa
		Sh5= 448,159 KPa	Sh6= 448,159 KPa
		Sh7= 448,159 KPa	Sh8= 448,159 KPa
		Sh9= 448,159 KPa	Sy= 448,159 KPa
5000	5050	B31.8 (2014)	Restrained = ---
		Sh1= 413,685 KPa	Sh2= 413,685 KPa
		Sh3= 413,685 KPa	Sh4= 413,685 KPa
		Sh5= 413,685 KPa	Sh6= 413,685 KPa
		Sh7= 413,685 KPa	Sh8= 413,685 KPa
		Sh9= 413,685 KPa	Sy= 413,685 KPa
8100	8150	B31.8 (2014)	Restrained = ---
		Sh1= 413,685 KPa	Sh2= 413,685 KPa
		Sh3= 413,685 KPa	Sh4= 413,685 KPa

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INPUT LISTING

		Sh5= 413,685 KPa	Sh6= 413,685 KPa
		Sh7= 413,685 KPa	Sh8= 413,685 KPa
		Sh9= 413,685 KPa	Sy= 413,685 KPa
8800	8849	B31.8 (2014)	Restrained = ---
		Sh1= 358,527 KPa	Sh2= 358,527 KPa
		Sh3= 358,527 KPa	Sh4= 358,527 KPa
		Sh5= 358,527 KPa	Sh6= 358,527 KPa
		Sh7= 358,527 KPa	Sh8= 358,527 KPa
		Sh9= 358,527 KPa	Sy= 358,527 KPa
11100	11150	B31.8 (2014)	Restrained = ---
		Sh1= 358,527 KPa	Sh2= 358,527 KPa
		Sh3= 358,527 KPa	Sh4= 358,527 KPa
		Sh5= 358,527 KPa	Sh6= 358,527 KPa
		Sh7= 358,527 KPa	Sh8= 358,527 KPa
		Sh9= 358,527 KPa	Sy= 358,527 KPa
11700	11750	B31.8 (2014)	Restrained = ---
		Sh1= 358,527 KPa	Sh2= 358,527 KPa
		Sh3= 358,527 KPa	Sh4= 358,527 KPa
		Sh5= 358,527 KPa	Sh6= 358,527 KPa
		Sh7= 358,527 KPa	Sh8= 358,527 KPa
		Sh9= 358,527 KPa	Sy= 358,527 KPa

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BEND ELEMENTS

400	450	Radius= 9,954.000 mm. (user)
		Bend Angle= 30.000 Angle/Node @1= 15.00
		449 Angle/Node @2= .00 448
501	502	Radius= 9,954.000 mm. (user)
		Bend Angle= 15.000
502	550	Radius= 9,954.000 mm. (user)
		Bend Angle= 15.000
591	592	Radius= 152.400 mm. (LONG)
		Bend Angle= 45.000
592	10500	Radius= 152.400 mm. (LONG)
		Bend Angle= 45.000
10505	10506	Radius= 152.400 mm. (LONG)
		Bend Angle= 45.000
10506	10550	Radius= 152.400 mm. (LONG)
		Bend Angle= 45.000
4000	4050	Radius= 762.000 mm. (LONG)
		Bend Angle= 90.000 Angle/Node @1= 45.00
		4049 Angle/Node @2= .00 4048
4050	4100	Radius= 762.000 mm. (LONG)
		Bend Angle= 90.000 Angle/Node @1= 45.00
		4099 Angle/Node @2= .00 4098
4152	4153	Radius= 762.000 mm. (LONG)
		Bend Angle= 45.000
4153	4200	Radius= 762.000 mm. (LONG)
		Bend Angle= 45.000
4451	4452	Radius= 762.000 mm. (LONG)
		Bend Angle= 45.000
4452	4500	Radius= 762.000 mm. (LONG)
		Bend Angle= 45.000

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INPUT LISTING

1500	1550	Radius= 2,133.000 mm. (LONG) Bend Angle= 90.000 Angle/Node @1= 45.00 1549 Angle/Node @2= .00 1548
1550	1600	Radius= 2,133.000 mm. (LONG) Bend Angle= 90.000 Angle/Node @1= 45.00 1599 Angle/Node @2= .00 1598
1651	1652	Radius= 2,133.000 mm. (LONG) Bend Angle= 45.000
1652	1700	Radius= 2,133.000 mm. (LONG) Bend Angle= 45.000
5201	5202	Radius= 762.000 mm. (LONG) Bend Angle= 45.000
5202	9500	Radius= 762.000 mm. (LONG) Bend Angle= 45.000
9503	9504	Radius= 762.000 mm. (LONG) Bend Angle= 45.000
9504	9550	Radius= 762.000 mm. (LONG) Bend Angle= 45.000
9552	9553	Radius= 762.000 mm. (LONG) Bend Angle= 45.000
9553	9600	Radius= 762.000 mm. (LONG) Bend Angle= 45.000
2001	2002	Radius= 2,133.000 mm. (LONG) Bend Angle= 22.500
2002	2050	Radius= 2,133.000 mm. (LONG) Bend Angle= 22.500
2050	2051	Radius= 2,133.000 mm. (LONG) Bend Angle= 22.500
2051	2100	Radius= 2,133.000 mm. (LONG) Bend Angle= 22.500
2152	2153	Radius= 2,133.000 mm. (LONG) Bend Angle= 22.500
2153	2200	Radius= 2,133.000 mm. (LONG) Bend Angle= 22.500
2200	2201	Radius= 2,133.000 mm. (LONG) Bend Angle= 22.500
2201	2250	Radius= 2,133.000 mm. (LONG) Bend Angle= 22.500
5654	5655	Radius= 914.400 mm. (LONG) Bend Angle= 45.000
5655	5700	Radius= 914.400 mm. (LONG) Bend Angle= 45.000
5951	5952	Radius= 914.400 mm. (LONG) Bend Angle= 45.000
5952	6000	Radius= 914.400 mm. (LONG) Bend Angle= 45.000
6101	6102	Radius= 914.400 mm. (LONG) Bend Angle= 22.500
6102	6150	Radius= 914.400 mm. (LONG) Bend Angle= 22.500
6151	6152	Radius= 914.400 mm. (LONG) Bend Angle= 22.500
6152	6200	Radius= 914.400 mm. (LONG) Bend Angle= 22.500
6201	6202	Radius= 914.400 mm. (LONG)

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INPUT LISTING

		Bend Angle= 22.500
6202	6250	Radius= 914.400 mm. (LONG)
		Bend Angle= 22.500
6251	6252	Radius= 914.400 mm. (LONG)
		Bend Angle= 22.500
6252	6300	Radius= 914.400 mm. (LONG)
		Bend Angle= 22.500
7601	7602	Radius= 762.000 mm. (LONG)
		Bend Angle= 45.000
7602	7650	Radius= 762.000 mm. (LONG)
		Bend Angle= 45.000
6605	6606	Radius= 457.200 mm. (LONG)
		Bend Angle= 22.500
6606	6650	Radius= 457.200 mm. (LONG)
		Bend Angle= 22.500
6651	6652	Radius= 457.200 mm. (LONG)
		Bend Angle= 22.500
6652	6700	Radius= 457.200 mm. (LONG)
		Bend Angle= 22.500
6701	6702	Radius= 971.700 mm. (user)
		Bend Angle= 22.500
6702	6800	Radius= 971.700 mm. (user)
		Bend Angle= 22.500
6800	6801	Radius= 850.000 mm. (user)
		Bend Angle= 15.000
6801	6850	Radius= 850.000 mm. (user)
		Bend Angle= 15.000
7001	7002	Radius= 971.700 mm. (user)
		Bend Angle= 7.500
7002	7050	Radius= 971.700 mm. (user)
		Bend Angle= 7.500
2553	2554	Radius= 4,266.000 mm. (user)
		Bend Angle= 30.000
2554	2600	Radius= 4,266.000 mm. (user)
		Bend Angle= 30.000
2701	2702	Radius= 4,266.000 mm. (user)
		Bend Angle= 15.000
2702	2750	Radius= 4,266.000 mm. (user)
		Bend Angle= 15.000
2901	2902	Radius= 2,133.000 mm. (LONG)
		Bend Angle= 22.499
2902	3000	Radius= 2,133.000 mm. (LONG)
		Bend Angle= 22.499
3001	3002	Radius= 2,133.000 mm. (LONG)
		Bend Angle= 15.001
3002	3055	Radius= 2,133.000 mm. (LONG)
		Bend Angle= 15.001
3051	3052	Radius= 2,133.000 mm. (LONG)
		Bend Angle= 22.500
3052	3100	Radius= 2,133.000 mm. (LONG)
		Bend Angle= 22.500
3101	3102	Radius= 2,133.000 mm. (LONG)
		Bend Angle= 22.500
3102	3150	Radius= 2,133.000 mm. (LONG)
		Bend Angle= 22.500

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INPUT LISTING

3151	3152	Radius= 2,133.000 mm. (LONG) Bend Angle= 22.499
3152	3200	Radius= 2,133.000 mm. (LONG) Bend Angle= 22.499
3201	3202	Radius= 2,133.000 mm. (LONG) Bend Angle= 22.499
3202	3250	Radius= 2,133.000 mm. (LONG) Bend Angle= 22.499
3302	3303	Radius= 4,266.000 mm. (user) Bend Angle= 7.500
3303	3350	Radius= 4,266.000 mm. (user) Bend Angle= 7.500
8150	8200	Radius= 762.000 mm. (LONG) Bend Angle= 90.000 Angle/Node @1= 45.00 8199 Angle/Node @2= .00 8198
8251	8252	Radius= 762.000 mm. (LONG) Bend Angle= 45.000
8252	8300	Radius= 762.000 mm. (LONG) Bend Angle= 45.000
11150	11200	Radius= 152.400 mm. (LONG) Bend Angle= 90.000 Angle/Node @1= 45.00 11199 Angle/Node @2= .00 11198
11251	11252	Radius= 152.400 mm. (LONG) Bend Angle= 44.944
11252	11300	Radius= 152.400 mm. (LONG) Bend Angle= 44.944
12105	12106	Radius= 152.400 mm. (LONG) Bend Angle= 45.000
12106	12150	Radius= 152.400 mm. (LONG) Bend Angle= 45.000
11405	11406	Radius= 152.400 mm. (LONG) Bend Angle= 45.000
11406	11450	Radius= 152.400 mm. (LONG) Bend Angle= 45.000
11500	11550	Radius= 152.400 mm. (LONG) Bend Angle= 90.000 Angle/Node @1= 45.00 11549 Angle/Node @2= .00 11548

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RIGIDS

8000	8050	RIGID Weight= 3,940.00 N.
8050	8100	RIGID Weight= 16,000.00 N.
10650	10700	RIGID Weight= 1,050.00 N.
10700	10750	RIGID Weight= 270.00 N.
11000	11050	RIGID Weight= 270.00 N.
11050	11100	RIGID Weight= 550.00 N.
4350	4400	RIGID Weight= .01 N.
750	800	RIGID Weight= .01 N.
4850	4900	RIGID Weight= .01 N.
9850	9900	RIGID Weight= .01 N.
5250	5300	RIGID Weight= .01 N.
1850	1900	RIGID Weight= .01 N.
7500	7550	RIGID Weight= .01 N.

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#### INPUT LISTING

5000	5050	RIGID Weight= .01 N.
8100	8150	RIGID Weight= 3,940.00 N.
8550	8600	RIGID Weight= .01 N.
11100	11150	RIGID Weight= 270.00 N.
11600	11650	RIGID Weight= 270.00 N.
11650	11700	RIGID Weight= 550.00 N.
11700	11750	RIGID Weight= 270.00 N.

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#### SIF's & TEE's

569	570	Node 570 Welding Tee
		Use Notes 6,9,10 = ---
10750	10800	Node 10800 Welding Tee
		Use Notes 6,9,10 = ---
699	700	Node 700 Welding Tee
		Use Notes 6,9,10 = ---
4250	4300	Node 4300 Welding Tee
		Use Notes 6,9,10 = ---
4502	4550	Node 4550 Welding Tee
		Use Notes 6,9,10 = ---
849	850	Node 850 Welding Tee
		Use Notes 6,9,10 = ---
1799	1800	Node 1800 Welding Tee
		Use Notes 6,9,10 = ---
4949	4950	Node 4950 Welding Tee
		Use Notes 6,9,10 = ---
5199	5200	Node 5200 Welding Tee
		Use Notes 6,9,10 = ---
1900	1950	Node 1950 Welding Tee
		Use Notes 6,9,10 = ---
2349	2350	Node 2350 Welding Tee
		Use Notes 6,9,10 = ---
6399	6400	Node 6400 Welding Tee
		Use Notes 6,9,10 = ---
8450	8500	Node 8500 Welding Tee
		Use Notes 6,9,10 = ---
8849	8850	Node 8850 Welding Tee
		Use Notes 6,9,10 = ---
11399	11400	Node 11400 Welding Tee
		Use Notes 6,9,10 = ---
12049	12050	Node 12050 Welding Tee
		Use Notes 6,9,10 = ---
11750	11800	Node 11800 Use Notes 6,9,10 = ---

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#### REDUCERS

300	350	Diam2= 1,422.000 mm. Wall2= 21.800 mm.
575	590	Diam2= 114.300 mm. Wall2= 5.200 mm.
5600	5650	Diam2= 609.600 mm. Wall2= 11.100 mm.
6450	6500	Diam2= 406.400 mm. Wall2= 11.100 mm.
6500	6550	Diam2= 323.850 mm. Wall2= 9.500 mm.

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Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1

INPUT LISTING

3400 3450 Diam2= 1,066.800 mm. Wall2= 16.600 mm.  
 8700 8750 Diam2= 323.850 mm. Wall2= 9.500 mm.  
 8750 8800 Diam2= 219.075 mm. Wall2= 7.000 mm.  
 CAESAR II 2017 Ver.9.00.00.5900, (Build 160721)

RESTRAINTS

NODE	TYPE	CNODE	Len		MU		Dir	FORCE	Vectors
			GAP	YIELD	STIF1	STIF2			
200	+Z			.30	.000	.000	1.000		
200	Guide			.30	.000	.000	.000		
250	+Z			.30	.000	.000	1.000		
250	Guide			.30	.000	.000	.000		
500	X2	16858	1.00	88784.77	.866	.000	-.500		
500	Y2	872294	1.00	4593935.00	.000	-1.000	.000		
500	X2	872294	1.00	4593935.00	.500	.000	.866		
501	X2	31838	1.00	167676.00	.866	.000	-.500		
501	Y2	1647385	1.00	8675954.00	.000	-1.000	.000		
501	X2	1647385	1.00	8675954.00	.500	.000	.866		
502	X2	29960	1.00	157782.47	.966	.000	-.259		
502	Y2	1550183	1.00	8164039.00	.000	-1.000	.000		
502	X2	1550183	1.00	8164039.00	.259	.000	.966		
550	X2	30558	1.00	160932.27	1.000	.000	.000		
550	Y2	1581129	1.00	8327017.50	.000	-1.000	.000		
550	Z2	1581129	1.00	8327017.50	.000	.000	1.000		
570	Z2	779	1.00	2636.70	.000	.000	1.000		
570	X2	146858	1.00	497249.34	1.000	.000	.000		
570	Y2	146858	1.00	497249.34	.000	-1.000	.000		
10505	Y2	355	1.00	1173.30	.000	-1.000	.000		
10505	X2	94440	1.00	312120.63	1.000	.000	.000		
10505	Z2	94440	1.00	312120.63	.000	.000	1.000		
10506	X2	168	1.00	555.12	.000	.707	.707		
10506	X2	44682	1.00	147671.31	1.000	.000	.000		
10506	X2	44682	1.00	147671.31	.000	-.707	.707		
10550	Z2	355	1.00	1173.30	.000	.000	1.000		
10550	X2	94440	1.00	312120.63	1.000	.000	.000		
10550	Y2	94440	1.00	312120.63	.000	-1.000	.000		
10551	Z2	542	1.00	1791.49	.000	.000	1.000		
10551	X2	144199	1.00	476569.94	1.000	.000	.000		
10551	Y2	144199	1.00	476569.94	.000	-1.000	.000		
10552	Z2	542	1.00	1791.49	.000	.000	1.000		
10552	X2	144199	1.00	476569.94	1.000	.000	.000		
10552	Y2	144199	1.00	476569.94	.000	-1.000	.000		
10553	Z2	1235	1.00	4082.76	.000	.000	1.000		
10553	X2	328626	1.00	1086091.62	1.000	.000	.000		
10553	Y2	328626	1.00	1086091.62	.000	-1.000	.000		
10554	Z2	1929	1.00	6374.03	.000	.000	1.000		
10554	X2	513053	1.00	1695613.25	1.000	.000	.000		
10554	Y2	513053	1.00	1695613.25	.000	-1.000	.000		
10600	Z2	964	1.00	3187.01	.000	.000	1.000		
10600	X2	256526	1.00	847806.63	1.000	.000	.000		
10600	Y2	256526	1.00	847806.63	.000	-1.000	.000		
600	X2	62665	1.00	330027.13	1.000	.000	.000		
600	Y2	3242455	1.00	17076388.00	.000	-1.000	.000		
600	Z2	3242455	1.00	17076388.00	.000	.000	1.000		



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INPUT LISTING

650	X2	73230	1.00	385663.38	1.000	.000	.000
650	Y2	3789071	1.00	19955138.00	.000	-1.000	.000
650	Z2	3789071	1.00	19955138.00	.000	.000	1.000
700	X2	26442	1.00	139257.06	1.000	.000	.000
700	Y2	1368175	1.00	7205491.00	.000	-1.000	.000
700	Z2	1368175	1.00	7205491.00	.000	.000	1.000
700	Z2	7538	1.00	29363.53	.000	.000	1.000
700	X2	616003	1.00	2399639.75	1.000	.000	.000
700	Y2	616003	1.00	2399639.75	.000	-1.000	.000
4150	Z2	2743	1.00	10686.23	.000	.000	1.000
4150	X2	224181	1.00	873297.44	1.000	.000	.000
4150	Y2	224181	1.00	873297.44	.000	-1.000	.000
4151	Z2	5486	1.00	21372.46	.000	.000	1.000
4151	X2	448362	1.00	1746594.87	1.000	.000	.000
4151	Y2	448362	1.00	1746594.87	.000	-1.000	.000
4152	Z2	4354	1.00	16962.40	.000	.000	1.000
4152	X2	355846	1.00	1386197.62	1.000	.000	.000
4152	Y2	355846	1.00	1386197.62	.000	-1.000	.000
4153	X2	3222	1.00	12552.35	.000	.707	-.707
4153	X2	263330	1.00	1025800.31	1.000	.000	.000
4153	X2	263330	1.00	1025800.31	.000	.707	.707
4200	Y2	6290	1.00	24502.54	.000	-1.000	.000
4200	X2	514027	1.00	2002390.87	1.000	.000	.000
4200	Z2	514027	1.00	2002390.87	.000	.000	1.000
4250	Y2	11258	1.00	43856.53	.000	-1.000	.000
4250	X2	920045	1.00	3584033.50	1.000	.000	.000
4250	Z2	920045	1.00	3584033.50	.000	.000	1.000
4300	Y2	18444	1.00	71848.36	.000	-1.000	.000
4300	X2	1507271	1.00	5871575.50	1.000	.000	.000
4300	Z2	1507271	1.00	5871575.50	.000	.000	1.000
4350	Y2	15078	1.00	58737.55	.000	-1.000	.000
4350	X2	1232226	1.00	4800136.50	1.000	.000	.000
4350	Z2	1232226	1.00	4800136.50	.000	.000	1.000
4400	Y2	8337	1.00	32476.06	.000	-1.000	.000
4400	X2	681299	1.00	2654001.50	1.000	.000	.000
4400	Z2	681299	1.00	2654001.50	.000	.000	1.000
4450	Y2	9791	1.00	38140.08	.000	-1.000	.000
4450	X2	800122	1.00	3116874.75	1.000	.000	.000
4450	Z2	800122	1.00	3116874.75	.000	.000	1.000
4451	Y2	6279	1.00	24459.54	.000	-1.000	.000
4451	X2	513125	1.00	1998876.87	1.000	.000	.000
4451	Z2	513125	1.00	1998876.87	.000	.000	1.000
4452	X2	3222	1.00	12552.35	.707	.707	.000
4452	X2	263330	1.00	1025800.31	.707	-.707	.000
4452	Z2	263330	1.00	1025800.31	.000	.000	1.000
4500	X2	5370	1.00	20920.75	1.000	.000	.000
4500	Y2	438886	1.00	1709681.12	.000	-1.000	.000
4500	Z2	438886	1.00	1709681.12	.000	.000	1.000
4501	X2	7519	1.00	29289.16	1.000	.000	.000
4501	Y2	614443	1.00	2393562.00	.000	-1.000	.000
4501	Z2	614443	1.00	2393562.00	.000	.000	1.000
1950	X2	13460	1.00	52434.87	1.000	.000	.000
1950	Y2	1100005	1.00	4285071.00	.000	-1.000	.000
1950	Z2	1100005	1.00	4285071.00	.000	.000	1.000
700	X2	21340	1.00	112389.53	1.000	.000	.000

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INPUT LISTING

700	Y2	1104206	1.00	5815301.50	.000	-1.000	.000
700	Z2	1104206	1.00	5815301.50	.000	.000	1.000
750	X2	36142	1.00	190343.22	1.000	.000	.000
750	Y2	1870087	1.00	9848810.00	.000	-1.000	.000
750	Z2	1870087	1.00	9848810.00	.000	.000	1.000
800	X2	36160	1.00	190434.03	1.000	.000	.000
800	Y2	1870979	1.00	9853509.00	.000	-1.000	.000
800	Z2	1870979	1.00	9853509.00	.000	.000	1.000
850	X2	21358	1.00	112480.35	1.000	.000	.000
850	Y2	1105098	1.00	5820000.50	.000	-1.000	.000
850	Z2	1105098	1.00	5820000.50	.000	.000	1.000
850	Z2	16095	1.00	84765.17	.000	.000	1.000
850	X2	832802	1.00	4385951.00	1.000	.000	.000
850	Y2	832802	1.00	4385951.00	.000	-1.000	.000
1500	Z2	16095	1.00	84765.17	.000	.000	1.000
1500	X2	832802	1.00	4385951.00	1.000	.000	.000
1500	Y2	832802	1.00	4385951.00	.000	-1.000	.000
1650	Z2	3834	1.00	20192.28	.000	.000	1.000
1650	X2	198385	1.00	1044796.63	1.000	.000	.000
1650	Y2	198385	1.00	1044796.63	.000	-1.000	.000
1651	Z2	13464	1.00	70907.71	.000	.000	1.000
1651	X2	696655	1.00	3668933.50	1.000	.000	.000
1651	Y2	696655	1.00	3668933.50	.000	-1.000	.000
1652	X2	19260	1.00	101430.86	.000	.707	-.707
1652	X2	996539	1.00	5248273.50	1.000	.000	.000
1652	X2	996539	1.00	5248273.50	.000	.707	.707
1700	Y2	11739	1.00	61825.73	.000	-1.000	.000
1700	X2	607426	1.00	3199010.00	1.000	.000	.000
1700	Z2	607426	1.00	3199010.00	.000	.000	1.000
1800	X2	6192	1.00	24120.04	1.000	.000	.000
1800	Y2	506002	1.00	1971132.62	.000	-1.000	.000
1800	Z2	506002	1.00	1971132.62	.000	.000	1.000
5201	Z2	2637	1.00	10271.71	.000	.000	1.000
5201	X2	215485	1.00	839422.63	1.000	.000	.000
5201	Y2	215485	1.00	839422.63	.000	-1.000	.000
9500	X2	5370	1.00	20920.75	1.000	.000	.000
9500	Y2	438886	1.00	1709681.12	.000	-1.000	.000
9500	Z2	438886	1.00	1709681.12	.000	.000	1.000
9501	X2	8290	1.00	32295.12	1.000	.000	.000
9501	Y2	677503	1.00	2639214.50	.000	-1.000	.000
9501	Z2	677503	1.00	2639214.50	.000	.000	1.000
9502	X2	8290	1.00	32295.12	1.000	.000	.000
9502	Y2	677503	1.00	2639214.50	.000	-1.000	.000
9502	Z2	677503	1.00	2639214.50	.000	.000	1.000
9503	X2	5370	1.00	20920.75	1.000	.000	.000
9503	Y2	438886	1.00	1709681.12	.000	-1.000	.000
9503	Z2	438886	1.00	1709681.12	.000	.000	1.000
9504	X2	3222	1.00	12552.35	-.707	-.641	.299
9504	X2	263330	1.00	1025800.31	-.672	.741	.000
9504	X2	263330	1.00	1025800.31	.221	.201	.954
9550	X2	5867	1.00	22855.42	.000	-.906	.423
9550	X2	479473	1.00	1867785.37	1.000	.000	.000
9550	X2	479473	1.00	1867785.37	.000	.423	.906
9551	X2	8512	1.00	33158.49	.000	-.906	.423
9551	X2	695616	1.00	2709770.50	1.000	.000	.000

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Allegato 1

INPUT LISTING

9551	X2	695616	1.00	2709770.50	.000	.423	.906
9552	X2	5867	1.00	22855.42	.000	-.906	.423
9552	X2	479473	1.00	1867785.37	1.000	.000	.000
9552	X2	479473	1.00	1867785.37	.000	.423	.906
9553	X2	3222	1.00	12552.35	-.707	-.641	.299
9553	X2	263330	1.00	1025800.31	-.672	.741	.000
9553	X2	263330	1.00	1025800.31	.221	.201	.954
9600	X2	4944	1.00	19259.05	1.000	.000	.000
9600	Y2	404026	1.00	1573883.62	.000	-1.000	.000
9600	Z2	404026	1.00	1573883.62	.000	.000	1.000
9650	X2	33319	1.00	129793.80	1.000	.000	.000
9650	Y2	2722880	1.00	10606978.00	.000	-1.000	.000
9650	Z2	2722880	1.00	10606978.00	.000	.000	1.000
9700	X2	59972	1.00	233621.84	1.000	.000	.000
9700	Y2	4901038	1.00	19091990.00	.000	-1.000	.000
9700	Z2	4901038	1.00	19091990.00	.000	.000	1.000
9750	X2	59972	1.00	233621.84	1.000	.000	.000
9750	Y2	4901038	1.00	19091990.00	.000	-1.000	.000
9750	Z2	4901038	1.00	19091990.00	.000	.000	1.000
9800	X2	31610	1.00	123135.62	1.000	.000	.000
9800	Y2	2583202	1.00	10062860.00	.000	-1.000	.000
9800	Z2	2583202	1.00	10062860.00	.000	.000	1.000
9850	X2	4837	1.00	18844.04	1.000	.000	.000
9850	Y2	395320	1.00	1539968.75	.000	-1.000	.000
9850	Z2	395320	1.00	1539968.75	.000	.000	1.000
9900	X2	6983	1.00	27201.12	1.000	.000	.000
9900	Y2	570639	1.00	2222923.50	.000	-1.000	.000
9900	Z2	570639	1.00	2222923.50	.000	.000	1.000
8500	X2	3769	1.00	14681.76	1.000	.000	.000
8500	Y2	308002	1.00	1199819.87	.000	-1.000	.000
8500	Z2	308002	1.00	1199819.87	.000	.000	1.000
5250	Y2	9705	1.00	37805.54	.000	-1.000	.000
5250	X2	793104	1.00	3089536.00	1.000	.000	.000
5250	Z2	793104	1.00	3089536.00	.000	.000	1.000
5300	Y2	8337	1.00	32477.11	.000	-1.000	.000
5300	X2	681321	1.00	2654087.25	1.000	.000	.000
5300	Z2	681321	1.00	2654087.25	.000	.000	1.000
2001	Y2	20074	1.00	105717.59	.000	-1.000	.000
2001	X2	1038656	1.00	5470079.00	1.000	.000	.000
2001	Z2	1038656	1.00	5470079.00	.000	.000	1.000
2002	X2	9630	1.00	50715.43	.000	.924	-.383
2002	X2	498270	1.00	2624136.75	1.000	.000	.000
2002	X2	498270	1.00	2624136.75	.000	.383	.924
2050	X2	9630	1.00	50715.43	.000	.707	-.707
2050	X2	498270	1.00	2624136.75	1.000	.000	.000
2050	X2	498270	1.00	2624136.75	.000	.707	.707
2051	X2	9630	1.00	50715.43	.000	.924	-.383
2051	X2	498270	1.00	2624136.75	1.000	.000	.000
2051	X2	498270	1.00	2624136.75	.000	.383	.924
2100	Y2	23980	1.00	126292.92	.000	-1.000	.000
2100	X2	1240804	1.00	6534695.50	1.000	.000	.000
2100	Z2	1240804	1.00	6534695.50	.000	.000	1.000
2101	Y2	39491	1.00	207976.88	.000	-1.000	.000
2101	X2	2043334	1.00	10761217.00	1.000	.000	.000
2101	Z2	2043334	1.00	10761217.00	.000	.000	1.000

