

**10 MWe Solar Thermal
Central Receiver Pilot Plant
Solar Facilities Design Integration**

**PSS FINAL DESIGN CALCULATIONS
BOOK 19 OF 26--THERMAL OIL PIPING
CONSTRUCTION PACKAGE 9 (RADL ITEM 7-8)**

September 1980

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**STEARNS-ROGER ENGINEERING CORP
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**PREPARED FOR THE
U.S. DEPARTMENT OF ENERGY
SOLAR ENERGY
UNDER CONTRACT DE-AC-03-79SF10499**

PREFACE

This document is provided by McDonnell Douglas Astronautics Company (MDAC) in accordance with Department of Energy Contract Number DE-AC03-79SF10499, Reports and Deliverables List (RADL Item 7-8). The report was prepared by Stearns-Roger Engineering Corporation under MDAC Subcontract Number 78012035.

The Plant Support Subsystem Final Design Calculations (RADL Item 7-8) are arranged in a twenty-six book volume as shown on the master Table of Contents.

Book 19 of this document is provided in support of the Mechanical Equipment Installation, Construction Package No. 9 and includes isometric drawings, weight, thermal, seismic, and stress analyses for the thermal oil piping design.

Questions concerning this report should be directed to R.J. Perkins at (714) 896-3073.

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Note: This document includes design calculation for the receiver tower steel (Construction Package 5A) which was previously submitted by MDAC letter A3-228-EP-RJP-46, dated 16 January 1980, and therefore, is not included in this submittal. Please transfer your copy to your RADL ITEM 7-8 file, marking it as BOOK 4 of 25.

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DESIGN CALCULATIONS (RADL ITEM 7-8)

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DESIGN CALCULATIONS (RADL ITEM 7-8)

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PAGE

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Note: This document was previously submitted by MDAC Letter A3-228-EP-RJP-262, dated 7 March 1980 and therefore is not included in this submittal. Please transfer your copy to your RADL ITEM 7-8 file, marking it as BOOK 25 of 25.

BOOK-26-MDAC GENERAL ANALYSIS AND
BACKGROUND DATA

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- 2 Receiver Subsystem Calculations
- 3 Thermal Storage Subsystems Calculations
- 4 Analysis of Plant Cost Reduction Options
- 5 Collector Field Design and Plant Power Calculations
- 6 Miscellaneous Plant Calculations

Stearns-Roger

PIPE STRESS ANALYSIS REPORT

FOR

IOMWe SOLAR PILOT PLANT

C-21700

TSU OIL EXTRACTION AND CHARGING

PIPING SYSTEM

TO-3, 9, 10, 11, 21-BBA

CONDITIONS ANALYZED / ANAL. I.D. NO.

THERMAL T-21700-TO-10-A-7/B-1/C-6

DEAD WEIGHT W-21700-TO-10-A-8

PRESSURE P-21700-TO-10-A-0

SEISMIC X-TO-10-A-2/B-1/C-1

CODE REFERENCE: ANSI B31.1-1973

W/ ADDENDA B.

(SUMMER 1979)

ANALYST G.H. MAY

DATE 7-14-80

TO -10/TO-22

DIVISION USAGE					
MM	P	PP	SH	FI	SP

Stearns-Roger
INCORPORATED
ENGINEERING STANDARD

STANDARD NUMBER
EE16.01.2

APPROVALS
Des. Sect. _____
Sect. Supv. _____
Div. _____

PIPING ANALYSIS RESULTS

PAGE 1 OF 1
ISSUED 8-31-73
REVISED 4-15-74

Date JAN. 30, 1980

TO: T.E. OLSON

FROM: G. H. MAY, Piping Engineering Group

Client DEPT. OF ENERGY Project SOLARI Job No. C-21700

Pipe Line Analyzed TSS OIL EXTRACTION & CHARGING / TO-3, 9, 10, 11, 21, 22, 24 & 25-684

Reference Dwg. P13-11, 12 & 13A

This piping has been analyzed for the THERMAL, DEAD WEIGHT & PRESSURE loading condition and is found to be:

- Satisfactory, as is.
- Satisfactory, with comments noted.
- Unsatisfactory - See Comments.

COMMENT (1) ALL PIPE STRESSES ARE SATISFACTORY. (2) FORCES AND MOMENTS ON SOME EQUIPMENT HAS INCREASED MORE THAN THE ALLOWABLE 15% BUT ARE STILL REASONABLE AND SHOULD BE ACCEPTED.

(3) SOME MINOR REVISIONS ARE MARKED ON THE ISOMETRICS.

(4) TO-10 CASE A THERMAL ALL LINES HOT, CASE B SAME EXCEPT INDIVIDUAL LEADS @ TOP & PARALLEL LEAD HOT. CASE C THERMAL - SAME AS CASE A EXCEPT 2" SETTLEMENT.

RECOMMENDATION (1) USE THE REFERENCED ROUTING W/ REVISIONS NOTED.

(2) SUBMIT THE FORCES AND MOMENTS TO ROCKEYDNE FOR APPROVAL.

(3) PROCEED WITH PIPE SUPPORT DESIGN.

ATTACHS: PIPE STRESS SUMMARY REPORT, SUMMARY OF FORCES & MOMENTS

G. H. MAY
Signature

Copies to: Sender
Analysis Folder - Job File
Piping Engrg. Supervisor TCT
R.E. NOBLE W/ ISOMETRICS

DIVISION USAGE					
MM	P	PP	SH	FI	SP

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INCORPORATED
ENGINEERING STANDARD

STANDARD NUMBER
EE16.01.8

APPROVALS
Des. Sect. SV 2/21/75
Sect. Supv. [Signature]
Div. _____

PIPE STRESS SUMMARY REPORT

ANSI B31.1 - 1973 EDITION

PAGE 1 OF 1
ISSUED 5/27/75
REVISED _____

10MWE SOLAR PILOT PLANT
Job Name
TSS OIL PIPING / 4" - TO - 22, 24 & 25 - BBA
System/Pipe Line Name

C-21700
Job No.
TO-22
Analysis No.

1. Loading Conditions Analyzed

Pressure X
Weight X
Thermal Expansion X
Sustained Mech. Loads _____
Occasional Loads _____

Analysis Ident. Code
P-TO-22-A-0
W-TO-22-A-6
T-TO-22-A-8

2. Stress Evaluation (Code Equations)

Eq. (11) $\frac{Pd^2}{Do^2-d^2} + \frac{0.75 iM_A}{z} \leq 1.0 S_h$ 1738 psi \leq 15000 psi

Material: - ASTM A106 Gr.B

PRESS = 115 psig \Rightarrow SLP = 461 psi
Temp = 580°F @ Pt. 882

Eq. (12) $\frac{Pd^2}{Do^2-d^2} + \frac{0.75 iM_A}{z} + \frac{0.75 iM_B}{z} \leq K S_h$ N.A. psi \leq _____ psi

Material: -

Temp =

Eq. (13) $S_E = \frac{iM_C}{z} \leq S_A$ 15361 psi \leq 20250 psi

Material: - ASTM A106 Gr.B

Temp = 580°F @ Pt. 849

Eq. (14) $\frac{Pd^2}{Do^2-d^2} + \frac{0.75 iM_A}{z} + \frac{iM_C}{z} \leq (S_h + S_A)$ 16055 psi \leq 35250 psi

Material: - ASTM A106 Gr.B

Temp = 580°F @ Pt. 849

3. Stress Evaluation (Local or Special)

Loading	Analysis Ident. Code	Calculated Stress (psi)	Allowable Stress (psi)
_____	_____	_____	_____
_____	_____	_____	_____

REMARKS:

1) ALL PIPE STRESSES ARE LESS THAN THE ALLOWABLES.

[Signature]
Prepared by

JAN. 30, 1980
Date

[Signature]
Approved By

1-30-80
Date

DIVISION USAGE						Stearns-Roger <small>INCORPORATED</small> ENGINEERING STANDARD		STANDARD NUMBER	
MM	P	PP	SH	FI	SP			EE16.01.8	
APPROVALS						PIPE STRESS SUMMARY REPORT			
Des. Sect. <u>HY 2nd</u>						ANSI B31.1 - 1973 EDITION			
Sect. Supv. <u>W. J. ...</u>						PAGE <u>1</u> OF <u>1</u>			
Div. _____						ISSUED 5/27/75			
						REVISED			

10MWE SOLAR PILOT PLANT
Job Name

TSS OIL PIPING / TO-3, 9, 10, 11 & 21
System/Pipe Line Name

C-21700
Job No.

TO-10
Analysis No.

1. Loading Conditions Analyzed

Analysis Ident. Code

Pressure X
 Weight X
 Thermal Expansion X
 Sustained Mech. Loads _____
 Occasional Loads _____

P-TO-10-A-0
W-TO-10-A-B
T-TO-10-C-6

2. Stress Evaluation (Code Equations)

Eq. (11) $\frac{Pd^2}{Do^2-d^2} + \frac{0.75 iM_A}{z} \leq 1.0 S_h$ 2737 psi \leq 5000 psi

Material: - ASTM A106 GR. B Temp = 580°F @ Pt. 825N
 PRESS = 115 PSIG \Rightarrow SLP = 762 PSI

Eq. (12) $\frac{Pd^2}{Do^2-d^2} + \frac{0.75 iM_A}{z} + \frac{0.75 iM_B}{z} \leq K S_h$ N.A. psi \leq _____ psi

Material: - Temp = _____

Eq. (13) $S_E = \frac{iM_C}{z} \leq S_A$ 22387 psi \neq 20250 psi

Material: - ASTM A106 GR. B Temp = 580°F @ Pt. 530F

Eq. (14) $\frac{Pd^2}{Do^2-d^2} + \frac{0.75 iM_A}{z} + \frac{iM_C}{z} \leq (S_h + S_A)$ 23251 psi \leq 35250 psi

Material: - ASTM A106 GR. B Temp = 580°F @ Pt. 530F

3. Stress Evaluation (Local or Special)

<u>Loading</u>	<u>Analysis Ident. Code</u>	<u>Calculated Stress (psi)</u>	<u>Allowable Stress (psi)</u>
_____	_____	_____	_____
_____	_____	_____	_____

REMARKS:

1) ALL PIPE STRESSES ARE LESS THAN THE ALLOWABLES WHEN ADDITIVE STRESSES ARE USED. (EQ.14)

Prepared by [Signature] 1-30-80
Date

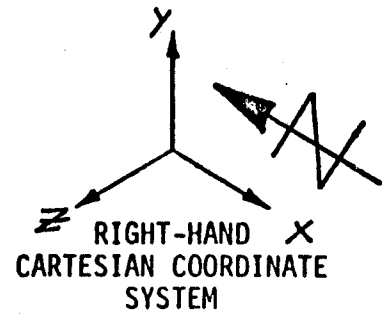
Approved By [Signature] 1-30-80
Date

CUSTOMER: DEPT. OF ENERGY
 PROJECT: SOLAR I
 JOB NO: C-21700
 BY: GHM DATE: JAN. 29, 1980
 REF. DWGS: P13-11, 12 & 13 A
 ANALYSIS CODE: T-T0-10-A-7/B-1/C-6
 W-T0-10-A-8

SUMMARY OF FORCES & MOMENTS
 ON SYSTEM TERMINAL EQUIPMENT
 (SYSTEM)

TSS OK PIPING AT TSS FILTERS
 10"-T0-3-BBA

THE REPORTED REACTIONS BASED ON A THERMAL
 EXPANSION ANALYSIS FROM ...70°F TO 580°F
 USING E_c THE COLD MOD. OF ELASTICITY, AND
% COLD SPRING.



DIVISION USAGE				
MM	P	PP	SH	FI
X				SP

APPROVALS

Des. Sect. *[Signature]*
 Sect. Supv. *[Signature]*
 Div. *[Signature]*

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 EE 16.01.7

SUMMARY OF FORCES & MOMENTS
 PER. ANSI B31.1-1973 PWR. PIPING CODE

ISSUED 2/28/74
 REVISED 4/18/78
 PAGE 1 OF 1

EQUIPMENT CONNECTIONS	FORCES (LBS)					MOMENTS (FT.-LBS)			
	LOC. NO.	X	Y	Z	RESULTANT	X	Y	Z	RESULTANT
TSS FILTER PF-T0-3-302	CASE A THERMAL 5	-1487	1048	-3520	3962	292	-6630	-605	6664
AT FLANGE CONN.	CASE B THERMAL 5	-2229	-8	-1435	2651	2656	-13614	-5042	14758
4'9" EAST OF	CASE C THERMAL 5	-2235	251	-1553	2733	1400	-13636	-5138	14639
INTERFACE 97I	CASE A WEIGHT 5	21	-343	10	344	207	152	-11	257
TSS FILTER PF-	CASE A THERMAL 45	320	-7136	2948	3175	1772	2934	4232	5446
T0-3-301 @ FLANGE	CASE B THERMAL 45	1364	33	917	1644	-2249	5686	4479	7580
CONN., 4'-9" EAST OF	CASE C THERMAL 45	1351	-265	1019	1713	-588	5636	4378	7161
INTERFACE 98I	CASE A WEIGHT 45	-19	-341	-8	342	205	-125	7	240

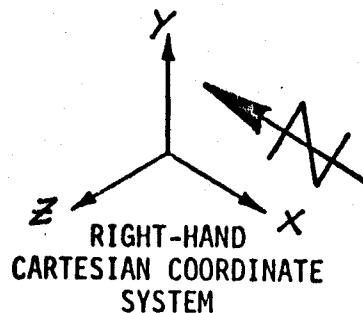
CUSTOMER: DEPT. OF ENERGY
 PROJECT: SOLAR I
 JOB NO: C-21700
 BY: GHM DATE: JAN. 29, 1980
 REF. DWGS: P13-11, 12413 A
 ANALYSIS CODE: T-70-10-A-7/B-1/C-6

W-70-10-A-8

SUMMARY OF FORCES & MOMENTS
 ON SYSTEM TERMINAL EQUIPMENT
 (SYSTEM)

TSS OIL PIPING AT PRE HEATERS
8"-70-21-BBA

THE REPORTED REACTIONS BASED ON A THERMAL
 EXPANSION ANALYSIS FROM ...70°F TO 580°F
 USING E_c, THE COLD MOD. OF ELASTICITY, AND
0.0% COLD SPRING.



DIVISION USAGE				
MM	P	PP	SH	FI
X				SP
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Dist. Sect.	[Signature]			
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Dist. Div. Eng.	[Signature]			

SUMMARY OF FORCES & MOMENTS
 PER. ANSI B31.1-1973 PWR. PIPING CODE

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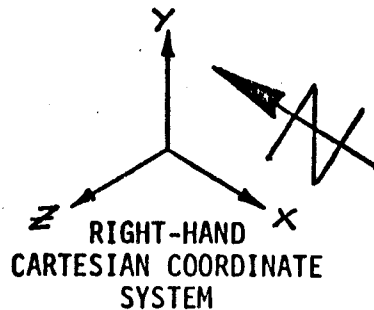
EQUIPMENT CONNECTIONS	FORCES (LBS)					MOMENTS (FT.-LBS)			
	LOC. NO.	X	Y	Z	RESULTANT	X	Y	Z	RESULTANT
TSS PREHEATER	CASE A THERMAL 290	287	-27	641	703	106	6439	-1325	6575
E-303, SKID SA-305	CASE B THERMAL 290	228	117	386	463	-464	5589	-1023	5701
1'0" EAST OF	CASE C THERMAL 290	223	138	354	441	-543	5547	-996	5662
INTERFACE 67I	CASE A WEIGHT 290	-2	-313	0	313	600	-35	-22	602
PREVIOUSLY APPROVED LOADS	67I	185	-310	295	466	2308	4245	-856	4907
TSS PREHEATER E-	CASE A THERMAL 265	-439	-168	565	735	-663	9635	2458	9966
304, SKID SA-306	CASE B THERMAL 265	350	152	-346	515	-598	8379	-1954	8625
1'0" EAST OF	CASE C THERMAL 265	341	149	-319	490	-589	8280	-1901	8516
INTERFACE 66I	CASE A WEIGHT 265	2	-308	0	308	582	46	50	586
PREVIOUSLY APPROVED LOADS	66I	293	-513	-268	649	3873	6631	-1492	7823

CUSTOMER: DEPT. OF ENERGY
 PROJECT: SOLAR I
 JOB NO: C-21700
 BY: GHM DATE: JAN. 29, 1980
 REF. DWGS: P13-11, 12 & 13 A
 ANALYSIS CODE: T-T0-10-A-7/B-1/C-6
 W-T0-10-A-B

SUMMARY OF FORCES & MOMENTS
 ON SYSTEM TERMINAL EQUIPMENT
 (SYSTEM)

TSS OIL PIPING - EXTRACTION PUMPS
8"-T0-10-BBA

THE REPORTED REACTIONS BASED ON A THERMAL EXPANSION ANALYSIS FROM ...70°F TO 580°F USING E_c, THE COLD MOD. OF ELASTICITY, AND% COLD SPRING.



DIVISION USAGE				
MM	P	PP	SH	FI
X				SP

APPROVALS
 Dist. Secy
 Sect. Supv
 Div. Eng

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SUMMARY OF FORCES & MOMENTS
 PER. ANSI B31.1-1973 PWR. PIPING CODE

STANDARD NUMBER
 EE 16.01.7

ISSUED 2/28/74
 REVISED 4/18/78

PAGE 1 OF 1

EQUIPMENT CONNECTIONS	LOC. NO.	FORCES (LBS)				MOMENTS (FT.-LBS)			
		X	Y	Z	RESULTANT	X	Y	Z	RESULTANT
EXTRA. PUMP P-303	305	-145	85	-361	398	-183	-443	582	754
SUCTION FLANGE	305	-143	83	-357	394	-180	-444	586	757
5'8" EAST OF	305	-169	164	-518	569	-356	96	142	575
INTERFACE 43I	305	1	123	3	123	-44	19	-60	77
EXTRA. PUMP P-304	415	186	92	-446	492	-198	668	-559	893
SUCTION FLANGE	415	186	90	-441	487	-195	682	-561	904
5'8" EAST OF	415	279	210	-822	893	-453	335	-375	677
INTERFACE 44I	415	0	121	-3	121	-44	-20	63	79
PUMP ALLOWABLES	-	919	552	1103	-	1500	1615	3000	-

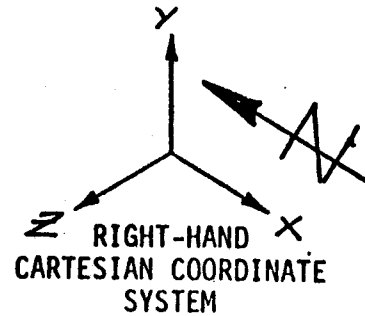
CUSTOMER: DEPT. OF ENERGY
 PROJECT: SOLAR I
 JOB NO: C-21700
 BY: GHM DATE: JAN. 30, 1980
 REF. DWGS: P13-11, 12 & 13 A
 ANALYSIS CODE: T-TO-10-A-7/B-1/C-6

W-TO-10-A-B

SUMMARY OF FORCES & MOMENTS
 ON SYSTEM TERMINAL EQUIPMENT
 (SYSTEM)

TSS OIL PIPING AT TSU NOZZLES
10"-TO-3&9-BBA

THE REPORTED REACTIONS BASED ON A THERMAL
 EXPANSION ANALYSIS FROM ...70...°F TO 580°F
 USING E_c , THE COLD MOD. OF ELASTICITY, AND
0...% COLD SPRING.



DIVISION USAGE				
MM	P	PP	SH	FI
X				SP

APPROVALS
 Des. Sec'y: *[Signature]*
 Sect. Supv: *[Signature]*
 Div. Mgr: *[Signature]*

Stearns-Roger
 INCORPORATED
 ENGINEERING STANDARD

SUMMARY OF FORCES & MOMENTS
 PER. ANSI B31.1-1973 PWR. PIPING CODE

EQUIPMENT CONNECTIONS	FORCES (LBS)					MOMENTS (FT.-LBS)				
	LOC. NO.	X	Y	Z	RESULTANT	X	Y	Z	RESULTANT	
TSU EXTRACTION	CASE A THERMAL	575	-110	1045	810	1327	-1621	-1361	1953	2880
NOZZLE V-303	CASE B THERMAL	575	-101	1042	853	1350	-1910	-1718	2006	3259
INTERFACE 39I	CASE C THERMAL	575	-178	2793	1603	3226	5839	-3184	5250	8474
	CASE A WEIGHT	575	-7	-1072	12	1072	-2645	23	-248	2657
PREVIOUSLY APPROVED LOADS		-	-441	-3451	-529	3519	-9873	3740	10537	14916
TSU CHARGING	CASE A THERMAL	75	-68	-132	1095	1105	3264	-1755	889	3811
NOZZLE V-303	CASE D THERMAL	75	-283	-349	1553	1617	4511	-4382	736	6332
INTERFACE 21I	CASE C THERMAL	75	-157	440	1154	1245	7995	-2220	2711	8729
	CASE A WEIGHT	75	6	-1334	-33	1334	-1278	293	-712	1492
PREVIOUSLY APPROVED LOADS		-	1319	-1297	1497	2380	3862	-5651	3837	7847

STANDARD NUMBER
 EE 16.01.7

PAGE 1 OF 1
 ISSUED 2/28/74
 REVISED 4/18/78

CUSTOMER: DEPT. OF ENERGY
 PROJECT: SOLAR I
 JOB NO: C-21700
 BY: G.H.C. DATE: JAN. 30, 1980
 REF. DWGS: P13-11, 12 & 13 A
 ANALYSIS CODE: T-T0-10-A-7/8-1/C-6
 W-T0-10-A-8

SUMMARY OF FORCES & MOMENTS
 ON SYSTEM TERMINAL EQUIPMENT
 (SYSTEM)

TSS OIL PIPING AT CONDENSER
8"-T0-9-BBA

DIVISION USAGE				
MM	P	PP	SH	FI
X				SP

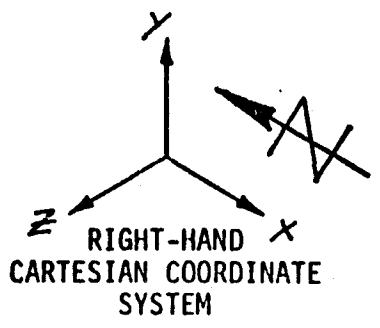
APPROVALS
 Des. Secy: *[Signature]*
 Sect. Supv: *[Signature]*
 Div. Mgr: *[Signature]*

Stearns-Roger
 INCORPORATED
 ENGINEERING STANDARD

STANDARD NUMBER
 EE 16.01.7

SUMMARY OF FORCES & MOMENTS
 PER. ANSI B31.1-1973 PWR. PIPING CODE

PAGE 1 OF 1
 ISSUED 2/28/74
 REVISED 4/18/78



THE REPORTED REACTIONS BASED ON A THERMAL EXPANSION ANALYSIS FROM ...70°F TO 580°F USING E_c THE COLD MOD. OF ELASTICITY, AND% COLD SPRING.

EQUIPMENT CONNECTIONS	LOC. NO.	FORCES (LBS)				MOMENTS (FT.-LBS)			
		X	Y	Z	RESULTANT	X	Y	Z	RESULTANT
CONDENSER ANCHOR	CASE A THERMAL 725	318	-162	-328	485	372	2805	-1802	3355
E-301, SKID	CASE B THERMAL 725	257	-15	288	386	1675	3379	-1332	3999
SA-303, 10" EAST	CASE C THERMAL 725	241	19	228	332	1286	3173	-1263	3649
CC INTERFACE 35I	CASE A WEIGHT 725	-2	195	-11	195	-918	-52	-133	929
PREVIOUSLY APPROVED LOADS	35I	281	-297	-397	570	1740	2072	-1722	3207
CONDENSER ANCHOR	CASE A THERMAL 745	260	-124	-272	397	-249	1092	-1509	1879
E-302, SKID SA-	CASE B THERMAL 745	372	-483	-1417	1543	-1594	2473	-2000	3558
302, 10" EAST OF	CASE C THERMAL 745	304	-305	-1146	1224	-1636	2027	-1637	3077
INTERFACE 36I	CASE A WEIGHT 745	0	239	30	241	-990	27	-10	991
PREVIOUSLY APPROVED LOADS	36I	432	-352	-535	772	-1042	3960	-3073	5119

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PAGE 1

JOB NO. C-21700 DATE 7-9-80 BY GMM CHK.

CUSTOMER DOE PROJECT SOLAR

SUBJECT TSU PIPING (T-3, 9, 10, 11, 21)

A REVIEW OF THE FINAL PIPE ROUTING AND SUPPORTS VERSUS THE FINAL ANALYSIS RUNS
T-TO-10-A-7/B-1/C-6
W-TO-10-A-8
X-TO-10-A-2/B-1/C-1

HAS BEEN MADE. MOST CHANGES ARE MINOR AND DO NOT SIGNIFICANTLY EFFECT THE ANALYSIS RESULTS. FOLLOWING IS A LIST OF THE REVISIONS, AND CALCULATIONS AS TO THEIR EFFECT.

1. TUFBV-2 REVISED FROM 290# TO 190#
LENGTH FROM 1' 7¹/₁₆" TO 2' 3¹/₁₆"
WT. OF PIPE ONLY 40.5#/FT. TOTAL WEIGHT CHANGE
= 290-190 - 40.5(1' 4⁷/₈") = 43#
HGR. H-TO-11-2 DESIGNED FOR 2268#. THIS IS A 1.9% CHANGE AND HAS NO REAL EFFECT.
RECOMMENDATION: NO REVISION.

2. TUFEV REVISED FROM 290# TO 190#
LENGTH FROM 1' 7¹/₁₆" TO 2' 13¹/₁₆"
EFFECT IS 43# REDUCTION, SEE TUFBV-2
TUFES REVISED FROM 290# TO 1114#
LENGTH FROM 1' 7¹/₁₆" TO 2' 4"
EFFECT IS INCREASE OF 1114-290-40.5(8⁵/₁₆") = 796#

WEIGHT LOAD ON ANCHOR IN ANALYSIS IS 1334#
WHICH MEANS IT TAKES LOAD OF 2 VALVES @ 290# + 1044 / 76.7 = 13.6'
OF PIPE. THUS VIRTUALLY THE ENTIRE WEIGHT INCREASE WILL GO TO THE ANCHOR. MAX. ANALYZED WEIGHT STRESS IS 893 psi. THUS INCREASE OF 196-43 = 753# SHOULD ONLY INCREASE STRESS BY 50% OR TO 1400 PSI. OK AS IS.

JOB NO. C-21700 DATE 7-9-80 BY GHM CHK.
CUSTOMER OOE PROJECT SOLARI
SUBJECT TSU PIPING TO-3, 9, 10, 11 & 21

3. TFE1-1 DELETED 160#
TFE15-1 REVISED FROM 290# TO 667#
LENGTH FROM 1'5⁹/₁₆" TO 1'11"
WT. PIPE ONLY = 28.6#/FT
NET INCREASE = 667-290 - (5⁷/₁₆)/12 (28.6) = 364#
TOTAL LENGTH OF RUN FROM 8'9" TO 7'10"
REDUCE WT. BY (11/12) 54.4#/FT = 50#
ELBOW SUPPORT MOVED TO BELOW RISER. IF RIGID
FLOOR SUPPORT TAKES ALL LOAD FROM RISER, SPRING
SUPPORT & ANCHOR MUST SUPPORT TFE15-1 & 5'11" PIPE
= 667# + 25.8(1'11") + 54.8(5'11") = 1041#
OLD LOAD SPRING = 640# DN
OLD LOAD ANCHOR = 123# UP
INCREASE SPRING LOAD TO 900# (140# TO ANCHOR &
RIGID FLOOR SUPPORT.

4. TFE2-2 DELETED
TFE15-1 REVISED
SUPPORT LOCATIONS REVISED. (SEE #3)
WRITE TO ROCKETDYNE

5. TUF1CV REVISED FROM 290# TO 190#
LENGTH FROM 1'7⁴/₁₆" TO 2'3¹/₁₆"
NET DECREASE OF 43#
TUF1BV-1 SAME NET DECREASE OF 43#
TUF1S INCREASE FROM 290# TO 1114#. ATTACHED DIRECTLY
TO TANK. NO EFFECT ON SUPPORTS.
HGR. H-TO-10-13 DESIGNED FOR 1370#
H-TO-9-1 DESIGNED FOR 1356#
3% CHANGE. NOT SIGNIFICANT ON VSH.
RECOMMEND NO CHANGES TO HANGERS.

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PAGE 3

JOB NO. C-21700 DATE 7-9-80 BY GMM CHK.
CUSTOMER DOE PROJECT SOLARI
SUBJECT TSU PIPING (TO-39, 1011 & 21)

6. TFFIS-2 DELETED 290# & 1'7 $\frac{1}{2}$ "
PIPE RUN REDUCED FROM 6'7" TO 2'3"
TOTAL WT. REDUCTION = 290 + 36.2(1'7 $\frac{1}{2}$ ") + 76.7(2'3 $\frac{5}{16}$ ")
= 290 + 59 + 207 = 556#

ORIGINAL LOAD HGR. H-TO-3-4 1011#
ORIGINAL LOAD ON ANCHOR 343#
REDUCE HGR TO 1011 - 556/2 = 773#
REDUCE ANCHOR TO 343 - 556/2 = 65#

7. TFFIS-1 DELETED
PIPE RUN REDUCED

EFFECT IS LOSS OF 556# (SEE #6.)

ORIGINAL LOAD H-TO-3-5 981# REV. LOAD = 703#
ORIGINAL LOAD ANCHOR 341# REV. LOAD = 63#

JOB NO. C-21700 DATE 7-9-80 BY GHM CHK. _____
 CUSTOMER DOE PROJECT SOLARI
 SUBJECT TSU PIPING TO-3,9,10,11 & 21

SEISMIC ANALYSES

The PIPING SYSTEM IS TOO LARGE FOR ONE SEISMIC ANALYSIS. THUS THE PIPE WAS BROKEN INTO 3 CASES A, B & C.

CASE A

PTS 5 TO 45, 26-265 & 290, & 50 TO 75.

$\sigma_x = 12911 \text{ psi}$, $\sigma_z = 11492 \text{ psi}$, $\sigma_y = 7715 \text{ psi}$, $\sigma_{TOTAL} = 14367 \text{ psi MAXIMUM}$

CASE B

PTS. 305 TO 415, 370 & 575

$\sigma_{TOTAL} = 12005 \text{ psi MAXIMUM}$

CASE C

PTS 535 TO 560, 725 TO 745 & 655 TO 75

$\sigma_x = 13170 \text{ psi}$, $\sigma_z = 7850 \text{ psi}$, $\sigma_y = 9474 \text{ psi}$ $\sigma_{TOTAL} = 13687 \text{ psi MAX}$

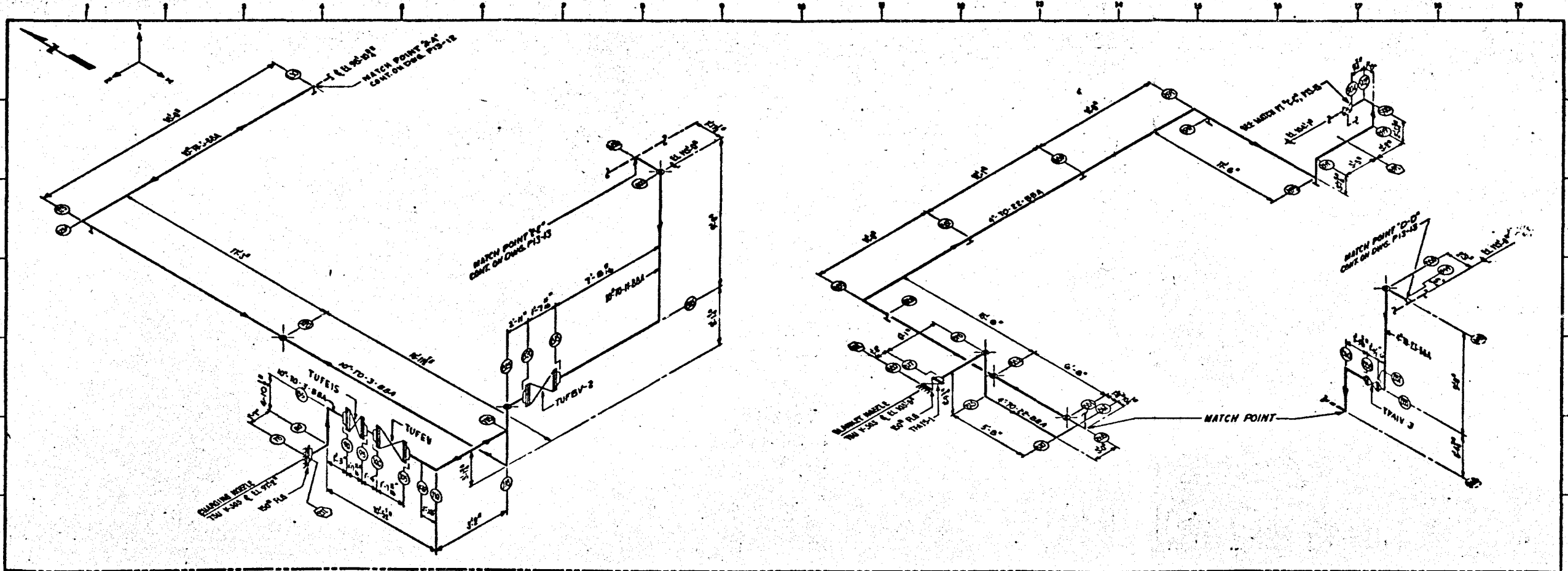
These are all $\frac{1}{2}$ SSE w/ .125g @ 330 cps.

$\sigma_{ALLOW} = 18000 \text{ psi} < \sigma_{WT} + \sigma_{SLP} + \sigma_{SEISMIC}$

$\sigma_{WT MAX} = 1975 \text{ psi}$

SLP = 685 psi on 8" PIPE 762 psi on 10" PIPE

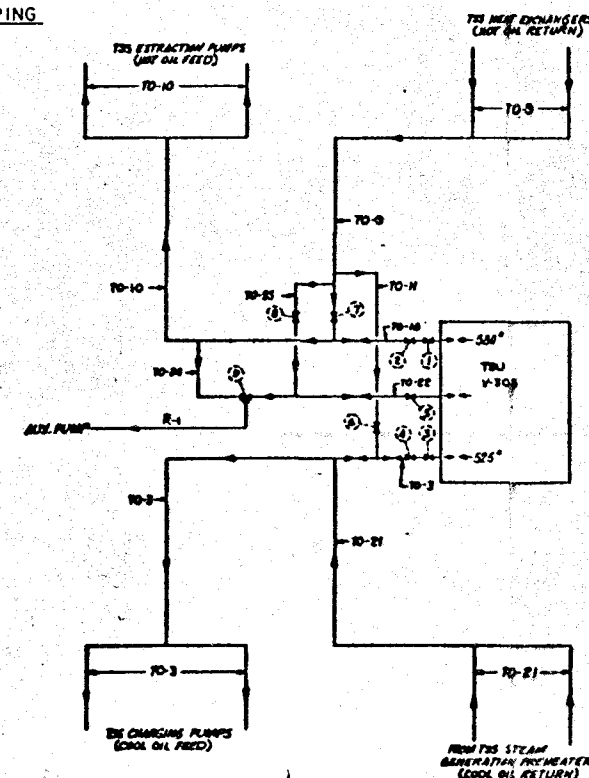
THUS ALL STRESSES SATISFACTORY.



PROCESS OPERATIONS DESCRIPTION FOR TSU CONTROL AND BY-PASS PIPING

MODE	ANALYSIS FLOW CONDITION						REMARKS
	LINE #	FROM	TO	TEMP. °F	ANAL. DESIG. PRESS. PSIA	VALVE POSITION	
A COLD START-UP	TO-11 TO-9 TO-8	TO-9 V4 HEAT EXCH.	TO-3 CHG. PUMPS TO-11	AMB. - 525	115 115	VG-O	THIS MODE FOR CHARGING EQUIP. CHECK AT 525° MAX. CHANGE TO CHARGING MODE
(NOTE: FOR MODE A, TSU AND OTHER BY-PASS PIPING ANB.)							
B CHARGING	TO-3	TSU	CHG. PUMPS	525	115	V3-O, V4-O	NORMAL CHARGING MODE
B1 MODE B WITH:	TO-9 TO-11	HEAT EXCH. PREHEATER	TO-22 TSU AUX. PUMP	580 515 525	115 115 115	V1-O, V2-O, V7-O V8-O & V9-O TO AUX. PUMP	FOR EXTRACTION WARM-UP
B2 MODE B WITH:	TO-21 TO-21	PREHEATER	AUX. PUMP TO-3	525 525	115 115	V6-O & V9-O TO AUX. PUMP	FOR EXTRACTION WARM-UP
C CHARGING AND EXTRACTION	TO-10	TO-9	EXTR. PUMPS	550	115		EXPERIENCE'S CLOUD MODE THERMAL CONDITIONS
C1 MODE C w/ MODE B1	TO-21	PREHEATER	TSU	525	115		EXTR. PEG
C2 MODE C w/ MODE B2					115		
D EXTRACTION INCLUDING HOT STAND-BY TRANSITION	TO-10 TO-21 TO-11 TO-22 TO-24 TO-9	TSU PREHEATER TO-9 TSU TO-10 HEAT EXCH.	EXTR. PUMPS TSU TO-3 AUX. PUMPS TO-11	580 525 525 580 585	115 115 115 115 115	V1-O, V2-O V3-O, V4-O V6-O V8-O & V9-O TO AUX. PUMP V9-O TO AUX. PUMP V7-O	NORMAL EXTR. MODE TRANSITION FROM BLANKET TO HOT STAND-BY EXTR. PEG.
E AUX. PEG & WARM-UP	TO-22 TO-21 TO-3	TSU PREHEATER TO-21	AUX. PUMP TO-3 TSU	500 525 525	115 115 115	V5-O, V8-O V3-O, V4-O	NIGHT TIME BLANKET
F DAILY START-UP	TO-3 TO-9 TO-11 TO-21	TSU HEAT EXCH. TO-8 TO-9	CHG. PUMPS TO-25 AUX. PUMP TO-11	425 580 580 580	115 115 115 115	V3-O, V4-O V8-O V5-O	EXTERNAL BY-PASS PIPING
G DAILY START-UP w/ OR w/o MODE F w/	TO-24	TO-11	AUX. PUMP		115	V9-O TO AUX. PUMP	ANK PEG
H MAINTENANCE SHUT-DOWN	ALL TSU	V1, V3 & V5	V4, V3 & V5	AMBIENT 500	115 115	ALL CLOSED	TSU ISOLATED

NOTE: V1, V3 & V5 VALVES ASSUMED CLOSED UNLESS STATED O = OPEN.



ANALYSIS SCHEMATIC

THERMAL ANALYSIS CASES			
CASE	LINE NO.	TEMP.	REMARKS
TO-10-A	TO-9 & 11 TO-9 & 10 TO-11	525°F 580°F 70°F	SOUTH LEAD TO-3 & TSU FILTERS, NORTH LEAD TO-11 & PREHEATER AND NORTH LEAD TO-9 CONDENSER ALL AT 70°F.
TO-10-B	TO-9 & 11 TO-9 & 10 TO-11	525°F 580°F 70°F	
TO-10-C	TO-9 & 11 TO-9 & 10 TO-11	525°F 580°F 70°F	2 INCH SETTLEMENT OF TANK ASSUMED, INCLUDED AT EXTRACTION AND CHARGING NOZZLES.
TO-22-A	TO-22, 24 & 25	580°F	2 INCH TANK SETTLEMENT MOVE- MENTS OF PITS 645 AND 610 FROM CASE T-10-C.
TO-22-B	TO-22, 24 & 25	580°F	NO TANK SETTLEMENT MOVE- MENTS OF PITS 645 AND 610 FROM CASE T-10-A.