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INPUT LISTING

2150	Y2	40650	1.00	214083.33	.000	-1.000	.000
2150	X2	2103329	1.00	11077180.00	1.000	.000	.000
2150	Z2	2103329	1.00	11077180.00	.000	.000	1.000
2151	Y2	39491	1.00	207976.88	.000	-1.000	.000
2151	X2	2043334	1.00	10761217.00	1.000	.000	.000
2151	Z2	2043334	1.00	10761217.00	.000	.000	1.000
2152	Y2	23980	1.00	126292.92	.000	-1.000	.000
2152	X2	1240804	1.00	6534695.50	1.000	.000	.000
2152	Z2	1240804	1.00	6534695.50	.000	.000	1.000
2153	X2	9630	1.00	50715.43	.000	.924	.383
2153	X2	498270	1.00	2624136.75	1.000	.000	.000
2153	X2	498270	1.00	2624136.75	.000	-.383	.924
2200	X2	9630	1.00	50715.43	.000	.707	.707
2200	X2	498270	1.00	2624136.75	1.000	.000	.000
2200	X2	498270	1.00	2624136.75	.000	-.707	.707
2201	X2	9630	1.00	50715.43	.000	.924	.383
2201	X2	498270	1.00	2624136.75	1.000	.000	.000
2201	X2	498270	1.00	2624136.75	.000	-.383	.924
2250	Y2	20240	1.00	106595.52	.000	-1.000	.000
2250	X2	1047281	1.00	5515505.00	1.000	.000	.000
2250	Z2	1047281	1.00	5515505.00	.000	.000	1.000
2300	Y2	37269	1.00	196276.25	.000	-1.000	.000
2300	X2	1928378	1.00	10155799.00	1.000	.000	.000
2300	Z2	1928378	1.00	10155799.00	.000	.000	1.000
2350	Y2	21843	1.00	115038.45	.000	-1.000	.000
2350	X2	1130231	1.00	5952362.50	1.000	.000	.000
2350	Z2	1130231	1.00	5952362.50	.000	.000	1.000
2350	X2	2856	1.00	11778.97	1.000	.000	.000
2350	Y2	201235	1.00	829915.19	.000	-1.000	.000
2350	Z2	201235	1.00	829915.19	.000	.000	1.000
5652	X2	10277	1.00	41601.41	1.000	.000	.000
5652	Y2	755732	1.00	3059128.00	.000	-1.000	.000
5652	Z2	755732	1.00	3059128.00	.000	.000	1.000
5653	X2	9887	1.00	40022.20	1.000	.000	.000
5653	Y2	727044	1.00	2943002.75	.000	-1.000	.000
5653	Z2	727044	1.00	2943002.75	.000	.000	1.000
5654	X2	7176	1.00	29048.79	1.000	.000	.000
5654	Y2	527701	1.00	2136081.25	.000	-1.000	.000
5654	Z2	527701	1.00	2136081.25	.000	.000	1.000
5655	X2	4465	1.00	18075.38	-.707	.707	.000
5655	X2	328358	1.00	1329159.75	.707	.707	.000
5655	Z2	328358	1.00	1329159.75	.000	.000	1.000
5700	Y2	7162	1.00	28991.47	.000	-1.000	.000
5700	X2	526660	1.00	2131866.00	1.000	.000	.000
5700	Z2	526660	1.00	2131866.00	.000	.000	1.000
5750	Y2	37774	1.00	152903.86	.000	-1.000	.000
5750	X2	2777655	1.00	11243671.00	1.000	.000	.000
5750	Z2	2777655	1.00	11243671.00	.000	.000	1.000
5800	Y2	65688	1.00	265900.16	.000	-1.000	.000
5800	X2	4830349	1.00	19552770.00	1.000	.000	.000
5800	Z2	4830349	1.00	19552770.00	.000	.000	1.000
5850	Y2	65688	1.00	265900.16	.000	-1.000	.000
5850	X2	4830349	1.00	19552770.00	1.000	.000	.000
5850	Z2	4830349	1.00	19552770.00	.000	.000	1.000
5900	Y2	65688	1.00	265900.16	.000	-1.000	.000

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5900	X2	4830349	1.0019552770.00	1.000	.000	.000
5900	Z2	4830349	1.0019552770.00	.000	.000	1.000
5950	Y2	37774	1.00 152903.86	.000	-1.000	.000
5950	X2	2777655	1.0011243671.00	1.000	.000	.000
5950	Z2	2777655	1.0011243671.00	.000	.000	1.000
5951	Y2	7162	1.00 28991.47	.000	-1.000	.000
5951	X2	526660	1.00 2131866.00	1.000	.000	.000
5951	Z2	526660	1.00 2131866.00	.000	.000	1.000
5952	X2	4465	1.00 18075.38	-.707	.707	.000
5952	X2	328358	1.00 1329159.75	.707	.707	.000
5952	Z2	328358	1.00 1329159.75	.000	.000	1.000
6000	X2	7176	1.00 29048.79	1.000	.000	.000
6000	Y2	527701	1.00 2136081.25	.000	-1.000	.000
6000	Z2	527701	1.00 2136081.25	.000	.000	1.000
6001	X2	9887	1.00 40022.20	1.000	.000	.000
6001	Y2	727044	1.00 2943002.75	.000	-1.000	.000
6001	Z2	727044	1.00 2943002.75	.000	.000	1.000
6002	X2	9887	1.00 40022.20	1.000	.000	.000
6002	Y2	727044	1.00 2943002.75	.000	-1.000	.000
6002	Z2	727044	1.00 2943002.75	.000	.000	1.000
6003	X2	13695	1.00 55437.79	1.000	.000	.000
6003	Y2	1007084	1.00 4076576.00	.000	-1.000	.000
6003	Z2	1007084	1.00 4076576.00	.000	.000	1.000
6050	X2	35177	1.00 142393.81	1.000	.000	.000
6050	Y2	2586730	1.0010470823.00	.000	-1.000	.000
6050	Z2	2586730	1.0010470823.00	.000	.000	1.000
6100	X2	32125	1.00 130037.34	1.000	.000	.000
6100	Y2	2362262	1.00 9562198.00	.000	-1.000	.000
6100	Z2	2362262	1.00 9562198.00	.000	.000	1.000
6101	X2	6816	1.00 27589.05	1.000	.000	.000
6101	Y2	501183	1.00 2028740.50	.000	-1.000	.000
6101	Z2	501183	1.00 2028740.50	.000	.000	1.000
6102	X2	2233	1.00 9037.69	-.924	.000	-.383
6102	Y2	164179	1.00 664579.88	.000	-1.000	.000
6102	X2	164179	1.00 664579.88	-.383	.000	.924
6150	X2	3602	1.00 14582.27	-.707	.000	-.707
6150	Y2	264902	1.00 1072296.62	.000	-1.000	.000
6150	X2	264902	1.00 1072296.62	-.707	.000	.707
6151	X2	3602	1.00 14582.27	-.707	.000	-.707
6151	Y2	264902	1.00 1072296.62	.000	-1.000	.000
6151	X2	264902	1.00 1072296.62	-.707	.000	.707
6152	X2	2233	1.00 9037.69	-.924	.000	-.383
6152	Y2	164179	1.00 664579.88	.000	-1.000	.000
6152	X2	164179	1.00 664579.88	-.383	.000	.924
6200	X2	9779	1.00 39585.02	1.000	.000	.000
6200	Y2	719102	1.00 2910854.75	.000	-1.000	.000
6200	Z2	719102	1.00 2910854.75	.000	.000	1.000
6201	X2	9779	1.00 39585.02	1.000	.000	.000
6201	Y2	719102	1.00 2910854.75	.000	-1.000	.000
6201	Z2	719102	1.00 2910854.75	.000	.000	1.000
6202	X2	2233	1.00 9037.69	-.924	.000	.383
6202	Y2	164179	1.00 664579.88	.000	-1.000	.000
6202	X2	164179	1.00 664579.88	.383	.000	.924
6250	X2	3163	1.00 12802.58	-.707	.000	.707
6250	Y2	232572	1.00 941427.88	.000	-1.000	.000

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6250	X2	232572	1.00	941427.88	.707	.000	.707
6251	X2	3163	1.00	12802.58	-.707	.000	.707
6251	Y2	232572	1.00	941427.88	.000	-1.000	.000
6251	X2	232572	1.00	941427.88	.707	.000	.707
6252	X2	2233	1.00	9037.69	-.924	.000	.383
6252	Y2	164179	1.00	664579.88	.000	-1.000	.000
6252	X2	164179	1.00	664579.88	.383	.000	.924
6300	X2	6060	1.00	24529.95	1.000	.000	.000
6300	Y2	445612	1.00	1803791.25	.000	-1.000	.000
6300	Z2	445612	1.00	1803791.25	.000	.000	1.000
6301	X2	8586	1.00	34754.24	1.000	.000	.000
6301	Y2	631346	1.00	2555627.00	.000	-1.000	.000
6301	Z2	631346	1.00	2555627.00	.000	.000	1.000
6302	X2	7284	1.00	29486.28	1.000	.000	.000
6302	Y2	535648	1.00	2168251.25	.000	-1.000	.000
6302	Z2	535648	1.00	2168251.25	.000	.000	1.000
6350	X2	21583	1.00	87366.27	1.000	.000	.000
6350	Y2	1587098	1.00	6424413.00	.000	-1.000	.000
6350	Z2	1587098	1.00	6424413.00	.000	.000	1.000
6400	X2	17941	1.00	72623.13	1.000	.000	.000
6400	Y2	1319274	1.00	5340287.50	.000	-1.000	.000
6400	Z2	1319274	1.00	5340287.50	.000	.000	1.000
6400	Y2	11853	1.00	46175.20	.000	-1.000	.000
6400	X2	968687	1.00	3773519.25	1.000	.000	.000
6400	Z2	968687	1.00	3773519.25	.000	.000	1.000
7500	Y2	15067	1.00	58694.55	.000	-1.000	.000
7500	X2	1231324	1.00	4796623.00	1.000	.000	.000
7500	Z2	1231324	1.00	4796623.00	.000	.000	1.000
7550	Y2	30875	1.00	120271.97	.000	-1.000	.000
7550	X2	2523126	1.00	9828839.00	1.000	.000	.000
7550	Z2	2523126	1.00	9828839.00	.000	.000	1.000
7600	Y2	30993	1.00	120732.34	.000	-1.000	.000
7600	X2	2532784	1.00	9866461.00	1.000	.000	.000
7600	Z2	2532784	1.00	9866461.00	.000	.000	1.000
7601	Y2	4943	1.00	19255.90	.000	-1.000	.000
7601	X2	403960	1.00	1573626.50	1.000	.000	.000
7601	Z2	403960	1.00	1573626.50	.000	.000	1.000
7602	X2	3222	1.00	12552.35	-.707	-.707	.000
7602	X2	263330	1.00	1025800.31	-.707	.707	.000
7602	Z2	263330	1.00	1025800.31	.000	.000	1.000
7650	X2	5370	1.00	20920.75	1.000	.000	.000
7650	Y2	438886	1.00	1709681.12	.000	-1.000	.000
7650	Z2	438886	1.00	1709681.12	.000	.000	1.000
7651	X2	7189	1.00	28005.75	1.000	.000	.000
7651	Y2	587519	1.00	2288679.75	.000	-1.000	.000
7651	Z2	587519	1.00	2288679.75	.000	.000	1.000
7652	X2	6860	1.00	26722.35	1.000	.000	.000
7652	Y2	560595	1.00	2183797.50	.000	-1.000	.000
7652	Z2	560595	1.00	2183797.50	.000	.000	1.000
7700	X2	19051	1.00	74213.95	1.000	.000	.000
7700	Y2	1556898	1.00	6064895.00	.000	-1.000	.000
7700	Z2	1556898	1.00	6064895.00	.000	.000	1.000
7750	X2	15621	1.00	60852.77	1.000	.000	.000
7750	Y2	1276600	1.00	4972996.00	.000	-1.000	.000
7750	Z2	1276600	1.00	4972996.00	.000	.000	1.000

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6400	X2	1343	1.00	5436.45	1.000	.000	.000
6400	Y2	98759	1.00	399765.09	.000	-1.000	.000
6400	Z2	98759	1.00	399765.09	.000	.000	1.000
6450	X2	2922	1.00	11829.31	1.000	.000	.000
6450	Y2	214891	1.00	869859.25	.000	-1.000	.000
6450	Z2	214891	1.00	869859.25	.000	.000	1.000
6500	X2	2377	1.00	9379.55	1.000	.000	.000
6500	Y2	191389	1.00	751786.06	.000	-1.000	.000
6500	Z2	191389	1.00	751786.06	.000	.000	1.000
6550	X2	12204	1.00	44269.25	1.000	.000	.000
6550	Y2	1343361	1.00	4871309.50	.000	-1.000	.000
6550	Z2	1343361	1.00	4871309.50	.000	.000	1.000
6600	X2	15088	1.00	54608.18	1.000	.000	.000
6600	Y2	1677437	1.00	6071103.50	.000	-1.000	.000
6600	Z2	1677437	1.00	6071103.50	.000	.000	1.000
6601	X2	7364	1.00	26651.25	1.000	.000	.000
6601	Y2	818665	1.00	2962972.25	.000	-1.000	.000
6601	Z2	818665	1.00	2962972.25	.000	.000	1.000
6602	X2	5466	1.00	19783.81	1.000	.000	.000
6602	Y2	607713	1.00	2199479.25	.000	-1.000	.000
6602	Z2	607713	1.00	2199479.25	.000	.000	1.000
6603	X2	3569	1.00	12916.36	1.000	.000	.000
6603	Y2	396761	1.00	1435986.12	.000	-1.000	.000
6603	Z2	396761	1.00	1435986.12	.000	.000	1.000
6604	X2	3569	1.00	12916.36	1.000	.000	.000
6604	Y2	396761	1.00	1435986.12	.000	-1.000	.000
6604	Z2	396761	1.00	1435986.12	.000	.000	1.000
6605	X2	2114	1.00	7652.89	1.000	.000	.000
6605	Y2	235079	1.00	850815.31	.000	-1.000	.000
6605	Z2	235079	1.00	850815.31	.000	.000	1.000
6606	X2	660	1.00	2389.41	-.924	.000	.383
6606	Y2	73397	1.00	265644.47	.000	-1.000	.000
6606	X2	73397	1.00	265644.47	.383	.000	.924
6650	X2	3274	1.00	11849.00	-.707	.000	.707
6650	Y2	363974	1.00	1317321.00	.000	-1.000	.000
6650	X2	363974	1.00	1317321.00	.707	.000	.707
6651	X2	3274	1.00	11849.00	-.707	.000	.707
6651	Y2	363974	1.00	1317321.00	.000	-1.000	.000
6651	X2	363974	1.00	1317321.00	.707	.000	.707
6652	X2	660	1.00	2389.41	-.924	.000	.383
6652	Y2	73397	1.00	265644.47	.000	-1.000	.000
6652	X2	73397	1.00	265644.47	.383	.000	.924
6700	X2	1266	1.00	4582.55	1.000	.000	.000
6700	Y2	140765	1.00	509468.50	.000	-1.000	.000
6700	Z2	140765	1.00	509468.50	.000	.000	1.000
6701	X2	1638	1.00	5926.99	1.000	.000	.000
6701	Y2	182063	1.00	658937.13	.000	-1.000	.000
6701	Z2	182063	1.00	658937.13	.000	.000	1.000
6702	X2	1403	1.00	5078.28	-.924	-.383	.000
6702	X2	155993	1.00	564581.69	-.383	.924	.000
6702	Z2	155993	1.00	564581.69	.000	.000	1.000
6800	X2	1111	1.00	4019.86	-.707	-.707	.000
6800	X2	123481	1.00	446910.75	-.707	.707	.000
6800	Z2	123481	1.00	446910.75	.000	.000	1.000
6801	X2	818	1.00	2961.44	-.500	-.866	.000

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6801	X2	90968	1.00	329239.84	-.866	.500	.000
6801	Z2	90968	1.00	329239.84	.000	.000	1.000
6850	X2	2194	1.00	7938.90	-.259	-.966	.000
6850	X2	243865	1.00	882613.00	-.966	.259	.000
6850	Z2	243865	1.00	882613.00	.000	.000	1.000
6851	X2	3463	1.00	12532.47	-.259	-.966	.000
6851	X2	384968	1.00	1393306.00	-.966	.259	.000
6851	Z2	384968	1.00	1393306.00	.000	.000	1.000
6852	X2	3357	1.00	12148.57	-.259	-.966	.000
6852	X2	373176	1.00	1350625.87	-.966	.259	.000
6852	Z2	373176	1.00	1350625.87	.000	.000	1.000
6900	X2	14611	1.00	52879.81	-.259	-.966	.000
6900	X2	1624345	1.00	5878951.00	-.966	.259	.000
6900	Z2	1624345	1.00	5878951.00	.000	.000	1.000
6950	X2	25865	1.00	93611.05	-.259	-.966	.000
6950	X2	2875514	1.00	10407276.00	-.966	.259	.000
6950	Z2	2875514	1.00	10407276.00	.000	.000	1.000
7000	X2	15012	1.00	54331.86	-.259	-.966	.000
7000	X2	1668949	1.00	6040383.00	-.966	.259	.000
7000	Z2	1668949	1.00	6040383.00	.000	.000	1.000
7001	X2	2313	1.00	8372.75	-.259	-.966	.000
7001	X2	257191	1.00	930846.31	-.966	.259	.000
7001	Z2	257191	1.00	930846.31	.000	.000	1.000
7002	X2	468	1.00	1692.84	-.131	-.991	.000
7002	X2	52000	1.00	188202.39	-.991	.131	.000
7002	Z2	52000	1.00	188202.39	.000	.000	1.000
7050	Y2	2018	1.00	7304.60	.000	-1.000	.000
7050	X2	224380	1.00	812094.25	1.000	.000	.000
7050	Z2	224380	1.00	812094.25	.000	.000	1.000
7051	Y2	3569	1.00	12916.36	.000	-1.000	.000
7051	X2	396761	1.00	1435986.12	1.000	.000	.000
7051	Z2	396761	1.00	1435986.12	.000	.000	1.000
7052	Y2	3700	1.00	13391.77	.000	-1.000	.000
7052	X2	411364	1.00	1488839.37	1.000	.000	.000
7052	Z2	411364	1.00	1488839.37	.000	.000	1.000
7053	Y2	3831	1.00	13867.17	.000	-1.000	.000
7053	X2	425967	1.00	1541692.62	1.000	.000	.000
7053	Z2	425967	1.00	1541692.62	.000	.000	1.000
7100	Y2	21975	1.00	79532.06	.000	-1.000	.000
7100	X2	2443040	1.00	8842034.00	1.000	.000	.000
7100	Z2	2443040	1.00	8842034.00	.000	.000	1.000
7150	Y2	40118	1.00	145196.95	.000	-1.000	.000
7150	X2	4460113	1.00	16142375.00	1.000	.000	.000
7150	Z2	4460113	1.00	16142375.00	.000	.000	1.000
7200	ANC			.000	.000	.000	
2350	Y2	56095	1.00	295421.75	.000	-1.000	.000
2350	X2	2902464	1.00	15285823.00	1.000	.000	.000
2350	Z2	2902464	1.00	15285823.00	.000	.000	1.000
2400	Y2	112189	1.00	590843.50	.000	-1.000	.000
2400	X2	5804927	1.00	30571646.00	1.000	.000	.000
2400	Z2	5804927	1.00	30571646.00	.000	.000	1.000
2450	Y2	98057	1.00	516416.66	.000	-1.000	.000
2450	X2	5073697	1.00	26720624.00	1.000	.000	.000
2450	Z2	5073697	1.00	26720624.00	.000	.000	1.000
2500	Y2	106234	1.00	559480.38	.000	-1.000	.000



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2500	X2	5496790	1.0028948844.00	1.000	.000	.000
2500	Z2	5496790	1.0028948844.00	.000	.000	1.000
2550	Y2	79746	1.00 419980.00	.000	-1.000	.000
2550	X2	4126225	1.0021730760.00	1.000	.000	.000
2550	Z2	4126225	1.0021730760.00	.000	.000	1.000
2551	Y2	30948	1.00 162989.02	.000	-1.000	.000
2551	X2	1601337	1.00 8433438.00	1.000	.000	.000
2551	Z2	1601337	1.00 8433438.00	.000	.000	1.000
2552	Y2	34640	1.00 182429.72	.000	-1.000	.000
2552	X2	1792338	1.00 9439346.00	1.000	.000	.000
2552	Z2	1792338	1.00 9439346.00	.000	.000	1.000
2553	Y2	32005	1.00 168554.97	.000	-1.000	.000
2553	X2	1656021	1.00 8721434.00	1.000	.000	.000
2553	Z2	1656021	1.00 8721434.00	.000	.000	1.000
2554	X2	25679	1.00 135239.53	-.500	.866	.000
2554	X2	1328703	1.00 6997614.50	.866	.500	.000
2554	Z2	1328703	1.00 6997614.50	.000	.000	1.000
2600	X2	27423	1.00 144421.56	-.866	.500	.000
2600	X2	1418915	1.00 7472714.00	.500	.866	.000
2600	Z2	1418915	1.00 7472714.00	.000	.000	1.000
2650	X2	97496	1.00 513463.53	-.866	.500	.000
2650	X2	5044683	1.0026567824.00	.500	.866	.000
2650	Z2	5044683	1.0026567824.00	.000	.000	1.000
2700	X2	105084	1.00 553422.75	-.866	.500	.000
2700	X2	5437275	1.0028635408.00	.500	.866	.000
2700	Z2	5437275	1.0028635408.00	.000	.000	1.000
2701	X2	28591	1.00 150572.09	-.866	.500	.000
2701	X2	1479343	1.00 7790958.00	.500	.866	.000
2701	Z2	1479343	1.00 7790958.00	.000	.000	1.000
2702	X2	12840	1.00 67622.21	-.966	.259	.000
2702	X2	664376	1.00 3498933.75	.259	.966	.000
2702	Z2	664376	1.00 3498933.75	.000	.000	1.000
2750	X2	28545	1.00 150329.89	1.000	.000	.000
2750	Y2	1476963	1.00 7778426.00	.000	-1.000	.000
2750	Z2	1476963	1.00 7778426.00	.000	.000	1.000
2800	X2	80257	1.00 422672.41	1.000	.000	.000
2800	Y2	4152677	1.0021870076.00	.000	-1.000	.000
2800	Z2	4152677	1.0021870076.00	.000	.000	1.000
2850	X2	116265	1.00 612307.25	1.000	.000	.000
2850	Y2	6015804	1.0031682232.00	.000	-1.000	.000
2850	Z2	6015804	1.0031682232.00	.000	.000	1.000
2900	X2	73213	1.00 385576.47	1.000	.000	.000
2900	Y2	3788217	1.0019950642.00	.000	-1.000	.000
2900	Z2	3788217	1.0019950642.00	.000	.000	1.000
2901	X2	19895	1.00 104779.33	1.000	.000	.000
2901	Y2	1029437	1.00 5421531.50	.000	-1.000	.000
2901	Z2	1029437	1.00 5421531.50	.000	.000	1.000
2902	X2	9629	1.00 50712.99	-.924	-.383	.000
2902	X2	498246	1.00 2624010.50	-.383	.924	.000
2902	Z2	498246	1.00 2624010.50	.000	.000	1.000
3000	X2	13178	1.00 69402.39	-.707	-.707	.000
3000	X2	681866	1.00 3591044.25	-.707	.707	.000
3000	Z2	681866	1.00 3591044.25	.000	.000	1.000
3001	X2	11574	1.00 60952.47	-.707	-.707	.000
3001	X2	598847	1.00 3153825.50	-.707	.707	.000

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3001	Z2	598847	1.00	3153825.50	.000	.000	1.000
3002	X2	6420	1.00	33813.15	-.500	-.866	.000
3002	X2	332208	1.00	1749572.87	-.866	.500	.000
3002	Z2	332208	1.00	1749572.87	.000	.000	1.000
3055	X2	23596	1.00	124268.13	-.259	-.966	.000
3055	X2	1220911	1.00	6429928.00	-.966	.259	.000
3055	Z2	1220911	1.00	6429928.00	.000	.000	1.000
3050	X2	37789	1.00	199013.97	-.259	-.966	.000
3050	X2	1955275	1.00	10297456.00	-.966	.259	.000
3050	Z2	1955275	1.00	10297456.00	.000	.000	1.000
3051	X2	22218	1.00	117009.63	-.259	-.966	.000
3051	X2	1149598	1.00	6054356.00	-.966	.259	.000
3051	Z2	1149598	1.00	6054356.00	.000	.000	1.000
3052	X2	9630	1.00	50714.40	-.239	-.892	-.383
3052	X2	498259	1.00	2624083.50	-.966	.259	.000
3052	X2	498259	1.00	2624083.50	-.099	-.370	.924
3100	X2	9656	1.00	50855.50	-.183	-.683	-.707
3100	X2	499646	1.00	2631384.25	-.966	.259	.000
3100	X2	499646	1.00	2631384.25	-.183	-.683	.707
3101	X2	9656	1.00	50855.50	-.183	-.683	-.707
3101	X2	499646	1.00	2631384.00	-.966	.259	.000
3101	X2	499646	1.00	2631384.00	-.183	-.683	.707
3102	X2	9630	1.00	50714.39	-.239	-.892	-.383
3102	X2	498259	1.00	2624083.25	-.966	.259	.000
3102	X2	498259	1.00	2624083.25	-.099	-.370	.924
3150	X2	21551	1.00	113498.77	-.259	-.966	.000
3150	X2	1115104	1.00	5872695.50	-.966	.259	.000
3150	Z2	1115104	1.00	5872695.50	.000	.000	1.000
3151	X2	21551	1.00	113498.61	-.259	-.966	.000
3151	X2	1115103	1.00	5872687.50	-.966	.259	.000
3151	Z2	1115103	1.00	5872687.50	.000	.000	1.000
3152	X2	9630	1.00	50714.08	-.239	-.892	.383
3152	X2	498256	1.00	2624067.00	-.966	.259	.000
3152	X2	498256	1.00	2624067.00	.099	.370	.924
3200	X2	8844	1.00	46574.72	-.183	-.683	.707
3200	X2	457588	1.00	2409886.75	-.966	.259	.000
3200	X2	457588	1.00	2409886.75	.183	.683	.707
3201	X2	8844	1.00	46574.72	-.183	-.683	.707
3201	X2	457588	1.00	2409886.75	-.966	.259	.000
3201	X2	457588	1.00	2409886.75	.183	.683	.707
3202	X2	9630	1.00	50714.08	-.239	-.892	.383
3202	X2	498256	1.00	2624067.00	-.966	.259	.000
3202	X2	498256	1.00	2624067.00	.099	.370	.924
3250	X2	20624	1.00	108615.21	-.259	-.966	.000
3250	X2	1067124	1.00	5620009.00	-.966	.259	.000
3250	Z2	1067124	1.00	5620009.00	.000	.000	1.000
3251	X2	31618	1.00	166516.34	-.259	-.966	.000
3251	X2	1635992	1.00	8615951.00	-.966	.259	.000
3251	Z2	1635992	1.00	8615951.00	.000	.000	1.000
3300	X2	31995	1.00	168503.28	-.259	-.966	.000
3300	X2	1655513	1.00	8718760.00	-.966	.259	.000
3300	Z2	1655513	1.00	8718760.00	.000	.000	1.000
3301	X2	32373	1.00	170490.22	-.259	-.966	.000
3301	X2	1675035	1.00	8821569.00	-.966	.259	.000
3301	Z2	1675035	1.00	8821569.00	.000	.000	1.000