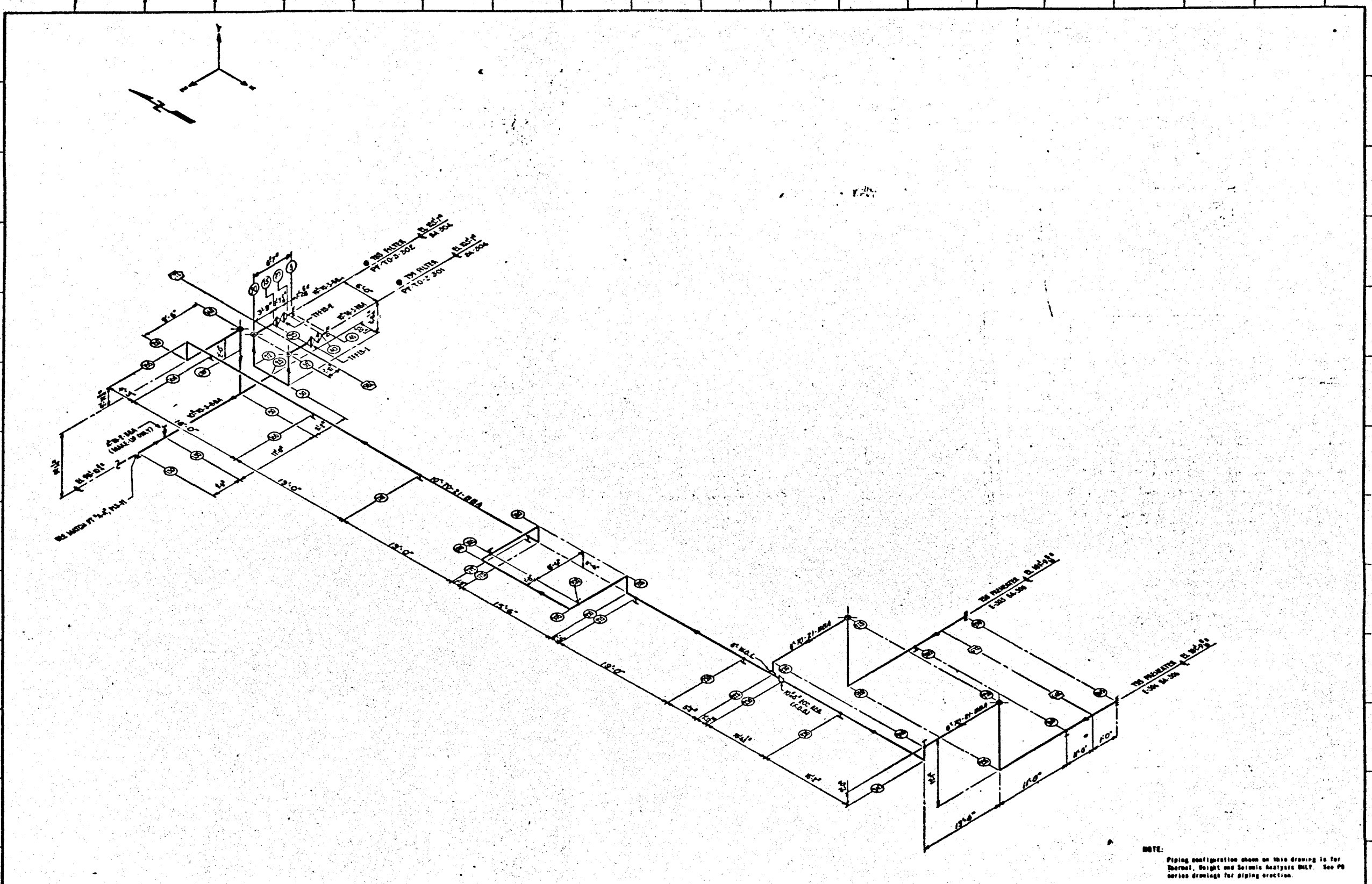
NOTE: ANALYSIS CASES DO NOT DUPLICATE TRUE PROCESS OPERATION MODES, BUT DO REPRESENT CRITICAL THERMAL STRESS CONDITIONS OF THE PIPING.

NOTE:
Piping configuration shown on this drawing is for Thermal, Weight and Seismic Analysis ONLY. See P&ID series drawings for piping erection.

DEPARTMENT OF ENERGY
SAN FRANCISCO OPERATIONS OFFICE
16 MW SOLAR PILOT PLANT - BARTON, CALIFORNIA

SOLAR TEN MEGAWATT PROJECT OFFICE
9350 PLAIN DRIVE, SUITE 210
LA MONTE, CALIFORNIA 91758

REVISIONS 1. UPDATED PER ANALYSIS DOCUMENTATION	REFERENCE DRAWINGS 1. THERMAL ANALYSIS SCHEMATIC 2. PIPING ISOMETRIC 3. THERMAL ANALYSIS SCHEMATIC	PRINT RECORD BOR 2-26-79 C-21700 1-1-79 P13-11	SOLAR FACILITIES DESIGN INTEGRATOR 	TITLE ANALYSIS ISOMETRIC TSU BY-PASS PIPING & AUX OIL SUCTION ANALYSIS ISOMETRIC (P13-11)	NO. 90P306S132015
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NOTE:
Piping configuration shown on this drawing is for
Thermal, Weight and Seismic Analysis Only. See PG
series drawings for piping erection.

REV	DESCRIPTION	DATE	BY	CHECKED	APP'D	REFERENCE DRAWINGS	PERMIT RECORD	STATUS	DATE	BY	CHECKED	APP'D
5	UPDATED PER ANALYSIS DOCUMENTATION					PS-5 S/R INTERNAL STORAGE UNIT PLAN PS-7 S/R PLAN NORTH HALF 10' LEVEL PS-8 S/R PLAN SOUTH HALF 10' LEVEL MAJ S/R CHARGING PUMP AND DRYER S/R PLAN MSD S/R PREHEATER AND DRYER S/R PLAN						

DEPARTMENT OF ENERGY
SAN FRANCISCO OPERATIONS OFFICE
16 MW SOLAR PILOT PLANT - BAGGETT, CALIFORNIA

SOLAR TEN MEGAWATT PROJECT OFFICE
9550 PLUMB DRIVE, SUITE 210
EL MONTE, CALIFORNIA 91731

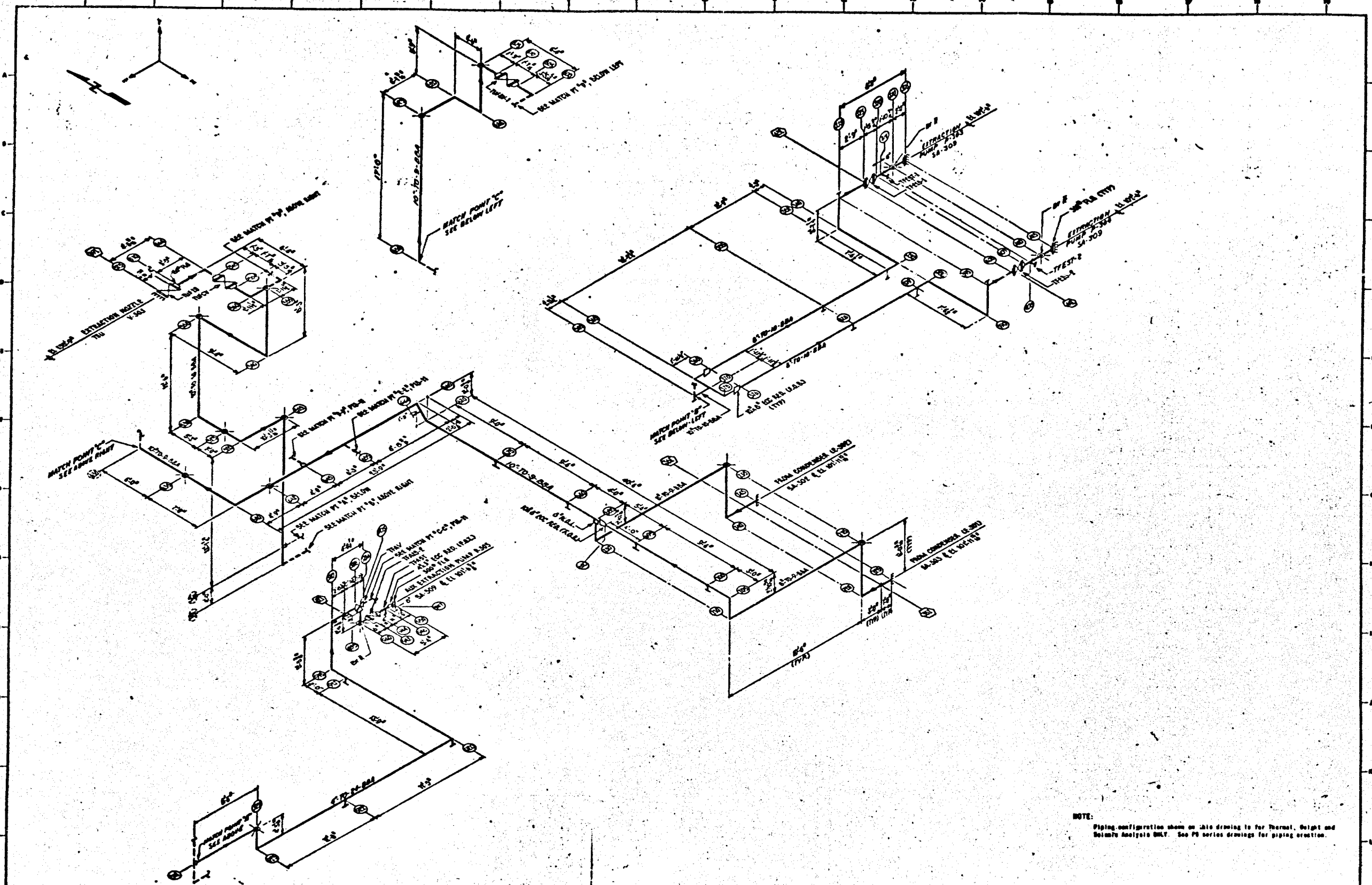
SOLAR FACILITIES DESIGN INTEGRATOR

ANALYSIS ISOMETRIC
TSS BTL - CHARGING SUPPLY & EXTRACTION RETURN

ANALYSIS ISOMETRIC (P13-12)

40P3005132016

1 of 1



NOTE:
Piping configuration shown on this drawing is for Thermal, Weight and Balance Analysis ONLY. See P&ID series drawings for piping location.

NO.	REVISIONS	DATE	BY	CHKD.
1	UPDATE P&ID ANALYSIS DOCUMENTATION			

NO.	REFERENCE DRAWINGS	DATE	BY	CHKD.
1	PS-5 S-B THERMAL STORAGE UNIT P&ID'S			
2	PS-6 S-R " " " " " " " "			
3	PS-7 S-R PLAN/SECTION/DETAIL 118 LEVEL			
4	PS-8 W-7C WATER TREATMENT SYSTEM			
5	W-9 EXTRACTOR PLANT LEVELS 10-20 (LOWER)			
6	W THERMAL STORAGE UNIT			

NO.	PRINT RECORD	DATE	BY	CHKD.
1				

DESIGNED BY	DATE	SCALE
DRAWN BY	DATE	SCALE
CHECKED BY	DATE	SCALE
APPROVED BY	DATE	SCALE

SOLAR FACILITIES DESIGN INTEGRATOR

Rockwell International
Manufacturing Division

DEPARTMENT OF ENERGY SOLAR TEN MEGAWATT PROJECT OFFICE
SAN FRANCISCO OPERATIONS OFFICE 9550 PLAZA DRIVE, SUITE 210
SAN FRANCISCO, CALIFORNIA 94133

10 MW SOLAR PILOT PLANT - BACOTT, CALIFORNIA

SCALE: NONE

DATE: P-18-80

ANALYSIS ISOMETRIC (P13-131) 90P3005132017

1 of 1

BRANCH CONNECTION SYMBOLS		PIPE SUPPORT SYMBOLS		ANCHOR OR RESTRAINT NO.	DISPLACEMENT (COLD TO HOT) IN.			ANCHOR &/OR TERM. POINTS	COORDINATE		
					X	Y	Z		X	Y	Z
	UNREINFORCED PIPE-PIPE INTERSECTION		CONSTANT SUPPORT	5	0	0	0	5	0'-0"	0'-0"	0'-0"
	REINFORCED PIPE-PIPE INTERSECTION		VARIABLE SPRING SUPPORT	45				45	6'-0"	0'-0"	0'-0"
	A S A TEE		RIGID ROD OR STRUT	265				265	133'-5"	-1'-8 3/8"	-15'-3"
	WELDOLET		HYDRAULIC SNUBBER	290				290	106'-5"	-1'-8 3/8"	-15'-3"
	SWEEPOLET		RIGID GUIDE	305				305	21'-6"	-1'-1"	-11"
			ANCHOR	415				415	40'-6"	-1'-1"	-11"
				725				725	75'-9"	-1'-6 3/8"	3'-9"
				745				745	57'-9"	-1'-7 3/16"	3'-9"

MODELING SYMBOLS	PIPING SYMBOLS

ANALYZED CONDITIONS				VALVES & SPECIAL COMPONENTS			
OPERATING TEMP (°F)	DESIGN PRESSURE (PSIG)	CASE	VALVE OR SPEC. COMP. NO.	WGT. (LBS.)	STATUS EST. OR FINAL	REFERENCE & COMMENTS	
SEE P1	3-11	FOR SCHEDULE	TUFIS	1114	FINAL	R (Per LTR # 80RC4025)	
			TUFCV	190			
			TUFBV-1	190			
			TFEIS-1 1/2	667			
			TFAST	90	FINAL		
			TFAV	240			
			TFAIS-2	240			

NOTES:

- 1) DIMENSIONS ARE IN FEET AND INCHES UNLESS NOTED OTHERWISE.
- 2) ALL ELBOWS ARE A S A LONG RADIUS UNLESS NOTED OTHERWISE.
- 3) PIPE ANALYZED FROM COLD TO HOT.
- 4) THERMAL ANALYSIS TEMPERATURE RANGE IS FROM 70° F. TO OPERATING TEMPERATURE UNLESS NOTED OTHERWISE.
- 5) SCALE: NONE
- 6) THIS DATA AND ATTACHED DRAWINGS USED FOR ANALYSIS PURPOSES ONLY.

DATA POINTS		PIPE MATERIAL	LINE SPEC.	PIPE SIZE (IN.)		WEIGHT LBS./LINEAR FT.			INS. THK.
FROM	TO			O.D.	W.T.	PIPE	FLUID*	INSULATION	
5/50/115/555 370/655	225/75/575/360 376/685	A106 Gr.B	BBA	10.75	.365	40.48	22.52 @ 575°F 29.00 @ 70°F	13.1	3 1/2
685/690/305 376/225/230	745/725/360 415/290/265	"	"	8.625	.322	28.55	14.29 @ 575°F 18.39 @ 70°F	11.1	3 1/2
877/905	948/510	"	"	4.50	.237	10.79	3.64 @ 575°F 4.68 @ 70°F	4.6	2 1/2
948	950	"	"	3.50	.216	7.58	2.11 @ 575°F 2.72 @ 70°F	3.9	2 1/2

* TSS OIL - SPECIFIC GRAVITY = .85 @ 70°F; = .73 @ 420°F; = .66 @ 575°F

NO.	REFERENCES	NO.	ANALYSIS CODES	NO.	REVISIONS	DATE	BY	CH'D	APP'D
	PIB-11, 12, 13		T-TO-10-A-7/B-1/C-6						
			X-TO-10-A-2/B-1/C-1						
			W-TO-10-A-B						
			T-TO-22-A-9/B-4						
			X-TO-22-A-1						
			W-TO-22-A-6						

PIPING ANALYSIS DATA (PIB-13)

Stearns-Roger
INCORPORATED

10 MWE SOLAR PILOT PLANT - DASSETT, CALIF.
TSS OIL - EXTRACTION SUPPLY & CHARGING RETURN
FOR ISOMETRIC PIB-B

DRAWN: KEN	DATE: 9-27-79	ANAL. BY GHM	DATE: 11-12-79
CHECKED: 156	DATE: 2-7-80	APP'D. BY JH/M	DATE: 2-7-80
JOB NO. C-21700	SYSTEM NO. TO-10&22	SHEET 1 OF 3	

BRANCH CONNECTION SYMBOLS	PIPE SUPPORT SYMBOLS	ANCHOR OR RESTRAINT NO.	DISPLACEMENT (COLD TO HOT) IN.			ANCHOR &/OR TERM. POINTS	COORDINATE		
			X	Y	Z		X	Y	Z
UNREINFORCED PIPE—PIPE INTERSECTION	CONSTANT SUPPORT	75 CASE A	0.0	0.0	0.0	75	26'-9"	-6'-5"	53'-0"
REINFORCED PIPE—PIPE INTERSECTION	VARIABLE SPRING SUPPORT	575 CASE A	0.0	1.58	0.0	575	26'-9"	32'-2"	53'-0"
ASA TEE	RIGID ROD OR STRUT	75 CASE B	0.0	0.0	-1.32	880	-13'-0"	-9'-6 5/8"	10'-9"
WELDOLET	HYDRAULIC SNUBBER	575 CASE B	0.0	1.58	-1.32	645	0'-0"	0'-0 3/8"	0'-0"
SWEEPOLET	RIGID GUIDE	75 CASE C	0.0	-4.0	-1.32	510	-4'-3"	-10'-0 7/8"	-6'-3"
	ANCHOR	575 CASE C	0.0	-2.0	-1.32	950	-20'-0"	-11'-5"	-44'-6 1/2"
		645 CASE A/B	-0.660/-1.192	-0.665/-0.366	0.025/-0.007				
		510 CASE A/B	0.1051/-0.311	0.213/-0.001	1.196/-0.224				
		645 CASE B	-0.668/-0.104	0.4281/-1.159	-0.9751/-0.050				

MODELING SYMBOLS	PIPING SYMBOLS
POINT OF INTEREST	ELBOW
DATA POINT NO.	BEND
MASS POINT OR CENTER OF GRAVITY	VALVES (ASSUMED RIGID)
INTERFACE POINT	REDUCER OR INCREASER
	EQUIPMENT NOZZLE

ANALYZED CONDITIONS			VALVES & SPECIAL COMPONENTS			
OPERATING TEMP (°F)	DESIGN PRESSURE (PSIG)	CASE	VALVE OR SPEC. COMP. NO.	WGT. (LBS.)	STATUS EST. OR FINAL	REFERENCE & COMMENTS
SEE P13-11	FOR SCHEDULE		TUFEIS	1114	FINAL	R (Per LTR # 80RC4625)
			TUFEV	190		
			TUFBV-2	190		
			TFAIS-1	240		
			TFAIV-3	266		

NOTES:

- 1) DIMENSIONS ARE IN FEET AND INCHES UNLESS NOTED OTHERWISE.
- 2) ALL ELBOWS ARE ASA LONG RADIUS UNLESS NOTED OTHERWISE.
- 3) PIPE ANALYZED FROM COLD TO HOT.
- 4) THERMAL ANALYSIS TEMPERATURE RANGE IS FROM 70° F. TO OPERATING TEMPERATURE UNLESS NOTED OTHERWISE.
- 5) SCALE: NONE
- 6) THIS DATA AND ATTACHED DRAWINGS USED FOR ANALYSIS PURPOSES ONLY.

DATA POINTS		PIPE MATERIAL	LINE SPEC.	PIPE SIZE (IN.)		WEIGHT LBS./LINEAR FT.			INS. THK.
FROM	TO			O.D.	W.T.	PIPE	FLUID	INSULATION	
75	130	A106 Gr B	BBA	10.75	.365				3 1/2"
115	800								
880	902	A106 Gr B	BBA	4.5	.237				2 1/2"
865	845								

NO.	REFERENCES	NO.	ANALYSIS CODES	NO.	REVISIONS	DATE	BY	CH'D	APP'D
	P13-11 A								

PIPING ANALYSIS DATA (P13-11)

Stearns-Roger
INCORPORATED

10MWE SOLAR PILOT PLANT - DAGGETT, CALIF.
TSS OIL-CHARGING & AUX OIL SUCTION & BY-PASS
FOR ISOMETRIC P13-11

DRAWN: KEN	DATE: 10-22-79	ANAL. BY GHM	DATE: 11-12-79
CHECKED: KER	DATE: 2-7-80	APP'D. BY JAM	DATE: 2-3-80
JOB NO. C-21700	SYSTEM NO. T0-10 & 22	SHEET 2 OF 3	


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FOREWORD

THE FOLLOWING REPORT WAS GENERATED BY THE DYNAFLEX PIPING ANALYSIS PROGRAM. THE PROGRAM ACCOMMODATES THE WIDEST RANGE OF PRACTICAL SITUATIONS ENCOUNTERED IN MODERN PIPING SYSTEMS INCLUDING DYNAMIC AS WELL AS THERMAL, WEIGHT AND PRESSURE EFFECTS.

FOR FURTHER INFORMATION OR PROMPT ASSISTANCE IN USING THE DYNAFLEX PROGRAM, PLEASE CONTACT YOUR LOCAL COMPUTER CENTER REPRESENTATIVE OR:

ENGINEERING SERVICES MANAGER
AUTON COMPUTING CORPORATION
1 METRO PLAZA
505 THORNALL STREET
EDISON, N.J. 08817

THE STRESS FORMULATION OF
ANSI B31.1 - 1977
INCLUDING THE LATEST MANDATORY UPDATES
HAS BEEN APPLIED IN THIS ANALYSIS

THE TABLE OF CONTENTS APPEARS AT THE END OF THIS REPORT.

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*****
*
*
*          STEARNS - ROGER CURP
*
*          10MW SOLAR PILOT PLANT - DOE - C-21700
*
*          OIL EXTR + CHARG.(T-TU-10-A-7)
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DYNAFLEX (MOD204F-UCC)

LAST UPDATE - 12/25/79

DYNAFLEX

STEARNS - ROGER CORP

PAGE 1

PROJECT - 10MW SOLAR PILOT PLANT - DOE - C-21700
 JOB - OIL EXTR + CHARG.(1-TU-10-A-7)

DATE 1/28/80

INPUT DATA - (CARD IMAGES)

LINE NUMBER	TYP	LOC	FRM	TO	DELTA X	DELTA Y	DELTA Z	RADIUS	ADDITIONAL DATA	LINE NUMBER
1	REC								STEARNS - ROGER CORP, 1/28/80, PROJ.10MW SO LAR PILOT PLANT - DOE - C-21700, JOBOIL EXT R + CHARG.(1-TU-10-A- 7)	1
2	GEN								APPLY OSI.1=1975, EAA	2
3			5	10			1-2-5/16		MAT=LCS,OU=10.75, WT=.365,UNIF=36.2, TEMP=525.	3
4				15			1-7-11/16		RIGID,WEIGHT=398.	4
5				20			3-9	L		5
6				22		4-8-1/4		L		6
7				25	3-0				WLT	7
8				30	3-0			L	TEMP=70.	8
9				32		4-8-1/4		L		9
10				35			3-9			10
11				40			1-7-11/16		RIGID,WEIGHT=398.	11
12				45			1-2-5/16			12
13			25	50			5-2		WLT,TEMP=525.	13
14				140		9-1-1/4		L	TEMP=525.	14
15				150			9-6	L		15
16				155		2-11-3/8		L		16
17				160	4-3					17
18				165	16-0					18
19				170	19-0					19
20				172	19-0					20
21				175	1-9			L		21
22				180		2-6		L		22
23				185			8-6			23
24				190			1-6	L		24
25				195	15-6			L		25
26				200			1-8			26
27				205			8-6	L		27
28				210		2-6		L		28
29				215	1-9					29
30				220	19-0					30
31				225	5-2				SIF=2.4	31

INPUT DATA - (CARD IMAGES)

LINE NUMBER	TYP	LOC	FRM	STO	DELTA X	DELTA Y	DELTA Z	RADIUS	ADDITIONAL DATA	LINE NUMBER
32	:	:	:	:230:1-3-1/2	:	:	:	:	:SIF=2.0	32
33	:	:	:	:235:10-6-1/2	:	:	:	:	:OD=8.625,WT=.322,	33
	:	:	:	:	:	:	:	:	:UNIF=25.8	
34	:	:	:	:240:15-2	:	:	:	:L	:	34
35	:	:	:	:245:	:2-0	:	:	:L	:	35
36	:	:	:	:250:	:	:1-13-6	:	:L	:	36
37	:	:	:	:255:	:1-11-1	:	:	:L	:	37
38	:	:	:	:260:	:	:1-11-0	:	:	:	38
39	:	:	:	:265:	:	:1-12-0	:	:	:	39
40	:	:	:	:225:270:	:2-0	:	:	:L	:TEMP=70.	40
41	:	:	:	:275:	:	:1-13-6	:	:L	:	41
42	:	:	:	:280:	:1-11-1	:	:	:L	:	42
43	:	:	:	:285:	:	:1-11-0	:	:	:	43
44	:	:	:	:290:	:	:1-12-0	:	:	:	44
45	:	:	:	:305:310:	:	:2-0	:	:	:MAT=LCS,OD=8.625,	45
	:	:	:	:	:	:	:	:	:WT=.322,UNIF=25.40,	
	:	:	:	:	:	:	:	:	:TEMP=580.	
46	:	:	:	:315:	:	:1-10-7/16	:	:	:	46
47	:	:	:	:320:	:	:0-8	:	:	:	47
48	:	:	:	:325:	:	:1-5-9/16	:	:	:RIGID,WEIGHT=374.	48
49	:	:	:	:335:	:	:2-9	:	:L	:	49
50	:	:	:	:340:	:3-7-1/4	:	:	:L	:	50
51	:	:	:	:350:7-6-1/2	:	:	:	:L	:	51
52	:	:	:	:352:	:	:1-3	:	:	:	52
53	:	:	:	:355:	:	:0-9	:	:	:	53
54	:	:	:	:360:	:	:1-4-3	:	:	:SIF=2.0	54
55	:	:	:	:365:	:	:1-11-1/2	:	:L	:OD=10.75,WT=.365,	55
	:	:	:	:	:	:	:	:	:UNIF=35.6	
56	:	:	:	:370:1-11-1/2	:	:	:	:	:WT	56
57	:	:	:	:375:1-11-1/2	:	:	:	:L	:TEMP=580.	57
58	:	:	:	:376:	:	:1-11-1/2	:	:	:SIF=2.0	58
59	:	:	:	:378:	:	:1-14-3	:	:	:OD=8.625,WT=.322,UNIF	59
	:	:	:	:	:	:	:	:	:25.40	
60	:	:	:	:379:	:	:1-8-9	:	:	:	60
61	:	:	:	:380:	:	:1-3	:	:L	:	61
62	:	:	:	:390:7-6-1/2	:	:	:	:L	:	62
63	:	:	:	:395:	:3-7-1/4	:	:	:L	:	63
64	:	:	:	:405:	:	:2-9	:	:	:	64
65	:	:	:	:407:	:	:1-5-9/16	:	:	:RIGID,WEIGHT=374.	65
66	:	:	:	:409:	:	:0-8	:	:	:	66
67	:	:	:	:410:	:	:1-10-7/16	:	:	:	67

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INPUT DATA - (CARD IMAGES)

LINE NUMBER	TYP	LOC	FRM	TO	DELTA X	DELTA Y	DELTA Z	RADIUS	ADDITIONAL DATA	LINE NUMBER
68	:	:	:	:415:	:	:	: -2-0	:	:	: 68
69	:	:	:50:	:135:	:	:	:17-0	:	:R=10.75,WT=.365,	: 69
	:	:	:	:	:	:	:	:	:TEMP=525.,UNIF=36.2,	
	:	:	:	:	:	:	:	:	:SIF=2.4	
70	:	:	:	:130:	:	:	:1-6	:	:	: 70
71	:	:	:	:125:	:	:	:18-0	:L	:	: 71
72	:	:	:	:120:	:17-3	:	:	:	:	: 72
73	:	:	:	:118:	:16-11-1/2	:	:	:L	:	: 73
74	:	:	:	:115:	:	:3-1-3/4	:	:	:WLT	: 74
75	:	:	:	:110:	:	:	:3-2	:L	:TEMP=525.	: 75
76	:	:	:	:105:	:4-7-1/8	:	:	:	:	: 76
77	:	:	:	:100:	:1-7-11/16	:	:	:	:RIGID,WEIGHT=398.	: 77
78	:	:	:	:95:	:1-4	:	:	:	:	: 78
79	:	:	:	:90:	:1-7-11/16	:	:	:	:RIGID,WEIGHT=398.	: 79
80	:	:	:	:85:	:1-3	:	:	:L	:	: 80
81	:	:	:	:80:	:4-10-1/2	:	:	:L	:	: 81
82	:	:	:	:75:	:	:	:1-7	:	:	: 82
83	:	:	:370:	:305:	:	:	:1-11-1/2	:L	:R=10.75,WT=.365,	: 83
	:	:	:	:	:	:	:	:	:UNIF=35.6,TEMP=580.	
	:	:	:	:	:	:	:	:	:SIF=2.4	
84	:	:	:	:510:	:4-0	:	:	:	:	: 84
85	:	:	:	:515:	:13-1-1/4	:	:	:L	:	: 85
86	:	:	:	:520:	:	:	:10-3-13/16	:L	:	: 86
87	:	:	:	:525:	:2-0	:	:	:	:	: 87
88	:	:	:	:530:	:5-3	:	:	:L	:	: 88
89	:	:	:	:535:	:11-6	:	:	:L	:	: 89
90	:	:	:	:540:	:9-4	:	:	:L	:	: 90
91	:	:	:	:555:	:8-3	:	:	:	:WLT	: 91
92	:	:	:	:560:	:	:	:1-11-1/2	:L	:	: 92
93	:	:	:	:564:	:3-5-5/16	:	:	:	:	: 93
94	:	:	:	:565:	:1-7-11/16	:	:	:	:RIGID,WEIGHT=398.	: 94
95	:	:	:	:568:	:1-3	:	:	:L	:	: 95
96	:	:	:	:570:	:	:	:3-5	:	:	: 96
97	:	:	:	:575:	:	:	:1-3-11/16	:	:RIGID,WEIGHT=344.	: 97
98	:	:	:555:	:600:	:	:	:1-11-1/2	:L	:	: 98
99	:	:	:	:605:	:3-5-5/16	:	:	:	:	: 99
100	:	:	:	:610:	:1-7-11/16	:	:	:	:RIGID,WEIGHT=398.	: 100
101	:	:	:	:615:	:1-3	:	:	:L	:	: 101
102	:	:	:	:618:	:5-7	:	:	:L	:	: 102
103	:	:	:	:620:	:4-6	:	:	:L	:	: 103
104	:	:	:	:625:	:	:	:6-7-11/16	:L	:	: 104
105	:	:	:	:630:	:17-0	:	:	:L	:	: 105

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INPUT DATA - (CARD IMAGES)

LINE NUMBER	TYP	LDC	FRM	TO	DELTA X	DELTA Y	DELTA Z	RADIUS	ADDITIONAL DATA	LINE NUMBER
106	:	:	:	:635	:6-0	:	:	:	:	: 106
107	:	:	:	:640	:7-0	:	:	:L	:	: 107
108	:	:	:	:642	:	:	: -4-9	:	:	: 108
109	:	:	:	:645	:	:	: -4-0	:	:SIF=2.4	: 109
110	:	:	:	:655	:	:	: -6-3	:	:WLT	: 110
111	:	:	:	:660	:	:	: -5-3	:	:TEMP=580.	: 111
112	:	:	:	:665	:	:	: -1-5-3/8	:L	:	: 112
113	:	:	:	:670	: -2-0-5/8	:	: -2-0-5/8	:L	:	: 113
114	:	:	:	:675	:9-0	:	:	:	:	: 114
115	:	:	:	:680	:9-6	:	:	:	:	: 115
116	:	:	:	:685	:4-0	:	:	:	:SIF=2.4	: 116
117	:	:	:	:690	:1-6	:	:	:	:SIF=2.0	: 117
118	:	:	:	:695	:4-0	:	:	:	:OC=8.625, w1=.322, UNIF=25.4	: 118
119	:	:	:	:700	:9-6	:	:	:	:	: 119
120	:	:	:	:705	:3-0	:	:	:L	:	: 120
121	:	:	:	:710	:	: -2-10-5/16	:	:L	:	: 121
122	:	:	:	:715	:	:	: -1-9-6	:L	:	: 122
123	:	:	:	:720	:	: -6-0-3/16	:	:L	:	: 123
124	:	:	:	:725	:	:	: -4-0	:	:	: 124
125	:	:	:	:685	:730	:	: -2-11-3/8	:L	:TEMP=70.	: 125
126	:	:	:	:735	:	:	: -1-9-6	:L	:	: 126
127	:	:	:	:740	:	: -6-0-3/16	:	:L	:	: 127
128	:	:	:	:745	:	:	: -4-0	:	:	: 128
129	:	:	:	:655	:800:1-11-1/2	:	:	:L	:OD=10.75, WT=.365, UNIF=36.2, TEMP=70.	: 129
130	:	:	:	:805	:	: -9-0	:	:L	:	: 130
131	:	:	:	:815	:	:	: 7-8-5/16	:	:	: 131
132	:	:	:	:820	:	:	: 1-7-11/16	:	:RIGID, WEIGHT=398.	: 132
133	:	:	:	:825	:	:	: 2-11	:L	:	: 133
134	:	:	:	:115	:	: -1-11-1/2	:	:	:	: 134
135	:	:ANC:	5:	:	:	:	:	:	:	: 135
136	:	:ANC:	45:	:	:	:	:	:	:	: 136
137	:	:ANC:	265:	:	:	:	:	:	:	: 137
138	:	:ANC:	290:	:	:	:	:	:	:	: 138
139	:	:ANC:	305:	:	:	:	:	:	:	: 139
140	:	:ANC:	415:	:	:	:	:	:	:	: 140
141	:	:ANC:	725:	:	:	:	:	:	:	: 141
142	:	:ANC:	745:	:	:	:	:	:	:	: 142
143	:	:ANC:	75:	:	:	:0.0	: -1.32	:	:	: 143
144	:	:ANC:	575:	:	:	:1.58	: -1.32	:	:	: 144

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INPUT DATA - (CARD IMAGES)

LINE NUMBER	STYP	LOC	FRM	TD	DELTA X	DELTA Y	DELTA Z	RADIUS	ADDITIONAL DATA	LINE NUMBER
145	:RAD:	125:	F	:	:	:RIGID	:	:	:	145
146	:RAD:	130:	:	:	:	:RIGID	:	:	:	146
147	:RAD:	160:	:	:	:	:RIGID	:	:	:	147
148	:RAD:	165:	:	:	:	:RIGID	:	:	:	148
149	:RAD:	170:	:	:	:	:RIGID	:	:	:	149
150	:RAD:	172:	:	:	:	:RIGID	:	:	:	150
151	:RAD:	185:	:	:	:	:RIGID	:	:	:	151
152	:RAD:	200:	:	:	:	:RIGID	:	:	:	152
153	:RAD:	215:	:	:	:	:RIGID	:	:	:	153
154	:RAD:	220:	:	:	:	:RIGID	:	:	:	154
155	:RAD:	235:	:	:	:	:RIGID	:	:	:	155
156	:RAD:	245:	F	:	:	:RIGID	:	:	:	156
157	:RAD:	260:	:	:	:	:RIGID	:	:	:	157
158	:RAD:	285:	:	:	:	:RIGID	:	:	:	158
159	:RAD:	352:	:	:	:	:RIGID	:	:	:	159
160	:RAD:	355:	:	:	:	:RIGID	:	:	:	160
161	:RAD:	378:	:	:	:	:RIGID	:	:	:	161
162	:RAD:	379:	:	:	:	:RIGID	:	:	:	162
163	:RAD:	505:	N	:	:	:RIGID	:	:	:	163
164	:RAD:	675:	:	:	:	:RIGID	:	:	:	164
165	:RAD:	680:	:	:	:	:RIGID	:	:	:	165
166	:RAD:	695:	:	:	:	:RIGID	:	:	:	166
167	:RAD:	700:	:	:	:	:RIGID	:	:	:	167
168	:CCC:	45:	:	:	:6=0	:0=0	:0=0	:	:	168
169	:CCC:	265:	:	:	:133=5	: -1-8-5/8	: -15-3	:	:	169
170	:CCC:	290:	:	:	:106=5	: -1-8-5/8	: -15-3	:	:	170
171	:CCC:	305:	:	:	:21=6	: -1-1	: -0-11	:	:	171
172	:CCC:	415:	:	:	:40=6	: -1-1	: -0-11	:	:	172
173	:CCC:	75:	:	:	:26=9	: -6=5	:53=0	:	:	173
174	:CCC:	575:	:	:	:26=9	:52=2	:53=0	:	:	174
175	:CCC:	725:	:	:	:75=9	: -1-6-1/8	:3=9	:	:	175
176	:CCC:	745:	:	:	:57=9	: -1-7-5/16	:3=9	:	:	176
177	:RAD:	335:	N	:	:	:RIGID	:	:	:	177
178	:RAD:	395:	F	:	:	:RIGID	:	:	:	178
179	:GUT:	:	:	:	:	:	:	:	:THERMAL	179

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DYNAFLEX

STEARNS - ROGER CORP

PAGE 6

PROJECT - 10MW SOLAR PILEDT PLANT - DOE - C-21700
JOB - OIL EXTR + CHARG.(T-TU-10-A-7)

DATE 1/28/80

*
* EDITED PIPING SYSTEM DESCRIPTION *
* ----- *
*

EXPLANATORY NOTES

IN THE EDITED PIPING SYSTEM DESCRIPTION:

- (1) POINT LOCATION NUMBER SUFFIXES N, M AND F IDENTIFY THE NEAR POINT, THE MID POINT AND THE FAR POINT RESPECTIVELY OF A PIPING ELEMENT IN THE DIRECTION IN WHICH THE LINE IS TRAVERSED. FRACTIONAL NODE NUMBERS APPEARING IN THE FOLLOWING REPORTS IDENTIFY THOSE NODES AT WHICH THE PROGRAM HAS INTRODUCED EVENLY SPACED LUMP POINTS AND ARE DETERMINED FROM THE MAXIMUM LUMP SPACING CRITERIA ENTERED BY THE USER. IF FRACTIONAL NODE NUMBERS ARE ASSIGNED TO MORE THAN ONE ELEMENT ORIGINATING AT THE SAME BRANCH POINT, A LETTER WILL PRECEDE THE FRACTIONAL PORTION OF THE NUMBER TO UNIQELY IDENTIFY EACH POINT (E.G. 2.A1). LETTERS ARE ASSIGNED TO ELEMENTS ALPHABETICALLY IN THE ORDER OF THEIR APPEARANCE IN THE INPUT DATA.
- (2) AMBIENT TEMPERATURE IS ASSUMED TO BE 70 DEGREES FAHRENHEIT.
- 31 (3) THE MAXIMUM ALLOWABLE DIFFERENCE IN LOOP CLOSURE CALCULATIONS IS ASSUMED TO BE .25 INCHES.
- (4) THE MAXIMUM ALLOWABLE DIFFERENCE BETWEEN THE CALCULATED AND INPUT COORDINATES OF USER DESIGNATED CHECK POINTS IS ASSUMED TO BE .25 INCHES.
- (8) IN ORDER TO MAKE IT POSSIBLE IN CERTAIN SITUATIONS TO PERFORM INDEPENDENT WEIGHT AND THERMAL ANALYSES IN THE SAME RUN AND APPLY THE CODE STRESS CALCULATIONS CORRECTLY, THE PROGRAM MAKES CERTAIN ASSUMPTIONS. IF THE INPUT DATA SPECIFIES IMPOSED MOVEMENTS ON ANCHORS (ANC) OR DISPLACEMENTS OR ROTATIONS ON RIGID RESTRAINTS (RAD,RAR) THESE ARE ASSUMED BY THE PROGRAM TO BE THERMAL EFFECTS AND INCLUDED ONLY IN THOSE LOADING CASES WHICH INCLUDE THERMAL. ALTERNATELY, IF THE INPUT DATA SPECIFIES FORCES AND MOMENTS (FUR,MOM) OR IMPOSED DISPLACEMENTS OR ROTATIONS ON FLEXIBLE RESTRAINTS (RAD,RAR) THESE ARE ASSUMED TO BE WEIGHT EFFECTS AND INCLUDED ONLY IN THOSE LOADING CASES WHICH INCLUDE WEIGHT. IF THESE ASSUMPTIONS ARE INVALID FOR A PARTICULAR SITUATION, THE USER CAN ACCURATELY MODEL THE MOST GENERAL SITUATION BY USING THE AUXILIARY SUPPORT MOVEMENTS (ASM) AND THE AUXILIARY CONCENTRATED LOADS (ACL) FEATURE OF THE PROGRAM AS AN ALTERNATE METHOD OF SPECIFYING THESE EFFECTS.
- (14) STRESS INTENSIFICATION FACTORS SPECIFIED AT THE TANGENT INTERSECTION POINT OF A BEND OR FITER WILL BE APPLIED TO THE NEAR, MID, AND FAR POINTS OF THE BEND OR FITER.
- (15) THE TABLE OF CONTENTS APPEARS AT THE END OF THIS REPORT.

POINT TYPE	ELEMENT DESIGNATION	POINT LOC. NO.	COORDINATES (FT)			RADIUS (FT)	LENGTH (FT)	ANGLE (DEG)	OUTSIDE DIAMETER (IN)	WALL THICK (IN)	TEMP (DEG) PRESS (PSI)	DIST. LOADS (LBS PER FT)		
			X	Y	Z							WT.	UNIF	
		>- 22N	0.00	-3.44	6.58				10.750	.365	LCS	525.	40.5	36.2
		(
	BEND	-(22M	.37	-4.32	6.58	1.25	1.96	90.000						
		(
		>- 22F	1.25	-4.69	6.58									
	STRAIGHT	-(					1.75							
BR PT		>- 25	3.00	-4.69	6.58									
		(
		(* WELDING TEE AT POINT 25												
		(
	STRAIGHT	-(					1.75				70.			
		(
		(* THERMAL EXPANSION OF LCS BETWEEN AMBIENT AND 70.												
		(DEGREES FAHRENHEIT IS 0.00 INCHES PER 100 FEET												
		(
		>- 30N	4.75	-4.69	6.58									
		(
	BEND	-(30M	5.63	-4.32	6.58	1.25	1.96	90.000						
		(
8		>- 30F	6.00	-3.44	6.58									
	STRAIGHT	-(					2.19							
		>- 32N	6.00	-1.25	6.58									
		(
	BEND	-(32M	6.00	-.37	6.22	1.25	1.96	90.000						
		(
		>- 32F	6.00	0.00	5.33									
	STRAIGHT	-(					2.50							
		>- 35	6.00	0.00	2.83									
		(
	RIGID	-(					1.64		N/A	N/A		N/A	N/A	
		(
		(* WEIGHT OF ELEMENT = 398. POUNDS												
		(
		>- 40	6.00	0.00	1.19									
	STRAIGHT	-(					1.19							
ANCHR		-- 45	6.00	0.00	.00									

* NOTES PERTAINING TO POINT 45 APPEAR ON THE FOLLOWING PAGE

DYNALOX

EDITED PIPING SYSTEM DESCRIPTION (CONTINUED)

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POINT TYPE	ELEMENT DESIGNATION	POINT LOC. NO.	COORDINATES (FT)			RADIUS (FT)	LENGTH (FT)	ANGLE (DEG)	OUTSIDE DIAMETER (IN)	WALL THICK (IN)	TEMP (FAHR)	DIST. LOADS (LBS PER FT)		
			X	Y	Z							PRESS (PSI)	PIPE WT. UNIF	
ANCHR	--	45	6.00	0.00	0.00				10.750	.365	LCS	70.	40.5	36.2
* CONTROL COORDINATES OF POINT 45, IN FEET :														
X = 6.00, Y = 0.00, Z = 0.00														
RESULTANT DIFFERENCE IS ZERO														
BR PT	--	25	3.00	-4.69	6.58									
(* WELDING TEE AT POINT 25														
STRAIGHT	-	(					5.17				525.			
(* THERMAL EXPANSION OF LCS BETWEEN AMBIENT AND 525.														
(DEGREES FARENHEIT IS 3.86 INCHES PER 100 FEET														
BR PT	>	50	3.00	-4.69	11.75									
(* WELDING TEE AT POINT 50														
STRAIGHT	-	(					7.85							
	>	140N	3.00	3.17	11.75									
BEND	-	(	140M	3.00	4.05	12.12	1.25	1.96	90.000					
	>	140F	3.00	4.42	13.00									
STRAIGHT	-	(					7.00							
	>	150N	3.00	4.42	20.00									
BEND	-	(	150M	3.00	4.78	20.88	1.25	1.96	90.000					
	>	150F	3.00	5.67	21.25									
STRAIGHT	-	(					.45							
	>	155N	3.00	6.11	21.25									
BEND	-	(	155M	3.37	7.00	21.25	1.25	1.96	90.000					
	>	155F	4.25	7.36	21.25									
STRAIGHT	-	(					3.00							
	>	160	7.25	7.36	21.25									

* NOTES PERTAINING TO POINT 160 APPEAR ON THE FOLLOWING PAGE

DYNALLEX

EDITED PIPING SYSTEM DESCRIPTION (CONTINUED)

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POINT TYPE	ELEMENT DESIGNATION	POINT LOC. NO.	COORDINATES (FT)			RADIUS (FT)	LENGTH (FT)	ANGLE (DEG)	OUTSIDE DIAMETER (IN)	WALL THICK (IN)	TEMP (DEG) (FAHR)	DIST. LOADS (LBS PER FT)	
			X	Y	Z							PRESS (PSI)	PIPE WT. UNIF
								10.750	.365	LC8: 525.		40.5	36.2
	STRAIGHT	>-180F	65.00	9.86	22.50		7.25						
		>-185	65.00	9.86	29.75								
		(
		(	* RIGID RESTRAINT AGAINST DISPLACEMENT AT POINT 185										
		(	IN DIRECTION Y										
	STRAIGHT	>-190F					.42						
		>-190N	65.00	9.86	30.17								
	BEND	>-190M	65.37	9.86	31.05	1.25	1.96	90.000					
		>-190F	66.25	9.86	31.42								
	STRAIGHT	>-195N	79.25	9.86	31.42		13.00						
		>-195M	80.13	9.86	31.05	1.25	1.96	90.000					
		>-195F	80.50	9.86	30.17								
	STRAIGHT	>-200	80.50	9.86	29.75		.42						
		(
		(	* RIGID RESTRAINT AGAINST DISPLACEMENT AT POINT 200										
		(	IN DIRECTION Y										
	STRAIGHT	>-205N	80.50	9.86	22.50		7.25						
		>-205M	80.50	9.50	21.62	1.25	1.96	90.000					
		>-205F	80.50	8.81	21.25								
		(
		(	* POINT 205F IS EQUIVALENT TO POINT 210N										
		(
		(
	BEND	>-210M	80.87	7.73	21.25	1.25	1.96	90.000					
		>-210F	81.75	7.36	21.25								
	STRAIGHT	>-215	82.25	7.36	21.25		.50						

* NOTES PERTAINING TO POINT 215 APPEAR ON THE FOLLOWING PAGE

DYNAFLEX

EDITED PIPING SYSTEM DESCRIPTION (CONTINUED)

PAGE 12

DIST. LOADS
(LBS PER FT)

POINT TYPE	ELEMENT DESIGNATION	POINT LOC. NO.	COORDINATES (FT)			RADIUS (FT)	LENGTH (FT)	ANGLE (DEG)	OUTSIDE WALL		TEMP (DEG) (FAHR)	DIST. LOADS (LBS PER FT)		
			X	Y	Z				DIAMETER (IN)	THICK (IN)		MATL	PRESS (PSI)	PIPE WT.	UNIF
									10.750	.365	LCS	525.	40.5	36.2
		>-215	82.25	7.36	21.25									
		(
		(	* RIGID RESTRAINT AGAINST DISPLACEMENT AT POINT 215											
		(	IN DIRECTION Y											
		(
	STRAIGHT	-				19.00								
		(
		>-220	101.25	7.36	21.25									
		(
		(	* RIGID RESTRAINT AGAINST DISPLACEMENT AT POINT 220											
		(	IN DIRECTION Y											
		(
	STRAIGHT	-				5.17								
		(
		(	* STRESS INTENSIFICATION SPECIFIED AT POINT 225											
		(	STRESS INTENSIFICATION FACTOR = 2.40											
		(
BR PT		>-225	106.42	7.36	21.25									
		(
37	STRAIGHT	-				1.29								
		(
		(	* STRESS INTENSIFICATION SPECIFIED AT POINT 230											
		(	STRESS INTENSIFICATION FACTOR = 2.00											
		(
		>-230	107.71	7.36	21.25									
		(
	STRAIGHT	-				10.54			8.625	.322			28.6	25.8
		(
		(	* A UNIFORM DISTRIBUTED LOAD OF 25.80 PLF IS ACTING											
		(	IN THE *Y DIRECTION.											
		(
		>-235	118.25	7.36	21.25									
		(
		(	* NOTES PERTAINING TO POINT 235 APPEAR ON THE FOLLOWING PAGE											

POINT TYPE	ELEMENT DESIGNATION	POINT LOC. NO.	COORDINATES (FT)			RADIUS (FT)	LENGTH (FT)	ANGLE (DEG)	OUTSIDE DIAMETER (IN)	WALL THICK (IN)	TEMP (FAHR)	DIST. LOADS (LBS PER FT)	
			X	Y	Z							PRESS (PSI)	WT. UNIF
												28.6	25.8
		>235	118.25	7.36	21.25								
		(
		(	* RIGID RESTRAINT AGAINST DISPLACEMENT AT POINT 235										
		(	IN DIRECTION Y										
	STRAIGHT	-(				14.17							
		(
		>240N	132.42	7.36	21.25								
	BEND	-(	240M	133.12	7.66	21.25	1.00	1.57	90.000				
		(
		>240F	133.42	8.36	21.25								
		(
		(	* POINT 240F IS EQUIVALENT TO POINT 245N										
		(
	BEND	-(	245M	133.42	9.07	20.96	1.00	1.57	90.000				
		(
38		>245F	133.42	9.36	20.25								
		(
		(	* RIGID RESTRAINT AGAINST DISPLACEMENT AT POINT 245F										
		(	IN DIRECTION Y										
	STRAIGHT	-(				11.50							
		(
		>250N	133.42	9.36	8.75								
	BEND	-(	250M	133.42	9.07	8.04	1.00	1.57	90.000				
		(
	STRAIGHT	-(	>250F	133.42	8.36	7.75		9.08					
		(
		>255N	133.42	-0.72	7.75								
	BEND	-(	255M	133.42	-1.43	7.46	1.00	1.57	90.000				
		(
	STRAIGHT	-(	>255F	133.42	-1.72	6.75		10.00					
		(
		>260	133.42	-1.72	-3.25								

* NOTES PERTAINING TO POINT 260 APPEAR ON THE FOLLOWING PAGE

DYNAFLEX

EDITED PIPING SYSTEM DESCRIPTION (CONTINUED)

PAGE 14

DIST. LOADS
(LBS PER FT)

POINT TYPE	ELEMENT DESIGNATION	POINT LOC. NO.	COORDINATES (FT)			RADIUS (FT)	LENGTH (FT)	ANGLE (DEG)	OUTSIDE WALL		TEMP (DEG) (FAHR)	PRESS PIPE		
			X	Y	Z				DIAMETER (IN)	THICK (IN)		MATL	WT.	UNIF
		>=260	133.42	-1.72	-3.25				8.625	.322	LCS	525	28.6	25.8
		(
		(	* RIGID RESTRAINT AGAINST DISPLACEMENT AT POINT 260											
		(	IN DIRECTION Y											
	STRAIGHT	(					12.00							
	ANCHR	--265	133.42	-1.72	-15.25									
		(	* CONTROL COORDINATES OF POINT 265, IN FEET :											
		(	X = 133.42, Y = -1.72, Z = -15.25											
		(	RESULTANT DIFFERENCE IS ZERO											
		(
	BR PT	--225	106.42	7.36	21.25									
		(
	STRAIGHT	(					1.00				70			
		(	* THERMAL EXPANSION OF LCS BETWEEN AMBIENT AND 70.											
		(	DEGREES FAHRENHEIT IS 0.00 INCHES PER 100 FEET											
		(
		>=270N	106.42	8.36	21.25									
		(
	BEND	(	270M	106.42	9.07	20.96	1.00	1.57	90.000					
		(
		>=270F	106.42	9.36	20.25									
		(					11.50							
	STRAIGHT	(
		(	>=275N	106.42	9.36	8.75								
		(
	BEND	(	275M	106.42	9.07	8.04	1.00	1.57	90.000					
		(
		>=275F	106.42	8.36	7.75									
		(					9.08							
	STRAIGHT	(
		(>=280N	106.42	-1.72	7.75								
		(
	BEND	(280M	106.42	-1.43	7.46	1.00	1.57	90.000					
		(
		>=280F	106.42	-1.72	6.75									

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DIST. LOADS
(LBS PER FT)

POINT TYPE	ELEMENT DESIGNATION	POINT LOC. NO.	COORDINATES (FT)			RADIUS (FT)	LENGTH (FT)	ANGLE (DEG)	OUTSIDE WALL		TEMP (DEG) (FAHR)	PRESS PIPE		
			X	Y	Z				DIAMETER (IN)	THICK (IN)		MATL	(PSI)	WT.	UNIF
									8.625	.322	LCS	70.	28.6	25.8
STRAIGHT	-	>280F	106.42	-1.72	6.75		10.00							
		>285	106.42	-1.72	-3.25									
		(	* RIGID RESTRAINT AGAINST DISPLACEMENT AT POINT 285											
		(	IN DIRECTION Y											
STRAIGHT	-	(					12.00							
ANCHR		--290	106.42	-1.72	-15.25									
			* CONTROL COORDINATES OF POINT 290, IN FEET :											
			X = 106.42, Y = -1.72, Z = -15.25											
			RESULTANT DIFFERENCE IS ZERO											
ANCHR		--305	21.50	-1.08	-.92									
		(	* CONTROL COORDINATES OF POINT 305, IN FEET :											
		(	X = 21.50, Y = -1.08, Z = -.92											
		(	RESULTANT DIFFERENCE IS ZERO											
STRAIGHT	-	(					2.00				580.		25.4	
		(	* THERMAL EXPANSION OF LCS BETWEEN AMBIENT AND 580.											
		(	DEGREES FAHRENHEIT IS 4.40 INCHES PER 100 FEET											
		(	* A UNIFORM DISTRIBUTED LOAD OF 25.40 PLF IS ACTING											
		(	IN THE -Y DIRECTION.											
STRAIGHT	-	>310	21.50	-1.08	1.08		1.87							
STRAIGHT	-	>315	21.50	-1.08	2.95		.67							
		>320	21.50	-1.08	3.62									

* NOTES PERTAINING TO POINT 320 APPEAR ON THE FOLLOWING PAGE

POINT TYPE	ELEMENT DESIGNATION	POINT LOC. NO.	COORDINATES (FT)			RADIUS (FT)	LENGTH (FT)	ANGLE (DEG)	OUTSIDE WALL		TEMP (DEG) (FAHR)	DIST. LOADS (LBS PER FT)		
			X	Y	Z				DIAMETER (IN)	THICK (IN)		MATL	PRESS (PSI)	PIPE WT. UNIF
									8.625	.322	LCS	580.	28.6	25.4
		>=320	21.50	-1.08	3.62									
	RIGID	(					1.46		N/A	N/A			N/A	N/A
		(
		(	* WEIGHT OF ELEMENT = 374. POUNDS											
		(
	STRAIGHT	>=325	21.50	-1.08	5.08		1.75							
		>=335N	21.50	-1.08	6.83									
		(
		(	* RIGID RESTRAINT AGAINST DISPLACEMENT AT POINT 335N											
		(	IN DIRECTION Y											
		(
	BEND	(335M	21.50	-1.38	7.54	1.00	1.57	90.000						
		(
		>=335F	21.50	-2.08	7.83		1.60							
41	STRAIGHT	>=340N	21.50	-3.69	7.83									
		(340M	21.79	-4.39	7.83	1.00	1.57	90.000						
		(
		>=340F	22.50	-4.69	7.83		5.54							
	STRAIGHT	>=350N	28.04	-4.69	7.83									
		(350M	28.75	-4.69	8.13	1.00	1.57	90.000						
		(
		>=350F	29.04	-4.69	8.83		.25							
	STRAIGHT	>=352	29.04	-4.69	9.08									
		(
		(	* RIGID RESTRAINT AGAINST DISPLACEMENT AT POINT 352											
		(	IN DIRECTION Y											
		(
	STRAIGHT	(					8.75							
		(
		>=355	29.04	-4.69	17.83									

* NOTES PERTAINING TO POINT 355 APPEAR ON THE FOLLOWING PAGE

POINT TYPE	ELEMENT DESIGNATION	POINT LOC. NO.	COORDINATES (FT)			RADIUS (FT)	LENGTH (FT)	ANGLE (DEG)	OUTSIDE WALL		TEMP (DEG FAHR)	DIST. LOADS (LBS PER FT)		
			X	Y	Z				DIAMETER (IN)	THICK (IN)		MATL	PRESS (PSI)	PIPE WT.	UNIF
		>-355	29.04	-4.69	17.83				8.625	.322	LCS	580.	28.6	25.4
		(
		(	* RIGID RESTRAINT AGAINST DISPLACEMENT AT POINT 355											
		(	IN DIRECTION Y											
	STRAIGHT	-					14.25							
		(
		(	* STRESS INTENSIFICATION SPECIFIED AT POINT 360											
		(	STRESS INTENSIFICATION FACTOR = 2.00											
		>-360	29.04	-4.69	32.08									
	STRAIGHT	-					.71		10.750	.365			40.5	35.6
		(
		(	* A UNIFORM DISTRIBUTED LOAD OF 35.60 PLF IS ACTING											
		(	IN THE -Y DIRECTION.											
		>-365N	29.04	-4.69	32.79									
42	BEND	-	365M	29.41	-4.69	33.68	1.25	1.96	90.000					
		>-365F	30.29	-4.69	34.04									
	STRAIGHT	-					.71							
BR PT		>-370	31.00	-4.69	34.04									
		(
		(	* WELDING IEE AT POINT 370											
	STRAIGHT	-					.71							
		>-375N	31.71	-4.69	34.04									
	BEND	-	375M	32.59	-4.69	33.68	1.25	1.96	90.000					
		>-375F	32.96	-4.69	32.79									
	STRAIGHT	-					.71							
		(
		(	* STRESS INTENSIFICATION SPECIFIED AT POINT 376											
		(	STRESS INTENSIFICATION FACTOR = 2.00											
		>-376	32.96	-4.69	32.08									

* NOTES PERTAINING TO POINT 376 APPEAR ON THE FOLLOWING PAGE

DYNALLEX

EDITED PIPING SYSTEM DESCRIPTION (CONTINUED)

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POINT TYPE	ELEMENT DESIGNATION	POINT LOC. NO.	COORDINATES (FT)			RADIUS (FT)	LENGTH (FT)	ANGLE (DEG)	OUTSIDE WALL		TEMP (DEG)	DIST. LOADS (LBS PER FT)		
			X	Y	Z				DIAMETER (IN)	THICK (IN)		MATL	PRESS (PSI)	PIPE WT.	UNIF
		>-395F	40.50	-1.08	6.83				8.625	.322	LCS	560.	28.6	25.4
		(
		(* RIGID RESTRAINT AGAINST DISPLACEMENT AT POINT 395F												
		(IN DIRECTION Y												
	STRAIGHT	-(					1.75							
		>-405	40.50	-1.08	5.08									
	RIGID	-(					1.46		N/A	N/A		N/A	N/A	
		(* WEIGHT OF ELEMENT = 374. POUNDS												
		>-407	40.50	-1.08	3.62									
	STRAIGHT	-(					.67							
		>-409	40.50	-1.08	2.95									
	STRAIGHT	-(					1.87							
		>-410	40.50	-1.08	1.04									
	STRAIGHT	-(					2.00							
44	ANCHR	--415	40.50	-1.08	-.92									
		(* CONTROL COORDINATES OF POINT 415, IN FEET :												
		X = 40.50, Y = -1.08, Z = -.92												
		RESULTANT DIFFERENCE IS ZERO												
	BR PT	-- 50	5.00	-4.69	11.75									

* NOTES PERTAINING TO POINT 50 APPEAR ON THE FOLLOWING PAGE

POINT TYPE	ELEMENT DESIGNATION	POINT LDC. NO.	COORDINATES (FT)			RADIUS (FT)	LENGTH (FT)	ANGLE (DEG)	OUTSIDE WALL		TEMP (DEG) (FAHR)	DIST. LOADS (LBS PER FT)		
			X	Y	Z				DIAMETER (IN)	THICK (IN)		MATL	PRESS (PSI)	PIPE WT.	UNIF
BR PT	-- 50		3.00	-4.69	11.75				8.625	.322	LCS	560.	28.6	25.4
	(
	(* WELDING TEE AT POINT 50													
	(
STRAIGHT	-(					17.00			10.750	.365		525.	40.5	36.2
	(
	(* STRESS INTENSIFICATION SPECIFIED AT POINT 135													
	(STRESS INTENSIFICATION FACTOR = 2.40													
	(
	(* THERMAL EXPANSION OF LCS BETWEEN AMBIENT AND 525.													
	(DEGREES FAHRENHEIT IS 3.86 INCHES PER 100 FEET													
	(
	(* A UNIFORM DISTRIBUTED LOAD OF 36.20 PLF IS ACTING													
	(IN THE -Y DIRECTION.													
	(
	>-135		3.00	-4.69	28.75									
STRAIGHT	-(					1.50								
	>-130		3.00	-4.69	30.25									
	(
	(* RIGID RESTRAINT AGAINST DISPLACEMENT AT POINT 130													
	(IN DIRECTION Y													
	(
STRAIGHT	-(					16.75								
	>-125N		3.00	-4.69	47.00									
	(
BEND	-(	125M	3.37	-4.69	47.88	1.25	1.96	90.000						
	(
	>-125F		4.25	-4.69	48.25									
	(
	(* RIGID RESTRAINT AGAINST DISPLACEMENT AT POINT 125F													
	(IN DIRECTION Y													
	(
STRAIGHT	-(					16.00								
	>-120		20.25	-4.69	48.25									
STRAIGHT	-(15.71								
	>-118N		35.96	-4.69	48.25									
	(
BEND	-(118M	36.84	-4.32	48.25	1.25	1.96	90.000						

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DYNALLEX

EDITED PIPING SYSTEM DESCRIPTION (CONTINUED)

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POINT TYPE	ELEMENT DESIGNATION	POINT LOC. NO.	COORDINATES (FT)			RADIUS (FT)	LENGTH (FT)	ANGLE (DEG)	OUTSIDE WALL		TEMP (DEG) (FAH)	DIST. LOADS (LBS PER FT)		
			X	Y	Z				DIAMETER (IN)	THICK (IN)		MATL	PRESS (PSI)	PIPE WT. UNIF
									10.750	.365	LC9	525	40.5	36.2
	BEND	(I18N	36.84	-4.32	48.25	1.25	1.96	90.000	:	:	:	:	:	:
		(:	:	:	:	:	:
		>I18F	37.21	-3.44	48.25				:	:	:	:	:	:
	STRAIGHT	(					1.90		:	:	:	:	:	:
BR PT		>I15	37.21	-1.54	48.25				:	:	:	:	:	:
		(:	:	:	:	:	:
		(* WELDING TEE AT POINT 115							:	:	:	:	:	:
		(:	:	:	:	:	:
	STRAIGHT	(					1.92		:	:	:	:	:	:
		(:	:	:	:	:	:
		>I10N	37.21	-1.54	50.17				:	:	:	:	:	:
		(:	:	:	:	:	:
	BEND	(I10M	36.84	-1.54	51.05	1.25	1.96	90.000	:	:	:	:	:	:
		(:	:	:	:	:	:
		>I10F	35.96	-1.54	51.42				:	:	:	:	:	:
	STRAIGHT	(					3.34		:	:	:	:	:	:
		>I05	32.61	-1.54	51.42				:	:	:	:	:	:
		(:	:	:	:	:	:
46	RIGID	(					1.64		N/A	N/A		N/A	N/A	
		(:	:	:	:	:	:
		(* WEIGHT OF ELEMENT = 398. POUNDS							:	:	:	:	:	:
		(:	:	:	:	:	:
		>I00	30.97	-1.54	51.42				:	:	:	:	:	:
	STRAIGHT	(					1.33		:	:	:	:	:	:
		>I95	29.64	-1.54	51.42				:	:	:	:	:	:
		(:	:	:	:	:	:
	RIGID	(					1.64		N/A	N/A		N/A	N/A	
		(:	:	:	:	:	:
		(* WEIGHT OF ELEMENT = 398. POUNDS							:	:	:	:	:	:
		(:	:	:	:	:	:
		>I90	28.00	-1.54	51.42				:	:	:	:	:	:
		(:	:	:	:	:	:
		(* POINT 90 IS EQUIVALENT TO POINT 85N							:	:	:	:	:	:
		(:	:	:	:	:	:
		(:	:	:	:	:	:
	BEND	(85M	27.12	-1.91	51.42	1.25	1.96	90.000	:	:	:	:	:	:
		(:	:	:	:	:	:
		>I85F	26.75	-2.79	51.42				:	:	:	:	:	:
	STRAIGHT	(					2.38		:	:	:	:	:	:
		>I80N	26.75	-5.17	51.42				:	:	:	:	:	:
		(:	:	:	:	:	:
	BEND	(80M	26.75	-6.05	51.78	1.25	1.96	90.000	:	:	:	:	:	:
		(:	:	:	:	:	:
		>I80F	26.75	-6.42	52.57				:	:	:	:	:	:

DIST. LOADS
(LBS PER FT)

POINT TYPE	ELEMENT DESIGNATION	POINT LOC. NO.	COORDINATES (FT)			RADIUS (FT)	LENGTH (FT)	ANGLE (DEG)	OUTSIDE DIAMETER (IN)	WALL THICK (IN)	TEMP (DEG) (FAHR)	PRESSURE (PSI)		PIPE WT. UNIF	
			X	Y	Z									WT.	UNIF
								10.750	.365	LCS	525.			40.5	36.2
	STRAIGHT	-	20F	26.75	-6.42	52.67									
	ANCHR	-	75	26.75	-6.42	53.00	.33								
			* CONTROL COORDINATES OF POINT 75, IN FEET :												
			X = 26.75, Y = -6.42, Z = 53.00												
			RESULTANT DIFFERENCE IS ZERO												
			* IMPOSED MOVEMENT OF ANCHOR 75, IN INCHES :												
			DELTA X = 0.00, DELTA Y = 0.00, DELTA Z = -1.32												
	BR PT	-	370	31.00	-4.69	34.04									
			* WELDING TEE AT POINT 370												
	STRAIGHT	-					.71				580.			35.6	
47			* THERMAL EXPANSION OF LCS BETWEEN AMBIENT AND 580. DEGREES FARENHEIT IS 4.40 INCHES PER 100 FEET												
			* A UNIFORM DISTRIBUTED LOAD OF 35.60 PLF IS ACTING IN THE -Y DIRECTION.												
			505N	31.00	-4.69	34.75									
			* RIGID RESTRAINT AGAINST DISPLACEMENT AT POINT 505N IN DIRECTION Y												
	BEND	-	505M	31.00	-4.32	35.63	1.25	1.96	90.000						
			505F	31.00	-3.44	36.00									

* NOTES PERTAINING TO POINT 505F APPEAR ON THE FOLLOWING PAGE

DYNAPLEX

EDITED PIPING SYSTEM DESCRIPTION (CONTINUED)

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DIST. LOADS
(LBS PER FT)

POINT TYPE	ELEMENT DESIGNATION	POINT LOC. NO.	COORDINATES (FT)			RADIUS (FT)	LENGTH (FT)	ANGLE (DEG)	OUTSIDE DIAMETER (IN)	WALL THICK (IN)	TEMP (DEG) (FAHR)	PRESS PIPE	
			X	Y	Z							(PSI)	WT. UNIF
		>=505F	31.00	-3.44	36.00				10.750	.365	LCS: 580.	40.5	35.6
	STRAIGHT	=(					2.75						
		(
		(	* STRESS INTENSIFICATION SPECIFIED AT POINTS 510										
		(	STRESS INTENSIFICATION FACTOR = 2.40										
		(
		>=510	31.00	-.69	36.00								
	STRAIGHT	=(					11.85						
		>=515N	31.00	11.17	36.00								
	BEND	=(515M	31.00	12.05	36.37	1.25	1.96	90.000					
		(
		>=515F	31.00	12.42	37.25								
	STRAIGHT	=(					7.82						
		>=520N	31.00	12.42	45.07								
		(
	BEND	=(520M	30.63	12.42	45.95	1.25	1.96	90.000					
		(
48		>=520F	29.75	12.42	46.32								
	STRAIGHT	=(					.75						
		>=525	29.00	12.42	46.32								
	STRAIGHT	=(					4.00						
		>=530N	25.00	12.42	46.32								
	BEND	=(530M	24.12	12.78	46.32	1.25	1.96	90.000					
		(
		>=530F	23.75	13.67	46.32								
	STRAIGHT	=(					9.00						
		>=535N	23.75	22.67	46.32								
	BEND	=(535M	24.12	23.55	46.32	1.25	1.96	90.000					
		(
		>=535F	25.00	23.92	46.32								
	STRAIGHT	=(					6.83						
		>=540N	31.83	23.92	46.32								
	BEND	=(540M	32.72	24.28	46.32	1.25	1.96	90.000					
		(
		>=540F	33.08	25.17	46.32								
	STRAIGHT	=(					7.00						
HR PT		>=555	33.08	32.17	46.32								

* NOTES PERTAINING TO POINT 555 APPEAR ON THE FOLLOWING PAGE

DYNAFLEX

EDITED PIPING SYSTEM DESCRIPTION (CONTINUED)

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POINT TYPE	ELEMENT DESIGNATION	POINT LOC. NO.	COORDINATES (FT)			RADIUS (FT)	LENGTH (FT)	ANGLE (DEG)	OUTSIDE WALL		TEMP (DEG) (FAHR)	DIST. LOADS (LBS PER FT)		
			X	Y	Z				DIAMETER (IN)	THICK (IN)		MATL	PRESS (PSI)	PIPE WT.	UNIF
BR PT	>=555		33.08	32.17	46.32				10.750	.365	LCS	560	40.5	35.6
	(
	(* WELDING TEE AT POINT 555													
	(
STRAIGHT	-					.71								
	(
	>=560N		33.08	32.17	47.03									
	(
BEND	-	560N	32.72	32.17	47.91	1.25	1.96	90.000						
	(
	>=560F		31.83	32.17	48.28									
STRAIGHT	-						2.19							
	(
	>=564		29.64	32.17	48.28									
	(
RIGID	-						1.64		N/A	N/A		N/A	N/A	
	(
	(* WEIGHT OF ELEMENT = 398. POUNDS													
	(
49		>=565	28.00	32.17	48.28									
	(
	(* POINT 565 IS EQUIVALENT TO POINT 568N													
	(
	(
BEND	-	568N	27.12	32.17	48.64	1.25	1.96	90.000						
	(
	>=568F		26.75	32.17	49.53									
STRAIGHT	-						2.17							
	(
	>=570		26.75	32.17	51.69									
	(
RIGID	-						1.31		N/A	N/A		N/A	N/A	
	(
	(* WEIGHT OF ELEMENT = 344. POUNDS													
	(
ANCHR	-	575	26.75	32.17	53.00									

* NOTES PERTAINING TO POINT 575 APPEAR ON THE FOLLOWING PAGE

DYNAFLEX

EDITED PIPING SYSTEM DESCRIPTION (CONTINUED)

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POINT TYPE	ELEMENT DESIGNATION	POINT LOC. NO.	COORDINATES (FT)			RADIUS (FT)	LENGTH (FT)	ANGLE (DEG)	OUTSIDE DIAMETER (IN)	WALL THICK (IN)	TEMP (FAHR)	DIST. LOADS (LBS PER FT)		
			X	Y	Z							PRESS (PSI)	PIPE WT. UNIF	
		>=660	35.25	9.42	30.75				10.750	.365	LCS	580.	40.5	35.6
	STRAIGHT - (						.93							
		>=665R	35.25	9.42	29.82									
	(
	BEND - (	665R	35.25	9.32	29.34	1.25	.98	45.000						
	(
	STRAIGHT - (	>=665F	35.25	9.05	28.94		1.13							
	(
		>=670R	35.25	8.25	28.13									
	(
	BEND - (	670R	35.62	7.62	27.51	1.25	1.96	90.000						
	(
	STRAIGHT - (	>=670F	36.50	7.36	27.25		7.75							
	(
		>=675	44.25	7.36	27.25									
	(
		* RIGID RESTRAINT AGAINST DISPLACEMENT AT POINT 675												
	(	IN DIRECTION Y												
52	STRAIGHT - (						9.50							
		>=680	53.75	7.36	27.25									
	(
		* RIGID RESTRAINT AGAINST DISPLACEMENT AT POINT 680												
	(	IN DIRECTION Y												
	STRAIGHT - (						4.00							
	(
		* STRESS INTENSIFICATION SPECIFIED AT POINT 685												
	(	STRESS INTENSIFICATION FACTOR = 2.40												
		>=685	57.75	7.36	27.25									
BR PT														

* NOTES PERTAINING TO POINT 685 APPEAR ON THE FOLLOWING PAGE

POINT TYPE	ELEMENT DESIGNATION	POINT LOC. NO.	COORDINATES (FT)			RADIUS (FT)	LENGTH (FT)	ANGLE (DEG)	OUTSIDE WALL		TEMP (DEG) (FAHR)	DIST. LOADS (LBS PER FT)		
			X	Y	Z				DIAMETER (IN)	THICK (IN)		MATL	PRESS (PSI)	PIPE WT. UNIF
	BEND	(710R	75.75	4.80	26.96	1.00	1.57	90.000	8.625	.322	LCS	580.	28.6	25.4
		(
	STRAIGHT	>710F	75.75	4.51	26.25		17.50							
		(
		>715N	75.75	4.51	8.75									
		(
	BEND	(715R	75.75	4.21	8.04	1.00	1.57	90.000						
		(
	STRAIGHT	>715F	75.75	3.51	7.75		4.02							
		(
		>720R	75.75	-1.51	7.75									
		(
	BEND	(720R	75.75	-1.22	7.46	1.00	1.57	90.000						
		(
		>720F	75.75	-1.51	6.75		3.00							
		(
	ANCHR	--725	75.75	-1.51	3.75									
54														
			* CONTROL COORDINATES OF POINT 725, IN FEET :											
			x = 75.75, Y = -1.51, Z = 3.75											
			RESULTANT DIFFERENCE IS ZERO											
	BR PT	--685	57.75	7.36	27.25									
		(
	STRAIGHT	>730R					1.95				70.			
		(
			* THERMAL EXPANSION OF LCS BETWEEN AMBIENT AND 70. DEGREES FARENHEIT IS 0.00 INCHES PER 100 FEET											
		>730N	57.75	5.42	27.25									
		(
	BEND	(730R	57.75	4.71	26.96	1.00	1.57	90.000						
		(
		>730F	57.75	4.42	26.25		17.50							
		(
	STRAIGHT	>735R	57.75	4.42	8.75									
		(
	BEND	(735R	57.75	4.12	8.04	1.00	1.57	90.000						

DYNAFLEX

EDITED PIPING SYSTEM DESCRIPTION (CONTINUED)

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POINT TYPE	ELEMENT DESIGNATION	POINT LOC. NO.	COORDINATES (FT)			RADIUS (FT)	LENGTH (FT)	ANGLE (DEG)	OUTSIDE DIAMETER (IN)	WALL THICK (IN)	TEMP (FAHR)	PRESS (PSI)	DIST. LOADS (LBS PER FT)	
			X	Y	Z								WT.	UNIF
		>815	37.21	.42	43.69				10.750	.365	LC9	70.	40.5	36.2
	RIGID	-(					1.64		N/A	N/A			N/A	N/A
	(* WEIGHT OF ELEMENT = 398. POUNDS													
	STRAIGHT	-(					1.67							
		>820	37.21	.42	45.33									
		>825M	37.21	.42	47.00									
	BEND	-(825H	37.21	.05	47.88	1.25	1.96	90.000						
		>825F	37.21	-.83	48.25									
	STRAIGHT	-(.71							
BR PT		--115	37.21	-1.54	48.25									
	* WELDING TEE AT POINT 115 :													

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DYNAFLEX

LOADING - THERMAL

PAGE 32

 * FORCES AND MOMENTS ON ANCHORS AND RESTRAINTS *

EXPLANATORY NOTES

THE FORCES AND MOMENTS SHOWN BELOW ARE THE ACTIONS OF THE PIPING SYSTEM ON THE ANCHORS AND RESTRAINTS.

LDC. NO.	FORCES (POUNDS)				MOMENTS (FOOT-POUNDS)			
	X	Y	Z	RESULTANT	X	Y	Z	RESULTANT
ANCHORS:								
5	-1487.	1048.	-3520.	3962.	292.	-6630.	-605.	6664.
45	320.	-1136.	2948.	3175.	1772.	2934.	4232.	5446.
265	-24839.	99868.	-565.	735.	-663.	9635.		
290	287.	-27.	641.	703.	106.	6439.	-1325.	6575.
305	-145.	85.	-361.	396.	-163.	-443.	582.	754.
415	186.	92.	-446.	492.	-196.	668.	-559.	893.
75	-68.	-132.	1095.	1105.	3264.	-1755.	889.	3811.
375	-110.	1045.	610.	1327.	-1621.	-1361.	1953.	2860.
725	318.	-162.	-328.	485.	372.	2805.	-1802.	3355.
745	260.	-124.	-272.	397.	-249.	1092.	-1509.	1879.
RESTRAINTS:								
160	0.	381.	0.	381.	0.	0.	0.	0.
165	0.	203.	0.	203.	0.	0.	0.	0.