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3302	X2	19396	1.00	102149.72	-.259	-.966	.000
3302	X2	1003602	1.00	5285469.00	-.966	.259	.000
3302	Z2	1003602	1.00	5285469.00	.000	.000	1.000
3303	X2	6420	1.00	33809.23	-.131	-.991	.000
3303	X2	332169	1.00	1749369.50	-.991	.131	.000
3303	Z2	332169	1.00	1749369.50	.000	.000	1.000
3350	Y2	19972	1.00	105182.81	.000	-1.000	.000
3350	X2	1033402	1.00	5442408.00	1.000	.000	.000
3350	Z2	1033402	1.00	5442408.00	.000	.000	1.000
3351	Y2	33524	1.00	176556.41	.000	-1.000	.000
3351	X2	1734634	1.00	9135447.00	1.000	.000	.000
3351	Z2	1734634	1.00	9135447.00	.000	.000	1.000
3400	Y2	22016	1.00	115947.98	.000	-1.000	.000
3400	X2	1139167	1.00	5999423.00	1.000	.000	.000
3400	Z2	1139167	1.00	5999423.00	.000	.000	1.000
3450	Y2	9981	1.00	50046.42	.000	-1.000	.000
3450	X2	539189	1.00	2697202.50	1.000	.000	.000
3450	Z2	539189	1.00	2697202.50	.000	.000	1.000
3500	Y2	29913	1.00	141599.44	.000	-1.000	.000
3500	X2	1691721	1.00	8008100.00	1.000	.000	.000
3500	Z2	1691721	1.00	8008100.00	.000	.000	1.000
3550	ANC			.000	.000	.000	
850	X2	22993	1.00	121093.10	1.000	.000	.000
850	Y2	1189717	1.00	6265644.50	.000	-1.000	.000
850	Z2	1189717	1.00	6265644.50	.000	.000	1.000
900	X2	22993	1.00	121093.10	1.000	.000	.000
900	Y2	1189717	1.00	6265644.50	.000	-1.000	.000
900	Z2	1189717	1.00	6265644.50	.000	.000	1.000
950	X2	57483	1.00	302732.75	1.000	.000	.000
950	Y2	2974293	1.00	15664111.00	.000	-1.000	.000
950	Z2	2974293	1.00	15664111.00	.000	.000	1.000
970	X2	114965	1.00	605465.50	1.000	.000	.000
970	Y2	5948585	1.00	31328222.00	.000	-1.000	.000
970	Z2	5948585	1.00	31328222.00	.000	.000	1.000
1000	X2	114965	1.00	605465.50	1.000	.000	.000
1000	Y2	5948585	1.00	31328222.00	.000	-1.000	.000
1000	Z2	5948585	1.00	31328222.00	.000	.000	1.000
1050	X2	114965	1.00	605465.50	1.000	.000	.000
1050	Y2	5948585	1.00	31328222.00	.000	-1.000	.000
1050	Z2	5948585	1.00	31328222.00	.000	.000	1.000
1100	X2	114965	1.00	605465.50	1.000	.000	.000
1100	Y2	5948585	1.00	31328222.00	.000	-1.000	.000
1100	Z2	5948585	1.00	31328222.00	.000	.000	1.000
1150	X2	114965	1.00	605465.50	1.000	.000	.000
1150	Y2	5948585	1.00	31328222.00	.000	-1.000	.000
1150	Z2	5948585	1.00	31328222.00	.000	.000	1.000
1175	X2	114965	1.00	605465.50	1.000	.000	.000
1175	Y2	5948585	1.00	31328222.00	.000	-1.000	.000
1175	Z2	5948585	1.00	31328222.00	.000	.000	1.000
1200	ANC			.000	.000	.000	
900	X2	5748	1.00	30273.28	1.000	.000	.000
900	Y2	297429	1.00	1566411.12	.000	-1.000	.000
900	Z2	297429	1.00	1566411.12	.000	.000	1.000
950	X2	5748	1.00	30273.28	1.000	.000	.000
950	Y2	297429	1.00	1566411.12	.000	-1.000	.000

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950	Z2	297429	1.00	1566411.12	.000	.000	1.000
5050	X2	4837	1.00	18844.04	1.000	.000	.000
5050	Y2	395320	1.00	1539968.75	.000	-1.000	.000
5050	Z2	395320	1.00	1539968.75	.000	.000	1.000
4300	X2	6192	1.00	24120.04	1.000	.000	.000
4300	Y2	506002	1.00	1971132.62	.000	-1.000	.000
4300	Z2	506002	1.00	1971132.62	.000	.000	1.000
8350	+Z			.30	.000	.000	1.000
8400	+Z			.30	.000	.000	1.000
8450	Y2	5624	1.00	21907.29	.000	-1.000	.000
8450	X2	459582	1.00	1790302.50	1.000	.000	.000
8450	Z2	459582	1.00	1790302.50	.000	.000	1.000
8500	Y2	7635	1.00	29741.06	.000	-1.000	.000
8500	X2	623923	1.00	2430492.00	1.000	.000	.000
8500	Z2	623923	1.00	2430492.00	.000	.000	1.000
8550	Y2	6975	1.00	27169.65	.000	-1.000	.000
8550	X2	569979	1.00	2220352.25	1.000	.000	.000
8550	Z2	569979	1.00	2220352.25	.000	.000	1.000
8600	Y2	22501	1.00	87651.18	.000	-1.000	.000
8600	X2	1838791	1.00	7163010.00	1.000	.000	.000
8600	Z2	1838791	1.00	7163010.00	.000	.000	1.000
8650	Y2	24778	1.00	96523.16	.000	-1.000	.000
8650	X2	2024912	1.00	7888044.00	1.000	.000	.000
8650	Z2	2024912	1.00	7888044.00	.000	.000	1.000
8700	Y2	6859	1.00	26718.71	.000	-1.000	.000
8700	X2	560519	1.00	2183500.75	1.000	.000	.000
8700	Z2	560519	1.00	2183500.75	.000	.000	1.000
8750	Y2	1741	1.00	6678.18	.000	-1.000	.000
8750	X2	153254	1.00	585539.25	1.000	.000	.000
8750	Z2	153254	1.00	585539.25	.000	.000	1.000
8800	Y2	1248	1.00	4380.32	.000	-1.000	.000
8800	X2	174060	1.00	609134.75	1.000	.000	.000
8800	Z2	174060	1.00	609134.75	.000	.000	1.000
8850	Y2	875	1.00	3029.52	.000	-1.000	.000
8850	X2	132566	1.00	458958.69	1.000	.000	.000
8850	Z2	132566	1.00	458958.69	.000	.000	1.000
8850	X2	12390	1.00	42895.82	1.000	.000	.000
8850	Y2	1877042	1.00	6498530.50	.000	-1.000	.000
8850	Z2	1877042	1.00	6498530.50	.000	.000	1.000
9000	ANC			.000	.000	.000	
8850	X2	875	1.00	3029.52	1.000	.000	.000
8850	Y2	132566	1.00	458958.69	.000	-1.000	.000
8850	Z2	132566	1.00	458958.69	.000	.000	1.000
8900	X2	16363	1.00	56649.30	1.000	.000	.000
8900	Y2	2478869	1.00	8582122.00	.000	-1.000	.000
8900	Z2	2478869	1.00	8582122.00	.000	.000	1.000
8950	ANC			.000	.000	.000	
11250	Z2	365	1.00	1205.58	.000	.000	1.000
11250	X2	97039	1.00	320708.28	1.000	.000	.000
11250	Y2	97039	1.00	320708.28	.000	-1.000	.000
11251	Z2	449	1.00	1482.79	.000	.000	1.000
11251	X2	119352	1.00	394451.69	1.000	.000	.000
11251	Y2	119352	1.00	394451.69	.000	-1.000	.000
11252	X2	168	1.00	554.42	-.706	.000	-.708
11252	Y2	44626	1.00	147486.78	.000	-1.000	.000

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11252	X2	44626	1.00	147486.78	-.708	.000	.706
11300	X2	355	1.00	1172.95	-1.000	.000	-.002
11300	Y2	94412	1.00	312028.38	.000	-1.000	.000
11300	X2	94412	1.00	312028.38	-.002	.000	1.000
11301	X2	542	1.00	1791.49	-1.000	.000	-.002
11301	Y2	144199	1.00	476569.94	.000	-1.000	.000
11301	X2	144199	1.00	476569.94	-.002	.000	1.000
11302	X2	542	1.00	1791.49	-1.000	.000	-.002
11302	Y2	144199	1.00	476569.94	.000	-1.000	.000
11302	X2	144199	1.00	476569.94	-.002	.000	1.000
11303	X2	678	1.00	2239.36	-1.000	.000	-.002
11303	Y2	180249	1.00	595712.38	.000	-1.000	.000
11303	X2	180249	1.00	595712.38	-.002	.000	1.000
11304	X2	2014	1.00	6656.83	-1.000	.000	-.002
11304	Y2	535816	1.00	1770843.50	.000	-1.000	.000
11304	X2	535816	1.00	1770843.50	-.002	.000	1.000
11305	X2	5287	1.00	17471.95	-1.000	.000	-.002
11305	Y2	1406336	1.00	4647871.00	.000	-1.000	.000
11305	X2	1406336	1.00	4647871.00	-.002	.000	1.000
11350	X2	10292	1.00	34014.24	-1.000	.000	-.002
11350	Y2	2737844	1.00	9048435.00	.000	-1.000	.000
11350	X2	2737844	1.00	9048435.00	-.002	.000	1.000
11400	X2	6613	1.00	21855.50	-1.000	.000	-.002
11400	Y2	1759174	1.00	5813980.00	.000	-1.000	.000
11400	X2	1759174	1.00	5813980.00	-.002	.000	1.000
11400	X2	6086	1.00	20112.62	.000	1.000	-.002
11400	X2	1618887	1.00	5350340.50	1.000	.000	.000
11400	X2	1618887	1.00	5350340.50	.000	.002	1.000
12000	X2	12171	1.00	40225.24	.000	1.000	-.002
12000	X2	3237774	1.00	10700681.00	1.000	.000	.000
12000	X2	3237774	1.00	10700681.00	.000	.002	1.000
12050	X2	6086	1.00	20112.62	.000	1.000	-.002
12050	X2	1618887	1.00	5350340.50	1.000	.000	.000
12050	X2	1618887	1.00	5350340.50	.000	.002	1.000
12050	X2	214	1.00	707.26	1.000	.000	.000
12050	Y2	56928	1.00	188144.34	.000	-1.000	.000
12050	Z2	56928	1.00	188144.34	.000	.000	1.000
12500	X2	2319	1.00	7663.90	1.000	.000	.000
12500	Y2	616876	1.00	2038744.50	.000	-1.000	.000
12500	Z2	616876	1.00	2038744.50	.000	.000	1.000
12550	ANC			.000	.000	.000	
12050	Y2	214	1.00	707.26	.000	-1.000	.000
12050	X2	56928	1.00	188144.34	1.000	.000	.000
12050	Z2	56928	1.00	188144.34	.000	.000	1.000
12100	Y2	657	1.00	2170.19	.000	-1.000	.000
12100	X2	174681	1.00	577310.63	1.000	.000	.000
12100	Z2	174681	1.00	577310.63	.000	.000	1.000
12101	Y2	885	1.00	2925.85	.000	-1.000	.000
12101	X2	235505	1.00	778332.63	1.000	.000	.000
12101	Z2	235505	1.00	778332.63	.000	.000	1.000
12102	Y2	714	1.00	2358.67	.000	-1.000	.000
12102	X2	189852	1.00	627451.25	1.000	.000	.000
12102	Z2	189852	1.00	627451.25	.000	.000	1.000
12103	Y2	542	1.00	1791.49	.000	-1.000	.000
12103	X2	144199	1.00	476569.94	1.000	.000	.000

CAESAR II 2017 Ver.9.00.00.5900, (Build 160721)  
 Licensed To: TECHFEM SPA

Impianto di Brindisi - Loc. Mass. Matagiola

Allegato 1

INPUT LISTING

12103	Z2	144199	1.00	476569.94	.000	.000	1.000
12104	Y2	542	1.00	1791.49	.000	-1.000	.000
12104	X2	144199	1.00	476569.94	1.000	.000	.000
12104	Z2	144199	1.00	476569.94	.000	.000	1.000
12105	Y2	355	1.00	1173.30	.000	-1.000	.000
12105	X2	94440	1.00	312120.63	1.000	.000	.000
12105	Z2	94440	1.00	312120.63	.000	.000	1.000
12106	X2	168	1.00	555.12	.707	.707	.000
12106	X2	44682	1.00	147671.31	.707	-.707	.000
12106	Z2	44682	1.00	147671.31	.000	.000	1.000
12150	X2	355	1.00	1173.30	1.000	.000	.000
12150	Y2	94440	1.00	312120.63	.000	-1.000	.000
12150	Z2	94440	1.00	312120.63	.000	.000	1.000
12151	X2	542	1.00	1791.49	1.000	.000	.000
12151	Y2	144199	1.00	476569.94	.000	-1.000	.000
12151	Z2	144199	1.00	476569.94	.000	.000	1.000
12152	X2	542	1.00	1791.49	1.000	.000	.000
12152	Y2	144199	1.00	476569.94	.000	-1.000	.000
12152	Z2	144199	1.00	476569.94	.000	.000	1.000
12153	X2	678	1.00	2239.36	1.000	.000	.000
12153	Y2	180249	1.00	595712.38	.000	-1.000	.000
12153	Z2	180249	1.00	595712.38	.000	.000	1.000
12154	X2	2550	1.00	8427.02	1.000	.000	.000
12154	Y2	678300	1.00	2241747.75	.000	-1.000	.000
12154	Z2	678300	1.00	2241747.75	.000	.000	1.000
12155	X2	4287	1.00	14166.81	1.000	.000	.000
12155	Y2	1140302	1.00	3768640.75	.000	-1.000	.000
12155	Z2	1140302	1.00	3768640.75	.000	.000	1.000
12200	ANC			.000	.000	.000	
11400	X2	1661	1.00	5489.55	1.000	.000	.000
11400	Y2	441860	1.00	1460325.62	.000	-1.000	.000
11400	Z2	441860	1.00	1460325.62	.000	.000	1.000
11401	X2	2068	1.00	6833.17	1.000	.000	.000
11401	Y2	550009	1.00	1817753.00	.000	-1.000	.000
11401	Z2	550009	1.00	1817753.00	.000	.000	1.000
11402	X2	678	1.00	2239.36	1.000	.000	.000
11402	Y2	180249	1.00	595712.38	.000	-1.000	.000
11402	Z2	180249	1.00	595712.38	.000	.000	1.000
11403	X2	542	1.00	1791.49	1.000	.000	.000
11403	Y2	144199	1.00	476569.94	.000	-1.000	.000
11403	Z2	144199	1.00	476569.94	.000	.000	1.000
11404	X2	542	1.00	1791.49	1.000	.000	.000
11404	Y2	144199	1.00	476569.94	.000	-1.000	.000
11404	Z2	144199	1.00	476569.94	.000	.000	1.000
11451	Z2	412	1.00	1362.57	.000	.000	1.000
11451	X2	109675	1.00	362470.91	1.000	.000	.000
11451	Y2	109675	1.00	362470.91	.000	-1.000	.000

CAESAR II 2017 Ver.9.00.00.5900, (Build 160721)

FLANGES

8050      8100      Location= Both    Method= Peq  
 Class/Grade= ASME-2009-600-1.1  
 G/C= 566.380 mm.    T/P table ( 1)= 37.8 C

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Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1

INPUT LISTING

-> 10,204.2 KPa ( 2)= 93.3 C  
 -> 9,376.9 KPa ( 3)= 148.9 C  
 -> 9,032.1 KPa ( 4)= 204.4 C  
 -> 8,721.9 KPa ( 5)= 260.0 C  
 -> 8,308.2 KPa ( 6)= 315.6 C  
 -> 7,825.5 KPa ( 7)= 343.3 C  
 -> 7,584.2 KPa ( 8)= 371.1 C  
 -> 7,308.4 KPa ( 9)= 398.9 C  
 -> 6,998.2 KPa (10)= 426.7 C  
 -> 5,688.2 KPa (11)= 454.4 C  
 -> 4,412.6 KPa (12)= 482.2 C  
 -> 3,171.6 KPa (13)= 510.0 C  
 -> 1,896.1 KPa (14)= 537.8 C  
 -> 1,172.1 KPa

10650 10700 Location= To Method= Peq  
 11050 11100 Location= Both Method= Peq  
 11650 11700 Location= Both Method= Peq  
 G/C= 144.600 mm.

CAESAR II 2017 Ver.9.00.00.5900, (Build 160721)

INPUT UNITS USED...

UNITS= SI (m NOM/SCH INPUT= ON

LENGTH inches x 25.400 = mm.  
 FORCE pounds x 4.448 = N.  
 MASS(dynamics) pounds x 0.454 = Kg.  
 MOMENTS(INPUT) inch-pounds x 0.113 = N.m.  
 MOMENTS(OUTPUT) inch-pounds x 0.113 = N.m.  
 STRESS lbs./sq.in. x 6.895 = KPa  
 TEMP. SCALE degrees F. x 0.556 = C  
 PRESSURE psig x 6.895 = KPa  
 ELASTIC MODULUS lbs./sq.in. x 6.895 = KPa  
 PIPE DENSITY lbs./cu.in. x 0.028 = kg./cu.cm.  
 INSULATION DENS. lbs./cu.in. x 0.028 = kg./cu.cm.  
 FLUID DENSITY lbs./cu.in. x 0.028 = kg./cu.cm.  
 TRANSL. STIF lbs./in. x 1.751 = N./cm.  
 ROTATIONAL STIF in.lb./deg. x 0.113 = N.m./deg  
 UNIFORM LOAD lb./in. x 1.751 = N./cm.  
 G LOAD g's x 1.000 = g's  
 WIND LOAD lbs./sq.in. x 6.895 = KPa  
 ELEVATION inches x 0.025 = m.  
 COMPOUND LENGTH inches x 25.400 = mm.  
 DIAMETER inches x 25.400 = mm.  
 WALL THICKNESS inches x 25.400 = mm.

CAESAR II 2017 Ver.9.00.00.5900, (Build 160721)

SETUP FILE PARAMETERS

-----  
 CONNECT GEOMETRY THRU CNODES = YES  
 MIN ALLOWED BEND ANGLE = 5.00000  
 MAX ALLOWED BEND ANGLE = 95.0000  
 BEND LENGTH ATTACHMENT PERCENT = 1.00000  
 MIN ANGLE TO ADJACENT BEND PT = 5.00000  
 LOOP CLOSURE TOLERANCE = 25.4000 mm.  
 THERMAL BOWING HORZ TOLERANCE = 0.100000E-03  
 AUTO NODE NUMBER INCREMENT= 10.0000

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 Licensed To: TECHFEM SPA

Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1

INPUT LISTING

Z AXIS UP= YES  
 USE PRESSURE STIFFENING = DEFAULT  
 ALPHA TOLERANCE = 0.500000E-01  
 RESLD-FORCE = NO  
 HGR DEF RESWGT STIF = 0.175127E+13 N./cm.  
 DECOMP SNG TOL = 0.100000E+11  
 BEND AXIAL SHAPE = YES  
 FRICT STIF = 0.175127E+07 N./cm.  
 FRICT NORM FORCE VAR = 0.150000  
 FRICT ANGLE VAR = 15.0000  
 FRICT SLIDE MULT = 1.00000  
 ROD TOLERANCE = 1.00000  
 ROD INC = 2.00000  
 INCORE NUMERICAL CHECK = NO  
 OUTCORE NUMERICAL CHECK = NO  
 DEFAULT TRANS RESTRAINT STIFF= 0.175127E+13 N./cm.  
 DEFAULT ROT RESTRAINT STIFF= 0.112985E+12 N.m./deg  
 IGNORE SPRING HANGER STIFFNESS = NO  
 MISSING MASS ZPA = EXTRACTED  
 MIN WALL MILL TOLERANCE = 12.5000  
 WRC-107 VERSION = MAR 79 1B1/2B1  
 WRC-107 INTERPOLATION = LAST VALUE  
 DEFAULT AMBIENT TEMPERATURE= 15.0000 C  
 BOURDON PRESSURE= NONE  
 COEFFICIENT OF FRICTION (MU) = 0.000000  
 INCLUDE SPRG STIF IN HGR OPE = NO  
 INCLUDE INSULATION IN HYDROTEST = NO  
 REDUCED INTERSECTION = B31.1(POST1980)  
 USE WRC329 NO  
 NO REDUCED SIF FOR RFT AND WLT NO  
 B31.1 REDUCED Z FIX = YES  
 CLASS 1 BRANCH FLEX NO  
 ALL STRESS CASES CORRODED = NO  
 ADD TORSION IN SL STRESS = DEFAULT  
 ADD F/A IN STRESS = DEFAULT  
 OCCASIONAL LOAD FACTOR = 0.000000  
 DEFAULT CODE = B31.3  
 B31.3 SUS CASE SIF FACTOR = 0.000000  
 ALLOW USERS BEND SIF = NO  
 USE SCHNEIDER NO  
 YIELD CRITERION STRESS = MAX 3D SHEAR  
 USE PD/4T NO  
 BASE HOOP STRESS ON ? = ID  
 EN13480 USE IN OUTPLANE SIFS= NO  
 LIBERAL EXPANSION ALLOWABLE= YES  
 B31.3 SEC 319.2.3C SAXIAL= Default  
 B31.3 WELDING/CONTOUR TEE ISB16.9 FALSE  
 PRESSURE VARIATION IN EXP CASE= DEFAULT  
 IMPLEMENT B313 APP-P NO  
 IMPLEMENT B313 CODE CASE 178 YES  
 IGNORE B31.1/B31.3 Wc FACTOR= YES  
 USE FRP SIF = YES  
 USE FRP FLEX = YES  
 BS 7159 Pressure Stiffening= Design Strain  
 FRP Property Data File= CAESAR.FRP



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Impianto di Brindisi - Loc. Mass. Matagiola  
Allegato 1

INPUT LISTING

FRP Emod (axial) = 0.220632E+08 KPa  
FRP Ratio Gmod/Emod (axial) = 0.250000  
FRP Ea/Eh\*Vh/a = 0.152730  
FRP Laminate Type = THREE  
FRP Alpha = 21.6000 C  
FRP Density = 0.166079E-02 kg./cu.cm.  
EXCLUDE f2 FROM UKOOA BENDING = NO  
CAESAR II 2017 Ver.9.00.00.5900, (Build 160721)

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Impianto di Brindisi - Loc. Mass. Matagiola  
Allegato 1

CAESAR II LOAD CASE REPORT

CASE 1 (HYD) WW+HP  
HYDRO TEST CASE

Keep/Discard: Keep  
Display: Disp/Force/Stress  
Elastic Modulus: EC  
Friction Mult.: 1.0000  
Flg Analysis Temp: None

CASE 2 (OPE) W+T1+P1  
OPERATING CASE CONDITION 1

Keep/Discard: Keep  
Display: Disp/Force/Stress  
Elastic Modulus: EC  
Friction Mult.: 1.0000  
Flg Analysis Temp: T1

CASE 3 (SUS) W+P1  
SUSTAINED CASE CONDITION 1

Keep/Discard: Keep  
Display: Disp/Force/Stress  
Elastic Modulus: EC  
Friction Mult.: 1.0000  
SUS/OCC case SH: SH\_MIN  
Flg Analysis Temp: None

CASE 4 (EXP) L4=L2-L3  
EXPANSION CASE CONDITION 1

Keep/Discard: Keep  
Display: Disp/Force/Stress  
Combination Method: ALG

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 Licensed To: TECHFEM SPA

Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1  
 DISPLACEMENTS REPORT: Nodal Movements  
 CASE 1 (HYD) WW+HP

Node	DX mm.	DY mm.	DZ mm.	RX deg.	RY deg.	RZ deg.
10	-23.770	0.025	-1.427	0.0144	-0.0369	-0.0007
50	-23.450	0.012	-0.715	0.0144	-0.0369	-0.0007
100	-23.363	0.008	-0.520	0.0144	-0.0369	-0.0007
150	-23.189	0.001	-0.130	0.0144	-0.0367	-0.0007
200	-23.131	0.000	-0.000	0.0144	-0.0366	-0.0006
250	-21.862	-0.000	2.774	0.0141	-0.0371	-0.0005
300	-21.574	-0.013	3.432	0.0140	-0.0374	-0.0008
350	-21.279	-0.030	4.032	0.0139	-0.0372	-0.0013
400	-20.788	-0.069	4.895	0.0137	-0.0356	-0.0020
448	-20.562	-0.092	5.279	0.0136	-0.0341	-0.0023
449	-20.346	-0.156	7.008	0.0133	-0.0359	-0.0038
450	-19.816	-0.113	8.379	0.0130	-0.0210	-0.0048
500	-19.527	-0.090	8.446	0.0130	-0.0134	-0.0049
501	-18.752	0.016	7.620	0.0134	0.0245	-0.0049
502	-19.702	0.069	5.360	0.0144	0.0617	-0.0036
550	-20.173	0.037	2.369	0.0155	0.0560	-0.0017
569	-19.928	0.019	1.757	0.0158	0.0481	-0.0014
570	-19.225	-0.012	0.482	0.0167	0.0293	-0.0006
575	-19.397	0.015	0.385	-0.0071	0.0022	-0.0645
590	-19.395	-0.009	0.368	-0.0106	-0.0024	-0.0907
591	-19.367	-0.060	0.344	-0.0149	-0.0094	-0.1638
592	-19.153	-0.106	0.324	-0.0297	-0.0598	-0.2342
600	-18.300	-0.021	-0.406	0.0180	0.0132	-0.0001
650	-15.619	-0.004	-0.340	0.0217	-0.0060	0.0001
699	-14.876	0.000	-0.152	0.0228	-0.0042	0.0001
700	-14.132	0.002	-0.010	0.0239	-0.0036	0.0001
750	-13.110	0.016	0.239	0.0252	-0.0022	-0.0000
800	-13.048	0.015	0.336	0.0253	-0.0017	-0.0001
849	-12.546	0.003	0.303	0.0259	0.0100	-0.0011
850	-12.044	-0.051	-0.223	0.0266	0.0286	-0.0027
899	-11.690	-0.087	-0.702	0.0259	0.0084	-0.0004
900	-11.337	-0.067	-0.684	0.0252	0.0002	0.0005
949	-11.249	-0.060	-0.664	0.0250	-0.0002	0.0006
950	-11.162	-0.053	-0.643	0.0248	-0.0000	0.0006
970	-9.448	-0.000	-0.272	0.0213	-0.0017	0.0001
1000	-7.790	0.001	-0.237	0.0177	0.0003	-0.0000
1050	-6.177	-0.000	-0.247	0.0142	-0.0000	0.0000
1100	-4.601	0.000	-0.245	0.0106	-0.0000	-0.0000
1150	-3.053	-0.000	-0.251	0.0071	0.0002	0.0000
1175	-1.522	-0.000	-0.230	0.0035	-0.0011	0.0000
1199	-0.761	0.000	-0.220	0.0018	-0.0016	-0.0000
1200	0.000	0.000	-0.000	0.0000	-0.0000	-0.0000
1499	-10.702	-0.718	0.302	0.0270	0.0546	-0.0071
1500	-8.949	-1.387	0.826	0.0267	0.0623	-0.0114
1548	-7.791	-1.914	1.227	0.0251	0.0612	-0.0148
1549	-6.134	-2.924	1.668	0.0444	0.0521	-0.0188
1550	-4.868	-3.441	2.896	0.0487	0.0518	-0.0353

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 Licensed To: TECHFEM SPA

Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1  
 DISPLACEMENTS REPORT: Nodal Movements  
 CASE 1 (HYD) WW+HP