DYNAFLEX

LOADING - THERMAL

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FORCES AND MOMENTS ON ANCHORS AND RESTRAINTS (CONTINUED)

EXPLANATORY NOTES

THE FORCES AND MOMENTS SHOWN BELOW ARE THE ACTIONS OF THE PIPING SYSTEM
ON THE ANCHORS AND RESTRAINTS.

LOC. NO.	(FOOT-POUNDS)				MOMENTS			
	X	Y	Z	RESULTANT	X	Y	Z	RESULTANT
RESTRAINTS (CONTINUED) -								
170	0.	-135.	0.	135.	0.	0.	0.	0.
172	0.	131.	0.	131.	0.	0.	0.	0.
185	0.	-47.	0.	47.	0.	0.	0.	0.
200	0.	25.	0.	25.	0.	0.	0.	0.
215	0.	62.	0.	62.	0.	0.	0.	0.
220	0.	-236.	0.	236.	0.	0.	0.	0.
235	0.	-133.	0.	133.	0.	0.	0.	0.
245F	0.	293.	0.	293.	0.	0.	0.	0.
260	0.	-506.	0.	506.	0.	0.	0.	0.
285	0.	351.	0.	351.	0.	0.	0.	0.
335H	0.	126.	0.	126.	0.	0.	0.	0.
352	0.	14.	0.	14.	0.	0.	0.	0.
355	0.	-552.	0.	552.	0.	0.	0.	0.
378	0.	-420.	0.	420.	0.	0.	0.	0.
379	0.	-167.	0.	167.	0.	0.	0.	0.
395F	0.	233.	0.	233.	0.	0.	0.	0.

DYNAFLEX

LOADING - THERMAL

PAGE 34

FORCES AND MOMENTS ON ANCHORS AND RESTRAINTS (CONTINUED)

EXPLANATORY NOTES

THE FORCES AND MOMENTS SHOWN BELOW ARE THE ACTIONS OF THE PIPING SYSTEM ON THE ANCHORS AND RESTRAINTS.

FORCES (POUNDS)

MOMENTS (FOOT-POUNDS)

LOC. NO.	FORCES (POUNDS)				MOMENTS (FOOT-POUNDS)			
	X	Y	Z	RESULTANT	X	Y	Z	RESULTANT
RESTRAINTS (CONTINUED) -								
130	0.	-634.	0.	634.	0.	0.	0.	0.
125F	0.	103.	0.	103.	0.	0.	0.	0.
505N	0.	-522.	0.	522.	0.	0.	0.	0.
675	0.	457.	0.	457.	0.	0.	0.	0.
680	0.	56.	0.	56.	0.	0.	0.	0.
695	0.	87.	0.	87.	0.	0.	0.	0.
700	0.	88.	0.	88.	0.	0.	0.	0.

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*****
*
* INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS *
* ----- *
*
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THE MAXIMUM STRESS OF 12,376. OCCURS AT POINT 25

EXPLANATORY NOTES:

- (1) THE FORCES AND MOMENTS SHOWN BELOW ARE WITH REFERENCE TO THE ELEMENT LOCAL AXES.
- (2) THE STRESSES SHOWN BELOW ARE CALCULATED IN ACCORDANCE WITH THE ANSI B31.1 - 1977 PIPING CODE (INCLUDING ALL MANDATORY UPDATES)
- (3) A (**) FOLLOWING A STRESS VALUE INDICATES THE MAXIMUM STRESS FOR THIS LOADING CONDITION.
- (4) A (*) FOLLOWING A STRESS VALUE INDICATES A STRESS WITHIN 10 PER CENT OF THE MAXIMUM.
- (5) THE COLD MODULUS HAS BEEN USED IN THIS ANALYSIS.
- (6) THE STRESS INTENSIFICATION FACTORS (ABBREVIATED AS SIF IN THE TABLE HEADING BELOW) ARE AUTOMATICALLY CALCULATED AND APPLIED AT BENDS, ELBOWS, MITERS AND ADMISSIBLE TYPES OF TEES (AS SPECIFICALLY IDENTIFIED IN THE INPUT DESCRIPTION OF THE PIPING SYSTEM). USER ENTERED STRESS INTENSIFICATION FACTORS TAKE PRECEDENCE OVER INTERNALLY CALCULATED VALUES.
- (15) THE EXACT SECTION MODULUS IS USED IN THE STRESS CALCULATIONS UNLESS THE SPECIFIC PIPING CODE OR THE USER EXPLICITLY REQUESTS OTHERWISE. IN THIS ANALYSIS THE SO-CALLED EFFECTIVE MODULUS IS USED FOR THE BRANCH LEG AT REDUCED OUTLET CONNECTIONS. THESE ARE IDENTIFIED WITH AN ASTERISK. THE EXACT SECTION MODULUS IS USED FOR ALL OTHER POINTS.

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DYNAFLEX

LOADING - THERMAL

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INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIP		SECTION MODULUS (IN (3))	EXPANSION STRESS PSI
			AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		
ANCHR		-- 5	3520.	1819.	605.	292.	6630.	1.00	1.00	29.90	2674.
	STR -(
	>-	10	3520.	1819.	605.	1541.	4857.	1.00	1.00	29.90	2059.
	RIGID -(
	>-	15	3520.	1819.	605.	3260.	2418.	1.00	1.00	29.90	1647.
	STR -(
	>-	20N	3520.	1819.	605.	5880.	1299.	2.61	2.61	29.90	6327.
	BEND -(	20M	3230.	2295.	1891.	5518.	1804.	2.61	2.61	29.90	6382.
	>-	20F	1048.	3821.	3157.	2790.	1253.	2.61	2.61	29.90	4595.
	STR -(
	>-	22N	1048.	3821.	3157.	4505.	4909.	2.61	2.61	29.90	7708.
	BEND -(	22M	1792.	3533.	6992.	5435.	4350.	2.61	2.61	29.90	10315.
	>-	22F	1487.	3672.	9309.	5054.	1243.	2.61	2.61	29.90	11149. *
	STR -(
BR PT		-- 25	1487.	3672.	9309.	7402.	3220.	1.97	1.97	29.90	9730.
BR PT		-- 25	320.	3159.	8112.	8015.	675.	1.97	1.97	29.90	9021.
	STR -(
	>-	30N	320.	3159.	8112.	1313.	2857.	2.61	2.61	29.90	9094.
	BEND -(	30M	577.	3122.	4795.	2434.	5151.	2.61	2.61	29.90	7784.
	>-	30F	1136.	2965.	827.	3132.	4427.	2.61	2.61	29.90	5735.
	STR -(
	>-	32N	1136.	2965.	827.	2021.	3832.	2.61	2.61	29.90	4611.
	BEND -(	32M	2488.	1320.	2242.	4210.	3578.	2.61	2.61	29.90	6233.
	>-	32F	2948.	1180.	4232.	4266.	1227.	2.61	2.61	29.90	6426.
	STR -(
	>-	35	2948.	1180.	4232.	1446.	2027.	1.00	1.00	29.90	1970.
	RIGID -(
	>-	40	2948.	1180.	4232.	418.	2552.	1.00	1.00	29.90	1990.
	STR -(
ANCHR		-- 45	2948.	1180.	4232.	1772.	2934.	1.00	1.00	29.90	2185.
BR PT		-- 25	572.	1170.	2545.	15418.	1197.	1.97	1.97	29.90	12376. **
BR PT		-- 50	572.	1170.	2545.	1652.	9390.	1.97	1.97	29.90	7792.

DYNAFLEX

LOADING - THERMAL

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INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION STRESS PSI
			AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		
HR	PT	50	572.	1170.	2545.	1652.	9390.	1.97	1.97	29.90	7792.
HR	PT	50	530.	730.	3920.	3533.	4423.	1.97	1.97	29.90	5437.
	STR	>- 140N	530.	730.	3920.	4125.	1283.	2.61	2.61	29.90	6098.
	BEND	140M	428.	795.	3445.	3998.	1223.	2.61	2.61	29.90	6009.
	STR	>- 140F	75.	900.	2191.	3557.	3012.	2.61	2.61	29.90	5383.
	STR	>- 150N	75.	900.	2191.	157.	2073.	2.61	2.61	29.90	3157.
	BEND	150M	428.	795.	183.	598.	3657.	2.61	2.61	29.90	3879.
	STR	>- 150F	530.	730.	2981.	726.	3099.	2.61	2.61	29.90	4559.
	STR	>- 155N	530.	730.	2981.	3424.	692.	2.61	2.61	29.90	4801.
89	BEND	155M	889.	158.	1647.	3872.	2531.	2.61	2.61	29.90	5133.
	STR	>- 155F	726.	536.	598.	3669.	2887.	2.61	2.61	29.90	4920.
	STR	>- 160	726.	536.	598.	2078.	2661.	1.00	1.00	29.90	1376.
	STR	>- 165	726.	167.	598.	606.	1303.	1.00	1.00	29.90	624.
	STR	>- 170	726.	110.	598.	424.	131.	1.00	1.00	29.90	299.
	STR	>- 172	726.	110.	598.	1110.	1564.	1.00	1.00	29.90	806.
	STR	>- 175N	726.	91.	598.	1085.	1602.	2.61	2.61	29.90	2117.
	BEND	175M	478.	554.	1583.	774.	777.	2.61	2.61	29.90	2013.
	STR	>- 175F	50.	730.	1696.	503.	114.	2.61	2.61	29.90	1853.
	BEND	180M	18.	732.	1365.	418.	638.	2.61	2.61	29.90	1653.
	STR	>- 180F	75.	728.	744.	346.	788.	2.61	2.61	29.90	1224.
	STR	>- 185	75.	728.	744.	18.	4479.	1.00	1.00	29.90	1825.
	STR	>- 190L	75.	726.	744.	4781.	19.	2.61	2.61	29.90	5067.

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INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION STRESS PSI
			AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		
		>- 190N	75.	726.	794.	4781.	19.	2.61	2.61	29.90	5067.
	BEND	(190M	567.	460.	547.	5396.	578.	2.61	2.61	29.90	5702.
		>- 190F	726.	76.	23.	5595.	798.	2.61	2.61	29.90	5908.
	STR	(
		>- 195N	726.	76.	23.	4615.	838.	2.61	2.61	29.90	4903.
	BEND	(195M	460.	567.	610.	4282.	579.	2.61	2.61	29.90	4562.
		>- 195F	75.	726.	841.	3612.	19.	2.61	2.61	29.90	3877.
	STR	(
		>- 200	75.	726.	841.	18.	3309.	1.00	1.00	29.90	1370.
	STR	(
		>- 205N	75.	727.	841.	187.	1957.	2.61	2.61	29.90	2236.
	BEND	(205M	33.	730.	2245.	239.	1431.	2.61	2.61	29.90	2795.
		>- 205F	28.	730.	2866.	316.	67.	2.61	2.61	29.90	3015.
	BEND	(210M	534.	499.	1775.	698.	2317.	2.61	2.61	29.90	3137.
		>- 210F	726.	81.	411.	939.	2960.	2.61	2.61	29.90	3274.
	STR	(
		>- 215	726.	117.	411.	925.	2998.	1.00	1.00	29.90	1270.
	STR	(
		>- 220	726.	117.	411.	784.	4431.	1.00	1.00	29.90	1813.
	STR	(
	BR pT	-- 225	726.	165.	411.	28.	4821.	2.40	2.40	29.90	4660.
	BR pT	-- 225	439.	593.	1497.	1258.	8870.	2.40	2.40	29.90	8747.
	STR	(
		>- 230	439.	593.	1497.	1028.	8140.	2.00	2.00	16.81	11908. *
	STR	(
		>- 235	439.	593.	1497.	845.	2181.	1.00	1.00	16.81	1982.
	STR	(
		>- 240N	439.	567.	1497.	1485.	5828.	2.44	2.44	16.81	10790.
	BEND	(240M	279.	661.	5345.	1646.	3462.	2.44	2.44	16.81	11451. *
		>- 240F	45.	716.	6393.	931.	1970.	2.44	2.44	16.81	11759. *
	BEND	(245M	368.	616.	6042.	518.	2817.	2.44	2.44	16.81	11641. **

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INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION STRESS PSI	
			AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE			
	BEND - (	245M	368.	616.	6042.	518.	2617.	2.44	2.44	16.81	11641. *
	>-	245F	565.	441.	2409.	321.	5954.	2.44	2.44	16.81	11196. *	
	STR - (>-	250N	565.	554.	2409.	3563.	904.	2.44	2.44	16.81	7652.
	BEND - (	250M	639.	468.	1193.	3637.	2032.	2.44	2.44	16.81	7544.
	>-	250F	338.	716.	465.	3336.	1970.	2.44	2.44	16.81	6793.	
	STR - (>-	255N	538.	716.	465.	1799.	2019.	2.44	2.44	16.81	4777.
	BEND - (	255M	639.	468.	1885.	2100.	1409.	2.44	2.44	16.81	5491.
	>-	255F	565.	554.	2458.	2026.	26.	2.44	2.44	16.81	5546.	
	STR - (>-	260	565.	470.	2458.	1351.	4365.	1.00	1.00	16.81	3704.
69	ANCHR	--	265	565.	470.	2458.	663.	9635.	1.00	1.00	16.81	7114.
	HR PT	--	225	324.	702.	4049.	1285.	1907.	2.40	2.40	16.81	7979.
	STR - (>-	270N	324.	702.	4049.	1266.	1573.	2.44	2.44	16.81	7877.
	BEND - (	270M	224.	740.	4059.	718.	1548.	2.44	2.44	16.81	7666.
	>-	270F	641.	433.	1860.	302.	3762.	2.44	2.44	16.81	7325.	
	STR - (>-	275N	641.	433.	1860.	3427.	457.	2.44	2.44	16.81	6835.
	BEND - (	275M	682.	364.	1076.	3469.	1435.	2.44	2.44	16.81	6799.
	>-	275F	324.	702.	170.	3110.	1573.	2.44	2.44	16.81	6075.	
	STR - (>-	280N	324.	702.	170.	2710.	1038.	2.44	2.44	16.81	5060.
	BEND - (	280M	682.	364.	938.	3068.	817.	2.44	2.44	16.81	5763.
	>-	280F	641.	433.	1325.	3026.	118.	2.44	2.44	16.81	5755.	
	STR - (>-	285	641.	289.	1325.	216.	2991.	1.00	1.00	16.81	2341.
	ANCHR	--	290	641.	289.	1325.	106.	6439.	1.00	1.00	16.81	4694.

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INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION STRESS PSI
			AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		
ANCHR		-- 290	641.	289.	1325.	106.	6439.	1.00	1.00	16.81	4694.
ANCHR		-- 305	361.	168.	582.	183.	443.	1.00	1.00	16.81	538.
	STR - (	>- 310	361.	168.	582.	14.	153.	1.00	1.00	16.81	430.
	STR - (	>- 315	361.	168.	582.	145.	118.	1.00	1.00	16.81	436.
	STR - (	>- 320	361.	168.	582.	201.	215.	1.00	1.00	16.81	466.
RIGID	-(	>- 325	361.	168.	582.	325.	427.	1.00	1.00	16.81	565.
	STR - (	>- 335N	361.	256.	582.	473.	681.	2.44	2.44	16.81	1764.
	BEND - (	335H	404.	180.	112.	517.	995.	2.44	2.44	16.81	1962.
	STR - (	>- 335F	16.81211:	1989.	826.	323.	727.	2.44	2.44		
BR		>- 340N	211.	309.	826.	960.	256.	2.44	2.44	16.81	2249.
	BEND - (	340M	252.	364.	871.	1001.	147.	2.44	2.44	16.81	2323.
	STR - (	>- 340F	145.	418.	618.	894.	464.	2.44	2.44	16.81	2057.
	BEND - (	>- 350N	145.	418.	618.	1537.	274.	2.44	2.44	16.81	2923.
	STR - (	350M	358.	260.	692.	1750.	94.	2.44	2.44	16.81	3280.
	STR - (	>- 350F	361.	256.	485.	1753.	407.	2.44	2.44	16.81	3245.
	STR - (	>- 352	361.	256.	485.	354.	1717.	1.00	1.00	16.81	1298.
	STR - (	>- 355	361.	267.	485.	1611.	448.	1.00	1.00	16.81	1243.
	STR - (	>- 360	361.	358.	485.	3059.	1618.	2.00	2.00	16.81	4990.
	STR - (	>- 365N	361.	354.	485.	1721.	3291.	2.61	2.61	29.90	3916.
	BEND - (	365M	358.	362.	2790.	1717.	2274.	2.61	2.61	29.90	4169.
	STR - (>- 365F	145.	488.	3701.	1451.	75.	2.61	2.61	29.90	4156.
BR PT		-- 370	145.	488.	3701.	1195.	157.	1.97	1.97	29.90	3074.

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INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION STRESS PSI
		AXIAL	RESILTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		
ANCHR	-- 415	446.	207.	559.	198.	668.	1.00	1.00	16.81	638.
BR PT	-- 50	497.	624.	1879.	5185.	5470.	1.97	1.97	29.90	6133.
STR - (	>- 135	497.	624.	1879.	2337.	2014.	2.40	2.40	29.90	3479.
STR - (	>- 130	497.	624.	1879.	3000.	2675.	1.00	1.00	29.90	1780.
STR - (	>- 125N	497.	480.	1879.	10048.	203.	2.61	2.61	29.90	10688.
BEND - (	125M	662.	195.	1542.	10256.	1016.	2.61	2.61	29.90	10893.
STR - (	>- 125F	440.	532.	442.	9978.	1640.	2.61	2.61	29.90	10581.
STR - (	>- 120	440.	504.	442.	230.	2032.	1.00	1.00	29.90	840.
STR - (	>- 118N	440.	504.	442.	1154.	5769.	2.61	2.61	29.90	6167.
BEND - (	118M	374.	556.	4574.	1070.	4205.	2.61	2.61	29.90	6591.
STR - (	>- 116F	88.	664.	6389.	713.	178.	2.61	2.61	29.90	6723.
BR PT	-- 115	88.	664.	6389.	1120.	121.	1.97	1.97	29.90	5123.
BR PT	-- 115	1095.	149.	1940.	1446.	9374.	1.97	1.97	29.90	7645.
STR - (	>- 110N	1095.	149.	1940.	9505.	1700.	2.61	2.61	29.90	10296.
BEND - (	110M	823.	738.	2622.	9164.	52.	2.61	2.61	29.90	9965.
STR - (	>- 110F	68.	1103.	1866.	8221.	1774.	2.61	2.61	29.90	9006.
STR - (	>- 105	68.	1103.	1866.	1332.	4559.	1.00	1.00	29.90	2048.
RIGID - (	>- 100	68.	1103.	1866.	1115.	2762.	1.00	1.00	29.90	1410.
STR - (	>- 95	68.	1103.	1866.	938.	1302.	1.00	1.00	29.90	988.
RIGID - (	>- 90	68.	1103.	1866.	721.	495.	2.61	2.61	29.90	2154.
BEND - (85M	142.	1096.	2070.	629.	1.	2.61	2.61	29.90	2262.
STR - (>- 85F	132.	1097.	1864.	641.	497.	2.61	2.61	29.90	2125.

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INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION STRESS PSI
			AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		
		>- 45F	132.	1097.	1864.	641.	497.	2.61	2.61	29.90	2125.
	STR - (
		>- 80N	132.	1097.	1864.	2104.	803.	2.61	2.61	29.90	3056.
	BEND - (	80M	868.	684.	1911.	3024.	689.	2.61	2.61	29.90	3808.
		>- 80F	1095.	149.	889.	3308.	1778.	2.61	2.61	29.90	4034.
	STR - (
ANCHR		-- 75	1095.	149.	889.	3264.	1755.	1.00	1.00	29.90	1529.
BR PT		-- 370	808.	591.	865.	402.	6930.	1.97	1.97	29.90	5524.
	STR - (
		>- 505N	808.	1113.	865.	7348.	431.	2.61	2.61	29.90	7747.
	BEND - (	505M	1357.	219.	292.	8035.	953.	2.61	2.61	29.90	8464.
		>- 505F	1112.	809.	483.	7728.	917.	2.61	2.61	29.90	8151.
	STR - (
		>- 510	1112.	809.	483.	1030.	5507.	2.40	2.40	29.90	5416.
	STR - (
		>- 515N	1112.	809.	483.	4065.	1517.	2.61	2.61	29.90	4564.
	BEND - (	515M	1357.	219.	747.	4372.	1450.	2.61	2.61	29.90	4878.
		>- 515F	808.	1113.	1568.	3685.	534.	2.61	2.61	29.90	4224.
	STR - (
		>- 520N	808.	1113.	1568.	855.	5008.	2.61	2.61	29.90	5558.
	BEND - (	520M	600.	1237.	5057.	596.	3415.	2.61	2.61	29.90	6410.
		>- 520F	41.	1374.	6398.	103.	178.	2.61	2.61	29.90	6692.
	STR - (
		>- 525	41.	1374.	6398.	656.	708.	1.00	1.00	29.90	2596.
	STR - (
		>- 530N	41.	1374.	6398.	5103.	3939.	2.61	2.61	29.90	9495.
	BEND - (	530M	815.	1107.	7605.	6071.	1025.	2.61	2.61	29.90	10229.
		>- 530F	1112.	809.	4948.	6442.	5389.	2.61	2.61	29.90	10190.
	STR - (
		>- 535N	29.90112:	809.	4948.	6072.	1880.	2.61	2.61		
	BEND - (535M	757.	1148.	5124.	5629.	1456.	2.61	2.61	29.90	8101.

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INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION :			
			AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		STRESS PSI			
	BEND	(	535M	757.	1148.	5124.	5629.	1456.	2.61	2.61	29.90	:	8101.	:
		)	>- 535F	41.	1374.	2689.	4631.	3939.	2.61	2.61	29.90	:	7036.	:
	STR	(	540N	41.	1374.	2689.	2968.	1580.	2.61	2.61	29.90	:	4634.	:
		)	>- 540F	1112.	809.	2589.	4409.	3898.	2.61	2.61	29.90	:	6721.	:
	BEND	(	540M	757.	1148.	630.	3966.	3874.	2.61	2.61	29.90	:	5832.	:
		)	>- 540F	1112.	809.	2589.	4409.	3898.	2.61	2.61	29.90	:	6721.	:
	BR PT	--	555	1112.	809.	2589.	9551.	4697.	1.97	1.97	29.90	:	8650.	:
	BR PT	--	555	810.	1051.	4665.	8604.	3030.	1.97	1.97	29.90	:	8091.	:
	STR	(	560N	810.	1051.	4665.	3108.	7864.	2.61	2.61	29.90	:	10096.	:
		)	>- 560F	110.	1322.	6558.	2234.	3359.	2.61	2.61	29.90	:	8048.	:
	BEND	(	560M	651.	1156.	1879.	2909.	7936.	2.61	2.61	29.90	:	9052.	:
		)	>- 564	110.	1322.	6558.	1068.	458.	1.00	1.00	29.90	:	2672.	:
	STR	(	565	110.	1322.	6558.	870.	647.	2.61	2.61	29.90	:	6948.	:
		)	>- 568F	810.	1051.	1953.	1744.	5251.	2.61	2.61	29.90	:	6134.	:
	BEND	(	568M	651.	1156.	5477.	1545.	3256.	2.61	2.61	29.90	:	6854.	:
		)	>- 570	810.	1051.	1953.	2987.	1505.	1.00	1.00	29.90	:	1554.	:
	STR	(	575	11.	1051.	1953.	1621.	1361.	N/A	N/A	N/A	:	N/A	:
	ANCHR	--	575	11.	1051.	1953.	1621.	1361.	N/A	N/A	N/A	:	N/A	:
	BR PT	--	555	2.	96.	32.	947.	441.	1.97	1.97	29.90	:	825.	:
	STR	(	600N	2.	96.	32.	392.	995.	2.61	2.61	29.90	:	1116.	:
		)	>- 600F	69.	67.	1078.	302.	52.	2.61	2.61	29.90	:	1172.	:
	BEND	(	600M	47.	84.	750.	330.	740.	2.61	2.61	29.90	:	1154.	:
		)	>- 605	69.	67.	1078.	199.	298.	1.00	1.00	29.90	:	456.	:
	STR	(	610	69.	67.	1078.	304.	294.	2.61	2.61	29.90	:	1212.	:
		)	>- 610	69.	67.	1078.	304.	294.	2.61	2.61	29.90	:	1212.	:
	RIGID	(610	69.	67.	1078.	304.	294.	2.61	2.61	29.90	:	1212.	:
)	>- 610	69.	67.	1078.	304.	294.	2.61	2.61	29.90	:	1212.	:

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INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION STRESS PSI
			AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		
		>- 610	69.	67.	1078.	309.	294.	2.61	2.61	29.90	1212.
	BEND	(615M	96.	3.	970.	343.	556.	2.61	2.61	29.90	1222.
		>- 615F	67.	69.	292.	306.	1081.	2.61	2.61	29.90	1213.
	STR	(618N	67.	69.	292.	81.	1088.	2.61	2.61	29.90	1180.
		>- 618M	96.	3.	976.	44.	565.	2.61	2.61	29.90	1180.
	BEND	(618F	69.	67.	1091.	78.	289.	2.61	2.61	29.90	1182.
	STR	(620N	69.	67.	1091.	285.	212.	2.61	2.61	29.90	1199.
		>- 620M	50.	82.	945.	308.	562.	2.61	2.61	29.90	1194.
	BEND	(620F	2.	96.	296.	369.	1007.	2.61	2.61	29.90	1163.
	STR	(625N	2.	96.	296.	730.	655.	2.61	2.61	29.90	1071.
		>- 625M	49.	83.	698.	671.	316.	2.61	2.61	29.90	1065.
	BEND	(625F	67.	69.	742.	649.	209.	2.61	2.61	29.90	1053.
	STR	(630N	67.	69.	742.	795.	679.	2.61	2.61	29.90	1341.
		>- 630M	2.	96.	43.	881.	1007.	2.61	2.61	29.90	1399.
	BEND	(630F	69.	67.	682.	966.	745.	2.61	2.61	29.90	1461.
	STR	(635	69.	67.	682.	1284.	755.	1.00	1.00	29.90	657.
	STR	(640N	69.	67.	682.	767.	1669.	2.61	2.61	29.90	2048.
		>- 640M	50.	82.	722.	744.	1721.	2.61	2.61	29.90	2100.
	BEND	(640F	2.	96.	1752.	683.	766.	2.61	2.61	29.90	2123.
	STR	(642	2.	96.	1752.	1000.	441.	1.00	1.00	29.90	829.
	STR	(645	2.	96.	1752.	1268.	164.	2.40	2.40	29.90	2089.
	STR	(655	2.	96.	1752.	269.	1686.	1.97	1.97	29.90	1932.

HR PT

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INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION. STRESS PSI
			AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		
BR PT		-- 655	2.	96.	1752.	269.	1686.	1.97	1.97	29.90	1932.
BR PT		-- 655	601.	645.	2435.	4688.	2499.	1.97	1.97	29.90	4615.
	STR - (	>- 660	601.	645.	2435.	990.	7722.	1.00	1.00	29.90	3273.
	STR - (	>- 665N	601.	645.	2435.	722.	8259.	2.61	2.61	29.90	9033.
	BEND - (	665M	445.	761.	5465.	528.	6975.	2.61	2.61	29.90	9280.
	STR - (	>- 665F	222.	853.	7773.	248.	4630.	2.61	2.61	29.90	9462.
	STR - (	>- 670N	222.	853.	7773.	5265.	464.	2.61	2.61	29.90	9838.
	BEND - (	670M	565.	677.	6055.	5715.	4613.	2.61	2.61	29.90	9950.
	STR - (	>- 670F	578.	666.	1249.	5731.	6988.	2.61	2.61	29.90	9537.
	STR - (	>- 675	578.	666.	1249.	1338.	4338.	1.00	1.00	29.90	1889.
	STR - (	>- 680	578.	611.	1249.	277.	1369.	1.00	1.00	29.90	752.
BR PT		-- 685	578.	611.	1249.	723.	3772.	2.40	2.40	29.90	3890.
BR PT		-- 685	318.	329.	516.	100.	1248.	2.40	2.40	29.90	1304.
	STR - (	>- 690	318.	329.	516.	120.	756.	2.00	2.00	16.81	1317.
	STR - (	>- 695	318.	337.	516.	171.	558.	1.00	1.00	16.81	556.
	STR - (	>- 700	318.	366.	516.	533.	3678.	1.00	1.00	16.81	2678.
	STR - (	>- 705N	318.	366.	516.	857.	4335.	2.44	2.44	16.81	7745.
	BEND - (	705M	339.	346.	2797.	678.	3662.	2.44	2.44	16.81	8166.
	STR - (	>- 705F	162.	457.	4663.	701.	844.	2.44	2.44	16.81	8340.
	STR - (	>- 710N	162.	457.	4663.	1126.	428.	2.44	2.44	16.81	8385.
	BEND - (710M	347.	339.	3088.	1311.	3375.	2.44	2.44	16.81	8285.
	STR - (>- 710F	528.	357.	110.	1293.	4345.	2.44	2.44	16.81	7895.

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INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION STRESS PSI
			AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		
		>- 710F	328.	357.	110.	1293.	4345.	2.44	2.44	16.81	7695.
	STR - (
		>- 715N	328.	357.	110.	1539.	1216.	2.44	2.44	16.81	3420.
	BEND - (	715M	347.	339.	1031.	1557.	1007.	2.44	2.44	16.81	3693.
		>- 715F	16.81162:	3467.	1534.	1372.	208.	2.44	2.44		
	STR - (
		>- 720N	162.	457.	1534.	53.	1484.	2.44	2.44	16.81	3718.
	BEND - (	720M	347.	339.	58.	132.	2359.	2.44	2.44	16.81	4115.
		>- 720F	328.	357.	1802.	113.	1852.	2.44	2.44	16.81	4503.
	STR - (
	ANCHR	-- 725	328.	357.	1802.	372.	2805.	1.00	1.00	16.81	2395.
	BR PT	-- 685	124.	377.	5020.	623.	733.	2.40	2.40	16.81	8806.
72	STR - (
		>- 730N	124.	377.	5020.	1264.	316.	2.44	2.44	16.81	9030.
	BEND - (	730M	281.	280.	3403.	1420.	3589.	2.44	2.44	16.81	6958.
		>- 730F	272.	288.	56.	1412.	4760.	2.44	2.44	16.81	8645.
	STR - (
		>- 735N	272.	288.	56.	767.	208.	2.44	2.44	16.81	1387.
	BEND - (	735M	281.	280.	32.	775.	3.	2.44	2.44	16.81	1351.
		>- 735F	124.	377.	52.	619.	204.	2.44	2.44	16.81	1139.
	STR - (
		>- 740N	124.	377.	52.	474.	1249.	2.44	2.44	16.81	2327.
	BEND - (	740M	281.	280.	923.	631.	1103.	2.44	2.44	16.81	2734.
		>- 740F	272.	288.	1509.	622.	312.	2.44	2.44	16.81	2893.
	STR - (
	ANCHR	-- 745	272.	288.	1509.	249.	1092.	1.00	1.00	16.81	1341.
	BR PT	-- 655	509.	638.	4185.	4419.	4187.	1.97	1.97	29.90	5833.
	STR - (
		>- 800N	509.	638.	4185.	4031.	3995.	2.61	2.61	29.90	7371.
	BEND - (800M	204.	790.	354.	3650.	5255.	2.61	2.61	29.90	6699.

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INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION STRESS PSI
			AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		
	BEND	-(800M	204.	750.	354.	3650.	5255.	2.61	2.61	29.90	6699.
		>- 800F	220.	786.	3246.	3119.	3437.	2.61	2.61	29.90	5921.
	STR	-(>- 805N	220.	786.	3246.	454.	187.	2.61	2.61	29.90	3432.
	BEND	-(805M	579.	575.	2614.	902.	1714.	2.61	2.61	29.90	3401.
		>- 805F	599.	554.	823.	927.	2611.	2.61	2.61	29.90	3021.
	STR	-(>- 815	599.	554.	823.	494.	666.	1.00	1.00	29.90	469.
	RIGID	-(>- 820	599.	554.	823.	856.	1501.	1.00	1.00	29.90	768.
	STR	-(>- 825N	599.	554.	823.	1223.	2349.	2.61	2.61	29.90	2899.
	BEND	-(825M	579.	575.	1265.	1199.	2692.	2.61	2.61	29.90	3353.
		>- 825F	220.	786.	2984.	751.	1459.	2.61	2.61	29.90	3560.
	STR	-(BR pT -- 115	220.	786.	2984.	327.	1819.	1.97	1.97	29.90	2772.

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 *
 * INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES *
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EXPLANATORY NOTES

THE FORCES AND MOMENTS AT ANY POINT SHOWN BELOW REPRESENT THE ACTION OF THE FAR END OF THE BRANCH ACTING ON THE NEAR END OF THE BRANCH.

POINT DESTINATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
ANCHOR		5	-1487.	1048.	-3520.	292.	+6630.	+605.
	STRAIGHT - (
	RIGID - (	10	-1487.	1048.	-3520.	1541.	+4857.	+605.
	STRAIGHT - (	15	-1487.	1048.	-3520.	3260.	+2418.	+605.
	(	20N	-1487.	1048.	-3520.	5880.	1299.	+605.
74	BEND - (	20M	-1487.	1048.	-3520.	5518.	2613.	+61.
	(	20F	-1487.	1048.	-3520.	2790.	3157.	1253.
	STRAIGHT - (
	(	22N	-1487.	1048.	-3520.	+4909.	3157.	4505.
	BEND - (	22M	-1487.	1048.	-3520.	+8020.	1868.	5435.
	(	22F	-1487.	1048.	-3520.	+9309.	+1243.	5054.
BRANCH PT.	STRAIGHT - (	25	-1487.	1048.	-3520.	+9309.	+7402.	3220.
BRANCH PT.	STRAIGHT - (	25	-320.	1136.	-2948.	+8112.	8015.	675.
	(	30M	-320.	1136.	-2948.	+8112.	2857.	-1313.
	BEND - (	30M	-320.	1136.	-2948.	+7032.	252.	-2434.
	(	30F	-320.	1136.	-2948.	+4427.	+827.	+3132.
	STRAIGHT - (
	(	32M	-320.	1136.	-2948.	2021.	+827.	-3832.
	BEND - (32M	-320.	1136.	-2948.	4216.	+945.	+4115.
	(32F	-320.	1136.	-2948.	4286.	+1227.	+4232.
	STRAIGHT - (
	(33	-320.	1136.	-2948.	1446.	+2027.	+4232.

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INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
	RIGID	>= 35	-320.	1136.	-2948.	1446.	-2027.	-4232.
	ANCHOR	>= 40	-320.	1136.	-2948.	-418.	-2552.	-4232.
	ANCHOR	= 45	-320.	1136.	-2948.	-1772.	-2934.	-4232.
BRANCH PT.	STRAIGHT	= 25	-1167.	-88.	-572.	-1197.	-15418.	2545.
BRANCH PT.	STRAIGHT	= 50	-1167.	-88.	-572.	-1652.	-9390.	2545.
BRANCH PT.	STRAIGHT	= 50	-726.	-530.	-75.	3533.	-3920.	4423.
	BEND	>= 140N	-726.	-530.	-75.	4125.	-3920.	-1283.
	BEND	(140M	-726.	-530.	-75.	3998.	-3654.	-1925.
	STRAIGHT	>= 140F	-726.	-530.	-75.	3557.	-3012.	-2191.
	BEND	>= 150N	-726.	-530.	-75.	-157.	2073.	-2191.
	BEND	(150M	-726.	-530.	-75.	-596.	2715.	-2457.
	STRAIGHT	>= 150F	-726.	-530.	-75.	-726.	2981.	-3099.
	BEND	>= 155N	-726.	-530.	-75.	-692.	2981.	-3424.
	BEND	(155M	-726.	-530.	-75.	-825.	2954.	-3072.
	STRAIGHT	>= 155F	-726.	-530.	-75.	-598.	2887.	-3669.
	STRAIGHT	>= 160	-726.	-530.	-75.	-598.	2661.	-2078.
	STRAIGHT	>= 165	-726.	-149.	-75.	-598.	1303.	606.
	STRAIGHT	>= 170	-726.	-81.	-75.	-598.	-131.	-424.
	STRAIGHT	>= 172	-726.	-81.	-75.	-598.	-1564.	1110.
	BEND	>= 175N	-726.	50.	-75.	-598.	-1602.	1085.
	BEND	(175M	-726.	50.	-75.	-570.	-1669.	774.
	BEND	>= 175F	-726.	50.	-75.	-503.	-1696.	114.
	BEND	(180M	-726.	50.	-75.	-416.	-1430.	-528.

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INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
	BEND - (	180M	-726.	50.	-75.	-418.	-1430.	-528.
	(
	>- 180F		-726.	50.	-75.	-346.	-788.	-794.
	STRAIGHT - (
	>- 185		-726.	50.	-75.	18.	4479.	-794.
	STRAIGHT - (
	>- 190M		-726.	3.	-75.	19.	4781.	-794.
	(
	BEND - (	190M	-726.	3.	-75.	22.	5396.	-795.
	(
	>- 190F		-726.	3.	-75.	23.	5595.	-798.
	STRAIGHT - (
	>- 195N		-726.	3.	-75.	23.	4615.	-838.
	(
	BEND - (	195M	-726.	3.	-75.	22.	4282.	-840.
	(
	>- 195F		-726.	3.	-75.	19.	3612.	-841.
	STRAIGHT - (
76	>- 200		-726.	3.	-75.	18.	3309.	-841.
	STRAIGHT - (
	(
	>- 205N		-726.	28.	-75.	-187.	-1957.	-841.
	(
	BEND - (	205M	-726.	28.	-75.	-239.	-2600.	-576.
	(
	>- 205F		-726.	28.	-75.	-316.	-2866.	67.
	(
	BEND - (	210M	-726.	28.	-75.	-383.	-2893.	698.
	(
	>- 210F		-726.	28.	-75.	-411.	-2960.	939.
	STRAIGHT - (
	>- 215		-726.	90.	-75.	-411.	-2998.	925.
	STRAIGHT - (
	>- 220		-726.	90.	-75.	-411.	-4431.	-784.
	STRAIGHT - (
BRANCH PT.	-- 225		-726.	-146.	-75.	-411.	-4821.	-28.
BRANCH PT.	-- 225		-439.	176.	565.	1497.	-8870.	1258.
	STRAIGHT - (
	>- 230		-439.	176.	565.	1497.	-8140.	1028.
	STRAIGHT - (
	>- 235		-439.	178.	565.	1497.	-2181.	-645.
	STRAIGHT - (
	>- 240M		-439.	45.	565.	1497.	5828.	-1485.
	(
	BEND - (240M	-439.	45.	565.	1331.	6227.	-1646.

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D) INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUE)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)			
			X	Y	Z	X	Y	Z	
	BEND - (	240M	-439.	45.	565.	1331.	6227.	-1646.
	(	>= 240F	-439.	45.	565.	931.	6393.	-1970.
	BEND - (	245M	-439.	45.	565.	518.	6264.	-2280.
	(	>= 245F	-439.	45.	565.	321.	5954.	-2409.
	STRAIGHT - (	>= 250N	-439.	338.	565.	-3563.	904.	-2409.
	(BEND - (250M	-439.	338.	565.	-3637.	594.	-2280.
	(	>= 250F	-439.	338.	565.	-3336.	465.	-1970.
	STRAIGHT - (	>= 255N	-439.	338.	565.	1799.	465.	2019.
	(BEND - (255M	-439.	338.	565.	2100.	336.	2330.
	(	>= 255F	-439.	338.	565.	2026.	26.	2458.
77	STRAIGHT - (	>= 260	-439.	-168.	565.	-1351.	-4365.	2458.
	STRAIGHT - (	-- 265	-439.	-168.	565.	663.	-9635.	2458.
ANCHOR									
BRANCH PT.	STRAIGHT - (	-- 275	-287.	-324.	-641.	-1907.	4049.	-1285.
	(	>= 270M	-287.	-324.	-641.	-1266.	4049.	-1573.
	BEND - (	270M	-287.	-324.	-641.	-716.	3965.	-1776.
	(	>= 270F	-287.	-324.	-641.	-302.	3762.	-1860.
	STRAIGHT - (	>= 275M	-287.	-324.	-641.	3427.	457.	-1860.
	(BEND - (275M	-287.	-324.	-641.	3469.	254.	-1776.
	(	>= 275F	-287.	-324.	-641.	3110.	170.	-1573.
	STRAIGHT - (	>= 280M	-287.	-324.	-641.	-2710.	170.	1058.
	(BEND - (280M	-287.	-324.	-641.	-3068.	86.	1241.
	(	>= 280F	-287.	-324.	-641.	-3026.	-118.	1325.
	STRAIGHT - (	>= 285	-287.	27.	-641.	216.	-2991.	1325.

INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)			
			X	Y	Z	X	Y	Z	
BRANCH PT.		-- 370	-145.	-328.	-361.	-3701.	1195.	157.	
BRANCH PT.		-- 370	-186.	262.	446.	3229.	1597.	-709.	
	STRAIGHT -(	>= 375W	-186.	262.	446.	3229.	1913.	-894.
	(BEND -(375M	-186.	262.	446.	3133.	2240.	-1125.
	(	>= 375F	-186.	262.	446.	2902.	2236.	-1221.
	STRAIGHT -(	>= 376	-186.	262.	446.	2716.	2107.	-1221.
	STRAIGHT -(	>= 378	-186.	262.	446.	-1016.	-545.	-1221.
	STRAIGHT -(	>= 379	-186.	-325.	446.	366.	-2174.	-1221.
	STRAIGHT -(	>= 388820.	-12286.	-325.	446.	447.		
	(BEND -(380M	-186.	-325.	446.	677.	-2221.	-1126.
	(	>= 380F	-186.	-325.	446.	772.	-1960.	-896.
	STRAIGHT -(	>= 390M	-186.	-325.	446.	772.	514.	905.
	(BEND -(390M	-186.	-325.	446.	642.	830.	1080.
	(	>= 390F	-186.	-325.	446.	326.	960.	1044.
	STRAIGHT -(	>= 395M	-186.	-325.	446.	-390.	960.	745.
	(BEND -(395M	-186.	-325.	446.	-611.	906.	614.
	(	>= 395F	-186.	-325.	446.	-911.	774.	559.
	STRAIGHT -(	>= 405	-186.	-92.	446.	-351.	449.	559.
	RIGID -(	>= 407	-186.	-92.	446.	-217.	176.	559.
	STRAIGHT -(	>= 409	-186.	-92.	446.	-156.	52.	559.
	STRAIGHT -(>= 410	-186.	-92.	446.	15.	-296.	559.	
	STRAIGHT -(-- 415	-186.	-92.	446.	198.	-668.	559.	
ANCHOR		-- 50	-440.	442.	-497.	-5185.	-5470.	-1679.	

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INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
BRANCH PT.	STRAIGHT - (	-- 50	-440.	442.	-497.	-5185.	-5470.	-1879.
		>- 135	-440.	442.	-497.	2337.	2014.	-1879.
	STRAIGHT - (	>- 130	-440.	442.	-497.	3000.	2675.	-1879.
		>- 125N	-440.	-191.	-497.	-203.	10048.	-1879.
	BEND - (	( 125M	-440.	-191.	-497.	-372.	10256.	-1809.
		>- 125F	-440.	-191.	-497.	-442.	9978.	-1640.
	STRAIGHT - (	>- 120	-440.	-88.	-497.	-442.	2032.	-230.
		>- 118N	-440.	-88.	-497.	-442.	-5769.	1154.
	BEND - (	( 118M	-440.	-88.	-497.	-261.	-6207.	1070.
8		>- 118F	-440.	-88.	-497.	178.	-6389.	713.
BRANCH PT.	STRAIGHT - (	-- 115	-440.	-88.	-497.	1120.	-6389.	-121.
BRANCH PT.	STRAIGHT - (	-- 115	68.	132.	-1095.	1446.	-9374.	-1940.
		>- 110N	68.	132.	-1095.	1700.	-9505.	-1940.
	BEND - (	( 110M	68.	132.	-1095.	1817.	-9164.	-1891.
		>- 110F	68.	132.	-1095.	1866.	-8221.	-1774.
	STRAIGHT - (	>- 105	68.	132.	-1095.	1866.	-4559.	-1332.
	RIGID - (	>- 100	68.	132.	-1095.	1866.	-2762.	-1115.
	STRAIGHT - (	>- 93	68.	132.	-1095.	1866.	-1302.	-938.
	RIGID - (	>- 90	68.	132.	-1095.	1866.	495.	-721.
	BEND - (	( 85M	68.	132.	-1095.	1465.	1463.	-629.
		>- 85F	68.	132.	-1095.	497.	1864.	-641.
	STRAIGHT - (>- 80N	68.	132.	-1095.	-2104.	1864.	-803.
		>- 80F	68.	132.	-1095.	-3024.	1839.	-864.

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D) INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUE)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT*POUNDS)			
			X	Y	Z	X	Y	Z	
	BEND -(	80M	63.	132.	-1095.	-3024.	1839.	-864.
)								
	STRAIGHT -(	> 80F	68.	132.	-1095.	+3506.	1778.	+889.
ANCHOR	)	-- 75	68.	132.	-1095.	-3264.	1755.	-889.
BRANCH PT.	STRAIGHT -(	-- 370	41.	-590.	-808.	-6930.	-402.	865.
	)	> 505431.	8681.	-1112.	-808.	-7348.		
	BEND -(	( 505M	41.	-1112.	-808.	-2035.	-468.	880.
	)	> 505F	41.	-1112.	-808.	-7728.	-483.	917.
	STRAIGHT -(	> 510	41.	-1112.	-808.	-5507.	-483.	1030.
	)	> 515N	41.	-1112.	-808.	4065.	-483.	1517.
18	BEND -(	( 515M	41.	-1112.	-808.	4372.	-498.	1553.
	)	> 515F	41.	-1112.	-808.	3685.	-534.	1568.
	STRAIGHT -(	> 520N	41.	-1112.	-808.	-5008.	-855.	1568.
)	BEND -((520M	41.	-1112.	-808.	-5991.	-596.	1161.
	)	> 520F	41.	-1112.	-808.	-6396.	103.	178.
	STRAIGHT -(	> 525	41.	-1112.	-808.	-6398.	708.	-656.
	)	> 530M	41.	-1112.	-808.	-6398.	3939.	-5103.
	BEND -(	( 530M	41.	-1112.	-808.	-6102.	4653.	-6071.
	)	> 530F	41.	-1112.	-808.	-5369.	4948.	-6442.
	STRAIGHT -(	> 535N	41.	-1112.	-808.	1880.	4948.	-6072.
)	BEND -((535M	41.	-1112.	-808.	2593.	4653.	-5629.
	)	> 535F	41.	-1112.	-808.	2889.	3939.	-4631.
	STRAIGHT -(> 540N	41.	-1112.	-808.	2889.	-1580.	2968.	
)	BEND -((540M	41.	-1112.	-808.	3185.	-2293.	3966.

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INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)			
			X	Y	Z	X	Y	Z	
	BEND - (	540H	41.	-1112.	-808.	3185.	-2293.	3966.
		>= 540F	41.	-1112.	-808.	3698.	-2569.	4409.	
BRANCH PT.	STRAIGHT - (	-- 555	41.	-1112.	-808.	9551.	-2569.	4697.
BRANCH PT.	STRAIGHT - (	-- 555	110.	-1045.	-810.	8604.	-3030.	4665.
		>= 560H	110.	-1045.	-810.	7864.	-3108.	4665.	
	BEND - (	560H	110.	-1045.	-810.	6940.	-2909.	4283.
		>= 560F	110.	-1045.	-810.	6558.	-2234.	3359.	
	STRAIGHT - (	>= 564	110.	-1045.	-810.	6558.	-456.	1068.
	RIGID - (	>= 565	110.	-1045.	-810.	6558.	870.	-647.
	BEND - (	568H	110.	-1045.	-810.	6175.	1545.	-1571.
82		>= 568F	110.	-1045.	-810.	5251.	1744.	-1953.	
	STRAIGHT - (	>= 570	110.	-1045.	-810.	2987.	1505.	-1953.
	RIGID - (	-- 575	110.	-1045.	-810.	1621.	1361.	-1953.
ANCHOR		-- 595	-69.	-67.	2.	947.	441.	32.	
BRANCH PT.	STRAIGHT - (	>= 600H	-69.	-67.	2.	995.	392.	32.
		BEND - (600H	-69.	-67.	2.	1054.	330.	7.
		>= 600F	-69.	-67.	2.	1078.	302.	-52.	
	STRAIGHT - (	>= 605	-69.	-67.	2.	1078.	298.	-199.
	RIGID - (	>= 610	-69.	-67.	2.	1078.	294.	-309.
		BEND - (615H	-69.	-67.	2.	1079.	292.	-343.
		>= 615F	-69.	-67.	2.	1081.	292.	-306.	
	STRAIGHT - (>= 618H	-69.	-67.	2.	1088.	292.	-81.	
		BEND - (618H	-67.	-67.	2.	1090.	291.	-44.

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INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
	BEND - (	618M	-69.	-67.	2.	1090.	291.	-44.
)						
	STRAIGHT - (	618F	-69.	-67.	2.	1091.	289.	-78.
)						
	STRAIGHT - (	620N	-69.	-67.	2.	1091.	285.	-212.
)						
	BEND - (	620M	-69.	-67.	2.	1066.	308.	-271.
)						
	STRAIGHT - (	620F	-69.	-67.	2.	1007.	369.	-296.
)						
	STRAIGHT - (	625N	-69.	-67.	2.	730.	655.	-296.
)						
	BEND - (	625M	-69.	-67.	2.	671.	717.	-270.
)						
	STRAIGHT - (	625F	-69.	-67.	2.	649.	742.	-209.
)						
	STRAIGHT - (	630N	-69.	-67.	2.	679.	742.	795.
)						
88	BEND - (	630M	-69.	-67.	2.	681.	743.	881.
)						
	STRAIGHT - (	630F	-69.	-67.	2.	682.	745.	966.
)						
	STRAIGHT - (	635	-69.	-67.	2.	682.	755.	1284.
)						
	STRAIGHT - (	640N	-69.	-67.	2.	682.	767.	1669.
)						
	BEND - (	640M	-69.	-67.	2.	707.	744.	1728.
)						
	STRAIGHT - (	640F	-69.	-67.	2.	766.	683.	1752.
)						
	STRAIGHT - (	642	-69.	-67.	2.	1000.	441.	1752.
)						
	STRAIGHT - (	645	-69.	-67.	2.	1268.	184.	1752.
)						
BRANCH PT.		655	-69.	-67.	2.	1686.	-269.	1752.
BRANCH PT.	STRAIGHT - (	655	-578.	-287.	601.	-2499.	-4688.	-2435.
)						
	STRAIGHT - (	660	-578.	-287.	601.	-990.	-7722.	-2435.
)						
	STRAIGHT - (	665M	-578.	-287.	601.	-722.	-8259.	-2435.
)						
	BEND - (665M	-578.	-287.	601.	-528.	-8536.	-2380.
)						
	STRAIGHT - (665F	-578.	-287.	601.	-248.	-8770.	-2223.
)						

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INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
		>- 665F	-578.	-287.	601.	-248.	-8770.	-2223.
	STRAIGHT - (
		>- 670N	-578.	-287.	601.	464.	-9234.	-1759.
	(
	BEND - (	670M	-578.	-287.	601.	1019.	-9375.	-1293.
	(
		>- 670F	-578.	-287.	601.	1249.	-8994.	-889.
	STRAIGHT - (
		>- 675	-578.	-287.	601.	1249.	-4338.	1338.
	STRAIGHT - (
		>- 680	-578.	111.	601.	1249.	1369.	-277.
	STRAIGHT - (
BRANCH PT.		-- 685	-578.	111.	601.	1249.	3772.	-723.
BRANCH PT.		-- 685	-318.	-13.	328.	516.	-1248.	100.
	STRAIGHT - (
		>- 690	-318.	-13.	328.	516.	-756.	120.
	STRAIGHT - (
84		>- 695	-318.	74.	328.	516.	558.	171.
	STRAIGHT - (
		>- 700	-318.	162.	328.	516.	3678.	-533.
	STRAIGHT - (
		>- 705N	-318.	162.	328.	516.	4335.	-857.
	(
	BEND - (	705M	-318.	162.	328.	612.	4567.	-878.
	(
		>- 705F	-318.	162.	328.	844.	4663.	-701.
	STRAIGHT - (
		>- 710N	-318.	162.	328.	1126.	4663.	-428.
	(
	BEND - (	710M	-318.	162.	328.	1311.	4570.	-203.
	(
		>- 710F	-318.	162.	328.	1293.	4343.	-110.
	STRAIGHT - (
		>- 715N	-318.	162.	328.	-1539.	-1216.	-110.
	(
	BEND - (	715M	-318.	162.	328.	-1557.	-1441.	-17.
	(
		>- 715F	-318.	162.	328.	-1372.	-1534.	206.
	STRAIGHT - (
		>- 720N	-318.	162.	328.	-53.	-1534.	1484.
	(
	BEND - (720M	-318.	162.	328.	132.	-1627.	1709.
	(
		>- 720F	-318.	162.	328.	113.	-1652.	1602.

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INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
		>= 720F	-318.	162.	328.	113.	-1852.	1802.
	STRAIGHT -(	-- 725	-318.	162.	328.	-372.	-2805.	1802.
ANCHOR								
		>= 730N	-260.	124.	272.	733.	5020.	-823.
	STRAIGHT -(	-- 685	-260.	124.	272.	1264.	5020.	-316.
BRANCH PT.								
		>= 730N	-260.	124.	272.	1420.	4944.	-132.
	BEND -(	730N	-260.	124.	272.	1412.	4760.	-56.
		>= 730F	-260.	124.	272.	-767.	208.	-56.
	STRAIGHT -(	-- 735N	-260.	124.	272.	-775.	25.	20.
		>= 735N	-260.	124.	272.	-619.	-52.	204.
	BEND -(	735N	-260.	124.	272.	474.	-52.	1249.
		>= 740N	-260.	124.	272.	631.	-128.	1433.
	STRAIGHT -(	-- 740N	-260.	124.	272.	622.	-312.	1509.
ANCHOR								
		>= 740F	-260.	124.	272.	249.	-1092.	1509.
	BEND -(	745	-260.	124.	272.	4185.	4419.	4187.
BRANCH PT.								
		>= 800N	509.	220.	-599.	4185.	3995.	4031.
	STRAIGHT -(	-- 855	509.	220.	-599.	3966.	3466.	3650.
		>= 800N	509.	220.	-599.	3437.	3246.	3119.
	BEND -(	800N	509.	220.	-599.	-454.	3246.	-187.
		>= 800F	509.	220.	-599.	-902.	3060.	-637.
	STRAIGHT -(	-- 805N	509.	220.	-599.	-927.	2611.	-823.
		>= 805N	509.	220.	-599.	494.		
	BEND -(	805N	509.	220.	-599.	856.	-1501.	-823.
		>= 805F	509.	220.	-599.	1223.	-2349.	-823.
	STRAIGHT -(-- 815666.	-8889.	220.	-599.			
	RIGID -(
		>= 820	509.	220.	-599.			
	STRAIGHT -(-- 825N	509.	220.	-599.			

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INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
		>= 825H	509.	220.	-599.	1223.	-2349.	-823.
	BEAD -(	825H	509.	220.	-599.	1199.	-2798.	-1009.
		>= 825F	509.	220.	-599.	751.	-2984.	-1459.
BRANCH PT.	STRAIGHT -(-- 115	509.	220.	-599.	327.	-2984.	-1819.

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 *
 * DISPLACEMENTS AND ROTATIONS *
 * ----- *
 *

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
ANCHOR		-- 5	-.000	.000	-.000	.000	-.000	-.000
	STRAIGHT - (
	>-- .003		-.00002	.000	.046	.002		
	RIGID - (
	>- 15		-.006	-.001	.109	.002	-.013	-.002
	STRAIGHT - (
	>- 20N		-.015	-.006	.205	.023	-.016	-.005
	BEND - (
	>- 20M		-.017	-.032	.233	.110	.007	.001
	STRAIGHT - (
	>- 20F		-.014	-.077	.220	.173	.022	.021
	STRAIGHT - (
	>- 22N		-.003	-.161	.138	.169	.038	.032
87	BEND - (		.023	.02306	-.189	.099		
	>- 22F		.068	-.176	.102	.063	-.008	.185
	STRAIGHT - (
BRANCH PT.		-- 25	.135	-.105	.106	.024	-.022	.198
BRANCH PT.		-- 25	.135	-.105	.106	.024	-.022	.198
	STRAIGHT - (
	>- 30N		.135	-.032	.109	-.010	-.005	.197
	BEND - (
	>- 30M		.121	.003	.103	-.050	.045	.170
	STRAIGHT - (
	>- 30F		.093	.015	.082	-.119	.068	.128
	STRAIGHT - (
	>- 32N		.038	.015	.024	-.124	.064	.114
	BEND - (
	>- 32M		.017	.007	.005	-.076	.044	.061
	STRAIGHT - (
	>- 32F		.009	-.000	.000	-.011	.014	.038
	RIGID - (
	>- 35		.003	-.001	.000	.002	.006	.013
	STRAIGHT - (
	>- 40		.001	-.001	.000	.002	.006	.012
ANCHOR		-- 45	.000	-.000	.000	.000	.000	.000

DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
ANCHOR		-- 45	.000	-.000	.000	.000	.000	.000
BRANCH PT.	STRAIGHT - (	-- 25	.135	-.105	.106	.024	-.022	.198
BRANCH PT.		-- 50	.041	-.124	.305	.010	-.140	.230
BRANCH PT.	STRAIGHT - (	-- 50	.041	-.124	.305	.010	-.140	.230
		>- 140N	-.368	.179	.366	.066	-.214	.253
	BEND - (	( 140M	-.431	.205	.398	.126	-.224	.248
		>- 140F	-.495	.190	.443	.181	-.257	.252
	STRAIGHT - (
		>- 150N	-.865	-.098	.713	.203	-.264	.215
	BEND - (	( 150M	-.947	-.121	.763	.197	-.225	.195
		>- 150F	-.995	-.102	.813	.187	-.201	.149
88	STRAIGHT - (
		>- 155N	-1.009	-.085	.830	.167	-.196	.146
	BEND - (	( 155M	-1.017	-.042	.878	.167	-.182	.092
		>- 155F	-.989	-.017	.920	.152	-.143	.036
	STRAIGHT - (
		>- 160	-.873	.000	1.005	.148	-.126	.020
	STRAIGHT - (
		>- 165	-.179	.000	1.349	.122	-.062	-.005
	STRAIGHT - (
		>- 170	.554	-.000	1.539	.095	-.042	-.001
	STRAIGHT - (
		>- 172	1.287	.000	1.747	.068	-.071	.011
	STRAIGHT - (
		>- 175N	1.307	.001	1.754	.067	-.073	.012
		(175M	1.339	.019	1.775	.071	-.091	.026
	BEND - ((
		>- 175F	1.347	.055	1.796	.071	-.096	.033
		(
	BEND - (	( 180N	1.333	.084	1.822	.064	-.102	.036
		(
		>- 180F	1.310	.087	1.861	.059	-.113	.038
	STRAIGHT - (
		>- 185	1.147	-.000	2.141	.057	-.089	.024

DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT			
			X	Y	Z	X AXIS	Y AXIS	Z AXIS	
	STRAIGHT - (	>- 185	1.147	-.000	2.141	.057	-.089	.024
	(	>- 190N	1.139	-.005	2.157	.057	-.085	.023
	BEND - (	190M	1.144	-.014	2.194	.060	-.010	.020
	(	>- 190F	1.179	-.016	2.202	.063	.071	.010
	STRAIGHT - (	>- 195N	1.681	-.016	1.837	.064	.193	-.010
	(BEND - (195M	1.697	-.014	1.781	.061	.259	-.020
	(	>- 195F	1.657	-.005	1.726	.058	.317	-.024
	STRAIGHT - (	>- 200	1.629	.000	1.710	.058	.320	-.023
	STRAIGHT - (	>- 205N	1.127	.087	1.430	.057	.329	-.039
	(BEND - (205M	1.065	.083	1.391	.054	.363	-.033
	(	>- 205F	1.057	.053	1.368	.049	.292	-.026
	(BEND - (210M	1.047	.017	1.338	.034	.278	-.020
	(	>- 210F	1.080	.001	1.288	.021	.240	-.007
	STRAIGHT - (	>- 215	1.099	.000	1.263	.020	.237	-.006
	STRAIGHT - (	>- 220	1.832	-.000	.561	.001	.107	-.004
	STRAIGHT - (	BRANCH PT. ** 225	2.031	-.007	.469	-.004	.063	-.008
	STRAIGHT - (	BRANCH PT. ** 225	2.031	-.007	.469	-.004	.063	-.008
	(	>- 2303	2.68005	-.009	.455	.001		
	STRAIGHT - (	>- 235	2.488	-.000	.654	.085	-.179	-.001
	STRAIGHT - (	>- 240N	3.034	-.094	1.145	.197	-.074	-.068
	(BEND - (240M	3.067	-.095	1.159	.170	.038	-.105
	(>- 240F	3.097	-.075	1.178	.154	.080	-.147	
	(BEND - (245M	3.114	-.037	1.191	.171	.115	-.151

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DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
	BEND - (	245N	3.114	-.037	1.191	.171	.115	-.151
	(
	>- 245F		3.098	.000	1.175	.120	.223	-.131
	STRAIGHT - (
	>- 250N		2.319	.380	.731	.104	.384	-.278
	(
	BEND - (	250N	2.242	.378	.701	.018	.413	-.300
	(
	>- 250F		2.168	.350	.693	-.064	.431	-.346
	STRAIGHT - (
	>- 255N		1.487	-.000	.875	-.093	.453	-.345
	(
	BEND - (	255N	1.412	-.032	.874	-.046	.442	-.304
	(
	>- 255F		1.329	-.046	.849	.003	.431	-.287
	STRAIGHT - (
	>- 260		.486	-.000	.463	.017	.343	-.156
	STRAIGHT - (
06 ANCHOR	-- 265		.000	.000	-.000	.000	.000	.000
BRANCH PT.	-- 225		2.031	-.007	.469	-.004	.063	-.008
	STRAIGHT - (
	>- 270N		2.033	-.007	.467	-.010	.085	-.014
	(
	BEND - (	270N	2.031	-.009	.464	-.034	.105	-.022
	(
	>- 270F		2.012	-.015	.461	-.045	.171	-.012
	STRAIGHT - (
	>- 275N		1.448	-.071	.461	.028	.270	-.126
	(
	BEND - (	275N	1.399	-.061	.456	.110	.286	-.142
	(
	>- 275F		1.357	-.053	.433	.169	.301	-.176
	STRAIGHT - (
	>- 280N		.936	-.053	.031	.196	.309	-.186
	(
	BEND - (	280N	.951	-.044	.007	.127	.303	-.164
	(
	>- 280F		.897	-.030	.001	.055	.294	-.155
	STRAIGHT - (
	>- 285		.326	.000	.000	-.003	.231	-.084
	STRAIGHT - (
ANCHOR	-- 290		.000	-.000	.000	.000	.000	.000
ANCHOR	-- 305		.000	.000	-.000	-.000	-.000	.000

DYNAFLEX

LOADING - THERMAL

PAGE 66

DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
ANCHOR		-- 305	-.000	.000	-.000	-.000	-.000	.000
	STRAIGHT -(	>- 310	-.001	.000	.088	-.001	-.002	.006
	STRAIGHT -(	>- 315	-.002	.001	.170	-.000	-.003	.012
	STRAIGHT -(	>- 320	-.002	.001	.200	.000	-.002	.014
	RIGID -(	>- 325	-.003	.001	.264	.000	-.002	.014
	STRAIGHT -(	>- 335N	-.003	.000	.341	.003	.002	.020
	BEND -(	335M	.000	-.014	.371	.015	.020	.029
	STRAIGHT -(	>- 335F	.007	-.046	.381	.026	.031	.047
	STRAIGHT -(	>- 340N	.024	-.117	.372	.026	.038	.053
	BEND -(	340M	.046	-.144	.366	.023	.041	.076
91	STRAIGHT -(	>- 340F	.083	-.144	.358	.022	.049	.099
	STRAIGHT -(	>- 350N	.326	-.022	.303	.004	.037	.106
	BEND -(	350M	.358	-.007	.313	.002	-.002	.103
	STRAIGHT -(	>- 350F	.368	-.000	.343	-.003	-.044	.102
	STRAIGHT -(	>- 352	.365	.000	.356	-.005	-.046	.102
	STRAIGHT -(	>- 355	.239	-.000	.741	.017	-.084	.079
	STRAIGHT -(	>- 360	.008	-.058	1.368	-.023	-.050	.042
	STRAIGHT -(	>- 365N	.001	-.054	1.399	-.029	-.048	.042
	BEND -(	365M	.010	-.041	1.440	-.070	-.022	.053
	STRAIGHT -(	>- 363F	.088	-.029	1.438	-.086	.001	.065
BRANCH PT.		-- 370	.079	-.014	1.458	-.092	.003	.065
BRANCH PT.	STRAIGHT -(	-- 370	.079	-.014	1.458	-.092	.003	.065
	STRAIGHT -(	>- 375N	.111	-.009	1.457	-.086	.005	.064

DYNAFLEX

LOADING - THERMAL

PAGE 67

DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
		>- 375N	.111	-.005	1.457	-.086	.005	.064
	BEND - (	375M	.148	.001	1.438	-.076	.036	.064
		>- 375F	.154	-.005	1.395	-.043	.069	.071
	STRAIGHT - (
		>- 376	.143	-.011	1.364	-.039	.072	.068
	STRAIGHT - (
		>- 378	-.179	-.000	.737	.010	.117	-.024
	STRAIGHT - (
		>- 379	-.359	-.000	.352	-.001	.069	-.081
	STRAIGHT - (
		>- 380N	-.362	-.000	.341	-.001	.067	-.082
	BEND - (	380M	-.355	-.005	.308	.003	.014	-.088
		>- 380F	-.324	-.019	.297	.002	-.036	-.103
	STRAIGHT - (
92		>- 390N	-.080	-.143	.355	.025	-.052	-.103
	BEND - (	390M	-.044	-.144	.363	.026	-.043	-.079
		>- 390F	-.021	-.117	.370	.030	-.040	-.054
	STRAIGHT - (
		>- 395N	-.004	-.047	.380	.030	-.032	-.048
	BEND - (	395M	.003	-.014	.371	.017	-.020	-.029
		>- 395F	.006	.000	.341	.003	.000	-.019
	STRAIGHT - (
		>- 405	.005	.001	.264	.000	.004	-.014
	RIGID - (
		>- 407	.004	.001	.200	.000	.005	-.015
	STRAIGHT - (
		>- 409	.003	.001	.170	-.000	.005	-.011
	STRAIGHT - (
		>- 410	.001	.000	.088	-.001	.004	-.006
	STRAIGHT - (
ANCHOR		>- 415	.000	.000	-.000	-.000	.000	-.000
BRANCH PT.		>- 50	.041	-.124	.305	.010	-.140	.230
	STRAIGHT - (
		>- 135	-.624	-.010	.961	-.034	-.194	.153
	STRAIGHT - (
		>- 130	-.484	-.000	1.019	-.027	-.167	.147

DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT			
			X	Y	Z	X AXIS	Y AXIS	Z AXIS	
ANCHOR		75	-.000	-.000	-1.320	.000	-.000	.000	
BRANCH PT.		370	.079	-.014	1.458	-.092	.003	.065	
	STRAIGHT - (
	>- 505M		.080	-.000	1.489	-.101	.002	.066	
	(
	BEND - (	505M	.074	.045	1.514	-.215	-.007	.072
	(
	STRAIGHT - (	>- 505F	.059	.103	1.479	-.332	-.012	.065
	STRAIGHT - (	>- 510	.008	.224	1.277	-.365	-.016	.090
	(	>- 515M	-.248	.745	.305	-.381	-.029	.118
	BEND - (	515M	-.274	.810	.256	-.318	-.038	.139
	(	>- 515F	-.293	.879	.272	-.258	-.050	.148
	STRAIGHT - (	>- 520M	-.383	1.290	.616	-.267	-.060	.177
	(BEND - (520M	-.411	1.332	.650	-.330	-.071	.162
	(	>- 520F	-.456	1.330	.652	-.355	-.075	.145
	STRAIGHT - (	>- 525	-.489	1.307	.640	-.367	-.075	.145
	STRAIGHT - (	>- 530M	-.665	1.192	.582	-.428	-.038	.124
	(BEND - (530M	-.709	1.192	.542	-.439	-.029	.041
	(	>- 530F	-.724	1.230	.454	-.492	-.030	-.051
	STRAIGHT - (	>- 535M	-.529	1.623	-.521	-.521	.077	-.155
	(BEND - (535M	-.476	1.648	-.623	-.512	.089	-.242
	(	>- 535F	-.416	1.611	-.683	-.517	.132	-.317
	STRAIGHT - (	>- 540M	-.116	1.137	-.891	-.470	.147	-.328
	(BEND - (540M	-.054	1.096	-.951	-.448	.111	-.277
	(>- 540F	.007	1.115	-1.037	-.394	.086	-.214	
	STRAIGHT - (
BRANCH PT.		555	.279	1.423	-1.561	-.307	.043	-.156	

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DYNAFLEX

LOADING - THERMAL

PAGE 70

DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LGC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT			
			X	Y	Z	X AXIS	Y AXIS	Z AXIS	
BRANCH PT.		-- 555	.279	1.423	-1.561	-.307	.043	-.156	
BRANCH PT.	STRAIGHT -(	-- 555	.279	1.423	-1.561	-.307	.043	-.156
	(	>= 560N	.285	1.468	-1.529	-.297	.039	-.148
	BEND -(	560M	.272	1.522	-1.490	-.187	-.006	-.099
	(	>= 560F	.232	1.545	-1.479	-.140	-.044	-.025
	STRAIGHT -(	>= 564	.135	1.553	-1.501	-.106	-.050	-.016
	RIGID -(	>= 565	.063	1.559	-1.518	-.105	-.050	-.016
	(BEND -(568M	.021	1.568	-1.510	-.081	-.031	-.005
	(	>= 568F	.001	1.577	-1.473	-.017	-.007	.010
	STRAIGHT -(	>= 570	.000	1.580	-1.378	-.000	-.000	.000
	RIGID -(
ANCHOR		-- 575	-.000	1.580	-1.320	-.000	-.000	.000	
BRANCH PT.	STRAIGHT -(	-- 555	.279	1.423	-1.561	-.307	.043	-.156
	(	>= 600N	.272	1.378	-1.592	-.306	.043	-.156
	BEND -(	600M	.248	1.354	-1.627	-.293	.049	-.160
	(	>= 600F	.205	1.342	-1.634	-.286	.053	-.164
	STRAIGHT -(	>= 605	.109	1.417	-1.609	-.283	.054	-.165
	RIGID -(	>= 610	.036	1.474	-1.590	-.283	.054	-.165
	(BEND -(615M	-.015	1.489	-1.559	-.279	.054	-.169
	(	>= 615F	-.063	1.463	-1.504	-.267	.051	-.174
	STRAIGHT -(	>= 618M	-.182	1.320	-1.325	-.260	.053	-.175
	(BEND -(619M	-.231	1.295	-1.274	-.248	.050	-.176
	(>= 619F	-.284	1.311	-1.246	-.244	.050	-.177	
	STRAIGHT -(>= 620M	-.372	1.385	-1.225	-.239	.051	-.178	

DYNAFLEX

LOADING - THERMAL

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DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
	>= 620M (	620M	-.372	1.385	-1.225	-.239	.051	-.178
	BEND = (	620M	-.406	1.436	-1.199	-.235	.055	-.176
	>= 620F STRAIGHT = (	620F	-.412	1.492	-1.156	-.223	.060	-.174
	>= 625M (	625M	-.358	1.682	-.974	-.216	.064	-.176
	BEND = (	625M	-.359	1.705	-.919	-.206	.071	-.175
	>= 625F STRAIGHT = (	625F	-.386	1.682	-.865	-.196	.074	-.175
	>= 630M (	630M	-.913	1.044	-.296	-.179	.099	-.167
	BEND = (	630M	-.927	.993	-.272	-.167	.105	-.155
	>= 630F STRAIGHT = (	630F	-.900	.949	-.280	-.161	.117	-.141
88	>= 635 STRAIGHT = (	635	-.691	.813	-.400	-.153	.124	-.132
	>= 640M (	640M	-.436	.663	-.554	-.144	.132	-.116
	BEND = (	640M	-.409	.634	-.595	-.134	.143	-.092
	>= 640F STRAIGHT = (	640F	-.421	.604	-.645	-.118	.154	-.081
	>= 642 STRAIGHT = (	642	-.535	.519	-.799	-.112	.157	-.087
	>= 645 STRAIGHT = (	645	-.668	.428	-.975	-.104	.159	-.050
BRANCH PT.	-- 655	655	-.877	.302	-1.250	-.087	.159	-.024
BRANCH PT.	-- 659 STRAIGHT = (	659	-.87624	.302	-1.250	-.087		
	>= 660 STRAIGHT = (	660	-1.022	.195	-1.481	-.104	.099	-.054
	>= 665M (	665M	-1.040	.175	-1.522	-.105	.085	-.060
	BEND = (	665M	-1.046	.160	-1.541	-.110	.029	-.054
	>= 665F STRAIGHT = (	665F	-1.050	.139	-1.553	-.113	-.011	-.037
	>= 670M (670M	-1.053	.084	-1.569	-.113	-.034	-.044
	BEND = (670M	-1.051	.040	-1.574	-.134	-.114	-.009

DYNAFLEX

LOADING - THERMAL

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DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
	BEND -(	670N	-1.031	.040	-1.574	-.134	-.114	-.069
	(
	>= 670F		-.985	.019	-1.545	-.157	-.234	-.010
	STRAIGHT -(
	>= 675		-.644	.000	-1.079	-.134	-.329	-.007
	STRAIGHT -(
	>= 680		-.226	-.000	-.381	-.106	-.355	.002
	STRAIGHT -(
BRANCH PT.	-- 685		-.050	.001	-.089	-.094	-.336	-.002
BRANCH PT.	-- 685		-.050	.001	-.089	-.094	-.336	-.002
	STRAIGHT -(
	>= 690		.016	.000	.017	-.092	-.339	-.001
	STRAIGHT -(
	>= 695		.192	.000	.303	-.081	-.340	.001
	STRAIGHT -(
	>= 700		.610	.000	.920	-.055	-.258	-.006
	STRAIGHT -(
97	>= 705N		.698	-.003	1.022	-.050	-.226	-.012
	(
	BEND -(	705N	.727	-.020	1.050	-.018	-.133	-.032
	(
	>= 705F		.734	-.053	1.056	.026	-.093	-.051
	STRAIGHT -(
	>= 710N		.724	-.091	1.051	.029	-.072	-.053
	(
	BEND -(	710N	.718	-.119	1.032	.058	-.035	-.088
	(
	>= 710F		.710	-.121	.997	.089	.056	-.117
	STRAIGHT -(
	>= 715N		.179	.253	.227	.080	.167	-.127
	(
	BEND -(	715F	.148	.249	.192	.044	.141	-.119
	(
	>= 715F		.123	.220	.176	.069	.129	-.108
	STRAIGHT -(
	>= 720N		.036	.043	.175	-.003	.097	-.094
	(
	BEND -(	720F	.020	.012	.165	-.002	.074	-.093
	(
	>= 720F		.010	-.001	.132	.002	.028	-.029
	STRAIGHT -(
ANCHOR	-- 725		.000	-.000	-.000	.000	.000	-.000
BRANCH PT.	-- 685		-.050	.001	-.089	-.094	-.336	-.002

DYNAFLEX

LOADING - THERMAL

PAGE 73

DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
BRANCH PT.	STRAIGHT - (	-- 685	-.050	.001	-.089	-.094	-.336	-.002
	>- 730H		-.052	.001	-.052	-.086	-.284	-.006
	(
	BEND - (	730M	-.038	-.003	-.042	-.054	-.245	-.041
	(
	>- 730F		-.013	-.009	-.039	-.020	-.147	-.072
	STRAIGHT - (
	>- 735H		.100	.007	-.039	.003	.031	-.077
	(
	BEND - (	735H	.090	.006	-.038	-.016	.033	-.078
	(
	>- 735F		.077	.005	-.035	-.033	.032	-.076
	STRAIGHT - (
	>- 740H		.017	.005	-.005	-.034	.031	-.084
	(
	BEND - (	740M	.007	.003	-.001	-.020	.022	-.037
	(
	>- 740F		.003	.001	-.000	-.005	.009	-.024
	STRAIGHT - (
88	ANCHOR	-- 745	.000	-.000	-.000	-.000	.000	-.000
BRANCH PT.	STRAIGHT - (	-- 655	-.877	.302	-1.250	-.087	.159	-.024
	>- 800H		-.877	.299	-1.274	-.080	.164	-.018
	(
	BEND - (	800M	-.875	.301	-1.306	-.047	.227	.038
	(
	>- 800F		-.863	.305	-1.322	.012	.257	.088
	STRAIGHT - (
	>- 805H		-.726	.305	-1.356	.030	.308	.106
	(
	BEND - (	805M	-.682	.303	-1.361	.020	.320	.113
	(
	>- 805F		-.611	.301	-1.362	.006	.352	.121
	STRAIGHT - (
	>- 815		-.122	.298	-1.362	.003	.364	.108
	RIGID - (
	>- 820		.003	.297	-1.362	.003	.364	.108
	STRAIGHT - (
	>- 825H		.129	.295	-1.362	.006	.358	.105
	(
	BEND - (	825M	.199	.292	-1.364	.025	.322	.090
	(
	>- 825F		.236	.290	-1.370	.039	.305	.064

DYNAFLEX

LOADING - THERMAL

PAGE 74

DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
		> R25F	.238	.290	-1.370	.039	.305	.064
BRANCH PT.	STRAIGHT - (	-- 115	.247	.290	-1.376	.040	.300	.061

DYNAFLEX

PAGE 75

*
* STATIC SOLUTION ACCURACY CHECKS *
*

EACH BASIC STATIC SOLUTION COMPRISING EACH LOAD OR LOADING COMBINATION
SPECIFIED IN THIS RUN HAS BEEN SUBJECTED TO EQUILIBRIUM AND
COMPATABILITY CHECKS FOR ALL POINTS IN THE SYSTEM:

LOADING = THERMAL

STATIC EQUILIBRIUM AND COMPATIBILITY HAVE BEEN SATISFIED FOR THIS
BASIC STATIC SOLUTION AT ALL POINTS IN THE SYSTEM.