Node	DX mm.	DY mm.	DZ mm.	RX deg.	RY deg.	RZ deg.
1598	-0.271	-0.923	6.902	0.0150	0.0348	-0.0397
1599	0.405	-1.103	6.759	-0.0340	0.0296	-0.0387
1600	0.244	-2.752	6.199	-0.0824	0.0156	-0.0403
1650	-0.027	-4.395	5.803	-0.0892	0.0144	-0.0388
1651	-0.187	-5.493	5.555	-0.0922	0.0139	-0.0378
1652	-0.085	-8.989	4.069	-0.1368	0.0112	-0.0348
1700	0.537	-10.420	1.229	-0.0589	0.0140	-0.0214
1750	0.676	-10.297	0.873	-0.0543	0.0138	-0.0209
1799	1.112	-9.886	-0.108	-0.0397	0.0131	-0.0188
1800	1.496	-9.475	-0.787	-0.0261	0.0124	-0.0160
1850	2.077	-8.326	-1.223	0.0097	0.0107	-0.0026
1900	2.182	-8.256	-0.751	0.0110	0.0107	-0.0021
1949	1.356	-4.457	0.675	0.0173	-0.0042	-0.0965
1950	1.962	-7.107	0.620	0.0253	0.0090	0.0082
2000	1.426	-6.496	1.736	0.0222	0.0085	0.0153
2001	0.586	-5.787	2.522	0.0027	0.0078	0.0174
2002	0.341	-5.968	2.259	-0.0437	0.0069	0.0133
2050	0.160	-6.620	1.471	-0.0595	0.0044	0.0092
2051	0.048	-7.386	0.495	-0.0666	0.0021	0.0053
2100	-0.000	-7.661	-0.222	-0.0269	0.0012	0.0012
2101	-0.025	-6.809	-0.804	-0.0049	0.0005	0.0001
2150	-0.019	-5.910	-0.933	-0.0054	-0.0002	-0.0001
2151	-0.015	-5.015	-1.514	-0.0115	-0.0010	0.0000
2152	-0.019	-4.175	-2.163	0.0047	-0.0017	-0.0000
2153	-0.021	-4.392	-1.794	0.0523	-0.0018	-0.0005
2200	-0.028	-5.132	-0.895	0.0665	-0.0018	-0.0010
2201	-0.027	-5.946	0.121	0.0652	-0.0015	-0.0018
2250	0.005	-6.218	0.739	0.0168	-0.0013	-0.0037
2300	0.197	-5.567	0.774	-0.0041	-0.0015	-0.0049
2349	0.387	-5.109	0.492	-0.0091	-0.0016	-0.0054
2350	0.573	-4.650	0.118	-0.0096	-0.0018	-0.0047
2400	0.071	-2.390	-0.288	0.0004	-0.0026	0.0036
2450	-0.005	-0.143	-0.228	0.0012	-0.0034	-0.0006
2500	-0.061	1.537	-0.261	-0.0024	-0.0040	0.0025
2550	-0.143	4.120	-0.212	0.0039	-0.0049	-0.0090
2551	0.454	4.747	-0.092	0.0016	-0.0051	-0.0202
2552	1.753	5.375	-0.062	0.0007	-0.0053	-0.0357
2553	4.283	6.157	0.004	0.0022	-0.0056	-0.0354
2554	4.799	5.778	0.090	0.0044	-0.0056	0.0307
2600	3.267	3.591	0.032	0.0027	-0.0083	0.0791
2650	0.909	0.723	-0.265	0.0011	-0.0109	0.0657
2700	-2.501	1.728	-0.316	0.0093	0.0031	-0.0283
2701	-2.415	3.737	-0.034	0.0072	-0.0005	-0.0124
2702	-2.231	3.731	-0.011	0.0065	-0.0021	0.0114
2750	-2.134	3.178	-0.048	0.0061	-0.0029	0.0286
2800	-3.079	0.781	-0.239	0.0053	-0.0032	0.0270
2850	-5.574	-0.219	-0.283	0.0032	0.0001	-0.0013
2900	-8.102	1.559	-0.206	0.0011	0.0033	-0.0355
2901	-8.766	3.678	-0.085	0.0006	0.0026	-0.0341

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 Licensed To: TECHFEM SPA

Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1  
 DISPLACEMENTS REPORT: Nodal Movements  
 CASE 1 (HYD) WW+HP

Node	DX mm.	DY mm.	DZ mm.	RX deg.	RY deg.	RZ deg.
2902	-8.681	3.976	-0.050	0.0002	0.0035	0.0129
3000	-8.203	3.519	0.003	-0.0016	0.0059	0.0637
3001	-7.146	1.942	0.139	-0.0023	0.0067	0.0748
3002	-6.490	1.533	0.217	-0.0062	0.0099	0.0772
3050	-2.046	-0.664	1.264	-0.0101	0.0148	0.0525
3051	-0.207	-1.983	1.821	0.0119	0.0114	0.0348
3052	0.133	-1.813	1.267	0.0783	-0.0028	0.0161
3055	-5.718	1.287	0.332	-0.0107	0.0121	0.0669
3100	0.345	-0.811	-0.043	0.1224	-0.0091	0.0063
3101	0.494	0.475	-1.654	0.1230	-0.0097	0.0050
3102	0.625	1.559	-3.060	0.0918	-0.0003	0.0016
3150	0.629	1.870	-3.865	0.0311	0.0158	-0.0022
3151	0.290	1.177	-4.210	-0.0070	0.0234	-0.0032
3152	0.360	1.438	-3.579	-0.0720	0.0398	-0.0044
3200	0.715	2.417	-2.245	-0.1101	0.0484	-0.0057
3201	1.091	3.414	-0.912	-0.1106	0.0481	-0.0056
3202	1.436	4.435	0.480	-0.0778	0.0384	-0.0057
3250	1.486	4.722	1.198	-0.0129	0.0206	-0.0049
3251	1.089	4.100	1.142	0.0095	0.0129	-0.0058
3300	0.587	3.508	0.636	0.0126	0.0103	-0.0093
3301	-0.158	2.965	0.224	0.0091	0.0094	-0.0130
3302	-1.009	2.452	0.016	0.0053	0.0086	-0.0066
3303	-1.075	2.539	-0.007	0.0034	0.0087	-0.0041
3350	-1.078	2.612	-0.023	0.0016	0.0086	-0.0009
3351	-0.706	1.874	-0.047	0.0001	0.0077	0.0082
3400	-0.261	1.137	-0.030	-0.0004	0.0068	0.0078
3450	-0.144	0.947	-0.023	-0.0004	0.0062	0.0065
3500	-0.052	0.797	-0.015	-0.0004	0.0053	0.0043
3549	0.023	0.399	-0.003	-0.0002	0.0026	0.0003
3550	0.000	-0.000	0.000	-0.0000	0.0000	-0.0000
3999	-14.156	-0.632	0.347	0.0261	0.0010	-0.0101
4000	-14.089	-1.247	0.703	0.0222	0.0039	-0.0202
4048	-13.886	-1.832	1.327	0.0012	0.0045	-0.0378
4049	-13.680	-1.774	1.288	-0.0141	0.0070	-0.0445
4050	-13.137	-1.705	1.109	-0.0183	0.0115	-0.0639
4098	-1.057	0.764	1.302	0.0201	-0.0082	-0.0680
4099	-0.468	0.835	1.491	0.0143	-0.0048	-0.0523
4100	-0.243	0.886	1.528	-0.0029	-0.0034	-0.0468
4150	-0.084	0.211	0.905	-0.0248	-0.0028	-0.0320
4151	-0.046	-0.277	0.645	-0.0299	-0.0015	-0.0258
4152	-0.032	-0.849	0.386	-0.0309	-0.0007	-0.0196
4153	0.018	-1.234	0.231	-0.0378	0.0040	-0.0133
4200	0.049	-1.367	-0.016	-0.0135	0.0079	0.0017
4250	-0.094	-0.940	-0.116	0.0011	0.0053	0.0075
4299	-0.137	-0.347	-0.029	0.0024	0.0012	-0.0070
4300	-0.413	-0.340	-0.006	0.0022	0.0017	0.0012
4350	-0.043	0.697	0.008	-0.0004	0.0018	-0.0007
4400	-0.032	0.720	0.000	-0.0004	0.0018	-0.0003
4450	-0.192	1.169	-0.009	-0.0003	0.0018	0.0089

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Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1  
 DISPLACEMENTS REPORT: Nodal Movements  
 CASE 1 (HYD) WW+HP

Node	DX mm.	DY mm.	DZ mm.	RX deg.	RY deg.	RZ deg.
4451	-0.468	1.578	-0.020	-0.0002	0.0018	0.0018
4452	-0.386	1.502	-0.019	0.0021	0.0009	-0.0239
4500	-0.281	1.199	-0.004	0.0039	-0.0022	-0.0236
4501	0.059	0.617	0.067	0.0057	-0.0043	-0.0196
4502	0.399	0.221	0.208	0.0075	-0.0066	-0.0212
4549	-0.041	-0.859	0.205	0.0069	-0.0041	-0.0250
4550	0.751	-0.556	0.385	0.0093	-0.0068	-0.0491
4800	0.925	-6.856	-0.442	-0.0089	0.0058	-0.0896
4850	0.775	-5.866	-0.388	-0.0043	0.0048	-0.0907
4900	0.750	-3.979	-0.290	-0.0038	0.0047	-0.0896
4949	0.638	-3.304	-0.255	-0.0005	0.0046	-0.0743
4950	0.526	-2.766	-0.220	0.0029	0.0046	-0.0548
4999	0.417	-2.332	-0.185	0.0028	0.0041	-0.0512
5000	0.309	-1.936	-0.154	0.0027	0.0035	-0.0453
5050	0.285	-1.004	-0.083	0.0027	0.0033	-0.0438
5100	0.140	-0.646	-0.057	0.0026	0.0022	-0.0278
5199	1.113	-2.499	-0.117	0.0095	0.0064	-0.0197
5200	1.215	-2.232	0.112	0.0175	0.0081	0.0009
5201	1.158	-2.039	0.013	0.0250	0.0093	-0.0055
5202	1.172	-1.502	0.002	0.0615	-0.0049	-0.0260
5250	0.357	-1.646	0.159	-0.0039	0.0029	0.0203
5300	-0.059	-1.622	0.080	-0.0037	0.0028	0.0196
5350	-0.347	-1.161	0.087	0.0035	-0.0014	-0.0045
5600	0.329	-4.298	0.092	-0.0091	-0.0017	-0.0323
5650	0.166	-3.830	0.074	-0.0087	-0.0016	-0.0470
5651	-0.262	-2.007	0.032	-0.0074	-0.0012	-0.0572
5652	-0.690	-0.689	0.006	-0.0062	-0.0005	-0.0132
5653	-1.087	-1.249	0.000	-0.0050	0.0000	0.0560
5654	-1.484	-3.684	0.007	-0.0038	0.0004	0.0976
5655	-1.900	-4.960	0.004	-0.0026	0.0018	0.0697
5700	-1.927	-5.174	-0.001	-0.0003	0.0025	-0.0468
5750	-0.295	-4.816	-0.003	-0.0000	0.0025	-0.0509
5800	0.014	-2.477	-0.000	0.0000	0.0019	0.0131
5850	0.002	-0.178	0.000	-0.0000	0.0014	-0.0074
5900	-0.021	2.119	0.000	0.0000	0.0008	0.0175
5950	0.310	4.450	-0.000	-0.0000	0.0003	-0.0689
5951	2.568	4.806	-0.001	-0.0000	0.0002	-0.0734
5952	2.953	4.766	-0.001	-0.0000	0.0001	0.0341
6000	2.686	3.760	-0.000	-0.0000	0.0001	0.0928
6001	2.307	1.279	0.002	0.0000	0.0001	0.0675
6002	1.930	0.082	0.006	0.0001	0.0002	0.0251
6003	1.553	-0.199	0.013	0.0001	0.0001	0.0031
6050	0.887	-0.041	-0.019	0.0002	-0.0024	-0.0042
6100	-1.116	0.006	0.245	0.0006	0.0178	0.0007
6101	-1.550	-0.007	0.829	0.0006	0.0018	0.0003
6102	-1.481	-0.008	0.704	0.0007	-0.0510	0.0002
6150	-1.168	-0.006	0.306	0.0007	-0.0929	0.0002
6151	-0.274	-0.001	-0.863	0.0007	-0.0937	0.0002
6152	0.050	0.001	-1.281	0.0008	-0.0608	0.0001

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Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1  
 DISPLACEMENTS REPORT: Nodal Movements  
 CASE 1 (HYD) WW+HP

Node	DX mm.	DY mm.	DZ mm.	RX deg.	RY deg.	RZ deg.
6200	0.134	0.002	-1.501	0.0008	-0.0219	0.0000
6201	-0.534	0.000	-1.304	0.0009	0.0301	0.0001
6202	-0.441	-0.001	-1.030	0.0009	0.0674	0.0002
6250	-0.102	-0.006	-0.586	0.0010	0.0942	0.0004
6251	0.637	-0.018	0.382	0.0011	0.0930	0.0004
6252	0.954	-0.024	0.788	0.0011	0.0538	0.0005
6300	1.027	-0.028	0.938	0.0011	0.0026	0.0003
6301	0.647	-0.032	0.571	0.0010	-0.0161	-0.0006
6302	0.368	-0.005	0.241	0.0010	-0.0135	-0.0028
6350	0.088	0.083	0.019	0.0009	-0.0083	-0.0068
6399	-0.600	0.575	-0.130	0.0008	0.0007	-0.0079
6400	-1.289	0.568	-0.019	0.0007	0.0020	0.0131
6450	-1.405	0.440	-0.005	0.0010	0.0017	0.0159
6500	-1.508	0.271	0.007	0.0014	0.0013	0.0181
6550	-1.547	0.143	0.013	0.0024	0.0010	0.0176
6600	-2.065	-0.008	0.000	0.0275	0.0001	-0.0024
6601	-2.236	0.010	0.022	0.0356	0.0013	0.0003
6602	-2.408	-0.009	0.006	0.0437	-0.0055	0.0013
6603	-2.493	-0.038	-0.157	0.0476	-0.0152	0.0019
6604	-2.577	-0.064	-0.502	0.0515	-0.0226	-0.0001
6605	-2.662	-0.012	-0.816	0.0554	0.0022	-0.0091
6606	-2.617	0.011	-0.721	0.0529	0.0650	-0.0291
6650	-2.424	0.021	-0.474	0.0452	0.1105	-0.0457
6651	-0.276	0.389	1.899	0.0440	0.0885	-0.0881
6652	-0.155	0.604	2.034	0.0253	0.0147	-0.1196
6700	-0.147	1.012	1.943	0.0187	-0.0588	-0.1500
6701	-0.198	2.401	1.276	0.0151	-0.0758	-0.1505
6702	-0.335	3.328	0.729	0.0121	-0.0800	-0.1130
6800	-0.589	3.810	0.272	0.0045	-0.0734	-0.0440
6801	-0.631	3.876	0.102	-0.0027	-0.0686	0.0020
6850	-0.526	3.860	0.028	-0.0103	-0.0654	0.0362
6851	0.243	3.557	-0.026	-0.0156	-0.0619	0.0429
6852	0.717	3.340	-0.020	-0.0169	-0.0597	0.0221
6900	0.899	3.202	-0.003	-0.0165	-0.0579	0.0090
6950	0.699	2.584	0.000	-0.0119	-0.0444	0.0041
7000	0.444	2.007	0.004	-0.0074	-0.0309	-0.0290
7001	-0.194	2.076	-0.024	-0.0052	-0.0291	-0.0236
7002	-0.242	2.100	-0.027	-0.0040	-0.0291	-0.0164
7050	-0.267	2.115	-0.024	-0.0028	-0.0290	-0.0081
7051	-0.210	2.032	0.004	-0.0008	-0.0279	0.0070
7052	-0.083	1.950	0.007	0.0001	-0.0268	0.0060
7053	-0.013	1.862	0.004	0.0002	-0.0257	0.0022
7100	0.004	1.774	0.000	0.0002	-0.0245	0.0005
7150	0.000	0.877	-0.000	-0.0000	-0.0122	-0.0002
7199	-0.004	0.438	0.001	0.0000	-0.0061	0.0000
7200	-0.000	-0.000	0.000	0.0000	-0.0000	0.0000
7500	-0.131	-0.434	-0.005	-0.0003	0.0016	0.0091
7550	0.055	-0.456	0.001	-0.0003	0.0016	0.0090
7600	0.092	-2.799	0.000	0.0001	0.0006	-0.0267

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 Allegato 1  
 DISPLACEMENTS REPORT: Nodal Movements  
 CASE 1 (HYD) WW+HP

Node	DX mm.	DY mm.	DZ mm.	RX deg.	RY deg.	RZ deg.
7601	-0.628	-3.084	-0.001	0.0001	0.0005	-0.0476
7602	-1.400	-2.699	-0.001	0.0002	0.0004	-0.1035
7650	-1.803	-1.772	-0.000	0.0003	0.0001	-0.0613
7651	-2.163	-0.518	0.000	0.0003	0.0000	-0.0364
7652	-2.492	-0.022	0.000	0.0003	-0.0000	-0.0130
7700	-2.822	0.102	0.000	0.0003	-0.0000	-0.0032
7749	-3.577	0.132	-0.000	0.0003	-0.0000	0.0014
7750	-4.333	0.005	-0.000	0.0003	0.0000	0.0030
8000	-22.527	0.368	0.334	0.0226	-0.0725	-0.0462
8050	-22.367	0.372	0.412	0.0227	-0.0728	-0.0465
8100	-21.382	0.397	0.890	0.0228	-0.0744	-0.0477
8150	-21.217	0.401	0.968	0.0227	-0.0747	-0.0479
8198	-20.756	0.531	1.171	0.0171	-0.0874	-0.0528
8199	-19.632	0.489	1.170	-0.0280	-0.1212	-0.0991
8200	-17.731	-0.048	0.993	-0.0770	-0.1859	-0.1227
8250	-14.844	-1.322	0.775	-0.0856	-0.1936	-0.1238
8251	-10.667	-3.164	0.469	-0.0789	-0.1935	-0.1253
8252	-8.500	-3.761	0.261	-0.0407	-0.1622	-0.1144
8300	-6.950	-3.873	0.054	-0.0177	-0.1422	-0.0859
8350	-6.591	-3.813	-0.000	-0.0163	-0.1385	-0.0843
8400	-1.245	-2.224	-0.000	0.0049	-0.0421	-0.0002
8450	-1.313	-2.061	0.024	0.0011	-0.0321	0.0122
8499	-1.690	-1.407	0.063	-0.0008	-0.0033	0.0277
8500	-1.821	-1.700	-0.006	-0.0009	-0.0101	0.0071
8550	-1.043	-1.396	-0.009	0.0002	-0.0097	-0.0403
8600	-0.202	-1.375	-0.004	0.0002	-0.0097	-0.0397
8650	0.053	0.177	0.000	-0.0000	-0.0075	0.0054
8700	0.031	0.618	0.000	0.0000	-0.0068	-0.0020
8750	0.057	0.703	0.001	0.0000	-0.0065	-0.0024
8800	0.070	0.716	0.001	0.0001	-0.0058	-0.0010
8849	0.062	0.717	0.001	0.0001	-0.0037	0.0104
8850	-0.042	0.719	0.002	0.0002	-0.0015	0.0317
8900	-0.040	0.063	-0.002	0.0001	-0.0001	0.0569
8949	-0.020	-1.458	-0.004	0.0001	0.0000	-0.0137
8950	-0.000	-0.000	-0.000	0.0000	0.0000	-0.0000
8999	-0.021	1.022	0.033	0.0001	0.0004	-0.0142
9000	0.000	0.000	0.000	0.0000	0.0000	-0.0000
9500	1.197	-0.921	-0.043	0.0618	-0.0066	-0.0298
9501	0.841	-0.262	-0.092	0.0517	-0.0016	-0.0240
9502	0.413	0.409	-0.192	0.0394	-0.0077	-0.0287
9503	0.058	1.258	-0.472	0.0292	-0.0128	-0.0373
9504	-0.158	1.723	-0.734	0.0217	-0.0127	-0.0492
9550	-0.379	1.837	-0.866	0.0039	0.0183	0.0063
9551	0.620	1.488	-0.741	0.0002	0.0377	0.0548
9552	3.204	1.155	-0.581	-0.0001	0.0544	0.0977
9553	4.626	0.648	-0.325	0.0024	0.0624	0.1202
9600	5.087	-0.054	0.021	0.0040	0.0110	0.0212
9650	4.845	-0.160	0.081	0.0038	0.0013	0.0020
9700	2.715	-0.002	0.000	0.0023	-0.0006	0.0005



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 Allegato 1  
 DISPLACEMENTS REPORT: Nodal Movements  
 CASE 1 (HYD) WW+HP

Node	DX mm.	DY mm.	DZ mm.	RX deg.	RY deg.	RZ deg.
9750	0.638	0.005	-0.000	0.0008	-0.0002	-0.0067
9800	-1.428	0.009	0.017	-0.0007	0.0015	0.0264
9850	-1.540	-0.292	0.037	-0.0007	0.0013	0.0318
9900	-1.559	-0.961	0.064	-0.0007	0.0012	0.0322
10500	-18.504	-0.132	0.261	-0.0345	-0.1024	-0.3880
10501	-15.582	-0.089	0.061	-0.0250	-0.0954	-0.4709
10502	-12.199	-0.046	-0.076	-0.0160	-0.0884	-0.5250
10503	-7.933	0.005	-0.162	-0.0059	-0.0803	-0.5516
10504	-4.216	0.048	-0.174	0.0023	-0.0733	-0.5433
10505	-0.652	0.091	-0.132	0.0101	-0.0663	-0.5060
10506	0.170	0.085	-0.118	0.0066	-0.0776	-0.4451
10550	0.370	0.074	-0.114	0.0028	-0.0576	-0.4344
10551	0.081	0.038	-0.070	0.0053	-0.0279	-0.4006
10552	-0.018	0.010	-0.027	0.0031	-0.0062	-0.3668
10553	-0.025	-0.004	0.016	0.0014	0.0005	-0.3331
10554	0.003	0.004	0.170	-0.0024	0.0024	-0.2129
10599	0.027	0.030	0.247	-0.0003	-0.0000	-0.1528
10600	-0.027	-0.022	0.324	0.0108	-0.0106	-0.0927
10650	-0.067	-0.064	0.345	0.0143	-0.0136	-0.0766
10700	-0.170	-0.172	0.348	0.0144	-0.0136	-0.0754
10750	-0.197	-0.200	0.349	0.0143	-0.0136	-0.0751
10800	-0.244	-0.256	0.377	0.0114	-0.0075	-0.0539
10850	-0.283	-0.316	0.412	0.0114	-0.0075	-0.0539
11000	-0.323	0.144	0.420	-0.0037	0.0149	-0.0180
11050	-0.324	0.179	0.449	-0.0038	0.0151	-0.0179
11100	-0.328	0.312	0.564	-0.0041	0.0153	-0.0175
11150	-0.329	0.346	0.594	-0.0042	0.0153	-0.0175
11198	-0.343	0.380	0.626	-0.0068	0.0131	-0.0162
11199	-0.353	0.397	0.652	-0.0118	0.0098	-0.0101
11200	-0.360	0.373	0.657	-0.0200	-0.0040	-0.0072
11250	0.130	0.077	0.561	-0.0145	-0.0697	-0.0055
11251	0.974	-0.011	0.503	-0.0071	-0.1114	-0.0045
11252	1.226	-0.019	0.400	-0.0057	-0.1231	-0.0045
11300	1.317	-0.016	0.216	-0.0058	-0.0603	-0.0027
11301	1.288	-0.003	-0.021	-0.0053	-0.0175	-0.0012
11302	1.258	0.001	-0.057	-0.0047	0.0010	-0.0003
11303	1.228	0.001	-0.032	-0.0042	0.0041	0.0001
11304	1.184	0.000	-0.000	-0.0033	0.0022	0.0001
11305	1.010	0.000	0.000	0.0000	-0.0008	-0.0003
11350	0.619	-0.000	0.000	0.0076	0.0003	0.0014
11399	0.276	-0.190	0.008	0.0145	-0.0000	0.0020
11400	-0.067	-0.123	0.000	0.0214	-0.0001	-0.0048
11401	-0.310	-0.001	0.002	0.0513	0.0004	0.0011
11402	-0.370	-0.025	0.001	0.0586	-0.0014	0.0034
11403	-0.410	-0.046	-0.018	0.0635	-0.0050	0.0008
11404	-0.450	-0.016	-0.066	0.0684	-0.0087	-0.0147
11405	-0.490	0.184	-0.121	0.0733	-0.0030	-0.0503
11406	-0.487	0.297	-0.121	0.0528	0.0015	-0.1250
11450	-0.489	0.336	-0.121	0.0262	-0.0163	-0.1606

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Impianto di Brindisi - Loc. Mass. Matagiola  
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 DISPLACEMENTS REPORT: Nodal Movements  
 CASE 1 (HYD) WW+HP

Node	DX mm.	DY mm.	DZ mm.	RX deg.	RY deg.	RZ deg.
11451	-0.609	0.216	-0.088	0.0162	-0.0457	-0.2150
11499	-0.761	0.186	-0.071	0.0092	-0.0694	-0.2422
11500	-0.969	0.171	-0.054	0.0044	-0.0890	-0.2694
11548	-2.080	0.150	0.010	0.0071	-0.1255	-0.3731
11549	-2.643	0.132	0.001	0.0137	-0.1500	-0.4078
11550	-3.603	0.120	-0.033	0.0206	-0.1680	-0.4785
11600	-11.548	0.017	-0.424	0.0162	-0.1473	-0.5025
11650	-12.524	0.016	-0.455	0.0160	-0.1472	-0.5022
11700	-16.304	0.013	-0.574	0.0153	-0.1469	-0.5006
11750	-17.275	0.012	-0.603	0.0151	-0.1468	-0.5000
11800	-21.772	-0.056	-0.629	-0.0062	-0.1332	-0.3563
12000	-0.000	0.237	0.000	-0.0054	0.0000	0.0173
12049	-1.595	0.421	-0.108	0.0013	0.0000	0.0129
12050	-0.161	0.604	-0.000	0.0003	-0.0001	-0.0627
12100	0.047	0.628	0.001	0.0001	-0.0000	-0.0229
12101	0.078	0.677	0.000	-0.0000	-0.0000	0.0042
12102	0.033	0.726	0.000	-0.0000	-0.0000	0.0070
12103	-0.047	0.757	-0.000	-0.0000	-0.0000	0.0210
12104	-0.266	0.787	-0.000	0.0000	-0.0000	0.0450
12105	-0.615	0.817	-0.000	0.0000	-0.0000	0.0434
12106	-0.659	0.820	-0.000	-0.0000	-0.0000	-0.0125
12150	-0.636	0.731	-0.000	-0.0000	-0.0000	-0.0612
12151	-0.605	0.289	0.000	-0.0000	-0.0000	-0.0542
12152	-0.573	0.039	0.000	-0.0000	0.0000	-0.0223
12153	-0.542	-0.031	0.000	-0.0000	0.0000	-0.0031
12154	-0.495	-0.008	-0.000	-0.0000	0.0000	0.0038
12155	-0.247	0.000	-0.000	-0.0000	-0.0000	-0.0008
12199	-0.123	-0.005	0.000	-0.0000	0.0000	0.0002
12200	0.000	-0.000	0.000	-0.0000	0.0000	0.0000
12500	-0.146	0.153	-0.000	0.0003	-0.0001	-0.0775
12549	-0.073	-0.431	0.000	0.0001	0.0000	0.0144
12550	0.000	-0.000	0.000	0.0000	0.0000	0.0000
19000	-26.125	-0.137	-0.566	-0.0049	-0.1332	-0.3563

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 Licensed To: TECHFEM SPA

Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1  
 DISPLACEMENTS REPORT: Nodal Movements  
 CASE 2 (OPE) W+T1+P1

Node	DX mm.	DY mm.	DZ mm.	RX deg.	RY deg.	RZ deg.
10	-51.234	0.051	7.119	-0.0188	-0.0840	-0.0014
50	-50.468	0.025	8.734	-0.0188	-0.0840	-0.0014
100	-50.258	0.018	9.174	-0.0188	-0.0840	-0.0014
150	-49.840	0.004	10.056	-0.0188	-0.0839	-0.0014
200	-49.701	-0.000	10.350	-0.0186	-0.0838	-0.0012
250	-46.637	-0.000	16.672	-0.0158	-0.0780	0.0005
300	-45.941	0.010	18.028	-0.0151	-0.0752	0.0006
350	-45.293	0.021	19.202	-0.0142	-0.0707	0.0007
400	-44.317	0.042	20.730	-0.0125	-0.0595	0.0010
448	-43.867	0.053	21.343	-0.0117	-0.0534	0.0011
449	-42.323	0.055	22.978	-0.0082	-0.0199	0.0013
450	-41.147	0.004	22.430	-0.0048	0.0294	0.0013
500	-40.939	-0.006	21.922	-0.0041	0.0410	0.0012
501	-40.876	-0.027	17.680	-0.0007	0.1018	0.0005
502	-42.099	-0.006	11.230	0.0025	0.1435	0.0000
550	-41.725	0.007	4.751	0.0058	0.1069	-0.0002
569	-41.234	0.004	3.583	0.0066	0.0915	-0.0002
570	-39.822	-0.004	1.174	0.0091	0.0545	-0.0002
575	-40.098	-0.352	0.714	-0.0480	-0.0013	-0.1323
590	-40.080	-0.483	0.631	-0.0567	-0.0107	-0.1864
591	-40.003	-0.717	0.513	-0.0681	-0.0248	-0.3375
592	-39.551	-0.838	0.397	-0.0730	-0.1282	-0.4829
600	-37.952	-0.008	-0.414	0.0128	0.0217	-0.0001
650	-32.543	-0.003	-0.308	0.0235	-0.0082	0.0002
699	-31.043	0.004	-0.019	0.0265	-0.0072	0.0003
700	-29.543	0.018	0.262	0.0295	-0.0078	0.0005
750	-27.495	0.088	0.822	0.0343	-0.0066	0.0013
800	-26.144	0.146	1.117	0.0345	-0.0058	0.0012
849	-25.138	0.180	1.186	0.0369	0.0170	-0.0010
850	-24.131	0.107	0.239	0.0393	0.0569	-0.0054
899	-23.423	-0.010	-0.813	0.0382	0.0190	-0.0024
900	-22.715	-0.048	-0.883	0.0372	0.0006	-0.0008
949	-22.540	-0.051	-0.844	0.0369	-0.0011	-0.0006
950	-22.365	-0.053	-0.793	0.0367	-0.0020	-0.0004
970	-18.931	-0.006	-0.040	0.0314	-0.0030	0.0003
1000	-15.608	0.002	0.015	0.0262	0.0005	-0.0001
1050	-12.377	-0.000	-0.002	0.0209	-0.0001	0.0000
1100	-9.220	0.000	0.000	0.0157	0.0000	-0.0000
1150	-6.116	-0.000	-0.000	0.0105	0.0000	-0.0000
1175	-3.049	-0.000	-0.000	0.0052	-0.0000	0.0000
1199	-1.525	0.000	0.000	0.0026	-0.0000	0.0000
1200	0.000	0.000	0.000	0.0000	0.0000	-0.0000
1499	-21.460	-0.861	1.296	0.0419	0.1085	-0.0139
1500	-17.969	-1.908	2.353	0.0458	0.1239	-0.0224
1548	-15.669	-2.819	3.159	0.0486	0.1215	-0.0289
1549	-12.402	-4.560	4.916	0.1018	0.1025	-0.0365
1550	-9.928	-5.003	8.279	0.1187	0.1020	-0.0690

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Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1  
 DISPLACEMENTS REPORT: Nodal Movements  
 CASE 2 (OPE) W+T1+P1

Node	DX mm.	DY mm.	DZ mm.	RX deg.	RY deg.	RZ deg.
1598	-0.882	0.025	20.133	0.0682	0.0685	-0.0791
1599	0.551	0.459	19.766	-0.0882	0.0565	-0.0824
1600	0.400	-3.897	17.402	-0.2553	0.0261	-0.0879
1650	-0.049	-8.817	16.609	-0.2697	0.0237	-0.0855
1651	-0.309	-12.053	16.114	-0.2775	0.0225	-0.0841
1652	0.188	-20.636	11.610	-0.3264	0.0130	-0.0811
1700	1.917	-23.112	4.842	-0.1167	0.0171	-0.0570
1750	2.295	-22.867	4.131	-0.1080	0.0168	-0.0558
1799	3.483	-22.050	2.154	-0.0801	0.0155	-0.0502
1800	4.521	-21.233	0.755	-0.0538	0.0143	-0.0417
1850	5.954	-18.971	-0.337	0.0126	0.0120	-0.0044
1900	6.117	-17.606	0.291	0.0149	0.0119	-0.0029
1949	3.763	-9.292	2.135	0.0341	-0.0202	-0.2232
1950	5.338	-15.344	2.489	0.0456	0.0096	0.0251
2000	3.807	-14.160	4.641	0.0453	0.0094	0.0432
2001	1.480	-12.787	6.413	0.0129	0.0091	0.0482
2002	0.835	-12.768	5.697	-0.1158	0.0070	0.0371
2050	0.417	-14.123	3.315	-0.1909	0.0013	0.0266
2051	0.171	-15.694	0.580	-0.1569	-0.0044	0.0163
2100	0.045	-15.846	-0.944	-0.0362	-0.0065	0.0044
2101	-0.064	-14.201	-1.276	-0.0001	-0.0071	0.0007
2150	-0.055	-12.467	-1.263	-0.0113	-0.0076	-0.0003
2151	-0.035	-10.742	-2.762	-0.0344	-0.0081	-0.0003
2152	-0.022	-9.123	-5.038	-0.0113	-0.0087	-0.0005
2153	-0.032	-9.147	-4.270	0.1242	-0.0086	-0.0018
2200	-0.071	-10.632	-1.743	0.2007	-0.0080	-0.0032
2201	-0.085	-12.280	1.048	0.1539	-0.0069	-0.0053
2250	-0.007	-12.429	2.394	0.0189	-0.0063	-0.0090
2300	0.453	-11.180	1.899	-0.0156	-0.0061	-0.0115
2349	0.891	-10.300	1.203	-0.0197	-0.0059	-0.0123
2350	1.308	-9.419	0.500	-0.0160	-0.0057	-0.0102
2400	0.158	-5.094	-0.066	0.0015	-0.0046	0.0082
2450	-0.013	-0.798	0.005	-0.0000	-0.0035	-0.0014
2500	-0.124	2.414	0.000	-0.0000	-0.0027	0.0052
2550	-0.378	7.347	-0.000	0.0000	-0.0014	-0.0176
2551	0.795	8.542	0.001	0.0000	-0.0011	-0.0418
2552	3.539	9.742	0.002	0.0000	-0.0008	-0.0787
2553	9.355	11.233	0.004	0.0000	-0.0004	-0.0921
2554	10.594	11.665	0.000	-0.0001	-0.0002	0.0580
2600	6.562	7.854	-0.003	-0.0002	0.0001	0.1784
2650	1.557	1.502	-0.001	-0.0004	0.0003	0.1440
2700	-4.995	3.313	0.003	-0.0017	0.0009	-0.0644
2701	-4.426	7.842	-0.006	-0.0022	0.0009	-0.0395
2702	-4.526	8.165	-0.010	-0.0025	0.0006	0.0238
2750	-4.913	6.963	-0.008	-0.0027	0.0003	0.0728
2800	-6.716	1.535	0.001	-0.0034	0.0001	0.0592
2850	-11.480	-0.541	0.008	-0.0051	0.0001	-0.0014
2900	-16.315	3.128	-0.072	-0.0067	-0.0020	-0.0822
2901	-17.585	8.094	-0.193	-0.0072	-0.0022	-0.0902

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Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1  
 DISPLACEMENTS REPORT: Nodal Movements  
 CASE 2 (OPE) W+T1+P1

Node	DX mm.	DY mm.	DZ mm.	RX deg.	RY deg.	RZ deg.
2902	-17.863	8.804	-0.193	-0.0080	0.0012	0.0203
3000	-17.232	7.624	-0.080	-0.0116	0.0069	0.1369
3001	-14.987	4.385	0.259	-0.0128	0.0092	0.1520
3002	-13.798	3.302	0.457	-0.0208	0.0161	0.1656
3050	-4.135	-1.531	3.076	-0.0307	0.0288	0.1119
3051	-0.274	-4.151	4.883	0.0080	0.0250	0.0718
3052	0.307	-4.190	3.668	0.1800	-0.0129	0.0312
3055	-12.220	2.491	0.750	-0.0301	0.0210	0.1542
3100	0.717	-2.141	0.266	0.3137	-0.0366	0.0099
3101	1.176	1.164	-3.675	0.3154	-0.0377	0.0074
3102	1.419	3.399	-7.305	0.2127	-0.0082	0.0009
3150	1.304	3.671	-9.142	0.0581	0.0329	-0.0057
3151	0.585	2.359	-9.806	-0.0108	0.0461	-0.0073
3152	0.625	2.527	-8.303	-0.1738	0.0879	-0.0090
3200	1.354	4.547	-4.811	-0.2897	0.1159	-0.0113
3201	2.275	7.146	-1.541	-0.2904	0.1152	-0.0108
3202	2.985	9.220	2.018	-0.1780	0.0835	-0.0109
3250	2.991	9.409	3.537	-0.0084	0.0372	-0.0091
3251	2.240	8.212	2.679	0.0302	0.0232	-0.0112
3300	1.253	7.083	1.302	0.0300	0.0196	-0.0197
3301	-0.321	6.081	0.367	0.0192	0.0188	-0.0302
3302	-2.318	5.195	-0.044	0.0103	0.0175	-0.0229
3303	-2.551	5.099	-0.082	0.0062	0.0177	-0.0081
3350	-2.528	4.958	-0.106	0.0026	0.0175	0.0078
3351	-1.454	3.543	-0.120	-0.0005	0.0156	0.0206
3400	-0.457	2.129	-0.064	-0.0011	0.0138	0.0167
3450	-0.216	1.769	-0.044	-0.0011	0.0127	0.0135
3500	-0.039	1.489	-0.026	-0.0008	0.0107	0.0083
3549	0.077	0.744	-0.003	-0.0003	0.0053	-0.0001
3550	0.000	-0.000	0.000	-0.0000	0.0000	-0.0000
3999	-29.598	-0.715	1.210	0.0296	0.0020	-0.0207
4000	-29.462	-1.420	2.158	0.0272	0.0079	-0.0419
4048	-29.047	-2.390	3.810	0.0167	0.0091	-0.0788
4049	-28.619	-2.422	4.151	0.0149	0.0141	-0.0929
4050	-27.489	-2.199	4.408	0.0167	0.0236	-0.1333
4098	-2.284	4.239	6.300	-0.0024	-0.0183	-0.1415
4099	-1.057	4.448	6.057	-0.0287	-0.0111	-0.1083
4100	-0.579	4.137	5.624	-0.0607	-0.0084	-0.0969
4150	-0.193	0.973	3.973	-0.0863	-0.0072	-0.0655
4151	-0.091	-0.645	3.284	-0.1006	-0.0044	-0.0524
4152	-0.034	-2.607	2.595	-0.1176	-0.0031	-0.0393
4153	0.085	-3.890	1.729	-0.1427	0.0063	-0.0260
4200	0.131	-4.113	0.628	-0.0480	0.0152	0.0078
4250	-0.338	-2.997	-0.105	-0.0095	0.0104	0.0245
4299	-0.729	-1.329	-0.116	0.0028	0.0009	-0.0102
4300	-1.426	-1.430	-0.066	0.0034	0.0038	0.0071
4350	-0.153	1.244	0.007	-0.0003	0.0044	-0.0062
4400	-0.037	1.876	0.000	-0.0003	0.0044	-0.0050
4450	-0.403	3.033	-0.018	-0.0009	0.0047	0.0254

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Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1  
 DISPLACEMENTS REPORT: Nodal Movements  
 CASE 2 (OPE) W+T1+P1

Node	DX mm.	DY mm.	DZ mm.	RX deg.	RY deg.	RZ deg.
4451	-1.357	4.088	-0.050	-0.0006	0.0050	0.0223
4452	-1.078	4.173	-0.052	0.0049	0.0029	-0.0672
4500	-0.484	3.386	-0.024	0.0093	-0.0046	-0.0777
4501	0.396	1.765	0.132	0.0137	-0.0103	-0.0446
4502	1.277	1.117	0.489	0.0181	-0.0183	-0.0348
4549	0.363	-1.123	0.563	0.0190	-0.0248	-0.0610
4550	2.189	-0.340	1.037	0.0227	-0.0245	-0.1079
4800	3.086	-15.447	0.777	-0.0210	-0.0092	-0.1940
4850	2.709	-13.309	0.656	-0.0124	-0.0125	-0.1957
4900	2.075	-9.238	0.392	-0.0114	-0.0127	-0.1933
4949	1.794	-7.782	0.288	-0.0050	-0.0126	-0.1606
4950	1.512	-6.619	0.186	0.0014	-0.0119	-0.1191
4999	1.238	-5.658	0.108	0.0017	-0.0085	-0.1135
5000	0.965	-4.767	0.055	0.0019	-0.0056	-0.1015
5050	0.333	-2.676	-0.057	0.0019	-0.0052	-0.0980
5100	-0.033	-1.896	-0.098	0.0023	-0.0029	-0.0594
5199	2.750	-5.934	0.304	0.0145	-0.0189	-0.0397
5200	2.900	-5.248	0.693	0.0327	-0.0260	0.0059
5201	3.082	-4.847	0.438	0.0508	-0.0279	-0.0096
5202	3.361	-3.640	0.003	0.1414	-0.0332	-0.0601
5250	0.857	-3.732	0.466	-0.0129	-0.0255	0.0440
5300	-0.039	-3.098	0.205	-0.0121	-0.0255	0.0421
5350	-0.479	-1.905	0.224	0.0104	-0.0250	-0.0176
5600	0.801	-8.673	0.409	-0.0152	-0.0060	-0.0681
5650	0.453	-7.688	0.344	-0.0145	-0.0061	-0.0985
5651	-0.502	-3.895	0.169	-0.0123	-0.0052	-0.1172
5652	-1.458	-1.277	0.042	-0.0101	-0.0029	-0.0201
5653	-2.344	-2.766	-0.001	-0.0080	-0.0006	0.1365
5654	-3.230	-8.645	0.002	-0.0060	0.0005	0.2425
5655	-4.544	-11.521	-0.001	-0.0040	0.0031	0.1590
5700	-4.641	-11.645	-0.005	-0.0003	0.0043	-0.1263
5750	-0.608	-10.848	-0.004	0.0001	0.0042	-0.1240
5800	0.035	-5.640	0.000	-0.0000	0.0032	0.0325
5850	0.004	-0.524	-0.000	-0.0000	0.0023	-0.0184
5900	-0.052	4.584	0.000	0.0000	0.0014	0.0438
5950	0.648	9.767	-0.000	-0.0001	0.0004	-0.1708
5951	6.298	10.558	-0.003	-0.0001	0.0003	-0.1952
5952	7.266	10.884	-0.003	-0.0001	0.0002	0.0670
6000	6.339	8.715	-0.002	0.0000	0.0002	0.2267
6001	5.500	2.849	0.006	0.0002	0.0004	0.1573
6002	4.664	0.116	0.021	0.0003	0.0007	0.0563
6003	3.829	-0.483	0.045	0.0005	0.0005	0.0058
6050	2.355	-0.091	-0.063	0.0007	-0.0082	-0.0100
6100	-2.079	0.014	0.568	0.0016	0.0552	0.0017
6101	-3.038	-0.019	2.546	0.0018	0.0301	0.0008
6102	-3.069	-0.020	2.297	0.0018	-0.1241	0.0006
6150	-2.409	-0.016	1.156	0.0019	-0.2620	0.0005
6151	0.127	-0.002	-1.983	0.0020	-0.2655	0.0005
6152	0.838	0.003	-3.212	0.0021	-0.1585	0.0003

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Impianto di Brindisi - Loc. Mass. Matagiola  
Allegato 1  
DISPLACEMENTS REPORT: Nodal Movements  
CASE 2 (OPE) W+T1+P1

Node	DX mm.	DY mm.	DZ mm.	RX deg.	RY deg.	RZ deg.
6200	0.861	0.004	-3.779	0.0022	-0.0435	0.0001
6201	-0.612	0.002	-3.559	0.0025	0.0533	0.0001
6202	-0.575	-0.003	-2.919	0.0026	0.1701	0.0004
6250	0.175	-0.015	-1.629	0.0029	0.2739	0.0008
6251	2.344	-0.046	1.038	0.0030	0.2716	0.0009
6252	3.057	-0.062	2.262	0.0031	0.1419	0.0011
6300	3.050	-0.073	2.636	0.0031	-0.0112	0.0008
6301	2.220	-0.082	1.426	0.0031	-0.0458	-0.0016
6302	1.609	-0.016	0.554	0.0030	-0.0347	-0.0071
6350	0.998	0.209	0.006	0.0030	-0.0203	-0.0172
6399	-0.505	1.471	-0.342	0.0029	0.0022	-0.0208
6400	-2.007	1.546	-0.047	0.0029	0.0053	0.0299
6450	-2.253	1.229	-0.013	0.0037	0.0045	0.0391
6500	-2.507	0.793	0.019	0.0055	0.0034	0.0467
6550	-2.641	0.451	0.034	0.0090	0.0025	0.0462
6600	-4.594	-0.020	-0.001	0.1014	0.0003	-0.0059
6601	-5.232	0.026	0.076	0.1312	0.0049	0.0006
6602	-5.874	-0.034	0.071	0.1610	-0.0164	0.0043
6603	-6.187	-0.132	-0.447	0.1755	-0.0518	0.0064
6604	-6.501	-0.220	-1.694	0.1899	-0.0901	-0.0005
6605	-6.816	-0.031	-3.184	0.2044	-0.0339	-0.0323
6606	-6.786	0.044	-2.979	0.1957	0.1790	-0.1017
6650	-6.283	0.059	-2.195	0.1692	0.3504	-0.1590
6651	0.564	1.091	5.453	0.1663	0.3019	-0.3067
6652	0.910	1.813	5.992	0.1001	0.0656	-0.4186
6700	0.855	3.239	5.772	0.0753	-0.1791	-0.5328
6701	0.677	8.179	3.771	0.0612	-0.2262	-0.5438
6702	-0.027	11.485	2.142	0.0488	-0.2329	-0.4150
6800	-1.182	13.186	0.784	0.0220	-0.2094	-0.1800
6801	-1.486	13.384	0.281	-0.0021	-0.1938	-0.0173
6850	-1.250	13.250	0.058	-0.0270	-0.1833	0.1115
6851	1.109	12.287	-0.096	-0.0440	-0.1730	0.1320
6852	2.559	11.588	-0.068	-0.0480	-0.1666	0.0678
6900	3.107	11.134	-0.010	-0.0466	-0.1617	0.0274
6950	2.435	9.006	0.001	-0.0332	-0.1241	0.0154
7000	1.588	7.018	0.011	-0.0206	-0.0863	-0.0997
7001	-0.638	7.264	-0.068	-0.0144	-0.0814	-0.0886
7002	-0.823	7.279	-0.075	-0.0112	-0.0814	-0.0559
7050	-0.904	7.263	-0.066	-0.0079	-0.0811	-0.0196
7051	-0.663	6.978	0.010	-0.0022	-0.0781	0.0241
7052	-0.250	6.695	0.020	0.0002	-0.0750	0.0191
7053	-0.033	6.392	0.010	0.0006	-0.0717	0.0065
7100	0.014	6.091	0.000	0.0005	-0.0685	0.0013
7150	0.000	3.011	-0.000	-0.0001	-0.0342	-0.0004
7199	-0.009	1.505	0.003	0.0000	-0.0171	0.0001
7200	-0.000	-0.000	0.000	0.0000	-0.0000	0.0000
7500	-0.181	-1.021	-0.017	-0.0010	0.0042	0.0137
7550	0.100	-1.650	0.003	-0.0009	0.0041	0.0137
7600	0.186	-7.659	0.001	0.0003	0.0016	-0.0607

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 Licensed To: TECHFEM SPA

Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1  
 DISPLACEMENTS REPORT: Nodal Movements  
 CASE 2 (OPE) W+T1+P1

Node	DX mm.	DY mm.	DZ mm.	RX deg.	RY deg.	RZ deg.
7601	-1.461	-8.391	-0.004	0.0002	0.0012	-0.1077
7602	-3.609	-7.634	-0.003	0.0006	0.0009	-0.2861
7650	-5.030	-5.090	-0.001	0.0008	0.0002	-0.1901
7651	-5.963	-1.368	0.001	0.0008	0.0000	-0.1051
7652	-6.816	0.013	0.001	0.0008	-0.0000	-0.0348
7700	-7.671	0.307	0.000	0.0008	-0.0000	-0.0071
7749	-9.629	0.348	-0.000	0.0008	-0.0000	0.0040
7750	-11.587	0.013	-0.000	0.0008	0.0000	0.0077
8000	-48.817	0.972	8.827	-0.0717	-0.1239	-0.0727
8050	-48.566	1.077	8.580	-0.0720	-0.1242	-0.0731
8100	-47.015	1.715	7.061	-0.0736	-0.1261	-0.0753
8150	-46.755	1.821	6.808	-0.0739	-0.1264	-0.0756
8198	-46.016	2.163	6.101	-0.0859	-0.1405	-0.0866
8199	-44.099	1.868	4.768	-0.1757	-0.1913	-0.1800
8200	-41.083	-0.041	3.698	-0.2405	-0.2732	-0.2203
8250	-36.877	-3.767	3.113	-0.2473	-0.2804	-0.2320
8251	-30.875	-9.020	2.286	-0.2368	-0.2767	-0.2485
8252	-27.488	-10.817	1.276	-0.1552	-0.2361	-0.2445
8300	-24.306	-11.013	0.205	-0.0533	-0.2181	-0.2427
8350	-23.290	-10.853	-0.000	-0.0473	-0.2125	-0.2428
8400	-4.019	-6.622	-0.000	0.0078	-0.0645	-0.0369
8450	-3.831	-6.187	0.039	0.0019	-0.0493	0.0069
8499	-4.540	-4.340	0.098	-0.0012	-0.0050	0.0844
8500	-4.876	-5.225	-0.008	-0.0014	-0.0155	0.0196
8550	-2.795	-4.433	-0.014	0.0003	-0.0148	-0.1080
8600	-0.543	-3.805	-0.006	0.0003	-0.0148	-0.1064
8650	0.141	0.232	0.000	-0.0000	-0.0114	0.0147
8700	0.075	1.382	0.000	0.0000	-0.0104	-0.0050
8750	0.143	1.637	0.001	0.0001	-0.0099	-0.0062
8800	0.175	1.703	0.001	0.0001	-0.0089	-0.0027
8849	0.156	1.769	0.002	0.0002	-0.0056	0.0262
8850	-0.109	1.836	0.004	0.0002	-0.0023	0.0807
8900	-0.103	0.161	-0.004	0.0002	-0.0001	0.1453
8949	-0.051	-3.722	-0.006	0.0001	0.0001	-0.0349
8950	-0.000	-0.000	-0.000	0.0000	0.0000	-0.0000
8999	-0.054	2.607	0.051	0.0001	0.0006	-0.0363
9000	0.000	0.000	0.000	0.0000	0.0000	-0.0000
9500	3.178	-2.284	-0.248	0.1432	-0.0010	-0.0706
9501	2.257	-0.714	-0.158	0.1198	-0.0000	-0.0583
9502	1.148	1.018	-0.432	0.0915	-0.0245	-0.0799
9503	0.228	3.509	-1.348	0.0680	-0.0454	-0.1175
9504	-0.659	4.743	-2.040	0.0505	-0.0385	-0.1311
9550	-1.288	4.786	-2.250	0.0091	0.0516	0.0364
9551	1.644	3.887	-1.920	0.0005	0.0993	0.1543
9552	8.776	3.028	-1.509	-0.0002	0.1495	0.2776
9553	12.499	1.414	-0.714	0.0055	0.1618	0.3163
9600	13.400	-0.433	0.190	0.0090	0.0181	0.0334
9650	12.777	-0.377	0.190	0.0087	-0.0024	-0.0074
9700	7.314	-0.003	0.000	0.0055	-0.0000	0.0057



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Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1  
 DISPLACEMENTS REPORT: Nodal Movements  
 CASE 2 (OPE) W+T1+P1

Node	DX mm.	DY mm.	DZ mm.	RX deg.	RY deg.	RZ deg.
9750	1.989	0.014	-0.000	0.0023	-0.0005	-0.0217
9800	-3.298	0.026	0.026	-0.0009	0.0023	0.0816
9850	-3.586	-0.906	0.056	-0.0010	0.0021	0.0979
9900	-4.205	-2.967	0.099	-0.0010	0.0018	0.0994
10500	-38.209	-0.836	0.251	-0.0542	-0.2161	-0.8006
10501	-32.178	-0.612	-0.049	-0.0350	-0.2010	-0.9722
10502	-25.193	-0.387	-0.222	-0.0168	-0.1859	-1.0841
10503	-16.383	-0.126	-0.275	0.0031	-0.1683	-1.1392
10504	-8.706	0.099	-0.200	0.0190	-0.1532	-1.1221
10505	-1.346	0.323	-0.020	0.0340	-0.1381	-1.0453
10506	0.352	0.345	0.079	0.0437	-0.1611	-0.9197
10550	0.766	0.287	0.170	0.0338	-0.1192	-0.8978
10551	0.168	0.090	0.398	0.0213	-0.0576	-0.8280
10552	-0.038	0.002	0.626	0.0071	-0.0131	-0.7581
10553	-0.059	-0.018	0.854	0.0016	-0.0005	-0.6883
10554	0.027	0.008	1.667	-0.0049	0.0141	-0.4399
10599	0.187	0.063	2.073	-0.0006	0.0003	-0.3157
10600	-0.186	-0.046	2.480	0.0223	-0.0746	-0.1915
10650	-0.473	-0.132	2.589	0.0295	-0.0964	-0.1582
10700	-1.203	-0.356	2.817	0.0297	-0.0964	-0.1558
10750	-1.390	-0.413	2.876	0.0296	-0.0961	-0.1552
10800	-1.731	-0.530	3.020	0.0235	-0.0559	-0.1114
10850	-2.024	-0.653	3.198	0.0235	-0.0559	-0.1114
11000	-2.136	0.297	3.076	-0.0076	0.0513	-0.0371
11050	-2.195	0.369	3.176	-0.0078	0.0517	-0.0368
11100	-2.423	0.643	3.569	-0.0084	0.0522	-0.0361
11150	-2.482	0.713	3.671	-0.0085	0.0521	-0.0360
11198	-2.554	0.784	3.778	-0.0141	0.0457	-0.0335
11199	-2.625	0.819	3.806	-0.0243	-0.0056	-0.0208
11200	-2.563	0.769	3.728	-0.0412	-0.0932	-0.0147
11250	0.507	0.158	3.232	-0.0299	-0.3728	-0.0113
11251	4.995	-0.023	2.928	-0.0146	-0.6075	-0.0092
11252	6.319	-0.039	2.319	-0.0113	-0.6553	-0.0091
11300	6.745	-0.033	1.324	-0.0115	-0.3106	-0.0056
11301	6.593	-0.006	0.017	-0.0101	-0.1049	-0.0025
11302	6.440	0.003	-0.254	-0.0087	-0.0043	-0.0005
11303	6.287	0.003	-0.163	-0.0073	0.0182	0.0002
11304	6.057	-0.000	-0.005	-0.0051	0.0118	0.0004
11305	5.158	0.000	0.001	0.0033	-0.0040	-0.0011
11350	3.140	-0.000	-0.000	0.0226	0.0011	0.0066
11399	1.369	-0.923	-0.009	0.0400	-0.0006	0.0099
11400	-0.402	-0.626	0.000	0.0574	0.0015	-0.0230
11401	-1.720	-0.005	-0.006	0.1372	-0.0046	0.0005
11402	-2.043	-0.056	-0.055	0.1567	-0.0030	0.0079
11403	-2.259	-0.102	-0.044	0.1698	0.0116	0.0006
11404	-2.474	-0.016	0.140	0.1828	0.0514	-0.0378
11405	-2.690	0.476	0.671	0.1958	0.1056	-0.1206
11406	-2.618	0.723	0.966	0.1504	0.1747	-0.2895
11450	-2.283	0.754	1.170	0.0939	0.1709	-0.3691

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Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1  
 DISPLACEMENTS REPORT: Nodal Movements  
 CASE 2 (OPE) W+T1+P1