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DYNAFLEX

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FOREWORD

THE FOLLOWING REPORT WAS GENERATED BY THE DYNAFLEX PIPING ANALYSIS PROGRAM. THE PROGRAM ACCOMMODATES THE WIDEST RANGE OF PRACTICAL SITUATIONS ENCOUNTERED IN MODERN PIPING SYSTEMS INCLUDING DYNAMIC AS WELL AS THERMAL, WEIGHT AND PRESSURE EFFECTS.

FOR FURTHER INFORMATION OR PROMPT ASSISTANCE IN USING THE DYNAFLEX PROGRAM, PLEASE CONTACT YOUR LOCAL COMPUTER CENTER REPRESENTATIVE OR:

ENGINEERING SERVICES MANAGER
AULON COMPUTING CORPORATION
1 METHUEN PLAZA
505 THORNALL STREET
EDISON, N.J. 08617

THE STRESS FORMULATION OF
ANSI B31.1 - 1977
INCLUDING THE LATEST MANDATORY UPDATES
HAS BEEN APPLIED IN THIS ANALYSIS

THE TABLE OF CONTENTS APPEARS AT THE END OF THIS REPORT.

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*****
*
*
* STEARNS - ROGER CORP
*
* 1984 SOLAR PILOT PLANT - DOE - C-21700
*
* OIL EXTR + CHARG. (T-10-10-1)
*
*
* 1/28/80
*
*
*****

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DYNAFLEX (MUD204F-UCC)
LAST UPDATE - 12/25/79

PROJECT - 10MW SOLAR PILOT PLANT - DGE - C-21700
 JOB - OIL EXTR + CHARG.(1-TU-10-B-1)

DATE 1/28/80

INPUT DATA - (CARD IMAGES)

LINE NUMBER	TYP	LOC	FRM	TO	DELTA X	DELTA Y	DELTA Z	RADIUS	ADDITIONAL DATA	LINE NUMBER
1	INTD								STEARNS - ROGER CORP, 1/28/80, PROJ. 10MW SO: LAW PILOT PLANT - DGE: - C-21700, JOB OIL EXT: R + CHARG.(1-TU-10-B-1) :)	1
2	GEN								APPLY 031,1-1973, EXA	2
3			5	10			1-2-5/16		MAT=LCS, UC=10.75, WT=365, UNIT=36.2, TEMP=525.	3
4				15			1-7-11/16		RIGID, WEIGHT=398.	4
5				20			3-9	L		5
6				22		-4-3-1/4		L		6
7				25	3-0				WLT	7
8				27	13-9			L	TEMP=525.	8
9				32		4-8-1/4		L		9
10				35			3-9			10
11				40			-1-7-11/16		RIGID, WEIGHT=398.	11
12				45			-1-2-5/16			12
13			25	50			5-2		WLT, TEMP=525.	13
14				140		9-1-1/4		L	TEMP=525.	14
15				150			9-6	L		15
16				155		2-11-3/8		L		16
17				160	4-3					17
18				165	18-0					18
19				170	19-0					19
20				172	18-0					20
21				175	1-9			L		21
22				180		2-6		L		22
23				185			8-6			23
24				190			1-8	L		24
25				195	15-6			L		25
26				200			1-8			26
27				205			-R-6	L		27
28				210		2-6		L		28
29				215	1-9					29
30				220	18-0					30
31				225	5-2				SIF=2.4	31

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INPUT DATA - (CARD IMAGES)

LINE NUMBER	:1	:4	:7	:10	:13	:25	:37	:49	:60	LINE NUMBER
	LOC	LOC	FR	FR	DELTA X	DELTA Y	DELTA Z	RADIUS	ADDITIONAL DATA	
32	:	:	:	:	:230:1-5-1/2	:	:	:	:SIF=2.0	32
33	:	:	:	:	:235:10-6-1/2	:	:	:	:OD=8.625,WT=.322,	33
34	:	:	:	:	:240:15-2	:	:	:	:UNIF=25.8	34
35	:	:	:	:	:245:	:2-0	:	:L	:	35
36	:	:	:	:	:250:	:	:1-13-6	:L	:	36
37	:	:	:	:	:255:	:1-11-1	:	:L	:	37
38	:	:	:	:	:260:	:	:1-11-0	:	:	38
39	:	:	:	:	:265:	:	:1-12-0	:	:	39
40	:	:	:	:	:225:270:	:2-0	:	:L	:TEMP=525,	40
41	:	:	:	:	:275:	:	:1-13-6	:L	:	41
42	:	:	:	:	:280:	:1-11-1	:	:L	:	42
43	:	:	:	:	:285:	:	:1-11-0	:	:	43
44	:	:	:	:	:290:	:	:1-12-0	:	:	44
45	:	:	:	:	:305:310:	:	:2-0	:	:MAT=LCS,OD=8.625,	45
	:	:	:	:	:	:	:	:	:WT=.322,UNIF=25.40,	
	:	:	:	:	:	:	:	:	:TEMP=580.	
46	:	:	:	:	:315:	:	:1-10-7/16	:	:	46
47	:	:	:	:	:320:	:	:0-8	:	:	47
48	:	:	:	:	:325:	:	:1-5-9/16	:	:RIGID,WEIGHT=374.	48
49	:	:	:	:	:335:	:	:2-9	:L	:	49
50	:	:	:	:	:340:	:3-7-1/4	:	:L	:	50
51	:	:	:	:	:350:7-6-1/2	:	:	:L	:	51
52	:	:	:	:	:352:	:	:1-3	:	:	52
53	:	:	:	:	:355:	:	:8-9	:	:	53
54	:	:	:	:	:360:	:	:1-4-3	:	:SIF=2.0	54
55	:	:	:	:	:365:	:	:1-11-1/2	:L	:OD=10.75,WT=.365,	55
	:	:	:	:	:	:	:	:	:UNIF=35.6	
56	:	:	:	:	:370:1-11-1/2	:	:	:	:WT	56
57	:	:	:	:	:375:1-11-1/2	:	:	:L	:TEMP=580.	57
58	:	:	:	:	:376:	:	:1-11-1/2	:	:SIF=2.0	58
59	:	:	:	:	:377:	:	:1-14-3	:	:OD=8.625,WT=.322,UNIF	59
	:	:	:	:	:	:	:	:	:25.40	
60	:	:	:	:	:379:	:	:1-8-9	:	:	60
61	:	:	:	:	:380:	:	:1-3	:L	:	61
62	:	:	:	:	:390:7-6-1/2	:	:	:L	:	62
63	:	:	:	:	:395:	:3-7-1/4	:	:L	:	63
64	:	:	:	:	:400:	:	:1-2-0	:	:	64
65	:	:	:	:	:407:	:	:1-5-9/16	:	:RIGID,WEIGHT=374.	65
66	:	:	:	:	:409:	:	:0-8	:	:	66
67	:	:	:	:	:410:	:	:1-10-7/16	:	:	67

INPUT DATA - (CARD IMAGES)

LINE NUMBER	:1	:4	:7	:10	:13	:25	:37	:49	:60	:	LINE NUMBER
	TYP	LOG	FR	FR	DELTA X	DELTA Y	DELTA Z	RADIUS	ADDITIONAL DATA		
68	:	:	:	:415:	:	:	: -2-0	:	:	:	68
69	:	:	:	:59:135:	:	:	:17-0	:	:RU=10.75,RT=.365,	:	69
	:	:	:	:	:	:	:	:	:TEMP=525.,UNIF=36.2,	:	
	:	:	:	:	:	:	:	:	:SIF=2.4	:	
70	:	:	:	:130:	:	:	:1-6	:	:	:	70
71	:	:	:	:125:	:	:	:18-0	:L	:	:	71
72	:	:	:	:120:17-3	:	:	:	:	:	:	72
73	:	:	:	:118:16-11-1/2	:	:	:	:L	:	:	73
74	:	:	:	:115:	:3-1-3/4	:	:	:	:WLT	:	74
75	:	:	:	:110:	:	:	:3-2	:L	:TEMP=525.	:	75
76	:	:	:	:105:-4-7-1/8	:	:	:	:	:	:	76
77	:	:	:	:100:-1-7-11/16	:	:	:	:	:RIGID,WEIGHT=398.	:	77
78	:	:	:	:95:-1-4	:	:	:	:	:	:	78
79	:	:	:	:90:-1-7-11/16	:	:	:	:	:RIGID,WEIGHT=398.	:	79
80	:	:	:	:85:-1-3	:	:	:	:L	:	:	80
81	:	:	:	:80:	:4-10-1/2	:	:	:L	:	:	81
82	:	:	:	:75:	:	:	:1-7	:	:	:	82
83	:	:	:	:370:505:	:	:	:1-11-1/2	:L	:RU=10.75,RT=.365,	:	83
	:	:	:	:	:	:	:	:	:UNIF=35.6,TEMP=580.	:	
	:	:	:	:	:	:	:	:	:SIF=2.4	:	
84	:	:	:	:510:	:4-0	:	:	:	:	:	84
85	:	:	:	:515:	:13-1-1/4	:	:	:L	:	:	85
86	:	:	:	:520:	:	:	:10-3-11/16	:L	:	:	86
87	:	:	:	:525:-2-0	:	:	:	:	:	:	87
88	:	:	:	:530:-5-3	:	:	:	:L	:	:	88
89	:	:	:	:535:	:11-6	:	:	:L	:	:	89
90	:	:	:	:540:19-4	:	:	:	:L	:	:	90
91	:	:	:	:555:	:8-3	:	:	:	:WLT	:	91
92	:	:	:	:560:	:	:	:1-11-1/2	:L	:	:	92
93	:	:	:	:564:-3-5-5/16	:	:	:	:	:	:	93
94	:	:	:	:565:-1-7-11/16	:	:	:	:	:RIGID,WEIGHT=398.	:	94
95	:	:	:	:568:-1-3	:	:	:	:L	:	:	95
96	:	:	:	:570:	:	:	:3-5	:	:	:	96
97	:	:	:	:575:	:	:	:1-3-11/16	:	:RIGID,WEIGHT=344.	:	97
98	:	:	:	:555:600:	:	:	:1-11-1/2	:L	:	:	98
99	:	:	:	:605:-3-5-5/16	:	:	:	:	:	:	99
100	:	:	:	:610:-1-7-11/16	:	:	:	:	:RIGID,WEIGHT=398.	:	100
101	:	:	:	:615:-1-3	:	:	:	:L	:	:	101
102	:	:	:	:618:	:5-9	:	:	:L	:	:	102
103	:	:	:	:620:-4-6	:	:	:	:L	:	:	103
104	:	:	:	:625:	:	:	:6-7-11/16	:L	:	:	104
105	:	:	:	:630:	:17-0	:	:	:L	:	:	105

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INPUT DATA - (CARD IMAGES)

LINE NUMBER	TYPE	LOC	FR	DELTA X	DELTA Y	DELTA Z	RADIUS	ADDITIONAL DATA	LINE NUMBER
106	:	:	:	:635:8-0	:	:	:	:	: 106
107	:	:	:	:640:7-0	:	:	:L	:	: 107
108	:	:	:	:642:	:	: -4-9	:	:	: 108
109	:	:	:	:645:	:	: -4-0	:	:SIF=2.4	: 109
110	:	:	:	:655:	:	: -6-3	:	:WLT	: 110
111	:	:	:	:660:	:	: -5-3	:	:TEMP=580.	: 111
112	:	:	:	:665:	:	: -1-5-3/8	:L	:	: 112
113	:	:	:	:670:	: -2-0-5/8	: -2-0-5/8	:L	:	: 113
114	:	:	:	:675:9-0	:	:	:	:	: 114
115	:	:	:	:680:9-6	:	:	:	:	: 115
116	:	:	:	:685:4-0	:	:	:	:SIF=2.4	: 116
117	:	:	:	:690:1-6	:	:	:	:SIF=2.0	: 117
118	:	:	:	:695:4-0	:	:	:	:OD=8.625,WT=.322, :UNIF=.5,4	: 118
119	:	:	:	:700:9-6	:	:	:	:	: 119
120	:	:	:	:705:3-0	:	:	:L	:	: 120
121	:	:	:	:710:	: -2-10-5/16	:	:L	:	: 121
122	:	:	:	:715:	:	: -1-9-6	:L	:	: 122
123	:	:	:	:720:	: -6-0-3/16	:	:L	:	: 123
124	:	:	:	:725:	:	: -4-0	:	:	: 124
125	:	:	:	:685:730:	: -2-11-3/8	:	:L	:TEMP=580.	: 125
126	:	:	:	:735:	:	: -1-9-6	:L	:	: 126
127	:	:	:	:740:	: -6-0-3/16	:	:L	:	: 127
128	:	:	:	:745:	:	: -4-0	:	:	: 128
129	:	:	:	:655:800:1-11-1/2	:	:	:L	:OD=10.75,WT=.365, :UNIF=.36,2,TEMP=70.	: 129
130	:	:	:	:805:	: -9-0	:	:L	:	: 130
131	:	:	:	:815:	:	: -7-8-5/16	:	:	: 131
132	:	:	:	:820:	:	: -1-7-11/16	:	:RIGID,WEIGHT=398.	: 132
133	:	:	:	:825:	:	: -2-11	:L	:	: 133
134	:	:	:	:115:	: -1-11-1/2	:	:	:	: 134
135	:ANG:	5:	:	:	:	:	:	:	: 135
136	:ANG:	45:	:	:	:	:	:	:	: 136
137	:ANG:	265:	:	:	:	:	:	:	: 137
138	:ANG:	290:	:	:	:	:	:	:	: 138
139	:ANG:	305:	:	:	:	:	:	:	: 139
140	:ANG:	415:	:	:	:	:	:	:	: 140
141	:ANG:	725:	:	:	:	:	:	:	: 141
142	:ANG:	745:	:	:	:	:	:	:	: 142
143	:ANG:	75:	:	:	:0.0	: -1.32	:	:	: 143
144	:ANG:	575:	:	:	:1.58	: -1.32	:	:	: 144

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INPUT DATA - (CARD IMAGES)

LINE NUMBER	TYP	LOC	FRM	TO	DELTA X	DELTA Y	DELTA Z	RADIUS	ADDITIONAL DATA	LINE NUMBER
145	:RAD:	125:	F	:	:	:RIGID	:	:	:	145
146	:RAD:	130:	:	:	:	:RIGID	:	:	:	146
147	:RAD:	160:	:	:	:	:RIGID	:	:	:	147
148	:RAD:	165:	:	:	:	:RIGID	:	:	:	148
149	:RAD:	170:	:	:	:	:RIGID	:	:	:	149
150	:RAD:	172:	:	:	:	:RIGID	:	:	:	150
151	:RAD:	185:	:	:	:	:RIGID	:	:	:	151
152	:RAD:	200:	:	:	:	:RIGID	:	:	:	152
153	:RAD:	215:	:	:	:	:RIGID	:	:	:	153
154	:RAD:	220:	:	:	:	:RIGID	:	:	:	154
155	:RAD:	235:	:	:	:	:RIGID	:	:	:	155
156	:RAD:	245:	F	:	:	:RIGID	:	:	:	156
157	:RAD:	260:	:	:	:	:RIGID	:	:	:	157
158	:RAD:	285:	:	:	:	:RIGID	:	:	:	158
159	:RAD:	352:	:	:	:	:RIGID	:	:	:	159
160	:RAD:	355:	:	:	:	:RIGID	:	:	:	160
161	:RAD:	375:	:	:	:	:RIGID	:	:	:	161
162	:RAD:	379:	:	:	:	:RIGID	:	:	:	162
163	:RAD:	505:	H	:	:	:RIGID	:	:	:	163
164	:RAD:	675:	:	:	:	:RIGID	:	:	:	164
165	:RAD:	680:	:	:	:	:RIGID	:	:	:	165
166	:RAD:	695:	:	:	:	:RIGID	:	:	:	166
167	:RAD:	700:	:	:	:	:RIGID	:	:	:	167
168	:CCC:	45:	:	16-0	0-0	0-0	:	:	:	168
169	:CCC:	265:	:	133-5	-1-8-5/8	-15-3	:	:	:	169
170	:CCC:	290:	:	110-5	-1-8-5/8	-15-3	:	:	:	170
171	:CCC:	305:	:	21-6	-1-1	-0-11	:	:	:	171
172	:CCC:	415:	:	140-6	-1-1	-0-11	:	:	:	172
173	:CCC:	75:	:	26-9	-6-5	53-0	:	:	:	173
174	:CCC:	575:	:	26-9	32-2	53-0	:	:	:	174
175	:CCC:	725:	:	75-9	-1-8-1/8	3-9	:	:	:	175
176	:CCC:	745:	:	157-9	-1-7-3/16	4-9	:	:	:	176
177	:RAD:	335:	H	:	:	:RIGID	:	:	:	177
178	:RAD:	395:	F	:	:	:RIGID	:	:	:	178
179	:OUI:	:	:	:	:	:	:	:	:THERMAL	179

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* * * * *
 * FORCES AND MOMENTS ON ANCHORS AND RESTRAINTS *
 * * * * *

EXPLANATORY NOTES

THE FORCES AND MOMENTS SHOWN BELOW ARE THE ACTIONS OF THE PIPING SYSTEM ON THE ANCHORS AND RESTRAINTS.

LINC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)		RESULTANT
	X	Z	X	Z	
5	2229.	1435.	2656.	13614.	5042.
45	1364.	917.	2249.	5686.	4479.
205	350.	346.	596.	8379.	1954.
290	220.	386.	464.	5589.	1023.
305	143.	357.	180.	444.	586.
415	146.	441.	155.	682.	561.
75	285.	347.	451.	4362.	736.
575	101.	853.	1910.	1718.	2006.
725	157.	244.	1675.	3379.	1332.
745	372.	443.	1594.	2473.	2000.
RESTRAINTS	0.	0.	0.	0.	0.
160	0.	374.	0.	0.	0.
165	0.	88.	0.	0.	0.

FORCES AND MOMENTS ON ANCHORS AND RESTRAINTS (CONTINUED)

EXPLANATORY NOTES

THE FORCES AND MOMENTS SHOWN BELOW ARE THE ACTIONS OF THE PIPING SYSTEM ON THE ANCHORS AND RESTRAINTS.

LOC. NO.	FORCES (POUNDS)				MOMENTS (FOOT-POUNDS)			
	X	Y	Z	RESULTANT	X	Y	Z	RESULTANT
RESTRAINTS (CONTINUED)								
170	0.	-94.	0.	94.	0.	0.	0.	0.
172	0.	100.	0.	100.	0.	0.	0.	0.
185	0.	-32.	0.	32.	0.	0.	0.	0.
200	0.	-35.	0.	35.	0.	0.	0.	0.
215	0.	100.	0.	100.	0.	0.	0.	0.
229	0.	-78.	0.	78.	0.	0.	0.	0.
235	0.	-90.	0.	90.	0.	0.	0.	0.
245F	0.	189.	0.	189.	0.	0.	0.	0.
260	0.	-373.	0.	373.	0.	0.	0.	0.
285	0.	15.	0.	15.	0.	0.	0.	0.
335H	0.	128.	0.	128.	0.	0.	0.	0.
352	0.	9.	0.	9.	0.	0.	0.	0.
355	0.	-544.	0.	544.	0.	0.	0.	0.
378	0.	-415.	0.	415.	0.	0.	0.	0.
379	0.	167.	0.	167.	0.	0.	0.	0.
395F	0.	233.	0.	233.	0.	0.	0.	0.

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FORCES AND MOMENTS ON ANCHORS AND RESTRAINTS (CONTINUED)

EXPLANATORY NOTES

THE FORCES AND MOMENTS SHOWN BELOW ARE THE ACTIONS OF THE PIPING SYSTEM ON THE ANCHORS AND RESTRAINTS.

LOC. NO.	FORCES (POUNDS)				MOMENTS (FOOT-POUNDS)			
	X	Y	Z	RESULTANT	X	Y	Z	RESULTANT
RESTRAINTS (CONTINUED)								
130	0.	-659.	0.	659.	0.	0.	0.	0.
125F	0.	172.	0.	172.	0.	0.	0.	0.
505N	0.	-529.	0.	529.	0.	0.	0.	0.
675	0.	721.	0.	721.	0.	0.	0.	0.
689	0.	70.	0.	70.	0.	0.	0.	0.
695	0.	274.	0.	274.	0.	0.	0.	0.
700	0.	-124.	0.	124.	0.	0.	0.	0.

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 *
 * INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS *
 * ----- *
 *

THE MAXIMUM STRESS OF 13,750, OCCURS AT POINT 685

EXPLANATORY NOTES:

- (1) THE FORCES AND MOMENTS SHOWN BELOW ARE WITH REFERENCE TO THE ELEMENT LOCAL AXES.
- (2) THE STRESSES SHOWN BELOW ARE CALCULATED IN ACCORDANCE WITH THE
 ANSI B31.1 - 1977
 PIPING CODE (INCLUDING ALL MANDATORY UPDATES)
- (3) A (**) FOLLOWING A STRESS VALUE INDICATES THE MAXIMUM STRESS FOR THIS LOADING CONDITION.
- (4) A (*) FOLLOWING A STRESS VALUE INDICATES A STRESS WITHIN 10 PER CENT OF THE MAXIMUM.
- (5) THE COLD MODULUS HAS BEEN USED IN THIS ANALYSIS.
- (6) THE STRESS INTENSIFICATION FACTORS (ABBREVIATED AS SIF IN THE TABLE HEADING BELOW) ARE
 AUTOMATICALLY CALCULATED AND APPLIED AT BENDS, ELBOWS, MITERS AND ADMISSIBLE TYPES OF TEES
 (AS SPECIFICALLY IDENTIFIED IN THE INPUT DESCRIPTION OF THE PIPING SYSTEM). USER ENTERED
 STRESS INTENSIFICATION FACTORS TAKE PRECEDENCE OVER INTERNALLY CALCULATED VALUES.
- (16) THE EXACT SECTION MODULUS IS USED IN THE STRESS CALCULATIONS
 UNLESS THE SPECIFIC PIPING CODE OR THE USER EXPLICITLY
 REQUESTS OTHERWISE. IN THIS ANALYSIS THE SO-CALLED EFFECTIVE
 MODULUS IS USED FOR THE BRANCH LEG AT REDUCED
 INLET CONNECTIONS. THESE ARE IDENTIFIED WITH AN ASTERISK.
 THE EXACT SECTION MODULUS IS USED FOR ALL OTHER POINTS.

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INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION STRESS PSI
			AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN-PLANE	OUT-OF-PLANE		
ANCHR	STR	-- 5	1435.	2229.	5042.	2656.	13614.	1.00	1.00	29.90	5922.
		>- 10	1435.	2229.	5042.	2646.	10956.	1.00	1.00	29.90	4955.
	RIGID	>- 15	1435.	2229.	5042.	2633.	7299.	1.00	1.00	29.90	3713.
	STR	>- 20N	1435.	2229.	5042.	2613.	1728.	2.61	2.61	29.90	6205.
	BEND	(20M	1009.	2451.	3159.	2080.	2817.	2.61	2.61	29.90	4930.
		>- 20F	8.	2651.	1058.	809.	2256.	2.61	2.61	29.90	2739.
	STR	>- 22N	8.	2651.	1058.	2619.	2330.	2.61	2.61	29.90	3827.
	BEND	(22M	1570.	2135.	2921.	4592.	2168.	2.61	2.61	29.90	6123.
		>- 22F	2229.	1435.	4123.	5415.	736.	2.61	2.61	29.90	7156.
	STR	>- 25	2229.	1435.	4123.	3247.	5429.	1.97	1.97	29.90	5963.
BR PT		-- 25	2229.	1435.	4123.	3247.	5429.	1.97	1.97	29.90	5963.
	STR	>- 30N	1364.	917.	2263.	6044.	1817.	1.97	1.97	29.90	5295.
	BEND	(30M	1364.	917.	2263.	1875.	4440.	2.61	2.61	29.90	5566.
		>- 30F	988.	1314.	1203.	1404.	3929.	2.61	2.61	29.90	4540.
	STR	>- 32N	33.	1644.	3294.	210.	1117.	2.61	2.61	29.90	3642.
	BEND	(32M	33.	1644.	3294.	888.	2774.	2.61	2.61	29.90	4596.
		>- 32F	625.	1520.	4790.	1711.	838.	2.61	2.61	29.90	5388.
	STR	>- 35	917.	1364.	4479.	2075.	1589.	2.61	2.61	29.90	5421.
	RIGID	>- 40	917.	1364.	4479.	2157.	1822.	1.00	1.00	29.90	2124.
	STR	>- 45	917.	1364.	4479.	2210.	4059.	1.00	1.00	29.90	2583.
ANCHR		-- 45	917.	1364.	4479.	2249.	5686.	1.00	1.00	29.90	3042.
BR PT		-- 25	518.	865.	3611.	9291.	1860.	1.97	1.97	29.90	8008.
BR PT	STR	-- 50	518.	865.	3611.	1733.	4824.	1.97	1.97	29.90	4952.

INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION :	
			AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		STRESS :	PSI :
BR	PT	-- 50	518.	865.	3611.	1733.	4824.	1.97	1.97	29.90	:	4952.
BR	PT	-- 50	437.	579.	3590.	3271.	4317.	1.97	1.97	29.90	:	5131.
	STR	(:	
		>- 140N	437.	579.	3590.	3583.	223.	2.61	2.61	29.90	:	5307.
	BEND	(:	
		140M	337.	643.	2908.	3458.	1870.	2.61	2.61	29.90	:	5112.
		(:	
		>- 140F	40.	725.	946.	3087.	2867.	2.61	2.61	29.90	:	4514.
	STR	(:	
		>- 150N	40.	725.	946.	29.	1179.	2.61	2.61	29.90	:	1581.
		(:	
	BEND	(:	
		150M	337.	643.	377.	342.	2014.	2.61	2.61	29.90	:	2171.
		(:	
		>- 150F	437.	579.	1902.	467.	1668.	2.61	2.61	29.90	:	2690.
	STR	(:	
		>- 155N	437.	579.	1902.	1927.	449.	2.61	2.61	29.90	:	2869.
		(:	
	BEND	(:	
		155M	718.	108.	1042.	2278.	1627.	2.61	2.61	29.90	:	3123.
		(:	
		>- 155F	578.	439.	400.	2104.	1852.	2.61	2.61	29.90	:	2960.
	STR	(:	
		>- 160	578.	439.	400.	793.	1733.	1.00	1.00	29.90	:	781.
	STR	(:	
		>- 165	578.	50.	400.	265.	1017.	1.00	1.00	29.90	:	451.
	STR	(:	
		>- 170	578.	76.	400.	296.	262.	1.00	1.00	29.90	:	225.
	STR	(:	
		>- 172	578.	76.	400.	932.	494.	1.00	1.00	29.90	:	453.
	STR	(:	
		>- 175N	578.	53.	400.	915.	514.	2.61	2.61	29.90	:	1174.
		(:	
	BEND	(:	
		175M	384.	435.	661.	672.	116.	2.61	2.61	29.90	:	992.
		(:	
		>- 175F	35.	579.	563.	350.	148.	2.61	2.61	29.90	:	710.
		(:	
	BEND	(:	
		180M	3.	561.	505.	302.	8.	2.61	2.61	29.90	:	616.
		(:	
		>- 180F	40.	579.	575.	256.	159.	2.61	2.61	29.90	:	678.
	STR	(:	
		>- 185	40.	579.	575.	2.	4350.	1.00	1.00	29.90	:	1761.
	STR	(:	
		>- 190N	40.	578.	575.	4591.	1.	2.61	2.61	29.90	:	4837.

INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION STRESS PSI
			AXIAL	RESULTANT SHEAR		TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		
		>- 190N	40.	578.		575.	4591.	1.	2.61	2.61	29.90	4837.
	BEND	(190M	437.	381.		406.	5088.	408.	2.61	2.61	29.90	5352.
		>- 190F	578.	40.		3.	5264.	578.	2.61	2.61	29.90	5536.
	STR	(
		>- 195N	578.	40.		3.	4747.	615.	2.61	2.61	29.90	5004.
	BEND	(195M	381.	437.		438.	4500.	435.	2.61	2.61	29.90	4749.
		>- 195F	40.	578.		619.	3975.	1.	2.61	2.61	29.90	4205.
	STR	(
		>- 200	40.	579.		619.	2.	3734.	1.00	1.00	29.90	1519.
	STR	(
		>- 205N	40.	579.		619.	234.	457.	2.61	2.61	29.90	841.
	BEND	(205M	51.	578.		972.	248.	397.	2.61	2.61	29.90	1128.
		>- 205F	33.	579.		1180.	225.	104.	2.61	2.61	29.90	1260.
	BEND	(210M	386.	434.		979.	627.	710.	2.61	2.61	29.90	1424.
		>- 210F	578.	51.		176.	867.	1229.	2.61	2.61	29.90	1583.
	STR	(
		>- 215	578.	78.		176.	883.	1249.	1.00	1.00	29.90	618.
	STR	(
		>- 220	578.	78.		176.	402.	2005.	1.00	1.00	29.90	824.
	STR	(
BR	PT	-- 225	578.	41.		176.	347.	2210.	2.40	2.40	29.90	2161.
BR	PT	-- 225	350.	367.		667.	703.	4954.	2.40	2.40	29.90	4890.
	STR	(
		>- 230	350.	367.		667.	545.	4507.	2.00	2.00	16.81	6599.
	STR	(
		>- 235	350.	367.		867.	742.	859.	1.00	1.00	16.81	1020.
	STR	(
		>- 240N	350.	347.		867.	1191.	4042.	2.44	2.44	16.81	7490.
	BEND	(240M	225.	439.		3572.	1316.	2490.	2.44	2.44	16.81	7920.
		>- 240F	32.	492.		4388.	521.	1573.	2.44	2.44	16.81	8166.
	BEND	(245M	222.	440.		4317.	267.	1743.	2.44	2.44	16.81	6120.

INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	FLEX TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION STRESS PSI
			AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		
	BEND - (	245M	222.	440.	4317.	267.	1743.	2.44	2.44	16.81	8120.
	>-	245F	346.	351.	1923.	143.	4038.	2.44	2.44	16.81	7791.
	STR - (
	>-	250N	346.	414.	1923.	2401.	16.	2.44	2.44	16.81	5355.
	BEND - (	250M	401.	361.	1451.	2456.	1123.	2.44	2.44	16.81	5337.
	>-	250F	221.	492.	334.	2276.	1573.	2.44	2.44	16.81	4852.
	STR - (
	>-	255N	221.	492.	334.	867.	1604.	2.44	2.44	16.81	3228.
	BEND - (	255M	401.	361.	1001.	1047.	1618.	2.44	2.44	16.81	3780.
	>-	255F	346.	414.	1954.	991.	684.	2.44	2.44	16.81	3997.
	STR - (
	>-	260	346.	381.	1954.	1220.	4182.	1.00	1.00	16.81	3408.
	STR - (
	ANCHP	-- 265	346.	381.	1954.	598.	8379.	1.00	1.00	16.81	6157.
116	HR PT	-- 225	133.	448.	2743.	1050.	691.	2.40	2.40	16.81	5170.
	STR - (
	>-	270N	133.	448.	2743.	305.	1279.	2.44	2.44	16.81	5296.
	BEND - (	270M	179.	432.	2911.	6.	874.	2.44	2.44	16.81	5291.
	>-	270F	386.	264.	1507.	213.	2515.	2.44	2.44	16.81	5118.
	STR - (
	>-	275N	386.	264.	1507.	1738.	110.	2.44	2.44	16.81	4010.
	BEND - (	275M	367.	290.	1210.	1719.	826.	2.44	2.44	16.81	3933.
	>-	275F	133.	448.	339.	1485.	1279.	2.44	2.44	16.81	3462.
	STR - (
	>-	280N	133.	448.	339.	2019.	795.	2.44	2.44	16.81	3823.
	BEND - (	280M	367.	290.	390.	2253.	963.	2.44	2.44	16.81	4319.
	>-	280F	386.	264.	1023.	2272.	567.	2.44	2.44	16.81	4449.
	STR - (
	>-	285	386.	257.	1023.	945.	2850.	1.00	1.00	16.81	2265.
	STR - (
	ANCHR	-- 290	386.	257.	1023.	464.	5589.	1.00	1.00	16.81	4070.

INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION STRESS PSI
			AXIAL	RESULANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		
ANCHR		-- 290	386.	257.	1023.	464.	5589.	1.00	1.00	16.81	4070.
ANCHR		-- 305	357.	166.	586.	180.	444.	1.00	1.00	16.81	541.
	STR	>- 310	357.	166.	586.	14.	157.	1.00	1.00	16.81	433.
	STR	>- 315	357.	166.	586.	142.	111.	1.00	1.00	16.81	438.
	STR	>- 320	357.	166.	586.	197.	207.	1.00	1.00	16.81	466.
	RIGID	>- 325	357.	166.	586.	319.	417.	1.00	1.00	16.81	562.
	STR	>- 335N	357.	256.	586.	465.	668.	2.44	2.44	16.81	1746.
	BEND	- (335M	402.	177.	100.	510.	988.	2.44	2.44	16.81	1944.
	STR	>- 335F	211.	385.	811.	319.	730.	2.44	2.44	16.81	1979.
	STR	>- 340N	211.	385.	811.	960.	254.	2.44	2.44	16.81	2232.
	BEND	- (340M	251.	360.	858.	999.	142.	2.44	2.44	16.81	2306.
	STR	>- 340F	143.	415.	611.	892.	454.	2.44	2.44	16.81	2041.
	STR	>- 350N	143.	415.	611.	1525.	280.	2.44	2.44	16.81	2901.
	BEND	- (350M	354.	260.	692.	1735.	84.	2.44	2.44	16.81	3256.
	STR	>- 350F	357.	256.	492.	1739.	399.	2.44	2.44	16.81	3221.
	STR	>- 352	357.	256.	492.	347.	1703.	1.00	1.00	16.81	1289.
	STR	>- 355	357.	263.	492.	1585.	447.	1.00	1.00	16.81	1227.
	STR	>- 360	357.	353.	492.	3016.	1597.	2.00	2.00	16.81	4923.
	STR	>- 365N	357.	353.	492.	1699.	3245.	2.61	2.61	29.90	3865.
	BEND	- (365M	354.	356.	2760.	1695.	2232.	2.61	2.61	29.90	4112.
	STR	>- 365F	143.	481.	3648.	1432.	88.	2.61	2.61	29.90	4098.
BR PT		-- 370	143.	481.	3648.	1179.	141.	1.97	1.97	29.90	3030.

INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION STRESS PSI
			AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		
BR	PT	-- 370	143.	481.	3648.	1179.	141.	1.97	1.97	29.90	3030.
BR	PT	-- 370	186.	511.	3189.	1615.	702.	1.97	1.97	29.90	2877.
	STR	>- 375N	186.	511.	3189.	1927.	885.	2.61	2.61	29.90	4004.
	BEND	(375M	443.	316.	2976.	2249.	1401.	2.61	2.61	29.90	4165.
	STR	>- 375F	441.	318.	1208.	2247.	2866.	2.61	2.61	29.90	4011.
	STR	>- 376	441.	318.	1208.	2682.	2115.	2.00	2.00	16.81	5174.
	STR	>- 378	441.	242.	1208.	1006.	529.	1.00	1.00	16.81	1184.
	STR	>- 379	441.	373.	1208.	359.	2153.	1.00	1.00	16.81	1781.
	BEND	(380M	443.	370.	1260.	2202.	315.	2.44	2.44	16.81	4450.
	STR	>- 380F	186.	547.	763.	1944.	885.	2.44	2.44	16.81	3949.
	BEND	(390M	360.	452.	1022.	1080.	126.	2.44	2.44	16.81	2599.
	STR	>- 390F	323.	479.	941.	1044.	322.	2.44	2.44	16.81	2511.
	BEND	(395M	540.	203.	192.	603.	1062.	2.44	2.44	16.81	2153.
	STR	>- 395F	441.	373.	561.	504.	756.	2.44	2.44	16.81	1858.
	RIGID	>- 405	441.	206.	561.	346.	431.	1.00	1.00	16.81	562.
	STR	>- 407	441.	206.	561.	214.	159.	1.00	1.00	16.81	443.
	STR	>- 409	441.	206.	561.	154.	36.	1.00	1.00	16.81	416.
	STR	>- 410	441.	206.	561.	15.	311.	1.00	1.00	16.81	458.
ANCHR		-- 415	441.	206.	561.	195.	682.	1.00	1.00	16.81	646.

INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT ELEM TYPE TYPE	LPC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION STRESS PSI
		AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		
ANCHR	-- 415	441.	206.	561.	195.	682.	1.00	1.00	16.81	646.
BR PT	-- 50	478.	543.	706.	5004.	1234.	1.97	1.97	29.90	4108.
STR	>- 135	478.	543.	706.	2839.	3635.	2.40	2.40	29.90	4494.
STR	>- 130	478.	543.	706.	3531.	4065.	1.00	1.00	29.90	2179.
STR	>- 125N	478.	348.	706.	8863.	221.	2.61	2.61	29.90	9298.
BEND	- (125M	541.	240.	415.	8941.	481.	2.61	2.61	29.90	9371.
STR	>- 125F	286.	517.	26.	8623.	459.	2.61	2.61	29.90	9028.
STR	>- 120	286.	479.	26.	54.	972.	1.00	1.00	29.90	391.
STR	>- 118N	286.	479.	26.	344.	6541.	2.61	2.61	29.90	6647.
BEND	- (118M	220.	513.	4818.	261.	5029.	2.61	2.61	29.90	7286.
STR	>- 118F	25.	557.	7139.	17.	572.	2.61	2.61	29.90	7486.
BR PT	-- 115	25.	557.	7139.	1478.	526.	1.97	1.97	29.90	5772.
BR PT	-- 115	1553.	449.	3005.	1402.	10514.	1.97	1.97	29.90	8706.
STR	>- 110N	1553.	449.	3005.	11056.	2071.	2.61	2.61	29.90	12172.
BEND	- (110M	1298.	963.	3717.	10738.	352.	2.61	2.61	29.90	11885.
STR	>- 110F	283.	1592.	2507.	9469.	2569.	2.61	2.61	29.90	10586.
STR	>- 105	283.	1592.	2507.	1402.	4277.	1.00	1.00	29.90	2067.
RIGID	>- 100	283.	1592.	2507.	830.	1729.	1.00	1.00	29.90	1267.
STR	>- 95	283.	1592.	2507.	365.	341.	1.00	1.00	29.90	1026.
RIGID	>- 90	283.	1592.	2507.	208.	2889.	2.61	2.61	29.90	4005.
BEND	- (85M	447.	1554.	4384.	412.	1643.	2.61	2.61	29.90	4413.
STR	>- 85F	349.	1578.	4630.	290.	566.	2.61	2.61	29.90	5093.