Node	DX mm.	DY mm.	DZ mm.	RX deg.	RY deg.	RZ deg.
11451	-1.498	0.299	1.344	0.0742	0.0965	-0.4919
11499	-1.339	0.131	1.431	0.0581	0.0359	-0.5533
11500	-1.324	0.002	1.518	0.0428	-0.0153	-0.6147
11548	-2.146	-0.155	1.850	-0.0080	-0.1234	-0.8487
11549	-3.149	-0.104	1.947	-0.0737	-0.2046	-0.9344
11550	-5.251	-0.085	2.171	-0.1359	-0.2563	-1.1012
11600	-23.501	-0.619	4.744	-0.1859	-0.2606	-1.1526
11650	-25.738	-0.677	5.105	-0.1860	-0.2606	-1.1521
11700	-34.410	-0.905	6.508	-0.1862	-0.2607	-1.1483
11750	-36.637	-0.964	6.869	-0.1861	-0.2607	-1.1469
11800	-46.950	-1.314	8.629	-0.1425	-0.2635	-0.8170
12000	-0.001	1.208	0.000	-0.0145	0.0011	0.0875
12049	-8.099	2.142	-0.293	0.0034	0.0008	0.0657
12050	-0.816	3.077	-0.002	0.0009	-0.0002	-0.3190
12100	0.239	3.197	0.001	0.0003	-0.0002	-0.1163
12101	0.399	3.447	0.001	-0.0001	-0.0002	0.0209
12102	0.183	3.697	0.000	-0.0000	-0.0001	0.0333
12103	-0.206	3.851	-0.000	-0.0000	-0.0001	0.1044
12104	-1.316	4.004	-0.000	0.0000	-0.0001	0.2343
12105	-3.188	4.158	-0.000	-0.0000	-0.0000	0.2497
12106	-3.417	4.236	-0.000	-0.0000	-0.0000	-0.0636
12150	-3.239	3.782	-0.000	-0.0000	-0.0000	-0.3403
12151	-3.078	1.437	0.000	-0.0000	-0.0000	-0.2811
12152	-2.917	0.163	0.000	-0.0000	0.0000	-0.1112
12153	-2.757	-0.174	0.000	-0.0000	0.0000	-0.0132
12154	-2.517	-0.039	-0.000	-0.0000	0.0000	0.0202
12155	-1.256	0.001	-0.000	-0.0000	-0.0000	-0.0045
12199	-0.628	-0.029	0.000	-0.0000	0.0000	0.0011
12200	0.000	-0.000	0.000	-0.0000	0.0000	0.0000
12500	-0.741	0.778	-0.000	0.0008	-0.0002	-0.3943
12549	-0.370	-2.191	0.001	0.0004	0.0000	0.0735
12550	0.000	-0.000	0.000	0.0000	0.0000	0.0000
19000	-56.931	-1.729	10.362	-0.1417	-0.2635	-0.8170

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Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1  
 DISPLACEMENTS REPORT: Nodal Movements  
 CASE 3 (SUS) W+P1

Node	DX mm.	DY mm.	DZ mm.	RX deg.	RY deg.	RZ deg.
10	-14.184	0.015	-1.072	0.0076	-0.0278	-0.0004
50	-13.991	0.007	-0.537	0.0076	-0.0278	-0.0004
100	-13.939	0.005	-0.390	0.0076	-0.0278	-0.0004
150	-13.834	0.001	-0.098	0.0076	-0.0277	-0.0004
200	-13.799	-0.000	-0.000	0.0076	-0.0277	-0.0004
250	-13.034	-0.000	2.089	0.0074	-0.0267	-0.0003
300	-12.860	-0.007	2.557	0.0074	-0.0262	-0.0004
350	-12.682	-0.016	2.972	0.0074	-0.0253	-0.0007
400	-12.386	-0.037	3.537	0.0073	-0.0226	-0.0011
448	-12.250	-0.049	3.775	0.0073	-0.0210	-0.0012
449	-12.130	-0.084	4.742	0.0071	-0.0186	-0.0020
450	-11.881	-0.061	5.393	0.0070	-0.0085	-0.0026
500	-11.730	-0.049	5.392	0.0070	-0.0041	-0.0026
501	-11.350	0.008	4.735	0.0072	0.0175	-0.0026
502	-11.953	0.037	3.291	0.0078	0.0384	-0.0019
550	-12.237	0.020	1.460	0.0084	0.0338	-0.0009
569	-12.088	0.010	1.091	0.0086	0.0288	-0.0008
570	-11.662	-0.007	0.339	0.0091	0.0169	-0.0004
575	-11.755	-0.006	0.281	-0.0055	0.0005	-0.0390
590	-11.752	-0.023	0.270	-0.0077	-0.0022	-0.0549
591	-11.733	-0.059	0.256	-0.0104	-0.0064	-0.0992
592	-11.601	-0.089	0.243	-0.0194	-0.0368	-0.1418
600	-11.100	-0.012	-0.143	0.0098	0.0065	-0.0000
650	-9.474	-0.002	-0.098	0.0120	-0.0025	0.0001
699	-9.023	0.001	-0.013	0.0126	-0.0021	0.0001
700	-8.572	0.003	0.065	0.0132	-0.0022	0.0001
750	-7.952	0.012	0.216	0.0141	-0.0014	0.0001
800	-7.914	0.015	0.277	0.0141	-0.0011	0.0000
849	-7.610	0.010	0.269	0.0145	0.0057	-0.0006
850	-7.305	-0.021	-0.035	0.0149	0.0172	-0.0016
899	-7.090	-0.045	-0.330	0.0145	0.0050	-0.0003
900	-6.876	-0.037	-0.312	0.0141	-0.0007	0.0002
949	-6.823	-0.033	-0.291	0.0140	-0.0012	0.0003
950	-6.770	-0.030	-0.267	0.0139	-0.0014	0.0003
970	-5.730	-0.000	-0.009	0.0119	-0.0008	0.0001
1000	-4.725	0.000	0.004	0.0099	0.0002	-0.0000
1050	-3.747	-0.000	-0.001	0.0080	-0.0000	0.0000
1100	-2.791	0.000	0.000	0.0060	0.0000	-0.0000
1150	-1.852	-0.000	-0.000	0.0040	0.0000	0.0000
1175	-0.923	-0.000	-0.000	0.0020	-0.0000	0.0000
1199	-0.462	0.000	0.000	0.0010	-0.0000	-0.0000
1200	0.000	0.000	0.000	0.0000	0.0000	-0.0000
1499	-6.495	-0.395	0.283	0.0152	0.0329	-0.0043
1500	-5.435	-0.772	0.602	0.0152	0.0376	-0.0069
1548	-4.736	-1.073	0.846	0.0145	0.0369	-0.0090
1549	-3.738	-1.720	1.141	0.0304	0.0312	-0.0114
1550	-2.977	-2.081	2.005	0.0335	0.0310	-0.0213

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Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1  
 DISPLACEMENTS REPORT: Nodal Movements  
 CASE 3 (SUS) W+P1

Node	DX mm.	DY mm.	DZ mm.	RX deg.	RY deg.	RZ deg.
1598	-0.209	-0.562	4.717	0.0097	0.0205	-0.0238
1599	0.200	-0.683	4.607	-0.0218	0.0174	-0.0231
1600	0.114	-1.698	4.254	-0.0499	0.0088	-0.0241
1650	-0.038	-2.689	4.014	-0.0540	0.0081	-0.0231
1651	-0.128	-3.353	3.864	-0.0559	0.0077	-0.0225
1652	-0.051	-5.493	2.946	-0.0841	0.0059	-0.0207
1700	0.328	-6.368	1.203	-0.0355	0.0074	-0.0127
1750	0.411	-6.293	0.989	-0.0326	0.0073	-0.0124
1799	0.671	-6.045	0.405	-0.0236	0.0068	-0.0112
1800	0.899	-5.796	0.006	-0.0153	0.0063	-0.0095
1850	1.246	-5.101	-0.250	0.0047	0.0053	-0.0016
1900	1.308	-5.059	-0.021	0.0053	0.0053	-0.0012
1949	0.811	-2.737	0.590	0.0093	-0.0050	-0.0592
1950	1.175	-4.364	0.643	0.0125	0.0044	0.0049
2000	0.853	-3.995	1.209	0.0109	0.0041	0.0092
2001	0.347	-3.567	1.579	-0.0003	0.0039	0.0105
2002	0.202	-3.678	1.407	-0.0266	0.0033	0.0080
2050	0.097	-4.066	0.938	-0.0350	0.0020	0.0057
2051	0.033	-4.518	0.365	-0.0388	0.0006	0.0033
2100	0.004	-4.679	-0.047	-0.0150	0.0001	0.0008
2101	-0.015	-4.165	-0.343	-0.0023	-0.0003	0.0001
2150	-0.012	-3.622	-0.403	-0.0033	-0.0006	-0.0001
2151	-0.009	-3.083	-0.776	-0.0077	-0.0009	0.0000
2152	-0.011	-2.576	-1.234	0.0013	-0.0013	-0.0000
2153	-0.013	-2.700	-1.039	0.0296	-0.0013	-0.0003
2200	-0.018	-3.130	-0.522	0.0383	-0.0012	-0.0006
2201	-0.018	-3.608	0.073	0.0383	-0.0010	-0.0011
2250	0.002	-3.769	0.438	0.0102	-0.0009	-0.0022
2300	0.118	-3.377	0.474	-0.0018	-0.0009	-0.0030
2349	0.233	-3.101	0.337	-0.0042	-0.0010	-0.0033
2350	0.345	-2.825	0.164	-0.0039	-0.0010	-0.0028
2400	0.043	-1.463	-0.013	0.0002	-0.0008	0.0022
2450	-0.003	-0.110	0.000	0.0000	-0.0006	-0.0004
2500	-0.036	0.902	0.000	-0.0000	-0.0004	0.0015
2550	-0.086	2.457	0.000	0.0000	-0.0002	-0.0054
2551	0.272	2.834	0.000	0.0000	-0.0001	-0.0121
2552	1.053	3.213	0.001	0.0000	-0.0001	-0.0214
2553	2.575	3.683	0.001	-0.0000	0.0000	-0.0213
2554	2.888	3.457	-0.000	-0.0001	0.0001	0.0183
2600	1.972	2.147	-0.001	-0.0001	0.0001	0.0474
2650	0.557	0.428	-0.000	-0.0002	0.0001	0.0394
2700	-1.495	1.034	0.001	-0.0005	0.0003	-0.0170
2701	-1.444	2.242	-0.002	-0.0007	0.0003	-0.0075
2702	-1.333	2.239	-0.003	-0.0007	0.0002	0.0068
2750	-1.275	1.908	-0.002	-0.0008	0.0001	0.0171
2800	-1.843	0.469	0.001	-0.0010	0.0000	0.0162
2850	-3.345	-0.131	0.001	-0.0014	-0.0000	-0.0008
2900	-4.866	0.937	-0.019	-0.0019	-0.0004	-0.0213
2901	-5.266	2.210	-0.041	-0.0020	-0.0003	-0.0205

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Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1  
 DISPLACEMENTS REPORT: Nodal Movements  
 CASE 3 (SUS) W+P1

Node	DX mm.	DY mm.	DZ mm.	RX deg.	RY deg.	RZ deg.
2902	-5.215	2.389	-0.034	-0.0023	0.0010	0.0078
3000	-4.927	2.114	0.008	-0.0033	0.0027	0.0383
3001	-4.292	1.166	0.119	-0.0036	0.0034	0.0449
3002	-3.898	0.920	0.178	-0.0055	0.0050	0.0464
3050	-1.231	-0.400	0.821	-0.0060	0.0077	0.0315
3051	-0.130	-1.192	1.122	0.0075	0.0057	0.0208
3052	0.075	-1.088	0.780	0.0473	-0.0027	0.0095
3055	-3.435	0.773	0.257	-0.0074	0.0061	0.0402
3100	0.207	-0.484	-0.012	0.0736	-0.0064	0.0035
3101	0.303	0.291	-0.984	0.0740	-0.0067	0.0028
3102	0.385	0.943	-1.832	0.0552	-0.0010	0.0007
3150	0.387	1.131	-2.318	0.0186	0.0088	-0.0014
3151	0.180	0.715	-2.530	-0.0043	0.0134	-0.0019
3152	0.221	0.871	-2.152	-0.0433	0.0234	-0.0026
3200	0.431	1.460	-1.352	-0.0662	0.0286	-0.0033
3201	0.654	2.059	-0.551	-0.0665	0.0284	-0.0032
3202	0.860	2.672	0.285	-0.0469	0.0226	-0.0033
3250	0.890	2.845	0.717	-0.0079	0.0119	-0.0028
3251	0.655	2.469	0.685	0.0055	0.0073	-0.0034
3300	0.354	2.112	0.382	0.0074	0.0058	-0.0056
3301	-0.094	1.786	0.135	0.0054	0.0053	-0.0078
3302	-0.605	1.477	0.009	0.0031	0.0049	-0.0040
3303	-0.645	1.529	-0.005	0.0020	0.0049	-0.0024
3350	-0.647	1.573	-0.014	0.0009	0.0049	-0.0006
3351	-0.424	1.129	-0.028	0.0000	0.0044	0.0049
3400	-0.157	0.685	-0.018	-0.0002	0.0038	0.0047
3450	-0.086	0.571	-0.013	-0.0002	0.0035	0.0039
3500	-0.031	0.481	-0.009	-0.0002	0.0030	0.0026
3549	0.014	0.240	-0.002	-0.0001	0.0015	0.0002
3550	0.000	-0.000	0.000	-0.0000	0.0000	-0.0000
3999	-8.586	-0.340	0.281	0.0139	0.0007	-0.0061
4000	-8.544	-0.665	0.498	0.0117	0.0024	-0.0122
4048	-8.419	-0.973	0.876	0.0009	0.0027	-0.0229
4049	-8.294	-0.966	0.869	-0.0025	0.0043	-0.0270
4050	-7.965	-0.954	0.839	-0.0016	0.0070	-0.0387
4098	-0.640	0.533	0.984	0.0028	-0.0049	-0.0412
4099	-0.284	0.546	1.019	0.0021	-0.0029	-0.0317
4100	-0.147	0.540	1.022	-0.0030	-0.0021	-0.0284
4150	-0.051	0.123	0.644	-0.0147	-0.0017	-0.0194
4151	-0.028	-0.165	0.487	-0.0177	-0.0009	-0.0156
4152	-0.020	-0.505	0.329	-0.0187	-0.0004	-0.0119
4153	0.011	-0.750	0.228	-0.0252	0.0024	-0.0081
4200	0.030	-0.841	0.052	-0.0103	0.0048	0.0010
4250	-0.056	-0.583	-0.059	-0.0004	0.0032	0.0045
4299	-0.083	-0.221	-0.024	0.0008	0.0004	-0.0040
4300	-0.250	-0.221	-0.011	0.0011	0.0010	0.0008
4350	-0.026	0.404	0.003	-0.0002	0.0011	-0.0005
4400	-0.019	0.418	0.000	-0.0001	0.0011	-0.0002
4450	-0.115	0.688	-0.006	-0.0003	0.0011	0.0054

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Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1  
 DISPLACEMENTS REPORT: Nodal Movements  
 CASE 3 (SUS) W+P1

Node	DX mm.	DY mm.	DZ mm.	RX deg.	RY deg.	RZ deg.
4451	-0.282	0.935	-0.015	-0.0002	0.0012	0.0012
4452	-0.235	0.890	-0.016	0.0012	0.0006	-0.0139
4500	-0.174	0.713	-0.006	0.0025	-0.0016	-0.0139
4501	0.031	0.368	0.047	0.0037	-0.0033	-0.0117
4502	0.235	0.129	0.157	0.0049	-0.0053	-0.0129
4549	-0.035	-0.529	0.179	0.0052	-0.0046	-0.0151
4550	0.447	-0.347	0.307	0.0062	-0.0062	-0.0300
4800	0.555	-4.187	0.073	-0.0062	-0.0013	-0.0551
4850	0.465	-3.578	0.053	-0.0038	-0.0020	-0.0557
4900	0.450	-2.419	0.010	-0.0036	-0.0020	-0.0550
4949	0.382	-2.004	-0.006	-0.0018	-0.0015	-0.0455
4950	0.315	-1.676	-0.016	-0.0000	-0.0007	-0.0333
4999	0.250	-1.413	-0.020	0.0001	-0.0004	-0.0310
5000	0.184	-1.173	-0.022	0.0002	-0.0002	-0.0273
5050	0.170	-0.611	-0.025	0.0003	-0.0001	-0.0264
5100	0.083	-0.396	-0.026	0.0004	-0.0000	-0.0166
5199	0.668	-1.515	0.008	0.0036	0.0010	-0.0117
5200	0.725	-1.354	0.111	0.0090	0.0027	0.0006
5201	0.704	-1.247	0.052	0.0137	0.0036	-0.0034
5202	0.728	-0.927	0.039	0.0369	-0.0044	-0.0163
5250	0.212	-1.002	0.102	-0.0023	-0.0004	0.0123
5300	-0.040	-0.988	0.055	-0.0021	-0.0005	0.0119
5350	-0.217	-0.711	0.083	0.0032	-0.0029	-0.0026
5600	0.198	-2.611	0.144	-0.0037	-0.0014	-0.0196
5650	0.100	-2.328	0.127	-0.0035	-0.0017	-0.0285
5651	-0.157	-1.221	0.069	-0.0030	-0.0019	-0.0347
5652	-0.415	-0.419	0.020	-0.0024	-0.0012	-0.0082
5653	-0.653	-0.751	0.001	-0.0019	-0.0004	0.0336
5654	-0.892	-2.215	-0.002	-0.0014	0.0000	0.0587
5655	-1.143	-2.982	-0.002	-0.0009	0.0008	0.0419
5700	-1.159	-3.111	-0.002	-0.0000	0.0011	-0.0281
5750	-0.178	-2.896	-0.001	0.0001	0.0010	-0.0306
5800	0.009	-1.489	0.000	-0.0000	0.0008	0.0079
5850	0.001	-0.106	-0.000	0.0000	0.0006	-0.0044
5900	-0.013	1.275	0.000	0.0000	0.0003	0.0105
5950	0.187	2.677	-0.000	-0.0000	0.0001	-0.0415
5951	1.544	2.891	-0.001	-0.0000	0.0001	-0.0442
5952	1.776	2.867	-0.001	-0.0000	0.0000	0.0205
6000	1.615	2.262	-0.000	0.0000	0.0000	0.0558
6001	1.388	0.769	0.001	0.0000	0.0001	0.0406
6002	1.161	0.049	0.004	0.0001	0.0001	0.0151
6003	0.934	-0.119	0.008	0.0001	0.0001	0.0018
6050	0.534	-0.024	-0.011	0.0002	-0.0014	-0.0025
6100	-0.672	0.004	0.147	0.0004	0.0107	0.0004
6101	-0.932	-0.004	0.499	0.0004	0.0011	0.0002
6102	-0.891	-0.005	0.423	0.0004	-0.0307	0.0001
6150	-0.703	-0.004	0.184	0.0004	-0.0559	0.0001
6151	-0.165	-0.001	-0.519	0.0004	-0.0563	0.0001
6152	0.030	0.001	-0.770	0.0005	-0.0366	0.0001

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Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1  
 DISPLACEMENTS REPORT: Nodal Movements  
 CASE 3 (SUS) W+P1

Node	DX mm.	DY mm.	DZ mm.	RX deg.	RY deg.	RZ deg.
6200	0.080	0.001	-0.903	0.0005	-0.0132	0.0000
6201	-0.322	0.000	-0.784	0.0005	0.0181	0.0000
6202	-0.265	-0.001	-0.619	0.0006	0.0405	0.0001
6250	-0.061	-0.004	-0.352	0.0006	0.0567	0.0002
6251	0.383	-0.011	0.230	0.0006	0.0559	0.0002
6252	0.574	-0.015	0.474	0.0007	0.0323	0.0003
6300	0.618	-0.017	0.564	0.0006	0.0016	0.0002
6301	0.389	-0.019	0.343	0.0006	-0.0097	-0.0004
6302	0.221	-0.003	0.145	0.0006	-0.0081	-0.0017
6350	0.053	0.050	0.011	0.0006	-0.0050	-0.0041
6399	-0.361	0.346	-0.078	0.0005	0.0004	-0.0047
6400	-0.775	0.341	-0.011	0.0004	0.0012	0.0079
6450	-0.845	0.264	-0.003	0.0006	0.0010	0.0096
6500	-0.907	0.163	0.004	0.0009	0.0008	0.0109
6550	-0.930	0.086	0.008	0.0015	0.0006	0.0106
6600	-1.242	-0.005	0.000	0.0165	0.0000	-0.0014
6601	-1.345	0.006	0.013	0.0214	0.0008	0.0002
6602	-1.449	-0.006	0.004	0.0263	-0.0033	0.0008
6603	-1.499	-0.023	-0.094	0.0286	-0.0092	0.0011
6604	-1.550	-0.039	-0.302	0.0310	-0.0136	-0.0000
6605	-1.601	-0.007	-0.491	0.0333	0.0013	-0.0055
6606	-1.574	0.006	-0.434	0.0318	0.0391	-0.0175
6650	-1.458	0.012	-0.285	0.0272	0.0664	-0.0275
6651	-0.166	0.234	1.142	0.0264	0.0532	-0.0530
6652	-0.093	0.363	1.223	0.0152	0.0089	-0.0720
6700	-0.089	0.609	1.169	0.0112	-0.0353	-0.0902
6701	-0.119	1.444	0.768	0.0091	-0.0456	-0.0905
6702	-0.201	2.001	0.438	0.0073	-0.0481	-0.0679
6800	-0.354	2.292	0.163	0.0027	-0.0441	-0.0265
6801	-0.379	2.331	0.061	-0.0017	-0.0413	0.0012
6850	-0.316	2.321	0.017	-0.0062	-0.0393	0.0217
6851	0.146	2.139	-0.016	-0.0094	-0.0372	0.0258
6852	0.431	2.009	-0.012	-0.0102	-0.0359	0.0133
6900	0.540	1.926	-0.002	-0.0099	-0.0348	0.0054
6950	0.420	1.554	0.000	-0.0072	-0.0267	0.0025
7000	0.267	1.207	0.002	-0.0044	-0.0186	-0.0174
7001	-0.117	1.249	-0.015	-0.0031	-0.0175	-0.0142
7002	-0.146	1.263	-0.016	-0.0024	-0.0175	-0.0099
7050	-0.160	1.272	-0.014	-0.0017	-0.0174	-0.0049
7051	-0.127	1.222	0.002	-0.0005	-0.0168	0.0042
7052	-0.050	1.173	0.004	0.0000	-0.0161	0.0036
7053	-0.008	1.120	0.002	0.0001	-0.0154	0.0013
7100	0.003	1.067	0.000	0.0001	-0.0147	0.0003
7150	0.000	0.527	-0.000	-0.0000	-0.0074	-0.0001
7199	-0.002	0.264	0.001	0.0000	-0.0037	0.0000
7200	-0.000	-0.000	0.000	0.0000	-0.0000	0.0000
7500	-0.079	-0.261	-0.003	-0.0002	0.0010	0.0055
7550	0.033	-0.274	0.001	-0.0002	0.0010	0.0054
7600	0.055	-1.683	0.000	0.0001	0.0004	-0.0161

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Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1  
 DISPLACEMENTS REPORT: Nodal Movements  
 CASE 3 (SUS) W+P1

Node	DX mm.	DY mm.	DZ mm.	RX deg.	RY deg.	RZ deg.
7601	-0.377	-1.855	-0.001	0.0001	0.0003	-0.0286
7602	-0.842	-1.623	-0.001	0.0001	0.0002	-0.0622
7650	-1.084	-1.066	-0.000	0.0002	0.0000	-0.0369
7651	-1.301	-0.312	0.000	0.0002	0.0000	-0.0219
7652	-1.499	-0.013	0.000	0.0002	-0.0000	-0.0078
7700	-1.697	0.061	0.000	0.0002	-0.0000	-0.0019
7749	-2.152	0.079	-0.000	0.0002	-0.0000	0.0008
7750	-2.606	0.003	-0.000	0.0002	0.0000	0.0018
8000	-13.445	0.221	0.149	0.0133	-0.0483	-0.0272
8050	-13.351	0.223	0.195	0.0133	-0.0485	-0.0274
8100	-12.771	0.239	0.476	0.0135	-0.0494	-0.0281
8150	-12.674	0.241	0.523	0.0135	-0.0496	-0.0282
8198	-12.403	0.319	0.650	0.0108	-0.0569	-0.0311
8199	-11.721	0.300	0.665	-0.0153	-0.0765	-0.0581
8200	-10.560	-0.016	0.563	-0.0466	-0.1136	-0.0717
8250	-8.799	-0.790	0.433	-0.0520	-0.1179	-0.0724
8251	-6.259	-1.910	0.249	-0.0478	-0.1176	-0.0733
8252	-4.955	-2.265	0.128	-0.0231	-0.0983	-0.0666
8300	-4.040	-2.325	0.023	-0.0084	-0.0863	-0.0498
8350	-3.831	-2.289	-0.000	-0.0075	-0.0841	-0.0488
8400	-0.750	-1.335	-0.000	0.0020	-0.0257	0.0002
8450	-0.793	-1.237	0.008	0.0003	-0.0196	0.0075
8499	-1.018	-0.844	0.034	-0.0004	-0.0021	0.0166
8500	-1.097	-1.020	-0.010	-0.0004	-0.0063	0.0042
8550	-0.628	-0.837	-0.008	0.0003	-0.0060	-0.0243
8600	-0.122	-0.824	-0.003	0.0003	-0.0060	-0.0239
8650	0.032	0.108	0.000	-0.0000	-0.0046	0.0033
8700	0.019	0.374	0.000	0.0000	-0.0042	-0.0012
8750	0.035	0.424	0.000	0.0000	-0.0040	-0.0015
8800	0.042	0.432	0.000	0.0000	-0.0036	-0.0006
8849	0.038	0.433	0.001	0.0001	-0.0023	0.0063
8850	-0.026	0.434	0.002	0.0001	-0.0010	0.0191
8900	-0.024	0.038	-0.001	0.0001	-0.0001	0.0343
8949	-0.012	-0.880	-0.002	0.0000	0.0000	-0.0082
8950	-0.000	-0.000	-0.000	0.0000	0.0000	-0.0000
8999	-0.013	0.617	0.021	0.0001	0.0002	-0.0086
9000	0.000	0.000	0.000	0.0000	0.0000	-0.0000
9500	0.748	-0.571	-0.001	0.0372	-0.0049	-0.0185
9501	0.534	-0.163	-0.049	0.0310	-0.0015	-0.0147
9502	0.276	0.245	-0.117	0.0237	-0.0047	-0.0173
9503	0.061	0.758	-0.286	0.0175	-0.0078	-0.0225
9504	-0.071	1.042	-0.445	0.0130	-0.0079	-0.0303
9550	-0.211	1.114	-0.525	0.0023	0.0108	0.0032
9551	0.376	0.903	-0.450	0.0001	0.0225	0.0326
9552	1.924	0.703	-0.353	-0.0001	0.0327	0.0587
9553	2.781	0.397	-0.199	0.0015	0.0376	0.0725
9600	3.059	-0.027	0.010	0.0024	0.0067	0.0130
9650	2.913	-0.096	0.049	0.0023	0.0009	0.0014
9700	1.632	-0.001	0.000	0.0015	-0.0004	0.0003



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 Licensed To: TECHFEM SPA

Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1  
 DISPLACEMENTS REPORT: Nodal Movements  
 CASE 3 (SUS) W+P1

Node	DX mm.	DY mm.	DZ mm.	RX deg.	RY deg.	RZ deg.
9750	0.382	0.003	-0.000	0.0006	-0.0001	-0.0040
9800	-0.860	0.006	0.011	-0.0003	0.0008	0.0158
9850	-0.928	-0.175	0.022	-0.0003	0.0007	0.0191
9900	-0.939	-0.577	0.036	-0.0003	0.0006	0.0193
10500	-11.208	-0.106	0.202	-0.0223	-0.0626	-0.2350
10501	-9.438	-0.080	0.071	-0.0168	-0.0583	-0.2852
10502	-7.389	-0.054	-0.025	-0.0118	-0.0540	-0.3180
10503	-4.805	-0.024	-0.097	-0.0066	-0.0490	-0.3341
10504	-2.554	0.002	-0.128	-0.0027	-0.0446	-0.3291
10505	-0.395	0.028	-0.135	0.0007	-0.0403	-0.3065
10506	0.103	0.029	-0.138	-0.0018	-0.0472	-0.2697
10550	0.224	0.031	-0.140	-0.0012	-0.0349	-0.2632
10551	0.049	0.022	-0.114	0.0022	-0.0169	-0.2427
10552	-0.011	0.008	-0.089	0.0018	-0.0037	-0.2223
10553	-0.015	-0.001	-0.064	0.0010	0.0003	-0.2018
10554	0.002	0.002	0.027	-0.0014	0.0014	-0.1290
10599	0.015	0.018	0.072	-0.0002	-0.0000	-0.0926
10600	-0.014	-0.013	0.117	0.0065	-0.0058	-0.0561
10650	-0.037	-0.039	0.129	0.0086	-0.0075	-0.0464
10700	-0.094	-0.104	0.131	0.0087	-0.0075	-0.0457
10750	-0.108	-0.121	0.131	0.0087	-0.0075	-0.0455
10800	-0.134	-0.155	0.148	0.0069	-0.0041	-0.0327
10850	-0.156	-0.191	0.169	0.0069	-0.0041	-0.0327
11000	-0.182	0.087	0.183	-0.0022	0.0116	-0.0109
11050	-0.182	0.108	0.206	-0.0023	0.0117	-0.0108
11100	-0.185	0.189	0.295	-0.0025	0.0119	-0.0106
11150	-0.185	0.209	0.318	-0.0025	0.0120	-0.0106
11198	-0.194	0.230	0.344	-0.0041	0.0110	-0.0098
11199	-0.202	0.240	0.366	-0.0071	0.0087	-0.0061
11200	-0.210	0.226	0.371	-0.0121	-0.0013	-0.0044
11250	0.079	0.046	0.314	-0.0088	-0.0419	-0.0034
11251	0.586	-0.007	0.279	-0.0043	-0.0665	-0.0027
11252	0.735	-0.011	0.218	-0.0034	-0.0722	-0.0027
11300	0.788	-0.010	0.112	-0.0035	-0.0342	-0.0017
11301	0.770	-0.002	-0.018	-0.0032	-0.0092	-0.0008
11302	0.753	0.001	-0.034	-0.0029	0.0010	-0.0002
11303	0.735	0.001	-0.018	-0.0025	0.0025	0.0001
11304	0.708	0.000	0.000	-0.0020	0.0012	0.0001
11305	0.604	0.000	0.000	-0.0000	-0.0004	-0.0002
11350	0.370	-0.000	0.000	0.0046	0.0002	0.0008
11399	0.165	-0.114	0.006	0.0087	-0.0000	0.0012
11400	-0.040	-0.074	0.000	0.0128	-0.0001	-0.0029
11401	-0.186	-0.001	0.002	0.0308	0.0004	0.0006
11402	-0.222	-0.015	0.003	0.0352	-0.0009	0.0020
11403	-0.246	-0.027	-0.012	0.0382	-0.0041	0.0003
11404	-0.270	-0.007	-0.054	0.0411	-0.0082	-0.0092
11405	-0.294	0.115	-0.113	0.0440	-0.0057	-0.0304
11406	-0.294	0.183	-0.119	0.0320	-0.0016	-0.0745
11450	-0.299	0.204	-0.121	0.0165	-0.0103	-0.0955

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Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1  
 DISPLACEMENTS REPORT: Nodal Movements  
 CASE 3 (SUS) W+P1

Node	DX mm.	DY mm.	DZ mm.	RX deg.	RY deg.	RZ deg.
11451	-0.371	0.128	-0.101	0.0108	-0.0274	-0.1276
11499	-0.462	0.107	-0.091	0.0068	-0.0416	-0.1436
11500	-0.587	0.094	-0.081	0.0043	-0.0534	-0.1597
11548	-1.254	0.059	-0.043	0.0073	-0.0757	-0.2208
11549	-1.591	0.041	-0.052	0.0131	-0.0908	-0.2414
11550	-2.161	0.030	-0.083	0.0183	-0.1017	-0.2833
11600	-6.863	-0.032	-0.379	0.0090	-0.0909	-0.2973
11650	-7.440	-0.033	-0.396	0.0089	-0.0909	-0.2972
11700	-9.677	-0.035	-0.461	0.0082	-0.0907	-0.2962
11750	-10.252	-0.035	-0.476	0.0081	-0.0907	-0.2958
11800	-12.912	-0.076	-0.456	-0.0077	-0.0836	-0.2108
12000	-0.000	0.143	0.000	-0.0033	-0.0000	0.0104
12049	-0.959	0.253	-0.065	0.0008	0.0000	0.0078
12050	-0.097	0.364	-0.000	0.0002	-0.0000	-0.0377
12100	0.028	0.378	0.000	0.0001	-0.0000	-0.0138
12101	0.047	0.407	0.000	-0.0000	-0.0000	0.0025
12102	0.020	0.437	0.000	-0.0000	-0.0000	0.0042
12103	-0.028	0.455	-0.000	-0.0000	-0.0000	0.0126
12104	-0.160	0.473	-0.000	0.0000	-0.0000	0.0271
12105	-0.370	0.491	-0.000	0.0000	-0.0000	0.0261
12106	-0.396	0.493	-0.000	-0.0000	-0.0000	-0.0075
12150	-0.383	0.440	-0.000	-0.0000	-0.0000	-0.0368
12151	-0.364	0.174	0.000	-0.0000	-0.0000	-0.0326
12152	-0.345	0.023	0.000	-0.0000	0.0000	-0.0134
12153	-0.326	-0.019	0.000	-0.0000	0.0000	-0.0019
12154	-0.297	-0.005	-0.000	-0.0000	0.0000	0.0023
12155	-0.148	0.000	-0.000	-0.0000	-0.0000	-0.0005
12199	-0.074	-0.003	0.000	-0.0000	0.0000	0.0001
12200	0.000	-0.000	0.000	-0.0000	0.0000	0.0000
12500	-0.088	0.092	-0.000	0.0002	-0.0000	-0.0466
12549	-0.044	-0.259	0.000	0.0001	0.0000	0.0087
12550	0.000	-0.000	0.000	0.0000	0.0000	0.0000
19000	-15.488	-0.125	-0.370	-0.0069	-0.0836	-0.2108

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Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1  
 DISPLACEMENTS REPORT: Nodal Movements  
 CASE 4 (EXP) L4=L2-L3

Node	DX mm.	DY mm.	DZ mm.	RX deg.	RY deg.	RZ deg.
10	-37.051	0.036	8.191	-0.0264	-0.0562	-0.0010
50	-36.476	0.018	9.270	-0.0264	-0.0562	-0.0010
100	-36.319	0.013	9.564	-0.0264	-0.0562	-0.0010
150	-36.006	0.003	10.153	-0.0264	-0.0562	-0.0009
200	-35.902	-0.000	10.350	-0.0262	-0.0562	-0.0009
250	-33.603	0.000	14.583	-0.0232	-0.0513	0.0007
300	-33.080	0.017	15.471	-0.0225	-0.0490	0.0011
350	-32.610	0.037	16.230	-0.0216	-0.0454	0.0014
400	-31.931	0.078	17.193	-0.0198	-0.0369	0.0020
448	-31.618	0.102	17.568	-0.0190	-0.0324	0.0023
449	-30.193	0.139	18.236	-0.0153	-0.0013	0.0034
450	-29.266	0.066	17.038	-0.0118	0.0379	0.0039
500	-29.209	0.042	16.530	-0.0111	0.0451	0.0038
501	-29.526	-0.036	12.945	-0.0079	0.0843	0.0031
502	-30.147	-0.043	7.939	-0.0053	0.1050	0.0019
550	-29.489	-0.013	3.291	-0.0027	0.0731	0.0007
569	-29.145	-0.006	2.491	-0.0020	0.0626	0.0005
570	-28.160	0.003	0.835	0.0000	0.0376	0.0001
575	-28.343	-0.346	0.434	-0.0424	-0.0018	-0.0932
590	-28.328	-0.460	0.360	-0.0490	-0.0085	-0.1315
591	-28.270	-0.658	0.256	-0.0578	-0.0184	-0.2383
592	-27.950	-0.748	0.154	-0.0536	-0.0913	-0.3411
600	-26.852	0.004	-0.270	0.0029	0.0151	-0.0000
650	-23.069	-0.001	-0.211	0.0114	-0.0058	0.0001
699	-22.020	0.004	-0.006	0.0139	-0.0052	0.0002
700	-20.971	0.015	0.197	0.0163	-0.0056	0.0004
750	-19.543	0.075	0.606	0.0202	-0.0052	0.0012
800	-18.230	0.131	0.840	0.0204	-0.0047	0.0012
849	-17.528	0.170	0.917	0.0224	0.0113	-0.0004
850	-16.826	0.129	0.274	0.0244	0.0397	-0.0037
899	-16.333	0.035	-0.483	0.0237	0.0141	-0.0021
900	-15.839	-0.011	-0.572	0.0231	0.0014	-0.0010
949	-15.717	-0.018	-0.553	0.0229	0.0001	-0.0008
950	-15.595	-0.023	-0.526	0.0227	-0.0006	-0.0007
970	-13.200	-0.006	-0.031	0.0195	-0.0022	0.0003
1000	-10.883	0.001	0.011	0.0162	0.0004	-0.0000
1050	-8.631	-0.000	-0.001	0.0130	-0.0000	0.0000
1100	-6.429	0.000	0.000	0.0097	0.0000	-0.0000
1150	-4.265	-0.000	-0.000	0.0065	0.0000	-0.0000
1175	-2.126	-0.000	-0.000	0.0032	-0.0000	0.0000
1199	-1.063	0.000	0.000	0.0016	-0.0000	0.0000
1200	0.000	0.000	0.000	0.0000	0.0000	-0.0000
1499	-14.965	-0.465	1.012	0.0267	0.0756	-0.0096
1500	-12.534	-1.136	1.750	0.0306	0.0863	-0.0155
1548	-10.933	-1.747	2.313	0.0341	0.0846	-0.0199
1549	-8.664	-2.840	3.775	0.0714	0.0713	-0.0251
1550	-6.951	-2.922	6.275	0.0852	0.0710	-0.0477

CAESAR II 2017 Ver.9.00.00.5900, (Build 160721)  
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Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1  
 DISPLACEMENTS REPORT: Nodal Movements  
 CASE 4 (EXP) L4=L2-L3

Node	DX mm.	DY mm.	DZ mm.	RX deg.	RY deg.	RZ deg.
1598	-0.673	0.587	15.415	0.0585	0.0479	-0.0552
1599	0.351	1.142	15.159	-0.0664	0.0391	-0.0593
1600	0.287	-2.199	13.147	-0.2054	0.0173	-0.0638
1650	-0.010	-6.128	12.595	-0.2157	0.0156	-0.0624
1651	-0.181	-8.700	12.250	-0.2216	0.0148	-0.0616
1652	0.239	-15.143	8.664	-0.2423	0.0071	-0.0604
1700	1.589	-16.744	3.639	-0.0812	0.0097	-0.0442
1750	1.884	-16.573	3.141	-0.0754	0.0095	-0.0434
1799	2.812	-16.005	1.749	-0.0566	0.0087	-0.0390
1800	3.622	-15.436	0.749	-0.0385	0.0080	-0.0322
1850	4.708	-13.869	-0.087	0.0079	0.0066	-0.0029
1900	4.809	-12.547	0.312	0.0095	0.0066	-0.0017
1949	2.952	-6.555	1.545	0.0248	-0.0152	-0.1640
1950	4.162	-10.980	1.846	0.0331	0.0053	0.0201
2000	2.954	-10.165	3.432	0.0344	0.0052	0.0339
2001	1.133	-9.220	4.834	0.0132	0.0052	0.0377
2002	0.634	-9.090	4.290	-0.0892	0.0037	0.0290
2050	0.319	-10.057	2.377	-0.1559	-0.0007	0.0210
2051	0.138	-11.177	0.215	-0.1181	-0.0050	0.0130
2100	0.041	-11.167	-0.897	-0.0212	-0.0066	0.0036
2101	-0.050	-10.037	-0.932	0.0022	-0.0068	0.0006
2150	-0.044	-8.845	-0.860	-0.0080	-0.0070	-0.0003
2151	-0.026	-7.660	-1.987	-0.0267	-0.0072	-0.0003
2152	-0.011	-6.547	-3.804	-0.0126	-0.0074	-0.0004
2153	-0.020	-6.446	-3.231	0.0946	-0.0073	-0.0015
2200	-0.053	-7.501	-1.221	0.1624	-0.0067	-0.0026
2201	-0.067	-8.672	0.975	0.1156	-0.0059	-0.0041
2250	-0.009	-8.660	1.956	0.0087	-0.0054	-0.0068
2300	0.335	-7.803	1.425	-0.0139	-0.0051	-0.0085
2349	0.658	-7.199	0.866	-0.0155	-0.0049	-0.0091
2350	0.963	-6.595	0.336	-0.0121	-0.0047	-0.0074
2400	0.115	-3.631	-0.053	0.0013	-0.0038	0.0060
2450	-0.010	-0.688	0.005	-0.0001	-0.0029	-0.0011
2500	-0.088	1.512	-0.000	-0.0000	-0.0023	0.0037
2550	-0.292	4.889	-0.000	0.0000	-0.0012	-0.0122
2551	0.522	5.708	0.000	0.0000	-0.0010	-0.0297
2552	2.485	6.529	0.001	0.0000	-0.0007	-0.0573
2553	6.780	7.550	0.003	0.0000	-0.0004	-0.0708
2554	7.706	8.208	0.001	-0.0000	-0.0002	0.0396
2600	4.589	5.707	-0.002	-0.0000	0.0000	0.1310
2650	1.000	1.074	-0.001	-0.0002	0.0001	0.1046
2700	-3.500	2.279	0.002	-0.0012	0.0006	-0.0474
2701	-2.982	5.600	-0.004	-0.0016	0.0006	-0.0320
2702	-3.193	5.926	-0.007	-0.0018	0.0004	0.0170
2750	-3.638	5.055	-0.006	-0.0019	0.0002	0.0557
2800	-4.872	1.065	0.000	-0.0024	0.0000	0.0431
2850	-8.136	-0.409	0.007	-0.0036	0.0001	-0.0006
2900	-11.448	2.191	-0.053	-0.0049	-0.0016	-0.0609
2901	-12.319	5.885	-0.152	-0.0052	-0.0019	-0.0697

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Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1  
 DISPLACEMENTS REPORT: Nodal Movements  
 CASE 4 (EXP) L4=L2-L3

Node	DX mm.	DY mm.	DZ mm.	RX deg.	RY deg.	RZ deg.
2902	-12.648	6.416	-0.159	-0.0058	0.0003	0.0125
3000	-12.304	5.511	-0.087	-0.0083	0.0042	0.0987
3001	-10.695	3.218	0.140	-0.0092	0.0059	0.1070
3002	-9.900	2.382	0.279	-0.0154	0.0111	0.1192
3050	-2.904	-1.132	2.255	-0.0248	0.0212	0.0804
3051	-0.143	-2.959	3.761	0.0005	0.0193	0.0510
3052	0.232	-3.102	2.888	0.1327	-0.0102	0.0217
3055	-8.785	1.718	0.494	-0.0227	0.0149	0.1140
3100	0.509	-1.657	0.278	0.2400	-0.0302	0.0064
3101	0.873	0.873	-2.692	0.2413	-0.0311	0.0046
3102	1.034	2.456	-5.473	0.1575	-0.0072	0.0001
3150	0.917	2.540	-6.824	0.0395	0.0241	-0.0043
3151	0.405	1.645	-7.276	-0.0065	0.0327	-0.0053
3152	0.403	1.655	-6.151	-0.1304	0.0646	-0.0065
3200	0.923	3.088	-3.459	-0.2235	0.0874	-0.0080
3201	1.621	5.087	-0.990	-0.2238	0.0868	-0.0076
3202	2.125	6.548	1.733	-0.1312	0.0608	-0.0076
3250	2.101	6.564	2.820	-0.0005	0.0252	-0.0063
3251	1.586	5.743	1.994	0.0247	0.0159	-0.0078
3300	0.898	4.971	0.920	0.0226	0.0138	-0.0141
3301	-0.227	4.295	0.233	0.0138	0.0135	-0.0224
3302	-1.713	3.719	-0.053	0.0072	0.0126	-0.0189
3303	-1.907	3.570	-0.077	0.0042	0.0128	-0.0057
3350	-1.882	3.385	-0.092	0.0016	0.0126	0.0084
3351	-1.030	2.414	-0.092	-0.0005	0.0113	0.0157
3400	-0.301	1.444	-0.046	-0.0009	0.0099	0.0121
3450	-0.129	1.198	-0.031	-0.0008	0.0091	0.0096
3500	-0.007	1.008	-0.017	-0.0006	0.0077	0.0057
3549	0.063	0.504	-0.001	-0.0002	0.0038	-0.0003
3550	0.000	-0.000	0.000	-0.0000	0.0000	-0.0000
3999	-21.013	-0.374	0.928	0.0157	0.0013	-0.0146
4000	-20.918	-0.755	1.660	0.0155	0.0055	-0.0297
4048	-20.628	-1.417	2.935	0.0158	0.0063	-0.0559
4049	-20.326	-1.457	3.282	0.0174	0.0098	-0.0659
4050	-19.524	-1.245	3.568	0.0183	0.0166	-0.0946
4098	-1.644	3.707	5.316	-0.0052	-0.0133	-0.1003
4099	-0.774	3.903	5.038	-0.0308	-0.0082	-0.0767
4100	-0.432	3.597	4.602	-0.0577	-0.0063	-0.0685
4150	-0.142	0.850	3.329	-0.0716	-0.0055	-0.0461
4151	-0.063	-0.480	2.797	-0.0829	-0.0036	-0.0368
4152	-0.015	-2.102	2.266	-0.0989	-0.0027	-0.0274
4153	0.074	-3.140	1.501	-0.1175	0.0039	-0.0180
4200	0.102	-3.272	0.576	-0.0377	0.0104	0.0068
4250	-0.282	-2.414	-0.045	-0.0090	0.0072	0.0199
4299	-0.646	-1.108	-0.092	0.0021	0.0005	-0.0061
4300	-1.176	-1.209	-0.054	0.0023	0.0028	0.0063
4350	-0.127	0.840	0.004	-0.0002	0.0033	-0.0057
4400	-0.018	1.458	0.000	-0.0002	0.0033	-0.0048
4450	-0.288	2.345	-0.013	-0.0006	0.0036	0.0201

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Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1  
 DISPLACEMENTS REPORT: Nodal Movements  
 CASE 4 (EXP) L4=L2-L3

Node	DX mm.	DY mm.	DZ mm.	RX deg.	RY deg.	RZ deg.
4451	-1.075	3.153	-0.035	-0.0004	0.0038	0.0211
4452	-0.843	3.283	-0.036	0.0036	0.0023	-0.0533
4500	-0.311	2.673	-0.018	0.0068	-0.0030	-0.0639
4501	0.366	1.397	0.085	0.0100	-0.0070	-0.0329
4502	1.042	0.988	0.332	0.0132	-0.0130	-0.0219
4549	0.398	-0.594	0.385	0.0138	-0.0202	-0.0459
4550	1.742	0.007	0.730	0.0166	-0.0183	-0.0779
4800	2.530	-11.260	0.704	-0.0148	-0.0080	-0.1389
4850	2.244	-9.731	0.603	-0.0085	-0.0105	-0.1400
4900	1.625	-6.820	0.382	-0.0079	-0.0107	-0.1382
4949	1.411	-5.778	0.293	-0.0032	-0.0111	-0.1151
4950	1.197	-4.943	0.203	0.0015	-0.0112	-0.0858
4999	0.988	-4.246	0.129	0.0016	-0.0081	-0.0825
5000	0.780	-3.594	0.077	0.0017	-0.0054	-0.0742
5050	0.163	-2.065	-0.032	0.0017	-0.0051	-0.0716
5100	-0.116	-1.499	-0.072	0.0018	-0.0029	-0.0427
5199	2.082	-4.419	0.296	0.0109	-0.0199	-0.0279
5200	2.175	-3.894	0.582	0.0237	-0.0287	0.0053
5201	2.378	-3.600	0.386	0.0371	-0.0315	-0.0062
5202	2.633	-2.713	-0.036	0.1045	-0.0288	-0.0439
5250	0.646	-2.730	0.364	-0.0106	-0.0251	0.0317
5300	0.000	-2.111	0.150	-0.0099	-0.0250	0.0302
5350	-0.262	-1.194	0.141	0.0072	-0.0221	-0.0150
5600	0.604	-6.061	0.265	-0.0115	-0.0046	-0.0485
5650	0.353	-5.360	0.217	-0.0110	-0.0044	-0.0700
5651	-0.345	-2.674	0.099	-0.0093	-0.0033	-0.0824
5652	-1.043	-0.858	0.022	-0.0077	-0.0017	-0.0119
5653	-1.690	-2.014	-0.002	-0.0061	-0.0003	0.1029
5654	-2.338	-6.430	0.004	-0.0046	0.0004	0.1839
5655	-3.401	-8.539	0.002	-0.0031	0.0023	0.1170
5700	-3.482	-8.534	-0.003	-0.0003	0.0033	-0.0981
5750	-0.431	-7.952	-0.003	0.0000	0.0032	-0.0934
5800	0.027	-4.151	0.000	0.0000	0.0025	0.0246
5850	0.003	-0.418	-0.000	-0.0000	0.0017	-0.0139
5900	-0.039	3.309	0.000	0.0000	0.0010	0.0333
5950	0.461	7.090	-0.000	-0.0001	0.0003	-0.1293
5951	4.754	7.667	-0.002	-0.0001	0.0002	-0.1510
5952	5.490	8.017	-0.003	-0.0001	0.0002	0.0465
6000	4.724	6.454	-0.001	-0.0000	0.0002	0.1709
6001	4.113	2.080	0.004	0.0001	0.0003	0.1167
6002	3.504	0.067	0.018	0.0002	0.0006	0.0412
6003	2.896	-0.364	0.037	0.0004	0.0004	0.0039
6050	1.822	-0.067	-0.052	0.0006	-0.0067	-0.0074
6100	-1.407	0.011	0.421	0.0012	0.0445	0.0013
6101	-2.105	-0.014	2.047	0.0014	0.0290	0.0006
6102	-2.178	-0.015	1.874	0.0014	-0.0934	0.0005
6150	-1.706	-0.012	0.972	0.0015	-0.2062	0.0004
6151	0.292	-0.001	-1.464	0.0015	-0.2091	0.0004
6152	0.809	0.002	-2.442	0.0016	-0.1219	0.0002

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Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1  
 DISPLACEMENTS REPORT: Nodal Movements  
 CASE 4 (EXP) L4=L2-L3

Node	DX mm.	DY mm.	DZ mm.	RX deg.	RY deg.	RZ deg.
6200	0.780	0.003	-2.877	0.0017	-0.0303	0.0001
6201	-0.290	0.002	-2.775	0.0020	0.0352	0.0001
6202	-0.310	-0.002	-2.299	0.0021	0.1296	0.0003
6250	0.237	-0.011	-1.276	0.0023	0.2172	0.0006
6251	1.960	-0.035	0.808	0.0023	0.2157	0.0007
6252	2.483	-0.048	1.788	0.0025	0.1096	0.0008
6300	2.432	-0.056	2.072	0.0024	-0.0128	0.0006
6301	1.831	-0.063	1.083	0.0024	-0.0361	-0.0012
6302	1.388	-0.012	0.409	0.0024	-0.0266	-0.0054
6350	0.945	0.159	-0.005	0.0024	-0.0153	-0.0131
6399	-0.143	1.125	-0.264	0.0024	0.0017	-0.0161
6400	-1.232	1.205	-0.035	0.0024	0.0040	0.0221
6450	-1.407	0.965	-0.009	0.0031	0.0034	0.0295
6500	-1.600	0.630	0.015	0.0046	0.0026	0.0358
6550	-1.710	0.365	0.026	0.0076	0.0019	0.0357
6600	-3.352	-0.015	-0.001	0.0849	0.0003	-0.0045
6601	-3.887	0.020	0.063	0.1098	0.0042	0.0005
6602	-4.425	-0.028	0.067	0.1348	-0.0131	0.0035
6603	-4.688	-0.109	-0.353	0.1468	-0.0427	0.0052
6604	-4.951	-0.181	-1.392	0.1589	-0.0765	-0.0005
6605	-5.214	-0.024	-2.693	0.1710	-0.0352	-0.0268
6606	-5.212	0.037	-2.546	0.1639	0.1399	-0.0842
6650	-4.825	0.047	-1.910	0.1421	0.2839	-0.1315
6651	0.730	0.857	4.311	0.1398	0.2487	-0.2537
6652	1.003	1.450	4.769	0.0849	0.0567	-0.3467
6700	0.943	2.630	4.603	0.0641	-0.1437	-0.4425
6701	0.796	6.735	3.003	0.0521	-0.1806	-0.4533
6702	0.174	9.484	1.703	0.0415	-0.1848	-0.3470
6800	-0.828	10.894	0.620	0.0193	-0.1653	-0.1535
6801	-1.107	11.053	0.219	-0.0005	-0.1525	-0.0185
6850	-0.934	10.929	0.042	-0.0208	-0.1439	0.0898
6851	0.963	10.147	-0.081	-0.0346	-0.1358	0.1062
6852	2.128	9.580	-0.056	-0.0378	-0.1307	0.0545
6900	2.567	9.208	-0.008	-0.0367	-0.1269	0.0220
6950	2.015	7.452	0.001	-0.0260	-0.0974	0.0129
7000	1.321	5.810	0.009	-0.0162	-0.0678	-0.0823
7001	-0.521	6.015	-0.053	-0.0113	-0.0639	-0.0744
7002	-0.677	6.016	-0.059	-0.0088	-0.0639	-0.0461
7050	-0.743	5.991	-0.052	-0.0062	-0.0637	-0.0147
7051	-0.537	5.756	0.008	-0.0017	-0.0613	0.0199
7052	-0.200	5.522	0.016	0.0001	-0.0589	0.0154
7053	-0.025	5.272	0.008	0.0005	-0.0563	0.0052
7100	0.012	5.024	0.000	0.0004	-0.0537	0.0010
7150	0.000	2.483	-0.000	-0.0001	-0.0269	-0.0003
7199	-0.007	1.242	0.002	0.0000	-0.0134	0.0001
7200	-0.000	-0.000	0.000	0.0000	-0.0000	0.0000
7500	-0.102	-0.760	-0.014	-0.0008	0.0032	0.0082
7550	0.067	-1.376	0.002	-0.0008	0.0032	0.0083
7600	0.131	-5.975	0.001	0.0002	0.0012	-0.0446

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Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1  
 DISPLACEMENTS REPORT: Nodal Movements  
 CASE 4 (EXP) L4=L2-L3