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INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT ELEM TYPE TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION : STRESS : PSI :
		AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		
STR	>- 85F	349.	1578.	4830.	290.	566.	2.61	2.61	29.90	5093.
BEND	>- 85N	29.40349:	6828.	4830.	3122.	383.	2.61	2.61		
STR	>- 86F	1345.	897.	3790.	4367.	2895.	2.61	2.61	29.90	6759.
STR	>- 86F	1553.	449.	736.	4627.	4476.	2.61	2.61	29.90	6774.
ANCHR	-- 75	1553.	449.	736.	4511.	4382.	1.00	1.00	29.90	2541.
BR PT	-- 370	798.	583.	842.	436.	6837.	1.97	1.97	29.90	5451.
STR	>- 505N	798.	1111.	842.	7249.	466.	2.61	2.61	29.90	7645.
BEND	>- 505M	1350.	225.	250.	7939.	962.	2.61	2.61	29.90	8364.
STR	>- 505F	1111.	799.	519.	7640.	895.	2.61	2.61	29.90	8059.
STR	>- 510	1111.	799.	519.	1011.	5445.	2.40	2.40	29.90	5357.
STR	>- 515N	1111.	799.	519.	4017.	1510.	2.61	2.61	29.90	4519.
BEND	>- 515M	1350.	225.	716.	4316.	1472.	2.61	2.61	29.90	4826.
STR	>- 515F	798.	1111.	1563.	3627.	572.	2.61	2.61	29.90	4172.
BEND	>- 520N	798.	1111.	1563.	901.	5054.	2.61	2.61	29.90	5610.
BEND	>- 520M	594.	1232.	5086.	646.	3451.	2.61	2.61	29.90	6460.
STR	>- 520F	42.	1368.	6443.	44.	175.	2.61	2.61	29.90	6738.
STR	>- 525	42.	1368.	6443.	658.	643.	1.00	1.00	29.90	2612.
BEND	>- 530N	42.	1368.	6443.	5100.	3836.	2.61	2.61	29.90	9480.
BEND	>- 530M	815.	1099.	7560.	6066.	1138.	2.61	2.61	29.90	10203.
STR	>- 530F	1111.	799.	4833.	6436.	5445.	2.61	2.61	29.90	10158.
BEND	>- 535N	1111.	799.	4833.	6057.	1739.	2.61	2.61	29.90	8302.
BEND	>- 535M	755.	1141.	4940.	5613.	1483.	2.61	2.61	29.90	7968.

INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION STRESS PSI
			AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		
	BEND	(535H	755.	1141.	4940.	5613.	1483.	2.61	2.61	29.90	7968.
		>- 535F	42.	1366.	2737.	4616.	3836.	2.61	2.61	29.90	6895.
	STR	(
		>- 540N	42.	1368.	2737.	2973.	1619.	2.61	2.61	29.90	4550.
	BEND	(540M	755.	1141.	498.	3970.	3785.	2.61	2.61	29.90	5758.
		>- 540F	1111.	799.	2616.	4413.	3735.	2.61	2.61	29.90	6634.
	STR	(
	BR PT	-- 555	1111.	799.	2616.	9322.	4708.	1.97	1.97	29.90	8502.
	BR PT	-- 555	853.	1047.	4594.	8873.	3008.	1.97	1.97	29.90	8240.
	STR	(
		>- 560N	853.	1047.	4594.	3080.	8135.	2.61	2.61	29.90	10284.
	BEND	(560M	675.	1170.	2123.	2857.	8080.	2.61	2.61	29.90	9230.
		>- 560F	101.	1347.	6833.	2140.	3291.	2.61	2.61	29.90	8238.
	STR	(
121	RIGID	(
		>- 564	101.	1347.	6833.	1006.	269.	1.00	1.00	29.90	2774.
		>- 565	101.	1347.	6833.	1130.	703.	2.61	2.61	29.90	7277.
	BEND	(566M	675.	1170.	5710.	1847.	3413.	2.61	2.61	29.90	7217.
		>- 566F	853.	1047.	2006.	2070.	5530.	2.61	2.61	29.90	6519.
	STR	(
		>- 570	853.	1047.	2006.	3272.	1850.	1.00	1.00	29.90	1710.
	RIGID	(
	ANCHR	-- 575	11.	1047.	2006.	1910.	1718.	N/A	N/A	N/A	N/A
	BR PT	-- 555	55.	90.	114.	449.	391.	1.97	1.97	29.90	479.
	STR	(
		>- 600N	55.	90.	114.	349.	497.	2.61	2.61	29.90	646.
	BEND	(600M	3.	106.	457.	277.	331.	2.61	2.61	29.90	658.
		>- 600F	59.	88.	583.	207.	29.	2.61	2.61	29.90	647.
	STR	(
		>- 605	59.	88.	583.	121.	87.	1.00	1.00	29.90	241.
	RIGID	(
		>- 610	59.	88.	583.	234.	3.	2.61	2.61	29.90	656.

INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT ELEM TYPE	LBC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION STRESS PSI
		AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN-PLANE	OUT-OF-PLANE		
	>- 610	59.	88.	583.	234.	3.	2.61	2.61	29.90	656.
BEND - (	615M	90.	55.	390.	273.	463.	2.61	2.61	29.90	694.
	>- 615F	68.	81.	72.	245.	651.	2.61	2.61	29.90	731.
STR - (	618N	68.	81.	72.	53.	830.	2.61	2.61	29.90	872.
BEND - (	618M	90.	55.	556.	26.	686.	2.61	2.61	29.90	923.
	>- 618F	59.	88.	898.	65.	140.	2.61	2.61	29.90	953.
STR - (	620N	59.	88.	898.	250.	202.	2.61	2.61	29.90	997.
BEND - (	620M	81.	69.	803.	277.	432.	2.61	2.61	29.90	996.
	>- 620F	55.	90.	287.	245.	812.	2.61	2.61	29.90	936.
STR - (	625N	55.	90.	287.	529.	0.	2.61	2.61	29.90	629.
BEND - (	625M	87.	60.	225.	489.	151.	2.61	2.61	29.90	584.
	>- 625F	68.	81.	74.	512.	213.	2.61	2.61	29.90	585.
STR - (	630N	68.	81.	74.	645.	1307.	2.61	2.61	29.90	1525.
BEND - (	630M	7.	106.	892.	722.	1025.	2.61	2.61	29.90	1609.
	>- 630F	59.	88.	1376.	804.	143.	2.61	2.61	29.90	1672.
STR - (	635	59.	88.	1376.	1129.	403.	1.00	1.00	29.90	732.
STR - (	640N	59.	88.	1376.	719.	1523.	2.61	2.61	29.90	2273.
BEND - (	640M	81.	69.	129.	745.	2110.	2.61	2.61	29.90	2343.
	>- 640F	55.	90.	1609.	713.	1461.	2.61	2.61	29.90	2391.
STR - (	642	55.	90.	1609.	1701.	506.	1.00	1.00	29.90	961.
STR - (	645	55.	90.	1609.	1975.	269.	2.40	2.40	29.90	2467.
STR - (	BR PT -- 655	55.	90.	1609.	100.	2403.	1.97	1.97	29.90	2285.

INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION STRESS PSI
			AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		
BR	pT	-- 655	55.	90.	1609.	100.	2403.	1.97	1.97	29.90	2285.
BR	pT	-- 655	1129.	769.	2887.	5807.	4714.	1.97	1.97	29.90	6331.
	STR	>- 660	1129.	769.	2887.	2389.	9108.	1.00	1.00	29.90	3952.
	STR	>- 665N	1129.	769.	2887.	1978.	9693.	2.61	2.61	29.90	10773.
	BEND	>- 665M	874.	1050.	6436.	1659.	8151.	2.61	2.61	29.90	10995.
	STR	>- 665F	486.	1277.	9125.	1173.	5368.	2.61	2.61	29.90	11135.
	STR	>- 670N	486.	1277.	9125.	6082.	88.	2.61	2.61	29.90	11464.
	BEND	>- 670M	788.	1116.	6922.	6460.	5408.	2.61	2.61	29.90	11398.
	STR	>- 670F	629.	1213.	1478.	6261.	7736.	2.61	2.61	29.90	10517.
	STR	>- 675	629.	1213.	1478.	2388.	1143.	1.00	1.00	29.90	1217.
123	STR	>- 680	629.	1182.	1478.	256.	9587.	1.00	1.00	29.90	3894.
BR	pT	-- 685	629.	1182.	1478.	1650.	14105.	2.40	2.40	29.90	13750. **
BR	pT	-- 685	257.	318.	1241.	315.	7836.	2.40	2.40	29.90	7647.
	STR	>- 690	257.	318.	1241.	113.	7404.	2.00	2.00	16.81	10720.
	STR	>- 695	257.	320.	1241.	425.	6253.	1.00	1.00	16.81	4561.
	STR	>- 700	257.	288.	1241.	900.	3518.	1.00	1.00	16.81	2740.
	STR	>- 705N	257.	288.	1241.	931.	2943.	2.44	2.44	16.81	5792.
	BEND	>- 705M	192.	335.	1119.	867.	2755.	2.44	2.44	16.81	5392.
	STR	>- 705F	15.	386.	2655.	690.	953.	2.44	2.44	16.81	5056.
	STR	>- 710N	15.	386.	2655.	706.	469.	2.44	2.44	16.81	4852.
	BEND	>- 710M	193.	334.	1621.	498.	2027.	2.44	2.44	16.81	4601.
	STR	>- 710F	288.	257.	212.	403.	2398.	2.44	2.44	16.81	4250.

INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT ELEM TYPE	ELEM TYPE	LGE. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION STRESS PSI
			AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN-PLANE	OUT-OF-PLANE		
	STR	>- 71CF	288.	257.	212.	403.	2398.	2.44	2.44	16.81	4250.
		>- 715N	288.	257.	212.	133.	2095.	2.44	2.44	16.81	3674.
	BEND	(715M	193.	334.	1707.	38.	1513.	2.44	2.44	16.81	3971.
	STR	>- 715F	15.	386.	2352.	170.	44.	2.44	2.44	16.81	4106.
		>- 720N	15.	386.	2352.	1326.	1075.	2.44	2.44	16.81	5059.
	BEND	(720M	193.	334.	827.	1534.	2605.	2.44	2.44	16.81	5456.
	STR	>- 720F	288.	257.	1332.	1629.	2609.	2.44	2.44	16.81	5835.
	ANCHR	-- 725	288.	257.	1332.	1675.	3379.	1.00	1.00	16.81	2855.
	HR PT	-- 685	483.	1465.	6269.	1335.	237.	2.40	2.40	16.81	10989.
	STR	>- 730N	483.	1465.	6269.	2997.	610.	2.44	2.44	16.81	12144.
124	BEND	(730M	1344.	758.	4110.	3858.	4601.	2.44	2.44	16.81	12668.
	STR	>- 730F	1417.	610.	238.	3932.	5897.	2.44	2.44	16.81	12346.
		>- 735N	1417.	610.	238.	4518.	613.	2.44	2.44	16.81	7948.
	BEND	(735M	1344.	758.	711.	4444.	528.	2.44	2.44	16.81	7889.
	STR	>- 735F	483.	1465.	985.	3583.	134.	2.44	2.44	16.81	6474.
		>- 740N	483.	1465.	985.	2106.	1628.	2.44	2.44	16.81	4944.
	BEND	(740M	1344.	758.	563.	2969.	2111.	2.44	2.44	16.81	6417.
	STR	>- 740F	1417.	610.	2000.	3043.	1357.	2.44	2.44	16.81	6765.
	ANCHR	-- 745	1417.	610.	2000.	1594.	2473.	1.00	1.00	16.81	2540.
	HR PT	-- 655	570.	1138.	7116.	5707.	4495.	1.97	1.97	29.90	8030.
	STR	>- 800N	570.	1138.	7116.	4230.	4946.	2.61	2.61	29.90	10081.
	BEND	(800M	138.	1265.	1928.	3691.	7579.	2.61	2.61	29.90	9040.

INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION STRESS PSI
			AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN- PLANE	OUT-OF- PLANE		
	BEND - (	800M	138.	1265.	1928.	3691.	7579.	2.61	2.61	29.90	9040.
	>-	800F	374.	1216.	3602.	3051.	5773.	2.61	2.61	29.90	7796.
	STR - (
	>-	805N	374.	1216.	3602.	1212.	652.	2.61	2.61	29.90	4031.
	BEND - (	805M	1024.	755.	3217.	2025.	1583.	2.61	2.61	29.90	4304.
	>-	805F	1075.	682.	1364.	2088.	2890.	2.61	2.61	29.90	3991.
	STR - (
	>-	815	1075.	682.	1364.	323.	779.	1.00	1.00	29.90	644.
	RIGID - (
	>-	820	1075.	682.	1364.	937.	1714.	1.00	1.00	29.90	956.
	STR - (
	>-	825N	1075.	682.	1364.	1561.	2663.	2.61	2.61	29.90	3528.
	BEND - (	825M	1024.	755.	1127.	1498.	3351.	2.61	2.61	29.90	4014.
	>-	825F	374.	1216.	3375.	685.	2076.	2.61	2.61	29.90	4204.
	STR - (
	BR PT	-- 115	374.	1216.	3375.	76.	2479.	1.97	1.97	29.90	3308.

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 *
 * INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES *
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EXPLANATORY NOTES

THE FORCES AND MOMENTS AT ANY POINT SHOWN BELOW REPRESENT THE ACTION OF THE FAR END OF THE BRANCH ACTING ON THE NEAR END OF THE BRANCH.

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
ANCHOR		5	-2229.	-8.	-1435.	2656.	-13614.	-5042.
	STRAIGHT - (
	> RIGID - (	10	-2229.	-8.	-1435.	2646.	-10956.	-5042.
	> STRAIGHT - (	15	-2229.	-8.	-1435.	2633.	-7299.	-5042.
	> (	20N	-2229.	-8.	-1435.	2613.	-1728.	-5042.
	BEND - (	20A	-2229.	-8.	-1435.	2080.	242.	-4226.
	> (	20F	-2229.	-8.	-1435.	809.	1058.	-2256.
126	STRAIGHT - (	22N	-2229.	-8.	-1435.	-2330.	1058.	2619.
	> (	22N	-2229.	-8.	-1435.	-3598.	532.	4592.
	BEND - (	22N	-2229.	-8.	-1435.	-4123.	-736.	5415.
	> STRAIGHT - (	22F	-2229.	-8.	-1435.	-4123.	-736.	5415.
BRANCH PT.		25	-2229.	-8.	-1435.	-4123.	-3247.	5429.
BRANCH PT.		25	-1364.	-33.	-917.	-2263.	6044.	1817.
	STRAIGHT - (
	> (	30N	-1364.	-33.	-917.	-2263.	4440.	1875.
	BEND - (	30N	-1364.	-33.	-917.	-1928.	3629.	1404.
	> (	30F	-1364.	-33.	-917.	-1117.	3294.	210.
	STRAIGHT - (
	> (	32N	-1364.	-33.	-917.	888.	3294.	-2774.
	BEND - (	32N	-1364.	-33.	-917.	1711.	2794.	-3979.
	> (	32F	-1364.	-33.	-917.	2075.	1589.	-4479.
	STRAIGHT - (
	> (	35	-1364.	-33.	-917.	2157.	-1822.	-4479.

INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
	RIGID -(	35	-1364.	-33.	-917.	2157.	-1822.	-4479.
	STRAIGHT -(	40	-1364.	-33.	-917.	2210.	-4059.	-4479.
ANCHOR		45	-1364.	-33.	-917.	2249.	-5686.	-4479.
BRANCH PT.	STRAIGHT -(	25	-865.	25.	-518.	-1860.	-9291.	3611.
BRANCH PT.		50	-865.	25.	-518.	-1733.	-4824.	3611.
BRANCH PT.	STRAIGHT -(	50	-578.	-437.	-40.	3271.	-3590.	4317.
	(	140N	-578.	-437.	-40.	3583.	-3590.	-223.
	BEND -(	140M	-578.	-437.	-40.	3458.	-3378.	-734.
	(	140F	-578.	-437.	-40.	3087.	-2867.	-946.
	STRAIGHT -(	150N	-578.	-437.	-40.	29.	1179.	-946.
	(	150M	-578.	-437.	-40.	-342.	1690.	-1157.
127	BEND -(	150F	-578.	-437.	-40.	-467.	1902.	-1668.
	STRAIGHT -(	155N	-578.	-437.	-40.	-449.	1902.	-1927.
	(	155M	-578.	-437.	-40.	-414.	1887.	-2278.
	BEND -(	155F	-578.	-437.	-40.	-400.	1852.	-2104.
	STRAIGHT -(	160	-578.	-437.	-40.	-400.	1733.	-793.
	STRAIGHT -(	165	-578.	30.	-40.	-400.	1017.	265.
	STRAIGHT -(	170	-578.	-65.	-40.	-400.	262.	-296.
	STRAIGHT -(	172	-578.	-65.	-40.	-400.	-494.	932.
	STRAIGHT -(	175N	-578.	35.	-40.	-400.	-514.	915.
	(	175M	-578.	35.	-40.	-385.	-549.	672.
	BEND -(	175F	-578.	35.	-40.	-350.	-563.	148.
	(	180N	-578.	35.	-40.	-302.	-352.	-363.

INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
	BEND - (	180M	-578.	35.	-40.	-302.	-352.	-363.
	(
	> 180F		-578.	35.	-40.	-256.	159.	-575.
	STRAIGHT - (
	> 185		-578.	35.	-40.	-2.	4350.	-575.
	STRAIGHT - (
	> 190M		-578.	3.	-40.	-1.	4591.	-575.
	(
	BEND - (	190M	-578.	3.	-40.	2.	5088.	-576.
	(
	> 190F		-578.	3.	-40.	3.	5264.	-578.
	STRAIGHT - (
	> 195M		-578.	3.	-40.	3.	4747.	-615.
	(
	BEND - (	195M	-578.	3.	-40.	2.	4500.	-618.
	(
	> 195F		-578.	3.	-40.	-1.	3975.	-619.
	STRAIGHT - (
	> 200		-578.	-33.	-40.	-2.	3734.	-619.
	STRAIGHT - (
128	> 205M		-578.	-33.	-40.	234.	-457.	-619.
	(
	BEND - (	205M	-578.	-33.	-40.	248.	-468.	-407.
	(
	> 205F		-578.	-33.	-40.	225.	-1180.	104.
	(
	BEND - (	210M	-578.	-33.	-40.	190.	-1194.	627.
	(
	> 210F		-578.	-33.	-40.	176.	-1228.	867.
	STRAIGHT - (
	> 215		-578.	68.	-40.	176.	-1249.	883.
	STRAIGHT - (
	> 220		-578.	68.	-40.	176.	-2005.	-402.
	STRAIGHT - (
BRANCH PT.		225	-578.	-11.	-40.	176.	-2210.	-347.
BRANCH PT.	STRAIGHT - (	225	-350.	122.	346.	867.	-4954.	703.
	(
	> 230		-350.	122.	346.	867.	-4507.	545.
	STRAIGHT - (
	> 235		-350.	122.	346.	867.	-859.	-742.
	STRAIGHT - (
	> 240M		-350.	32.	346.	867.	4042.	-1191.
	(
	BEND - (	240M	-350.	32.	346.	765.	4287.	-1316.

INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
	BEND - (	240H	-350.	32.	346.	765.	4287.	-1316.
	(
	> 240F		-350.	32.	346.	521.	4388.	-1573.
	(
	BEND - (	245H	-350.	32.	346.	267.	4286.	-1820.
	(
	> 245F		-350.	32.	346.	143.	4038.	-1923.
	(
	STRAIGHT - (	250H	-350.	221.	346.	-2401.	16.	-1923.
	(
	BEND - (	250H	-350.	221.	346.	-2456.	-232.	-1820.
	(
	> 250F		-350.	221.	346.	-2276.	-334.	-1573.
	(
	STRAIGHT - (	255H	-350.	221.	346.	867.	-334.	1604.
	(
	BEND - (	255H	-350.	221.	346.	1047.	-436.	1852.
	(
	> 255F		-350.	221.	346.	991.	-684.	1954.
	(
	STRAIGHT - (	260	-350.	-152.	346.	-1220.	-4182.	1954.
	(
	STRAIGHT - (	265	-350.	-152.	346.	598.	-8379.	1954.
	(
	ANCHOR							
	BRANCH PT.							
	STRAIGHT - (	225	-228.	-133.	-386.	-691.	2743.	-1050.
	(
	> 270H		-228.	-133.	-386.	-305.	2743.	-1279.
	(
	BEND - (	270H	-228.	-133.	-386.	6.	2676.	-1440.
	(
	> 270F		-228.	-133.	-386.	213.	2515.	-1507.
	(
	STRAIGHT - (	275H	-228.	-133.	-386.	1738.	-110.	-1507.
	(
	BEND - (	275H	-228.	-133.	-386.	1719.	-272.	-1440.
	(
	> 275F		-228.	-133.	-386.	1485.	-339.	-1279.
	(
	STRAIGHT - (	280H	-228.	-133.	-386.	-2019.	-339.	795.
	(
	BEND - (	280H	-228.	-133.	-386.	-2253.	-406.	957.
	(
	> 280F		-228.	-133.	-386.	-2272.	-567.	1023.
	(
	STRAIGHT - (	285	-228.	-117.	-386.	-945.	-2850.	1023.
	(

INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
	STRAIGHT -(	> 285	-224.	-117.	-386.	-945.	-2850.	1023.
ANCHOR		-- 290	-228.	-117.	-386.	464.	-5589.	1023.
ANCHOR	STRAIGHT -(	-- 303	-143.	83.	-357.	-180.	-444.	586.
	STRAIGHT -(	> 310	-143.	83.	-357.	-14.	-157.	586.
	STRAIGHT -(	> 315	-143.	83.	-357.	142.	111.	586.
	RIGID -(	> 320	-143.	83.	-357.	197.	207.	586.
	STRAIGHT -(	> 325	-143.	83.	-357.	319.	417.	586.
		> 335N	-143.	211.	-357.	465.	668.	586.
	BEND -(	335A	-143.	211.	-357.	510.	769.	628.
		> 335F	-143.	211.	-357.	319.	811.	730.
	STRAIGHT -(	> 340N	-143.	211.	-357.	-254.	811.	960.
	BEND -(	340A	-143.	211.	-357.	-506.	707.	999.
		> 340F	-143.	211.	-357.	-611.	454.	892.
	STRAIGHT -(	> 350N	-143.	211.	-357.	-611.	-1525.	-280.
	BEND -(	350A	-143.	211.	-357.	-549.	-1735.	-430.
		> 350F	-143.	211.	-357.	-349.	-1739.	-492.
	STRAIGHT -(	> 352	-143.	211.	-357.	-347.	-1703.	-492.
	STRAIGHT -(	> 355	-143.	221.	-357.	1585.	-447.	-492.
	STRAIGHT -(	> 360	-143.	-323.	-357.	-3016.	1597.	-492.
		> 365N	-143.	-323.	-357.	-3245.	1699.	-492.
	BEND -(365A	-143.	-323.	-357.	-3540.	1695.	-373.
		> 365F	-143.	-323.	-357.	-3648.	1432.	-88.
	STRAIGHT -(-- 370	-143.	-323.	-357.	-3648.	1179.	141.

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INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
BRANCH PT.		370	-143.	-323.	-357.	-3648.	1179.	141.
BRANCH PT.		370	-186.	259.	441.	3189.	1615.	-702.
	STRAIGHT -(	375N	-186.	259.	441.	3189.	1927.	-885.
	(
	BEND -(	375N	-186.	259.	441.	3094.	2249.	-1114.
	(
	STRAIGHT -(	375F	-186.	259.	441.	2866.	2247.	-1208.
	(
	STRAIGHT -(	376	-186.	259.	441.	2662.	2115.	-1208.
	(
	STRAIGHT -(	376529.	-12006.	-156.	441.	-1006.		
	(
	STRAIGHT -(	379	-186.	-323.	441.	359.	-2153.	-1208.
	(
	BEND -(	380N	-186.	-323.	441.	440.	-2200.	-1208.
	(
	BEND -(	380M	-186.	-323.	441.	668.	-2202.	-1114.
	(
	STRAIGHT -(	380F	-186.	-323.	441.	763.	-1944.	-885.
	(
	BEND -(	390N	-186.	-323.	441.	763.	500.	906.
	(
	BEND -(	390M	-186.	-323.	441.	634.	812.	1080.
	(
	STRAIGHT -(	390F	-186.	-323.	441.	322.	941.	1044.
	(
	BEND -(	395N	-186.	-323.	441.	-386.	941.	746.
	(
	BEND -(	395M	-186.	-323.	441.	-603.	887.	615.
	(
	STRAIGHT -(	395F	-186.	-323.	441.	-504.	756.	561.
	(
	RIGID -(	405	-186.	-90.	441.	-346.	431.	561.
	(
	STRAIGHT -(	407	-186.	-90.	441.	-214.	159.	561.
	(
	STRAIGHT -(	409	-186.	-90.	441.	-154.	36.	561.
	(
	STRAIGHT -(	410	-186.	-90.	441.	15.	-311.	561.
	(
ANCHOR		415	-186.	-90.	441.	195.	-682.	561.
BRANCH PT.		50	-286.	461.	-478.	-5004.	-1234.	-706.

INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
BRANCH PT.		50	-286.	461.	-478.	-5064.	-1234.	-706.
	STRAIGHT - (
		135	-286.	461.	-478.	2839.	3635.	-706.
	STRAIGHT - (
		130	-286.	461.	-478.	3531.	4065.	-706.
	STRAIGHT - (
		125M	-286.	-198.	-478.	221.	8863.	-706.
	BEND - (
		125M	-286.	-198.	-478.	46.	8941.	-633.
	BEND - (
		125F	-286.	-198.	-478.	-26.	8623.	-459.
	STRAIGHT - (
		120	-286.	-25.	-478.	-26.	972.	-54.
	STRAIGHT - (
		118M	-286.	-25.	-478.	-26.	-6541.	344.
	BEND - (
		118M	-286.	-25.	-478.	149.	-6963.	261.
	BEND - (
		118F	-286.	-25.	-478.	572.	-7139.	17.
	STRAIGHT - (
BRANCH PT.		115	-286.	-25.	-478.	1478.	-7139.	-526.
BRANCH PT.		115	283.	349.	-1553.	1402.	-10514.	-3005.
	STRAIGHT - (
		110M	283.	349.	-1553.	2071.	-11056.	-3005.
	BEND - (
		110M	283.	349.	-1553.	2380.	-10738.	-2877.
	BEND - (
		110F	283.	349.	-1553.	2507.	-9469.	-2569.
	STRAIGHT - (
		105	283.	349.	-1553.	2507.	-4277.	-1402.
	RIGID - (
		100	283.	349.	-1553.	2507.	-1729.	-830.
	STRAIGHT - (
		95	283.	349.	-1553.	2507.	341.	-365.
	RIGID - (
		90	283.	349.	-1553.	2507.	2869.	208.
	BEND - (
		85M	283.	349.	-1553.	1939.	4262.	412.
	BEND - (
		85F	283.	349.	-1553.	566.	4830.	290.
	STRAIGHT - (
		80M	283.	349.	-1553.	-3122.	4830.	-383.
	BEND - (
		80M	283.	349.	-1553.	-4367.	4726.	-633.

INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
	BEND - (	80M	203.	349.	-1553.	-4367.	4726.	-633.
	(
	>- 80F		203.	349.	-1553.	-4627.	4476.	-736.
	ANCHOR	75	203.	349.	-1553.	-4511.	4382.	-736.
	BRANCH PT.	370	42.	-582.	-798.	-6837.	-436.	842.
	STRAIGHT - (
	>- 505N		42.	-1111.	-798.	-7249.	-466.	842.
	(
	BEND - (	505M	42.	-1111.	-798.	-7939.	-503.	858.
	(
	>- 505F		42.	-1111.	-798.	-7640.	-519.	895.
	STRAIGHT - (
	>- 510		42.	-1111.	-798.	-5445.	-519.	1011.
	STRAIGHT - (
	>- 515N		42.	-1111.	-798.	4017.	-519.	1510.
	(
	BEND - (	515M	42.	-1111.	-798.	4316.	-534.	1547.
	(
	>- 515F		42.	-1111.	-798.	3627.	-572.	1563.
	STRAIGHT - (
	>- 520N		42.	-1111.	-798.	-5054.	-901.	1563.
	(
	BEND - (	520M	42.	-1111.	-798.	-6036.	-646.	1156.
	(
	>- 520F		42.	-1111.	-798.	-6443.	44.	175.
	STRAIGHT - (
	>- 525		42.	-1111.	-798.	-6443.	643.	-658.
	STRAIGHT - (
	>- 530N		42.	-1111.	-798.	-6443.	3836.	-5100.
	(
	BEND - (	530M	42.	-1111.	-798.	-6150.	4541.	-6066.
	(
	>- 530F		42.	-1111.	-798.	-5445.	4833.	-6436.
	STRAIGHT - (
	>- 535N		42.	-1111.	-798.	1739.	4833.	-6057.
	(
	BEND - (	535M	42.	-1111.	-798.	2445.	4541.	-5613.
	(
	>- 535F		42.	-1111.	-798.	2737.	3836.	-4616.
	STRAIGHT - (
	>- 540N		42.	-1111.	-798.	2737.	-1619.	2973.
	(
	BEND - (	540M	42.	-1111.	-798.	3029.	-2324.	3970.

INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
	BEND - (	540N	42.	-1111.	-798.	3029.	-2324.	3970.
)							
	STRAIGHT - (	540F	42.	-1111.	-798.	3735.	-2616.	4413.
BRANCH PT.		555	42.	-1111.	-798.	9322.	-2616.	4708.
BRANCH PT.	STRAIGHT - (	555	101.	-1042.	-853.	8673.	-3008.	4594.
	)	560N	101.	-1042.	-853.	8135.	-3080.	4594.
	BEND - (	560F	101.	-1042.	-853.	7214.	-2857.	4212.
)							
	STRAIGHT - (	560F	101.	-1042.	-853.	6833.	-2140.	3291.
	RIGID - (	564	101.	-1042.	-853.	6833.	-269.	1006.
	)	565	101.	-1042.	-853.	6833.	1130.	-703.
	BEND - (	565N	101.	-1042.	-853.	6451.	1847.	-1624.
)							
134	STRAIGHT - (	568F	101.	-1042.	-853.	5530.	2070.	-2006.
	RIGID - (	570	101.	-1042.	-853.	3272.	1850.	-2006.
ANCHOR		575	101.	-1042.	-853.	1910.	1718.	-2006.
BRANCH PT.	STRAIGHT - (	555	-59.	-68.	55.	449.	391.	114.
	)	600N	-59.	-68.	55.	497.	349.	114.
	BEND - (	600F	-59.	-68.	55.	558.	277.	89.
)							
	STRAIGHT - (	600F	-59.	-68.	55.	593.	207.	29.
	RIGID - (	605	-59.	-68.	55.	583.	87.	-121.
	)	610	-59.	-68.	55.	583.	-3.	-234.
	BEND - (	615N	-59.	-68.	55.	603.	-52.	-273.
)							
	STRAIGHT - (	615F	-59.	-68.	55.	651.	-72.	-245.
	)	618N	-59.	-68.	55.	830.	-72.	-53.
	BEND - (	618F	-59.	-68.	55.	878.	-92.	-26.

INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
	BEND - (	618H	-59.	-68.	55.	878.	-92.	-26.
	(
	> 618F		-59.	-68.	55.	898.	-140.	-65.
	STRAIGHT - (	620H	-59.	-68.	55.	898.	-250.	-202.
	(
	> 620F		-59.	-68.	55.	873.	-277.	-262.
	BEND - (	620H	-59.	-68.	55.	873.	-277.	-262.
	(
	> 620F		-59.	-68.	55.	812.	-245.	-287.
	STRAIGHT - (	625H	-59.	-68.	55.	529.	0.	-287.
	(
	BEND - (	625H	-59.	-68.	55.	489.	53.	-266.
	(
	> 625F		-59.	-68.	55.	512.	74.	-213.
	STRAIGHT - (	630H	-59.	-68.	55.	1307.	74.	645.
	(
	BEND - (	630H	-59.	-68.	55.	1355.	94.	722.
	(
	> 630F		-59.	-68.	55.	1376.	143.	804.
135	STRAIGHT - (	635	-59.	-68.	55.	1376.	403.	1129.
	(
	> 640H		-59.	-68.	55.	1376.	719.	1523.
	(
	BEND - (	640H	-59.	-68.	55.	1401.	745.	1584.
	(
	> 640F		-59.	-68.	55.	1461.	713.	1609.
	STRAIGHT - (	642	-59.	-68.	55.	1701.	506.	1609.
	(
	> 645		-59.	-68.	55.	1975.	269.	1609.
	STRAIGHT - (	655	-59.	-68.	55.	2403.	-100.	1609.
BRANCH PT.	(
BRANCH PT.	STRAIGHT - (	655	-629.	-443.	1129.	-4714.	-5807.	-2887.
	(
	> 660		-629.	-443.	1129.	-2389.	-9108.	-2887.
	STRAIGHT - (	665H	-629.	-443.	1129.	-1978.	-9693.	-2887.
	(
	BEND - (	665H	-629.	-443.	1129.	-1659.	-9994.	-2827.
	(
	> 665F		-629.	-443.	1129.	-1173.	-10249.	-2657.

INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
	STRAIGHT - (>	665F	-629.	-443.	1129.	-1173.	-10249.	-2657.
	(	670H	-629.	-443.	1129.	88.	-10753.	-2152.
	BEND - (>	670H	-629.	-443.	1129.	1071.	-10732.	-1597.
	(	670F	-629.	-443.	1129.	1478.	-9897.	-1043.
	STRAIGHT - (>	675	-629.	-443.	1129.	1478.	-1143.	2388.
	STRAIGHT - (>	680	-629.	349.	1129.	1478.	9587.	-256.
BRANCH PT.	STRAIGHT - (>	685	-629.	348.	1129.	1478.	14105.	-1650.
BRANCH PT.	STRAIGHT - (>	685	-257.	-134.	-288.	1241.	7836.	-315.
	STRAIGHT - (>	690	-257.	-134.	-288.	1241.	7404.	-113.
	STRAIGHT - (>	695	-257.	139.	-288.	1241.	6253.	425.
136	STRAIGHT - (>	700	-257.	15.	-288.	1241.	3518.	-900.
	(	705H	-257.	15.	-288.	1241.	2943.	-931.
	BEND - (>	705H	-257.	15.	-288.	1157.	2739.	-867.
	(	705F	-257.	15.	-288.	953.	2655.	-690.
	STRAIGHT - (>	710H	-257.	15.	-288.	706.	2655.	-469.
	(	710H	-257.	15.	-288.	498.	2580.	-288.
	BEND - (>	710F	-257.	15.	-288.	403.	2398.	-212.
	STRAIGHT - (>	715H	-257.	15.	-288.	133.	-2095.	-212.
	(	715H	-257.	15.	-288.	38.	-2277.	-137.
	BEND - (>	715F	-257.	15.	-288.	-170.	-2352.	44.
	STRAIGHT - (>	720H	-257.	15.	-288.	-1326.	-2352.	1075.
	(	720H	-257.	15.	-288.	-1534.	-2427.	1257.
	BEND - (>	720F	-257.	15.	-288.	-1629.	-2609.	1332.

INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)			
			X	Y	Z	X	Y	Z	
		> 720F	-257.	15.	-288.	-1629.	-2609.	1332.	
ANCHOR	STRAIGHT -(	-- 725	-257.	15.	-288.	-1675.	-3379.	1332.
BRANCH PT.	STRAIGHT -(	-- 685	-372.	483.	1417.	237.	6269.	-1335.
	(	> 730N	-372.	483.	1417.	2997.	6269.	-610.
	BEND -(	( 730M	-372.	483.	1417.	3858.	6160.	-347.
	(	> 730F	-372.	483.	1417.	3932.	5807.	-238.
	STRAIGHT -(	> 735N	-372.	483.	1417.	-4518.	-613.	-238.
	(BEND -((735M	-372.	483.	1417.	-4444.	-876.	-129.
	(	> 735F	-372.	483.	1417.	-3583.	-985.	134.
	STRAIGHT -(	> 740N	-372.	483.	1417.	2108.	-985.	1628.
	(BEND -((740M	-372.	483.	1417.	2969.	-1094.	1891.
137	(	> 740F	-372.	483.	1417.	3043.	-1357.	2000.
	STRAIGHT -(	-- 745	-372.	483.	1417.	1594.	-2473.	2000.
ANCHOR									
BRANCH PT.	STRAIGHT -(	-- 655	570.	374.	-1075.	7116.	5707.	4495.
	(	> 800N	570.	374.	-1075.	7116.	4946.	4230.
	BEND -(	( 800M	570.	374.	-1075.	6723.	3996.	3691.
	(	> 800F	570.	374.	-1075.	5773.	3602.	3051.
	STRAIGHT -(	> 805N	570.	374.	-1075.	-1212.	3602.	-652.
	(BEND -((805M	570.	374.	-1075.	-2025.	3394.	-1155.
	(	> 805F	570.	374.	-1075.	-2088.	2850.	-1364.
	STRAIGHT -(	> 815	570.	374.	-1075.	323.	-779.	-1364.
	RIGID -(> 820	570.	374.	-1075.	937.	-1714.	-1364.	
	STRAIGHT -(> 825N	570.	374.	-1075.	1561.	-2663.	-1364.	

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INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT NO.	LOC.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
0254	(		570.	374.	-1075.	1561.	-2663.	-1364.
0254	(		570.	374.	-1075.	1498.	-3167.	-1572.
025f	(		570.	374.	-1075.	685.	-3475.	-2076.
STRAIGHT - (			570.	374.	-1075.	-76.	-3375.	-2479.