Node	DX mm.	DY mm.	DZ mm.	RX deg.	RY deg.	RZ deg.
7601	-1.084	-6.536	-0.003	0.0002	0.0010	-0.0791
7602	-2.767	-6.011	-0.003	0.0004	0.0007	-0.2239
7650	-3.945	-4.025	-0.001	0.0006	0.0001	-0.1532
7651	-4.662	-1.056	0.001	0.0006	0.0000	-0.0832
7652	-5.317	0.026	0.001	0.0006	-0.0000	-0.0270
7700	-5.973	0.246	0.000	0.0006	-0.0000	-0.0052
7749	-7.477	0.269	-0.000	0.0006	-0.0000	0.0032
7750	-8.982	0.010	-0.000	0.0006	0.0000	0.0059
8000	-35.372	0.751	8.679	-0.0850	-0.0756	-0.0455
8050	-35.215	0.854	8.386	-0.0853	-0.0757	-0.0458
8100	-34.244	1.477	6.585	-0.0872	-0.0766	-0.0472
8150	-34.081	1.580	6.284	-0.0874	-0.0768	-0.0474
8198	-33.613	1.844	5.451	-0.0966	-0.0836	-0.0555
8199	-32.377	1.568	4.103	-0.1604	-0.1148	-0.1220
8200	-30.523	-0.025	3.135	-0.1939	-0.1596	-0.1486
8250	-28.077	-2.977	2.680	-0.1953	-0.1625	-0.1596
8251	-24.615	-7.110	2.037	-0.1890	-0.1590	-0.1751
8252	-22.533	-8.552	1.148	-0.1321	-0.1378	-0.1779
8300	-20.266	-8.687	0.182	-0.0449	-0.1318	-0.1929
8350	-19.458	-8.564	0.000	-0.0398	-0.1284	-0.1940
8400	-3.268	-5.287	-0.000	0.0058	-0.0389	-0.0370
8450	-3.039	-4.950	0.031	0.0016	-0.0296	-0.0005
8499	-3.522	-3.495	0.064	-0.0009	-0.0028	0.0678
8500	-3.778	-4.205	0.002	-0.0010	-0.0092	0.0154
8550	-2.167	-3.596	-0.005	0.0001	-0.0088	-0.0837
8600	-0.422	-2.981	-0.004	0.0001	-0.0088	-0.0825
8650	0.109	0.124	-0.000	0.0000	-0.0068	0.0114
8700	0.056	1.008	0.000	0.0000	-0.0062	-0.0038
8750	0.108	1.212	0.001	0.0000	-0.0059	-0.0048
8800	0.133	1.271	0.001	0.0001	-0.0053	-0.0021
8849	0.119	1.336	0.001	0.0001	-0.0033	0.0200
8850	-0.083	1.402	0.002	0.0001	-0.0014	0.0616
8900	-0.079	0.123	-0.002	0.0001	-0.0001	0.1109
8949	-0.039	-2.843	-0.003	0.0001	0.0000	-0.0267
8950	-0.000	-0.000	-0.000	0.0000	0.0000	-0.0000
8999	-0.042	1.990	0.030	0.0001	0.0004	-0.0277
9000	0.000	0.000	0.000	0.0000	0.0000	-0.0000
9500	2.430	-1.712	-0.247	0.1061	0.0039	-0.0521
9501	1.723	-0.551	-0.109	0.0887	0.0015	-0.0436
9502	0.872	0.773	-0.316	0.0678	-0.0197	-0.0626
9503	0.167	2.751	-1.062	0.0505	-0.0376	-0.0949
9504	-0.588	3.701	-1.595	0.0375	-0.0306	-0.1009
9550	-1.077	3.672	-1.724	0.0068	0.0408	0.0332
9551	1.268	2.983	-1.471	0.0004	0.0768	0.1216
9552	6.852	2.325	-1.156	-0.0002	0.1168	0.2189
9553	9.718	1.017	-0.515	0.0040	0.1242	0.2438
9600	10.341	-0.405	0.180	0.0066	0.0114	0.0204
9650	9.864	-0.281	0.142	0.0064	-0.0033	-0.0087
9700	5.682	-0.002	-0.000	0.0041	0.0004	0.0054



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Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1  
 DISPLACEMENTS REPORT: Nodal Movements  
 CASE 4 (EXP) L4=L2-L3

Node	DX mm.	DY mm.	DZ mm.	RX deg.	RY deg.	RZ deg.
9750	1.607	0.011	-0.000	0.0017	-0.0004	-0.0177
9800	-2.437	0.020	0.016	-0.0006	0.0015	0.0657
9850	-2.658	-0.731	0.035	-0.0007	0.0014	0.0789
9900	-3.266	-2.391	0.063	-0.0007	0.0012	0.0800
10500	-27.001	-0.730	0.049	-0.0319	-0.1534	-0.5657
10501	-22.740	-0.532	-0.120	-0.0182	-0.1426	-0.6869
10502	-17.804	-0.333	-0.197	-0.0050	-0.1319	-0.7661
10503	-11.578	-0.102	-0.178	0.0097	-0.1193	-0.8051
10504	-6.153	0.097	-0.072	0.0218	-0.1085	-0.7930
10505	-0.951	0.295	0.114	0.0333	-0.0977	-0.7387
10506	0.249	0.316	0.217	0.0456	-0.1140	-0.6500
10550	0.541	0.256	0.310	0.0350	-0.0842	-0.6346
10551	0.119	0.068	0.512	0.0191	-0.0407	-0.5852
10552	-0.027	-0.005	0.715	0.0053	-0.0094	-0.5359
10553	-0.043	-0.017	0.918	0.0006	-0.0008	-0.4865
10554	0.025	0.006	1.640	-0.0035	0.0128	-0.3109
10599	0.171	0.045	2.002	-0.0004	0.0003	-0.2231
10600	-0.171	-0.032	2.363	0.0158	-0.0687	-0.1353
10650	-0.436	-0.093	2.460	0.0209	-0.0889	-0.1118
10700	-1.109	-0.251	2.686	0.0210	-0.0889	-0.1101
10750	-1.282	-0.292	2.744	0.0210	-0.0886	-0.1097
10800	-1.597	-0.375	2.872	0.0166	-0.0518	-0.0787
10850	-1.868	-0.462	3.028	0.0166	-0.0518	-0.0787
11000	-1.954	0.210	2.893	-0.0054	0.0397	-0.0262
11050	-2.013	0.260	2.971	-0.0055	0.0400	-0.0260
11100	-2.238	0.454	3.274	-0.0059	0.0403	-0.0255
11150	-2.297	0.503	3.353	-0.0060	0.0402	-0.0254
11198	-2.360	0.553	3.434	-0.0099	0.0347	-0.0236
11199	-2.423	0.578	3.440	-0.0172	-0.0142	-0.0147
11200	-2.352	0.543	3.357	-0.0291	-0.0919	-0.0104
11250	0.428	0.111	2.918	-0.0211	-0.3308	-0.0079
11251	4.409	-0.016	2.648	-0.0103	-0.5410	-0.0064
11252	5.584	-0.027	2.101	-0.0079	-0.5830	-0.0064
11300	5.957	-0.023	1.212	-0.0080	-0.2764	-0.0039
11301	5.823	-0.004	0.035	-0.0069	-0.0957	-0.0018
11302	5.687	0.002	-0.220	-0.0058	-0.0054	-0.0004
11303	5.552	0.002	-0.145	-0.0047	0.0157	0.0001
11304	5.349	-0.000	-0.005	-0.0031	0.0106	0.0003
11305	4.554	0.000	0.001	0.0033	-0.0036	-0.0010
11350	2.770	-0.000	-0.000	0.0180	0.0009	0.0058
11399	1.204	-0.809	-0.015	0.0313	-0.0006	0.0087
11400	-0.362	-0.552	0.000	0.0445	0.0016	-0.0201
11401	-1.534	-0.005	-0.007	0.1064	-0.0050	-0.0001
11402	-1.821	-0.041	-0.058	0.1215	-0.0020	0.0059
11403	-2.013	-0.075	-0.032	0.1316	0.0157	0.0003
11404	-2.204	-0.009	0.195	0.1417	0.0597	-0.0286
11405	-2.396	0.361	0.784	0.1518	0.1112	-0.0902
11406	-2.324	0.540	1.086	0.1184	0.1762	-0.2150
11450	-1.985	0.550	1.290	0.0774	0.1812	-0.2736

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Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1  
 DISPLACEMENTS REPORT: Nodal Movements  
 CASE 4 (EXP) L4=L2-L3

Node	DX mm.	DY mm.	DZ mm.	RX deg.	RY deg.	RZ deg.
11451	-1.127	0.171	1.445	0.0634	0.1239	-0.3643
11499	-0.877	0.024	1.522	0.0513	0.0775	-0.4097
11500	-0.737	-0.092	1.599	0.0385	0.0381	-0.4551
11548	-0.891	-0.214	1.893	-0.0153	-0.0477	-0.6279
11549	-1.558	-0.145	1.998	-0.0869	-0.1138	-0.6929
11550	-3.090	-0.115	2.254	-0.1541	-0.1546	-0.8179
11600	-16.638	-0.587	5.123	-0.1949	-0.1697	-0.8553
11650	-18.298	-0.645	5.501	-0.1949	-0.1697	-0.8549
11700	-24.733	-0.870	6.969	-0.1944	-0.1700	-0.8521
11750	-26.386	-0.928	7.346	-0.1942	-0.1700	-0.8511
11800	-34.038	-1.238	9.085	-0.1348	-0.1799	-0.6062
12000	-0.001	1.065	0.000	-0.0113	0.0011	0.0770
12049	-7.140	1.889	-0.228	0.0026	0.0008	0.0580
12050	-0.720	2.713	-0.001	0.0007	-0.0002	-0.2813
12100	0.211	2.819	0.001	0.0002	-0.0002	-0.1025
12101	0.351	3.040	0.001	-0.0001	-0.0001	0.0184
12102	0.163	3.260	0.000	-0.0000	-0.0001	0.0290
12103	-0.178	3.396	-0.000	-0.0000	-0.0001	0.0918
12104	-1.156	3.531	-0.000	-0.0000	-0.0001	0.2073
12105	-2.819	3.667	-0.000	-0.0000	-0.0000	0.2236
12106	-3.021	3.743	-0.000	-0.0000	-0.0000	-0.0561
12150	-2.856	3.342	-0.000	-0.0000	-0.0000	-0.3035
12151	-2.714	1.263	0.000	-0.0000	-0.0000	-0.2485
12152	-2.573	0.140	0.000	-0.0000	0.0000	-0.0978
12153	-2.431	-0.155	0.000	-0.0000	0.0000	-0.0113
12154	-2.220	-0.035	-0.000	-0.0000	0.0000	0.0179
12155	-1.108	0.001	-0.000	-0.0000	-0.0000	-0.0040
12199	-0.554	-0.026	0.000	-0.0000	0.0000	0.0009
12200	0.000	-0.000	0.000	-0.0000	0.0000	0.0000
12500	-0.653	0.686	-0.000	0.0006	-0.0002	-0.3477
12549	-0.327	-1.932	0.001	0.0003	0.0000	0.0648
12550	0.000	-0.000	0.000	0.0000	0.0000	0.0000
19000	-41.444	-1.604	10.732	-0.1348	-0.1799	-0.6062

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Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1  
 RESTRAINT SUMMARY REPORT: Loads On Restraints  
 Various Load Cases

## LOAD CASE DEFINITION KEY

CASE 1 (HYD) WW+HP  
 CASE 2 (OPE) W+T1+P1  
 CASE 3 (SUS) W+P1  
 CASE 4 (EXP) L4=L2-L3

Filters Used:  
 Show All Restraints  
 Exclude bi-linear translation (soil) restraints

Node	Load Case	FX N.	FY N.	FZ N.	MX N.m.	MY N.m.	MZ N.m.
200		Rigid +Z; Rigid GUI					
	1(HYD)	-52691	132	-175506	0	0	0
	2(OPE)	-3078	-10481	641	0	0	0
	3(SUS)	-17388	-1733	-56227	0	0	0
	4(EXP)	14310	-8748	56869	0	0	0
	MAX	-52691/L1	-10481/L2	-175506/L1			
250		Rigid +Z; Rigid GUI					
	1(HYD)	-10234	-34387	1299	0	0	0
	2(OPE)	-4635	-16408	1657	0	0	0
	3(SUS)	-5691	-19213	912	0	0	0
	4(EXP)	1056	2805	745	0	0	0
	MAX	-10234/L1	-34387/L1	1657/L2			
1200		Rigid ANC					
	1(HYD)	4474302	0	-79877	22758	-164600	-0
	2(OPE)	8719530	0	0	33618	0	-0
	3(SUS)	2675921	0	0	12768	0	-0
	4(EXP)	6043609	0	0	20850	0	-0
	MAX	8719530/L2	0/L2	-79877/L1	33618/L2	-164600/L1	-0/L2
3550		Rigid ANC					
	1(HYD)	13664	-2517748	234	-1221	20339	-14934
	2(OPE)	32383	-5224504	1267	-898	41304	-44596
	3(SUS)	8196	-1512304	148	-701	11514	-8943
	4(EXP)	24187	-3712201	1119	-197	29790	-35653
	MAX	32383/L2	5224504/L2	1267/L2	-1221/L1	41304/L2	-44596/L2
7200		Rigid ANC					
	1(HYD)	-3	-210678	1	3	-356	11
	2(OPE)	-8	-689356	2	9	-994	29
	3(SUS)	-2	-126711	1	2	-214	7
	4(EXP)	-6	-562645	2	7	-780	22

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Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1  
 RESTRAINT SUMMARY REPORT: Loads On Restraints  
 Various Load Cases

Node	Load Case	FX N.	FY N.	FZ N.	MX N.m.	MY N.m.	MZ N.m.
	MAX	-8/L2	-689356/L2	2/L2	9/L2	-994/L2	29/L2
8350		Rigid +Z					
	1(HYD)	-13470	-7792	-51872	0	0	0
	2(OPE)	-1306	-609	-4803	0	0	0
	3(SUS)	-7941	-4744	-30832	0	0	0
	4(EXP)	6634	4135	26029	0	0	0
	MAX	-13470/L1	-7792/L1	-51872/L1			
8400		Rigid +Z					
	1(HYD)	-3183	-5684	-21715	0	0	0
	2(OPE)	-4466	-7360	-28698	0	0	0
	3(SUS)	-1443	-2568	-9819	0	0	0
	4(EXP)	-3023	-4793	-18880	0	0	0
	MAX	-4466/L2	-7360/L2	-28698/L2			
8950		Rigid ANC					
	1(HYD)	-167922	-218	-0	1	2	-867
	2(OPE)	-602897	-557	-1	1	3	-2212
	3(SUS)	-101001	-132	-0	1	1	-523
	4(EXP)	-501896	-425	-0	1	2	-1690
	MAX	-602897/L2	-557/L2	-1/L2	1/L2	3/L2	-2212/L2
9000		Rigid ANC					
	1(HYD)	160570	243	9	1	30	-860
	2(OPE)	583997	620	14	2	47	-2193
	3(SUS)	96566	147	6	1	19	-519
	4(EXP)	487431	473	9	1	28	-1674
	MAX	583997/L2	620/L2	14/L2	2/L2	47/L2	-2193/L2
12200		Rigid ANC					
	1(HYD)	12995	-5	0	-0	0	5
	2(OPE)	65742	-27	0	-0	0	27
	3(SUS)	7815	-3	0	-0	0	3
	4(EXP)	57926	-24	0	-0	0	24
	MAX	65742/L2	-27/L2	0/L2	-0/L2	0/L2	27/L2
12550		Rigid ANC					
	1(HYD)	24672	-446	0	1	0	425
	2(OPE)	125325	-2270	1	2	1	2165
	3(SUS)	14839	-268	0	0	0	256
	4(EXP)	110487	-2002	1	2	1	1909
	MAX	125325/L2	-2270/L2	1/L2	2/L2	1/L2	2165/L2

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Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1  
 FLANGE PEQ REPORT: Flange (Equiv Pressure Method)  
 CASE 2 (OPE) W+T1+P1

Node	Axial Force N.	Bending Moment N.m.	G/C mm.	P Equivalent KPa	Rating Temperature C	Allowable Pressure /Stress	Ratio %	
8050	29753	91202	566.38	10174.62	60.00	9873.29	103.05	*
8100	29753	66110	566.38	9471.25	60.00	9873.29	95.93	
10650								
10700	1086	743	566.38	7525.15	60.00	9873.29	76.22	
11050	3552	1066	566.38	7543.98	60.00	9873.29	76.41	
11100	3552	345	566.38	7523.77	60.00	9873.29	76.20	
11650	356	1813	144.60	10576.13	60.00	9873.29	107.12	*
11700	356	3576	144.60	13544.91	60.00	9873.29	137.19	*

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Impianto di Brindisi - Loc. Mass. Matagiola  
Allegato 1  
FLANGE PEQ REPORT: Flange (Equiv Pressure Method)  
CASE 2 (OPE) W+T1+P1

## Verifica Flangia 20" in accordo a ASME VIII Div.1

### FLANGE LEAKAGE/STRESS CALCULATIONS

Flange Inside Diameter [B] (User to verify) .....(mm.) 488.950  
Flange Thickness [t].....(mm.) 88.900  
Flange Rating (Optional) ..... 600.000

Bolt Circle Diameter .....(mm.) 723.900  
Number of Bolts ..... 24.000  
Bolt Diameter .....(mm.) 41.275  
Bolt Initial Tightening Stress .....( KPa )

Uncompressed Gasket Thickness .....(mm.) 3.200  
Grade of Attached B16\_5 ANSI Flange..... 1.100  
Leak Pressure Ratio [m] ..... 3.000  
Effective Gasket Modulus .....( KPa ) 207000000.000

Externally Applied Moment ..... (optional) ....( N.m. ) 91202.000  
Externally Applied Force ..... (optional) .....( N. ) 29753.000  
Pressure [P].....( KPa ) 7500.000

Disable Stress Calculations (Y/N) ..... N

Flange Type (1-8, see ?-Help or Alt-P to plot) ..... 1.000

Flange Outside Diameter [A].....(mm.) 812.800  
Design Temperature ..... C 60.000

Small End Hub Thickness [g0].....(mm.) 9.525  
Large End Hub Thickness [g1].....(mm.) 60.325  
Hub Length [h].....(mm.) 101.600

Flange Allowable @Design Temperature .....( KPa ) 157889.938  
Flange Allowable @Ambient Temperature .....( KPa ) 157889.938  
Flange Modulus of Elasticity @Design .....( KPa ) 207000000.000  
Flange Modulus of Elasticity @Ambient .....( KPa ) 207000000.000  
Bolt Allowable @Design Temperature .....( KPa ) 172368.922  
Bolt Allowable @Ambient Temperature .....( KPa ) 172368.922  
Gasket Seating Stress [y] .....( KPa ) 69000.000

Flange Allowable Stress Multiplier ..... 1.000  
Bolt Allowable Stress Multiplier (VIII Div 2 4-141) ... 1.000

Disable Leakage Calculations (Y/N) ..... N  
Disable ANSI B16.5 Checks (Y/N) ..... N  
Flange Face OD or Lapjt Cnt OD.....(mm.) 584.200  
Flange Face ID or Lapjt Cnt ID.....(mm.) 488.950  
Gasket Outer Diameter .....(mm.) 679.500  
Gasket Inner Diameter .....(mm.) 533.400  
Nubbin Width .....(mm.) 73.000

CAESAR II 2017 Ver.9.00.00.5900, (Build 160721)  
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Impianto di Brindisi - Loc. Mass. Matagiola  
Allegato 1  
FLANGE PEQ REPORT: Flange (Equiv Pressure Method)  
CASE 2 (OPE) W+T1+P1

Facing Sketch .....	1.000
Facing Column .....	2.000

Flange Type: (Integral Weld Neck)

Effective gasket width parameters:  
Effective gasket seating width, b.....(mm.) 8.9803  
Diameter of gasket load reaction, G....(mm.) 566.2395

SAFETY FACTOR SUMMARY for the different Flange Models analyzed. (SAFETY FACTOR = Allowed/Actual)

SAFETY  
FACTOR

Flexibility/Gasket Compression Model (Leakage)..	2.33
ANSI B16.5/Equivalent Pressure (Stress).....	0.97
ASME Model Operating (Stress).....	1.02
ASME Model Seating (Stress).....	1.07

FLANGE FLEXIBILITY MODEL -----

BOLTED FLANGE CHARACTERISTICS:

Initial Tightening Stress in the Bolt (Not the seating stress): 243391 KPa

Approximate Torque required to induce the above initial stress: 1633 N.m.

GASKET COMPRESSION:                    COMPRESSION  
(mm.)

After Initial Boltup (Ci).....	0.0037817329
Loss-of due to Pressure (Cp).....	0.0009752907
Loss-of due to Applied Moment (Cm)..	0.0003326955
Loss-of due to Applied Force (Cf)...	0.0000153643
Loss-of due to all loads (CL).....	0.0013233505
Initial minus all Losses (Ci-CL)....	0.0024583824
For Leak-Proof Joint (Creq).....	0.0006956522
Excess available (Ci-Creq) .....	0.0030860805

LEAKAGE SAFETY FACTOR: (If less than one then joint leakage is predicted.) (Allowed/Actual)

Pressure Only (Ci-Creq)/Cp .....	3.16
Force Only (Ci-Creq)/Cf .....	200.86
Moment Only (Ci-Creq)/Cm .....	9.28
Pressure+Force+Moment (Ci-Creq)/CL .....	2.33

CAESAR II 2017 Ver.9.00.00.5900, (Build 160721)  
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Impianto di Brindisi - Loc. Mass. Matagiola  
Allegato 1  
FLANGE PEQ REPORT: Flange (Equiv Pressure Method)  
CASE 2 (OPE) W+T1+P1

EQUIVALENT PRESSURE MODEL -----

Equivalent Pressure ( KPa ) ..... 10176.58  
ANSI B16.5 Flange Allowable Pressure Rating . 9845.71

STRESS SAFETY FACTOR: (If less than one then joint failure is predicted.) (Allowed/Actual)

ANSI B16.5/Equivalent Pressure ..... 0.97

ASME SECT VIII DIV 1 STRESS MODEL -----

ACCORDING TO A05 APP 2-14, THE FOLLOWING RIGIDITY FACTORS SHOULD BE LESS THAN 1.0

ASME Rigidity Factor "J", Operating Case ..... 0.4549  
ASME Rigidity Factor "J", Seating Case ..... 0.4304

CALCULATED STRESSES ( KPa )

OPERATING ALLOW SEATING ALLOW  
-----

Longitudinal Hub .. 211590 236835 200183 236835  
Radial Flange ..... 99502 157890 94138 157890  
Tangential Flange . 90468 157890 85591 157890  
Maximum Average ... 155546 157890 147160 157890  
Bolting ..... 150842 172369 50668 172369

"" Indicates Failure for an item.

STRESS SAFETY FACTOR: (If less than one then joint failure is predicted.) (Allowed/Actual)

OPERATING SEATING  
-----

Longitudinal Hub .... 1.12 1.18  
Radial Flange ..... 1.59 1.68  
Tangential Flange ... 1.75 1.84  
Maximum Average ..... 1.02 1.07  
Bolting ..... 1.14 3.40

**Verifica Flangia 4" in accordo a ASME VIII Div.1**

FLANGE LEAKAGE/STRESS CALCULATIONS



CAESAR II 2017 Ver.9.00.00.5900, (Build 160721)  
 Licensed To: TECHFEM SPA

Impianto di Brindisi - Loc. Mass. Matagiola  
 Allegato 1  
 FLANGE PEQ REPORT: Flange (Equiv Pressure Method)  
 CASE 2 (OPE) W+T1+P1

Flange Inside Diameter [B] (User to verify) .....(mm.) 102.362  
 Flange Thickness [t].....(mm.) 38.100  
 Flange Rating (Optional) ..... 600.000

Bolt Circle Diameter .....(mm.) 215.900  
 Number of Bolts ..... 8.000  
 Bolt Diameter .....(mm.) 22.225  
 Bolt Initial Tightening Stress .....( KPa )

Uncompressed Gasket Thickness .....(mm.) 3.200  
 Grade of Attached B16\_5 ANSI Flange..... 1.100  
 Leak Pressure Ratio [m] ..... 3.000  
 Effective Gasket Modulus .....( KPa ) 207000000.000

Externally Applied Moment ..... (optional) ....( N.m. ) 3576.000  
 Externally Applied Force ..... (optional) .....( N. ) 356.000  
 Pressure [P].....( KPa ) 7500.000

Disable Stress Calculations (Y/N) ..... N

Flange Type (1-8, see ?-Help or Alt-P to plot) ..... 1.000

Flange Outside Diameter [A].....(mm.) 273.050  
 Design Temperature ..... C 60.000

Small End Hub Thickness [g0].....(mm.) 5.969  
 Large End Hub Thickness [g1].....(mm.) 25.019  
 Hub Length [h].....(mm.) 63.500

Flange Allowable @Design Temperature .....( KPa ) 137895.141  
 Flange Allowable @Ambient Temperature .....( KPa ) 137895.141  
 Flange Modulus of Elasticity @Design .....( KPa ) 207000000.000  
 Flange Modulus of Elasticity @Ambient .....( KPa ) 207000000.000  
 Bolt Allowable @Design Temperature .....( KPa ) 172368.922  
 Bolt Allowable @Ambient Temperature .....( KPa ) 172368.922  
 Gasket Seating Stress [y] .....( KPa ) 69000.000

Flange Allowable Stress Multiplier ..... 1.000  
 Bolt Allowable Stress Multiplier (VIII Div 2 4-141) ... 1.000

Disable Leakage Calculations (Y/N) ..... N  
 Disable ANSI B16.5 Checks (Y/N) ..... N  
 Flange Face OD or Lapjt Cnt OD.....(mm.) 157.200  
 Flange Face ID or Lapjt Cnt ID.....(mm.) 102.362  
 Gasket Outer Diameter .....(mm.) 190.500  
 Gasket Inner Diameter .....(mm.) 131.800  
 Nubbins Width .....(mm.) 29.350  
 Facing Sketch ..... 1.000  
 Facing Column ..... 2.000

CAESAR II 2017 Ver.9.00.00.5900, (Build 160721)  
Licensed To: TECHFEM SPA

Impianto di Brindisi - Loc. Mass. Matagiola  
Allegato 1  
FLANGE PEQ REPORT: Flange (Equiv Pressure Method)  
CASE 2 (OPE) W+T1+P1

Flange Type: (Integral Weld Neck)

Effective gasket width parameters:  
Effective gasket seating width, b.....(mm.) 6.3500  
Diameter of gasket load reaction, G....(mm.) 144.5000

SAFETY FACTOR SUMMARY for the different Flange Models analyzed. (SAFETY FACTOR = Allowed/Actual)

SAFETY FACTOR

Flexibility/Gasket Compression Model (Leakage).. 3.14  
ANSI B16.5/Equivalent Pressure (Stress)..... 0.73  
ASME Model Operating (Stress)..... 1.06  
ASME Model Seating (Stress)..... 1.45

FLANGE FLEXIBILITY MODEL -----

BOLTED FLANGE CHARACTERISTICS:

Initial Tightening Stress in the Bolt (Not the seating stress): 331686 KPa

Approximate Torque required to induce the above initial stress: 299 N.m.

GASKET COMPRESSION: COMPRESSION (mm.)

After Initial Boltup (Ci)..... 0.0027602550

Loss-of due to Pressure (Cp)..... 0.0003641214  
Loss-of due to Applied Moment (Cm).. 0.0002930551  
Loss-of due to Applied Force (Cf)... 0.0000010539  
Loss-of due to all loads (CL)..... 0.0006582304

Initial minus all Losses (Ci-CL).... 0.0021020246  
For Leak-Proof Joint (Creq)..... 0.0006956522  
Excess available (Ci-Creq) ..... 0.0020646029

LEAKAGE SAFETY FACTOR: (If less than one then joint leakage is predicted.) (Allowed/Actual)

Pressure Only (Ci-Creq)/Cp ..... 5.67  
Force Only (Ci-Creq)/Cf ..... 1958.97  
Moment Only (Ci-Creq)/Cm ..... 7.05

Pressure+Force+Moment (Ci-Creq)/CL ..... 3.14

EQUIVALENT PRESSURE MODEL -----

CAESAR II 2017 Ver.9.00.00.5900, (Build 160721)  
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Impianto di Brindisi - Loc. Mass. Matagiola  
Allegato 1  
FLANGE PEQ REPORT: Flange (Equiv Pressure Method)  
CASE 2 (OPE) W+T1+P1

Equivalent Pressure ( KPa ) ..... 13557.92  
ANSI B16.5 Flange Allowable Pressure Rating . 9845.71

STRESS SAFETY FACTOR: (If less than one then joint failure is predicted.) (Allowed/Actual)

ANSI B16.5/Equivalent Pressure ..... 0.73

ASME SECT VIII DIV 1 STRESS MODEL -----

ACCORDING TO A05 APP 2-14, THE FOLLOWING RIGIDITY FACTORS SHOULD BE LESS THAN 1.0

ASME Rigidity Factor "J", Operating Case ..... 0.1610  
ASME Rigidity Factor "J", Seating Case ..... 0.1409

CALCULATED STRESSES ( KPa )

OPERATING ALLOW SEATING ALLOW  
-----

Longitudinal Hub ..	115833	206843	101336	206843
Radial Flange .....	101440	137895	88745	137895
Tangential Flange .	74456	137895	65138	137895
Maximum Average ...	108636	137895	95040	137895
Bolting .....	162796	172369	91975	172369

"" Indicates Failure for an item.

STRESS SAFETY FACTOR: (If less than one then joint failure is predicted.) (Allowed/Actual)

OPERATING SEATING  
-----

Longitudinal Hub ....	1.79	2.04
Radial Flange .....	1.36	1.55
Tangential Flange ...	1.85	2.12
Maximum Average .....	1.27	1.45
Bolting .....	1.06	1.87