 * DISPLACEMENTS AND ROTATIONS *

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
ANCHOR		-- 5	-.000	-.000	-.000	.000	-.000	-.000
	STRAIGHT - (	>- 10	-.004	-.001	.046	.006	-.027	-.014
	RIGID - (	>- 15	-.013	-.003	.109	.006	-.028	-.015
	STRAIGHT - (	>- 20N	-.036	-.009	.206	.018	-.049	-.045
	BEND - (	20M	-.052	-.030	.236	.054	-.077	-.068
	STRAIGHT - (	>- 20F	-.075	-.069	.238	.076	-.088	-.106
	BEND - (	>- 22N	-.125	-.153	.203	.072	-.082	-.105
	STRAIGHT - (	22M	-.126	-.193	.199	.039	-.091	-.051
	BEND - (	>- 22F	-.094	-.210	.215	.022	-.107	.024
139	STRAIGHT - (
BRANCH PT.		-- 25	-.027	-.198	.255	.004	-.114	.042
BRANCH PT.	STRAIGHT - (	>- 30N	.040	-.181	.293	-.005	-.097	.048
	BEND - (	30M	.069	-.156	.304	-.030	-.038	.073
	STRAIGHT - (	>- 30F	.068	-.116	.297	-.062	-.016	.085
	BEND - (	>- 32N	.030	-.031	.267	-.063	.001	.080
	STRAIGHT - (	32M	.017	-.001	.243	-.043	.001	.050
	BEND - (	>- 32F	.013	.008	.206	-.015	.012	.040
	STRAIGHT - (	>- 35	.005	.002	.109	-.005	.011	.013
	RIGID - (	>- 40	.002	.001	.046	-.005	.011	.013
	STRAIGHT - (
ANCHOR		-- 45	.000	.000	.000	-.000	.000	.000

DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
ANCHOR		45	.000	.000	.000	.000	.000	.000
BRANCH PT.	STRAIGHT - (	25	-.027	-.148	.255	.004	-.114	.042
BRANCH PT.		50	.191	-.193	.454	-.013	-.181	.086
BRANCH PT.	STRAIGHT - (	50	-.191	-.193	.454	-.013	-.161	.086
		> 140N	-.367	.110	.473	.037	-.248	.116
		(
	BEND - (	140N	-.409	.134	.499	.049	-.262	.124
		(
		> 140F	-.471	.131	.541	.137	-.298	.132
	STRAIGHT - (	150N	-.922	-.090	.911	.157	-.308	.117
		(
	BEND - (	150N	-.986	-.105	.957	.155	-.287	.106
		(
		> 150F	-1.025	-.082	.960	.148	-.273	.081
	STRAIGHT - (	155N	-1.032	-.065	.913	.148	-.271	.080
		(
	BEND - (	155N	-1.030	-.026	.960	.135	-.261	.048
		(
		> 155F	-.999	-.007	1.016	.126	-.236	.015
	STRAIGHT - (	160	-.883	.000	1.161	.123	-.226	.007
	STRAIGHT - (	165	-.189	.000	1.920	.106	-.180	-.001
	STRAIGHT - (	170	.544	-.000	2.585	.088	-.158	-.002
	STRAIGHT - (	172	1.277	.000	3.213	.070	-.162	.009
		> 175N	1.297	.001	3.230	.069	-.163	.010
		(
	BEND - (	175N	1.329	.014	3.266	.069	-.168	.022
		(
		> 175F	1.338	.054	3.292	.067	-.169	.028
		(
	BEND - (180N	1.320	.083	3.318	.062	-.170	.029
		(
		> 180F	1.266	.046	3.356	.058	-.169	.027
	STRAIGHT - (185	1.044	-.000	3.636	.056	-.139	.018

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DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
		> 195	1.044	-.000	3.636	.056	-.139	.018
	STRAIGHT - (	> 196N	1.032	-.005	3.652	.056	-.136	.017
	(	> 196N	1.027	-.014	3.693	.059	-.065	.014
	(	> 196F	1.058	-.017	3.712	.061	.012	.007
	STRAIGHT - (	> 195N	1.560	-.017	3.514	.061	.132	-.007
	(	> 195N	1.580	-.014	3.469	.059	.200	-.015
	BEND - (	> 195F	1.551	-.005	3.418	.056	.262	-.016
	(	> 200	1.528	-.000	3.402	.056	.265	-.018
	STRAIGHT - (	> 205N	1.101	.086	3.122	.058	.287	-.029
	(	> 205N	1.046	.083	3.084	.061	.280	-.028
	BEND - (	> 205F	1.019	.054	3.058	.065	.276	-.026
	(	> 210N	1.029	.014	3.025	.063	.272	-.020
	BEND - (	> 210F	1.062	.001	2.971	.059	.257	-.009
	STRAIGHT - (	> 215	1.081	.000	2.944	.059	.256	-.008
	STRAIGHT - (	> 220	1.814	-.000	2.029	.067	.199	.000
	STRAIGHT - (	> 225	2.013	-.002	1.824	.069	.179	-.003
BRANCH PT.		> 225	2.013	-.002	1.824	.069	.179	-.003
	STRAIGHT - (	> 230	2.663	-.002	1.777	.072	.168	-.002
	STRAIGHT - (	> 235	2.470	-.000	1.563	.120	.053	-.006
	STRAIGHT - (	> 240N	3.017	-.094	1.342	.185	.145	-.062
	(	> 240N	3.049	-.094	1.326	.166	.223	-.091
	BEND - (	> 240F	3.076	-.073	1.334	.152	.252	-.125
	(	> 245N	3.040	-.036	1.346	.161	.275	-.132
	BEND - (

DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
	BEND - (	245M	3.060	-.036	1.346	.161	.275	-.132
)						
	STRAIGHT - (	245F	3.042	.000	1.329	.165	.347	-.120
)						
	BEND - (	250M	2.653	.359	.685	.112	.442	-.238
)						
	BEND - (	250M	1.972	.361	.653	.055	.451	-.251
)						
	STRAIGHT - (	250F	1.905	.336	.630	-.001	.460	-.283
)						
	BEND - (	255M	1.347	-.015	.885	-.028	.444	-.283
)						
	BEND - (	255M	1.291	-.043	.876	-.005	.430	-.246
)						
	STRAIGHT - (	255F	1.204	-.053	.849	.020	.407	-.228
)						
	STRAIGHT - (	260	.431	-.000	.463	.015	.307	-.124
)						
ANCHOR		265	.000	.000	-.000	-.000	.000	-.000
BRANCH PT.	STRAIGHT - (	275	2.613	-.002	1.824	.069	.179	-.003
)						
	BEND - (	270M	2.615	.037	1.838	.067	.194	-.008
)						
	BEND - (	270M	2.005	.068	1.836	.064	.206	-.018
)						
	STRAIGHT - (	270F	1.972	.089	1.813	.067	.249	-.014
)						
	BEND - (	275M	1.279	.290	1.369	.112	.305	-.105
)						
	BEND - (	275M	1.227	.298	1.333	.154	.311	-.115
)						
	STRAIGHT - (	275F	1.189	.281	1.296	.192	.317	-.141
)						
	BEND - (	280M	.900	-.069	.919	.182	.301	-.150
)						
	BEND - (	280M	.861	-.068	.884	.131	.292	-.130
)						
	STRAIGHT - (	280F	.811	-.084	.850	.077	.276	-.119
)						
	STRAIGHT - (	285	.298	.000	.463	.012	.207	-.065
)						
ANCHOR		290	.000	.000	.000	-.000	.000	-.000
ANCHOR		305	-.000	.000	-.000	-.000	-.000	.000

DISPLACEMENTS AND ROTATIONS (CONTINUED)

PRINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
ANCHOR		305	.000	.000	.000	.000	.000	.000
	STRAIGHT -(	> 310	.001	.000	.088	.001	.002	.006
	STRAIGHT -(	> 315	.002	.001	.170	.000	.003	.012
	STRAIGHT -(	> 320	.002	.001	.200	.000	.002	.014
	RIGID -(	> 325	.003	.001	.264	.000	.002	.014
	STRAIGHT -(	> 335N	.003	.000	.341	.003	.002	.020
	BEND -(	335N	.000	.014	.371	.015	.020	.029
	STRAIGHT -(	> 335F	.007	.046	.381	.025	.030	.047
	BEND -(	340N	.024	.117	.372	.025	.037	.053
	STRAIGHT -(	> 340F	.046	.144	.366	.023	.040	.076
143	STRAIGHT -(	> 340F	.083	.144	.358	.022	.048	.099
	BEND -(	350N	.326	.022	.305	.004	.036	.106
	STRAIGHT -(	> 350F	.358	.007	.315	.002	.003	.102
	STRAIGHT -(	> 352	.367	.000	.347	.005	.044	.102
	STRAIGHT -(	> 355	.365	.000	.353	.005	.046	.101
	STRAIGHT -(	> 360	.239	.000	.743	.017	.064	.078
	STRAIGHT -(	> 365N	.000	.053	1.401	.029	.049	.040
	BEND -(	365N	.010	.040	1.442	.069	.023	.052
	STRAIGHT -(	> 365F	.047	.023	1.460	.084	.000	.063
BRANCH PT.		370	.079	.014	1.460	.091	.002	.063
BRANCH PT.	STRAIGHT -(	> 375N	.079	.014	1.460	.091	.002	.063
		> 375N	.110	.005	1.459	.085	.004	.062

DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
		> 375N	.110	-.005	1.459	-.085	.004	.062
	BEND - (	375N	.147	.000	1.440	-.075	.035	.062
		> 375F	.153	-.066	1.398	-.042	.068	.069
	STRAIGHT - (	375	.143	-.012	1.366	-.039	.071	.067
	STRAIGHT - (	> 378	-.177	-.000	.740	.010	.117	-.025
	STRAIGHT - (	> 379	-.350	.000	.355	-.002	.069	-.081
		> 380N	-.361	-.000	.344	-.001	.067	-.082
	BEND - (	380N	-.355	-.005	.311	.003	.015	-.088
		> 380F	-.323	-.019	.300	.002	-.035	-.103
	STRAIGHT - (	> 390N	-.080	-.143	.355	.024	-.051	-.103
	BEND - (	390N	-.043	-.140	.364	.025	-.042	-.079
144		> 390F	-.021	-.117	.370	.029	-.039	-.054
	STRAIGHT - (	> 395N	-.004	-.047	.381	.029	-.031	-.048
	BEND - (	395N	.004	-.014	.371	.017	-.020	-.029
		> 395F	.006	.000	.341	.003	.001	-.019
	STRAIGHT - (	> 405	.005	.001	.264	.000	.005	-.014
	RIGID - (	> 407	.004	.001	.200	.000	.005	-.013
	STRAIGHT - (	> 409	.003	.001	.170	-.000	.005	-.012
	STRAIGHT - (	> 410	.001	.000	.088	-.001	.004	-.006
	STRAIGHT - (	ANCHOR	-.000	.000	-.000	-.000	.000	-.000
		BRANCH PT.	-.191	-.193	.454	-.013	-.181	.086
	STRAIGHT - (	> 135	-.815	-.013	1.110	-.047	-.143	.058
	STRAIGHT - (	> 130	-.458	-.000	1.168	-.038	-.133	.055

DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. ID.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
	STRAIGHT -(	130	-.858	-.000	1.168	-.038	-.133	.055
		125N	-1.019	.001	1.814	.020	.066	.627
	BEND -(	125M	-.981	-.002	1.836	.024	.198	.023
		125F	-.928	.000	1.801	.027	.327	.017
	STRAIGHT -(	120	-.311	.039	.405	.026	.468	.009
		110N	.296	.672	-1.064	.025	.388	.013
	BEND -(	110M	.328	.089	-1.125	.052	.304	.018
		110F	.334	.125	-1.134	.084	.270	.020
BRANCH PT.	STRAIGHT -(	115	.331	.198	-1.100	.088	.238	.019
BRANCH PT.	STRAIGHT -(	115	.331	.198	-1.100	.088	.238	.019
145		110N	.419	.162	-1.026	.094	.200	.005
	BEND -(	110M	.428	.143	-.985	.110	.038	.001
		110F	.392	.136	-.979	.110	-.111	-.023
	STRAIGHT -(	105	.263	.157	-1.074	.130	-.153	-.036
	RIGID -(	100	.200	.170	-1.127	.131	-.153	-.036
	STRAIGHT -(	95	.148	.180	-1.170	.139	-.155	-.037
	RIGID -(	90	.085	.193	-1.224	.139	-.155	-.037
	BEND -(	85M	.643	.125	-1.260	.134	-.120	-.032
		85F	.029	.153	-1.293	.132	-.104	-.027
	STRAIGHT -(	80N	.016	.062	-1.358	.126	-.077	-.027
	BEND -(	80M	.606	.221	-1.363	.070	-.057	-.014
		80F	.606	.000	-1.333	.003	-.003	.001
ANCHOR	STRAIGHT -(	75	-.000	-.000	-1.320	.000	-.000	.000

DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
ANCHOR		75	-.000	-.000	-1.320	.000	-.000	.000
BRANCH PT.		370	.079	-.014	1.460	-.091	.002	.063
	STRAIGHT - (
	> 505H		.079	-.006	1.491	-.100	.001	.065
	(
	BEND - (	505H	.073	.044	1.517	-.212	-.008	.070
	(
	> 505F		.058	.102	1.482	-.328	-.014	.083
	STRAIGHT - (
	STRAIGHT - (	510	.069	.223	1.283	-.361	-.018	.088
	> 515H		-.242	.744	.323	-.376	-.032	.116
	(
	BEND - (	515H	-.268	.809	.275	-.314	-.041	.137
	(
	> 515F		-.285	.877	.291	-.255	-.054	.146
	STRAIGHT - (
	> 520H		-.334	1.284	.635	-.265	-.064	.175
	(
	BEND - (	520H	-.413	1.326	.668	-.328	-.076	.159
	(
	> 520F		-.458	1.324	.669	-.354	-.081	.143
	STRAIGHT - (
	> 525		-.491	1.302	.657	-.365	-.081	.142
	STRAIGHT - (
	> 530H		-.667	1.188	.594	-.427	-.064	.121
	(
	BEND - (	530H	-.711	1.189	.552	-.439	-.037	.039
	(
	> 530F		-.726	1.227	.463	-.443	-.039	.054
	STRAIGHT - (
	> 535H		-.525	1.623	-.514	-.523	.066	.157
	(
	BEND - (	535H	-.472	1.645	-.616	-.516	.078	.244
	(
	> 535F		-.413	1.608	-.674	-.521	.120	.319
	STRAIGHT - (
	> 540H		-.112	1.131	-.865	-.476	.134	.330
	(
	BEND - (	540H	-.050	1.090	-.923	-.455	.098	.278
	(
	> 540F		.011	1.109	-1.009	-.403	.074	.216
	STRAIGHT - (
BRANCH PT.		555	.245	1.417	-1.547	-.319	.030	.157

DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
BRANCH PT.		555	.285	1.417	-1.547	-.319	.030	-.157
BRANCH PT.	STRAIGHT - (	555	.285	1.417	-1.547	-.319	.030	-.157
	> 560N	560	.296	1.463	-1.516	-.308	.026	-.149
	(
	BEND - (	560N	.274	1.519	-1.478	-.195	-.018	-.100
	(
	> 566F	566	.233	1.543	-1.469	-.147	-.055	-.026
	STRAIGHT - (
	> 564	564	.137	1.552	-1.496	-.111	-.060	-.017
	RIGID - (
	> 565	565	.664	1.557	-1.516	-.110	-.060	-.017
	(
	BEND - (	568N	.022	1.567	-1.510	-.085	-.037	-.005
	(
	> 568F	568	.602	1.577	-1.473	-.018	-.008	.011
	STRAIGHT - (
	> 570	570	.000	1.580	-1.378	-.000	-.000	.000
	RIGID - (
ANCHOR		575	-.000	1.580	-1.320	-.000	-.000	.000
BRANCH PT.		555	.245	1.417	-1.547	-.319	.030	-.157
	STRAIGHT - (
	> 600N	600	.261	1.370	-1.579	-.318	.031	-.157
	(
	BEND - (	600N	.259	1.324	-1.615	-.312	.036	-.159
	(
	> 606F	606	.217	1.329	-1.624	-.310	.039	-.160
	STRAIGHT - (
	> 605	605	.120	1.403	-1.606	-.306	.040	-.160
	RIGID - (
	> 610	610	.048	1.458	-1.592	-.306	.040	-.160
	(
	BEND - (	615N	-.003	1.472	-1.562	-.304	.037	-.164
	(
	> 615F	615	-.050	1.446	-1.503	-.295	.034	-.168
	STRAIGHT - (
	> 618N	618	-.165	1.302	-1.304	-.291	.034	-.169
	(
	BEND - (	618N	-.212	1.277	-1.248	-.280	.030	-.169
	(
	> 614F	614	-.264	1.292	-1.222	-.276	.025	-.170
	STRAIGHT - (
	> 620N	620	-.352	1.363	-1.212	-.271	.024	-.170

DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
		> 620N	-.352	1.363	-1.212	-.271	.024	-.170
	BEND - (	620N	-.389	1.415	-1.191	-.268	.020	-.170
		> 620F	-.402	1.477	-1.151	-.259	.016	-.168
	STRAIGHT - (	625N	-.388	1.649	-.969	-.254	.016	-.171
	BEND - (	625N	-.379	1.729	-.911	-.246	.015	-.172
	STRAIGHT - (	625F	-.438	1.709	-.850	-.239	.014	-.174
		> 630N	-.457	1.671	-.155	-.215	.017	-.169
	BEND - (	630N	-.971	1.620	-.119	-.198	.022	-.159
	STRAIGHT - (	630F	-.944	.975	-.109	-.191	.029	-.148
	STRAIGHT - (	635	-.735	.433	-.138	-.176	.032	-.139
148		> 640N	-.482	.673	-.180	-.157	.037	-.125
	BEND - (	640N	-.447	.640	-.204	-.144	.048	-.100
	STRAIGHT - (	640F	-.440	.609	-.247	-.120	.059	-.087
	STRAIGHT - (	642	-.485	.524	-.401	-.110	.063	-.074
	STRAIGHT - (	645	-.538	.434	-.577	-.096	.066	-.059
BRANCH PT.		-- 655	-.627	.328	-.852	-.071	.067	-.034
BRANCH PT.	STRAIGHT - (	655	-.627	.328	-.852	-.071	.067	-.034
	STRAIGHT - (	660	-.664	.228	-1.982	-.106	-.005	-.071
		> 665N	-.662	.207	-1.123	-.109	-.021	-.077
	BEND - (	665N	-.658	.191	-1.142	-.123	-.087	-.070
	STRAIGHT - (	665F	-.652	.163	-1.152	-.133	-.134	-.050
		> 670N	-.636	.110	-1.165	-.134	-.160	-.059
	BEND - (	670N	-.599	.061	-1.157	-.162	-.253	-.021

DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
	BEND - (	670N	-.599	.061	-1.157	-.162	-.253	-.021
	(
	STRAIGHT - (	670F	-.545	.037	-1.099	-.189	-.388	-.023
	(
	STRAIGHT - (	675	-.204	.000	-.387	-.162	-.467	-.013
	(
	STRAIGHT - (	680	-.213	.000	-.561	-.128	-.393	-.005
	(
BRANCH PT.		685	-.389	.002	-.797	-.114	-.306	-.002
BRANCH PT.		685	-.389	.002	-.797	-.114	-.306	-.002
	STRAIGHT - (
	(	690	-.455	.002	-.889	-.110	-.285	-.002
	STRAIGHT - (
	(	695	-.631	.000	-1.079	-.084	-.173	-.000
	STRAIGHT - (
	(	700	-1.689	-.000	-1.217	-.021	.016	-.009
	STRAIGHT - (
	(	705N	-1.137	-.005	-1.204	-.006	.043	-.017
	BEND - (	705N	-1.166	-.022	-1.193	.019	.107	-.038
	(
	STRAIGHT - (	705F	-1.172	-.054	-1.180	.057	.134	-.057
	(
	STRAIGHT - (	710N	-1.162	-.094	-1.169	.059	.147	-.059
	(
	BEND - (	710N	-1.142	-.121	-1.146	.074	.169	-.082
	(
	STRAIGHT - (	710F	-1.107	-.122	-1.110	.084	.220	-.100
	(
	STRAIGHT - (	715N	-.181	.226	-.340	-.103	-.231	-.120
	(
	BEND - (	715N	-.143	.229	-.303	-.105	-.188	-.107
	(
	STRAIGHT - (	715F	-.117	.204	-.274	-.104	-.171	-.094
	(
	STRAIGHT - (	720N	-.041	.028	-.190	.092	.121	-.085
	(
	BEND - (	720N	-.024	.001	-.166	.058	.095	-.047
	(
	STRAIGHT - (	720F	-.012	-.066	-.132	.020	.037	-.021
	(
ANCHOR		725	.000	.000	.000	.000	.000	-.000
BRANCH PT.		685	-.389	.002	-.797	-.114	-.306	-.002

DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
BRANCH PT.		685	.369	.002	.797	-.114	-.306	-.002
	STRAIGHT - (
	>	730N	.367	-.083	.842	-.101	-.241	-.010
	(
	BEND - (	730N	.395	-.117	.839	-.019	-.190	-.058
	(
	>	730F	.410	-.126	.807	.074	-.068	-.097
	STRAIGHT - (
	>	735N	.169	.294	.038	.053	.121	-.119
	(
	BEND - (	735N	.145	.262	.008	-.054	.107	-.116
	(
	>	735F	.121	.245	.012	-.150	.100	-.110
	STRAIGHT - (
	>	740N	.033	.069	.151	-.162	.079	-.096
	(
	BEND - (	740N	.017	.030	.158	-.101	.060	-.054
	(
	>	740F	.008	.008	.132	-.028	.023	-.032
	STRAIGHT - (
ANCHOR		745	.000	-.000	-.000	-.000	.000	-.000
BRANCH PT.		655	-.627	.328	-.852	-.071	.067	-.034
	STRAIGHT - (
	>	800N	-.627	.323	-.862	-.059	.074	-.029
	(
	BEND - (	800N	-.626	.323	-.881	-.010	.157	.030
	(
	>	800F	-.615	.327	-.901	.062	.199	.079
	STRAIGHT - (
	>	805N	-.492	.327	-1.042	.109	.255	.093
	(
	BEND - (	805N	-.455	.319	-1.061	.085	.267	.096
	(
	>	805F	-.395	.307	-1.067	.054	.301	.103
	STRAIGHT - (
	>	815	.026	.245	-1.067	.043	.314	.082
	RIGID - (
	>	820	.134	.230	-1.067	.043	.314	.082
	STRAIGHT - (
	>	825N	.243	.215	-1.067	.047	.307	.076
	(
	BEND - (	825N	.301	.264	-1.072	.070	.265	.058
	(
	>	825F	.328	.198	-1.087	.087	.243	.022

LOADING - THERMAL
DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT	LOC.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
625F			.326	.198	.1067	.087	.243	.022
BRANCH PT.	STRAIGHT - (	115	.331	.196	.1100	.066	.238	.019

DYNAFLEX

 *
 * STATIC SOLUTION ACCURACY CHECKS *
 *

EACH BASIC STATIC SOLUTION COMPRISING EACH LOAD OR LOADING COMBINATION
 SPECIFIED IN THIS RPT HAS BEEN SUBJECTED TO EQUILIBRIUM AND
 COMPATIBILITY CHECKS FOR ALL POINTS IN THE SYSTEM:

LOADING - THERMAL

STATIC EQUILIBRIUM AND COMPATIBILITY HAVE BEEN SATISFIED FOR THIS
 BASIC STATIC SOLUTION AT ALL POINTS IN THE SYSTEM.

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DYNAFLEX

STEARNS - ROGER CORP

PAGE 1

PROJECT - 10MW SOLAR PILOT PLANT - DOE - C-21700
JOB - OIL EXTR + CHARG.(T-10-10-C-6)

DATE 1/28/80

INPUT DATA - (CARD IMAGES)

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LINE NUMBER	TYPE	LOC	FRM	TO	DELTA X	DELTA Y	DELTA Z	RADIUS	ADDITIONAL DATA	LINE NUMBER
1	GEN								STEARNS - ROGER CORP, 1/28/80, PROJ.10MW SO LAR PILOT PLANT - DOE - C-21700, JOB OIL EXT: R + CHARG.(T-10-10-C- 6)	1
2	GEN								APPLY BSI-1-1973, EXA	2
3			5	10			1-2-5/16		MAT=LCS, DU=10.75, WT=365, UNIF=36.2, TEMP=525.	3
4				15			1-7-11/16		RIGID, WEIGHT=398.	4
5				20			3-9	L		5
6				22		4-5-1/4		L		6
7				25	3-0				WLT	7
8				30	3-0			L	TEMP=525.	8
9				32		4-8-1/4		L		9
10				35			3-9			10
11				40			1-7-11/16		RIGID, WEIGHT=398.	11
12				45			1-2-5/16			12
13			25	50			5-2		WLT, TEMP=525.	13
14				140		9-1-1/4		L	TEMP=525.	14
15				150			9-6	L		15
16				155		2-11-3/8		L		16
17				160	4-3					17
18				165	12-0					18
19				170	19-0					19
20				172	19-0					20
21				175	1-9			L		21
22				180		2-6		L		22
23				185			8-6			23
24				190			1-8	L		24
25				195	15-6			L		25
26				200			1-8			26
27				205			8-6	L		27
28				210		2-6		L		28
29				215	1-9					29
30				220	19-0					30
31				225	5-2				SIF=2.4	31

INPUT DATA - (CARD IMAGES)

LINE NUMBER	TYP	LOC NO.	FRM	TO	DELTA X	DELTA Y	DELTA Z	RADIUS	ADDITIONAL DATA	LINE NUMBER
32	:	:	:	230	1-3-1/2	:	:	:	SIF=2.0	32
33	:	:	:	235	10-6-1/2	:	:	:	OD=8.625, WT=.322, UNIF=25.8	33
34	:	:	:	240	15-2	:	:	:L	:	34
35	:	:	:	245		2-0	:	:L	:	35
36	:	:	:	250			-13-6	:L	:	36
37	:	:	:	255		-11-1	:	:L	:	37
38	:	:	:	260			-11-0	:	:	38
39	:	:	:	265			-12-0	:	:	39
40	:	:	:	225	270	2-0	:	:L	TEMP=580.	40
41	:	:	:	275			-13-6	:L	:	41
42	:	:	:	280		-11-1	:	:L	:	42
43	:	:	:	285			-11-0	:	:	43
44	:	:	:	290			-12-0	:	:	44
45	:	:	:	305	310		2-0	:	MAT=LCS, OD=8.625, WT=.322, UNIF=25.40, TEMP=580.	45
46	:	:	:	315			1-10-7/16	:	:	46
47	:	:	:	320			0-8	:	:	47
48	:	:	:	325			1-5-9/16	:	RIGID, WEIGHT=374.	48
49	:	:	:	335			2-9	:L	:	49
50	:	:	:	340		-3-7-1/4	:	:L	:	50
51	:	:	:	350	7-6-1/2			:L	:	51
52	:	:	:	352			1-3	:	:	52
53	:	:	:	355			8-9	:	:	53
54	:	:	:	360			14-3	:	SIF=2.0	54
55	:	:	:	365			1-11-1/2	:L	OD=10.75, WT=.365, UNIF=35.6	55
56	:	:	:	370	1-11-1/2			:	WLT	56
57	:	:	:	375	1-11-1/2			:L	TEMP=580.	57
58	:	:	:	376			-1-11-1/2	:	SIF=2.0	58
59	:	:	:	378			-14-3	:	OD=8.625, WT=.322, UNIF =25.40	59
60	:	:	:	379			-8-9	:	:	60
61	:	:	:	380			-1-3	:L	:	61
62	:	:	:	390	7-6-1/2			:L	:	62
63	:	:	:	395		3-7-1/4		:L	:	63
64	:	:	:	405			-2-9	:	:	64
65	:	:	:	407			-1-5-9/16	:	RIGID, WEIGHT=374.	65
66	:	:	:	409			0-8	:	:	66
67	:	:	:	410			-1-10-7/16	:	:	67

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INPUT DATA - (CARD IMAGES)

LINE NUMBER	STYP	LOC	FRM	TO	DELTA X	DELTA Y	DELTA Z	RADIUS	ADDITIONAL DATA	LINE NUMBER
68	:	:	:	415	:	:	-2-0	:	:	68
69	:	:	50	135	:	:	17-0	:	DD=10.75,WT=.365,	69
	:	:	:	:	:	:	:	:	TEMP=525.,UNIF=36.2,	
	:	:	:	:	:	:	:	:	SIF=2.4	
70	:	:	:	130	:	:	1-6	:	:	70
71	:	:	:	125	:	:	18-0	L	:	71
72	:	:	:	120	17-3	:	:	:	:	72
73	:	:	:	118	16-11-1/2	:	:	L	:	73
74	:	:	:	115	3-1-3/4	:	:	:	WLT	74
75	:	:	:	110	:	:	3-2	L	TEMP=525.	75
76	:	:	:	105	-4-7-1/8	:	:	:	:	76
77	:	:	:	100	-1-7-11/16	:	:	:	RIGID,WEIGHT=398.	77
78	:	:	:	95	-1-4	:	:	:	:	78
79	:	:	:	90	-1-7-11/16	:	:	:	RIGID,WEIGHT=398.	79
80	:	:	:	85	-1-3	:	:	L	:	80
81	:	:	:	80	-4-10-1/2	:	:	L	:	81
82	:	:	:	75	:	:	1-7	:	:	82
83	:	:	370	595	:	:	1-11-1/2	L	DD=10.75,WT=.365,	83
	:	:	:	:	:	:	:	:	UNIF=35.6,TEMP=580.	
	:	:	:	:	:	:	:	:	SIF=2.4	
84	:	:	:	510	4-0	:	:	:	:	84
85	:	:	:	515	13-1-1/4	:	:	L	:	85
86	:	:	:	520	:	:	10-3-13/16	L	:	86
87	:	:	:	525	-2-0	:	:	:	:	87
88	:	:	:	530	-5-3	:	:	L	:	88
89	:	:	:	535	11-0	:	:	L	:	89
90	:	:	:	540	9-4	:	:	L	:	90
91	:	:	:	555	8-3	:	:	:	WLT	91
92	:	:	:	560	:	:	1-11-1/2	L	:	92
93	:	:	:	564	-3-5-5/16	:	:	:	:	93
94	:	:	:	565	-1-7-11/16	:	:	:	RIGID,WEIGHT=398.	94
95	:	:	:	568	-1-3	:	:	L	:	95
96	:	:	:	570	:	:	3-5	:	:	96
97	:	:	:	575	:	:	1-3-11/16	:	RIGID,WEIGHT=344.	97
98	:	:	555	600	:	:	-1-11-1/2	L	:	98
99	:	:	:	605	-3-5-5/16	:	:	:	:	99
100	:	:	:	610	-1-7-11/16	:	:	:	RIGID,WEIGHT=398.	100
101	:	:	:	615	-1-3	:	:	L	:	101
102	:	:	:	618	-5-9	:	:	L	:	102
103	:	:	:	620	-4-6	:	:	L	:	103
104	:	:	:	625	:	:	6-7-11/16	L	:	104
105	:	:	:	630	-17-0	:	:	L	:	105

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INPUT DATA - (CARD IMAGES)

LINE NUMBER	TYP	LOC	FRF	TD	DELTA X	DELTA Y	DELTA Z	RADIUS	ADDITIONAL DATA	LINE NUMBER
106	:	:	:	635	6-0	:	:	:	:	106
107	:	:	:	640	7-0	:	:	L	:	107
108	:	:	:	642	:	:	-4-9	:	:	108
109	:	:	:	645	:	:	-4-0	:	SIF=2.4	109
110	:	:	:	655	:	:	-6-3	:	WLT	110
111	:	:	:	660	:	:	-5-3	:	TEMP=580.	111
112	:	:	:	665	:	:	-1-5-3/8	L	:	112
113	:	:	:	670	-2-0-5/8	:	-2-0-5/8	L	:	113
114	:	:	:	675	9-0	:	:	:	:	114
115	:	:	:	680	9-6	:	:	:	:	115
116	:	:	:	685	4-0	:	:	:	SIF=2.4	116
117	:	:	:	690	1-6	:	:	:	SIF=2.0	117
118	:	:	:	695	4-0	:	:	:	OD=8.625, WT=.322, UNIF=25.4	118
119	:	:	:	700	9-6	:	:	:	:	119
120	:	:	:	705	3-0	:	:	L	:	120
121	:	:	:	710	-2-10-5/16	:	:	L	:	121
122	:	:	:	715	:	:	-19-6	L	:	122
123	:	:	:	720	-6-0-3/16	:	:	L	:	123
124	:	:	:	725	:	:	-4-0	:	:	124
125	:	:	:	685	7-30	-2-11-3/8	:	L	TEMP=580.	125
126	:	:	:	735	:	:	-19-6	L	:	126
127	:	:	:	740	-6-0-3/16	:	:	L	:	127
128	:	:	:	745	:	:	-4-0	:	:	128
129	:	:	:	655	800	1-11-1/2	:	L	OD=10.75, WT=.365, UNIF=36.2, TEMP=70.	129
130	:	:	:	805	-9-0	:	:	L	:	130
131	:	:	:	815	:	:	7-8-5/16	:	:	131
132	:	:	:	820	:	:	1-7-11/16	:	RIGID, WEIGHT=398.	132
133	:	:	:	825	:	:	2-11	L	:	133
134	:	:	:	115	-1-11-1/2	:	:	:	:	134
135	:	ANC	5	:	135	:	:	:	:	135
136	:	ANC	45	:	:	:	:	:	:	136
137	:	ANC	265	:	:	:	:	:	:	137
138	:	ANC	290	:	:	:	:	:	:	138
139	:	ANC	305	:	:	:	:	:	:	139
140	:	ANC	415	:	:	:	:	:	:	140
141	:	ANC	725	:	:	:	:	:	:	141
142	:	ANC	745	:	:	:	:	:	:	142
143	:	ANC	575	:	:	-1.42	-1.32	:	:	143
144	:	ANC	75	:	:	-2.0	-1.32	:	:	144

INPUT DATA - (CARD IMAGES)

LINE NUMBER	TYP	LDC	FRN	TD	DELTA X	DELTA Y	DELTA Z	RADIUS	ADDITIONAL DATA	LINE NUMBER
145	:RAD:	125:	F	:	:	:RIGID	:	:	:	145
146	:RAD:	130:	:	:	:	:RIGID	:	:	:	146
147	:RAD:	160:	:	:	:	:RIGID	:	:	:	147
148	:RAD:	165:	:	:	:	:RIGID	:	:	:	148
149	:RAD:	170:	:	:	:	:RIGID	:	:	:	149
150	:RAD:	172:	:	:	:	:RIGID	:	:	:	150
151	:RAD:	185:	:	:	:	:RIGID	:	:	:	151
152	:RAD:	200:	:	:	:	:RIGID	:	:	:	152
153	:RAD:	215:	:	:	:	:RIGID	:	:	:	153
154	:RAD:	220:	:	:	:	:RIGID	:	:	:	154
155	:RAD:	235:	:	:	:	:RIGID	:	:	:	155
156	:RAD:	245:	F	:	:	:RIGID	:	:	:	156
157	:RAD:	260:	:	:	:	:RIGID	:	:	:	157
158	:RAD:	285:	:	:	:	:RIGID	:	:	:	158
159	:RAD:	352:	:	:	:	:RIGID	:	:	:	159
160	:RAD:	355:	:	:	:	:RIGID	:	:	:	160
161	:RAD:	376:	:	:	:	:RIGID	:	:	:	161
162	:RAD:	379:	:	:	:	:RIGID	:	:	:	162
163	:RAD:	505:	N	:	:	:RIGID	:	:	:	163
164	:RAD:	675:	:	:	:	:RIGID	:	:	:	164
165	:RAD:	680:	:	:	:	:RIGID	:	:	:	165
166	:RAD:	695:	:	:	:	:RIGID	:	:	:	166
167	:RAD:	700:	:	:	:	:RIGID	:	:	:	167
168	:CCC:	45:	:	:6-0	:0-0	:0-0	:	:	:	168
169	:CCC:	265:	:	:133-5	:1-6-5/8	:15-3	:	:	:	169
170	:CCC:	290:	:	:106-5	:1-8-5/8	:15-3	:	:	:	170
171	:CCC:	305:	:	:21-6	:1-1	:0-11	:	:	:	171
172	:CCC:	415:	:	:40-6	:1-1	:0-11	:	:	:	172
173	:CCC:	75:	:	:26-9	:6-5	:53-0	:	:	:	173
174	:CCC:	575:	:	:26-9	:32-2	:53-0	:	:	:	174
175	:CCC:	725:	:	:75-9	:1-6-1/8	:3-9	:	:	:	175
176	:CCC:	745:	:	:57-9	:1-7-3/16	:3-9	:	:	:	176
177	:RAD:	335:	N	:	:	:RIGID	:	:	:	177
178	:RAD:	395:	F	:	:	:RIGID	:	:	:	178
179	:OUT:	:	:	:	:	:	:	:THERMAL	:	179

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 *
 * FORCES AND MOMENTS ON ANCHORS AND RESTRAINTS *
 * ----- *
 *

EXPLANATORY NOTES

THE FORCES AND MOMENTS SHOWN BELOW ARE THE ACTIONS OF THE PIPING SYSTEM ON THE ANCHORS AND RESTRAINTS.

LOC. NO.	FORCES (POUNDS)				MOMENTS (FOOT-POUNDS)			
	X	Y	Z	RESULTANT	X	Y	Z	RESULTANT
ANCHORS:								
5	-2235.	251.	-1553.	2733.	1400.	-13636.	-5138.	14639.
45	1351.	-265.	1019.	1713.	-588.	5636.	4378.	7161.
265	341.	149.	-319.	490.	-589.	8280.	-1901.	8516.
290	223.	138.	354.	441.	-543.	5547.	-996.	5662.
305	-169.	164.	-518.	569.	-356.	96.	442.	575.
415	279.	210.	-822.	893.	-453.	335.	-375.	677.
75	-157.	440.	1154.	1245.	7995.	-2220.	2711.	8729.
375	-178.	2793.	1603.	3226.	5839.	-3164.	5250.	8474.
725	241.	19.	228.	332.	1286.	3173.	-1263.	3649.
745	304.	-305.	-1146.	1224.	-1636.	2027.	-1637.	3077.
RESTRAINTS:								
160	0.	367.	0.	367.	0.	0.	0.	0.
165	0.	69.	0.	69.	0.	0.	0.	0.

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FORCES AND MOMENTS ON ANCHORS AND RESTRAINTS (CONTINUED)

EXPLANATORY NOTES

THE FORCES AND MOMENTS SHOWN BELOW ARE THE ACTIONS OF THE PIPING SYSTEM ON THE ANCHORS AND RESTRAINTS.

LOC. NO.	FORCES (POUNDS)				MOMENTS (FOOT-POUNDS)			
	X	Y	Z	RESULTANT	X	Y	Z	RESULTANT
RESTRAINTS (CONTINUED)								
170	0.	-88.	0.	88.	0.	0.	0.	0.
172	0.	96.	0.	96.	0.	0.	0.	0.
185	0.	-30.	0.	30.	0.	0.	0.	0.
200	0.	-44.	0.	44.	0.	0.	0.	0.
215	0.	106.	0.	106.	0.	0.	0.	0.
220	0.	-58.	0.	58.	0.	0.	0.	0.
235	0.	-85.	0.	85.	0.	0.	0.	0.
245F	0.	176.	0.	176.	0.	0.	0.	0.
260	0.	-356.	0.	356.	0.	0.	0.	0.
285	0.	-30.	0.	30.	0.	0.	0.	0.
335	0.	-46.	0.	46.	0.	0.	0.	0.
352	0.	176.	0.	176.	0.	0.	0.	0.
355	0.	-612.	0.	612.	0.	0.	0.	0.
378	0.	-262.	0.	262.	0.	0.	0.	0.
379	0.	-309.	0.	309.	0.	0.	0.	0.
395F	0.	223.	0.	223.	0.	0.	0.	0.

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FORCES AND MOMENTS ON ANCHORS AND RESTRAINTS (CONTINUED)

EXPLANATORY NOTES

THE FORCES AND MOMENTS SHOWN BELOW ARE THE ACTIONS OF THE PIPING SYSTEM ON THE ANCHORS AND RESTRAINTS.

LOC. NO.	FORCES (POUNDS)				MOMENTS (FOOT-POUNDS)			
	X	Y	Z	RESULTANT	X	Y	Z	RESULTANT
RESTRAINTS (CONTINUED) -								
136	0.	-424.	0.	424.	0.	0.	0.	0.
125F	0.	-231.	0.	231.	0.	0.	0.	0.
505N	0.	-2276.	0.	2276.	0.	0.	0.	0.
675	0.	-594.	0.	594.	0.	0.	0.	0.
660	0.	707.	0.	707.	0.	0.	0.	0.
695	0.	66.	0.	66.	0.	0.	0.	0.
700	0.	-135.	0.	135.	0.	0.	0.	0.

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*
* INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS *
* ----- *
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THE MAXIMUM STRESS OF 22,357. OCCURS AT POINT 530F

EXPLANATORY NOTES:

- (1) THE FORCES AND MOMENTS SHOWN BELOW ARE WITH REFERENCE TO THE ELEMENT LOCAL AXES.
- (2) THE STRESSES SHOWN BELOW ARE CALCULATED IN ACCORDANCE WITH THE ANSI B31.1 - 1977 PIPING CODE (INCLUDING ALL MANDATORY UPDATES)
- (3) A (**) FOLLOWING A STRESS VALUE INDICATES THE MAXIMUM STRESS FOR THIS LOADING CONDITION.
- (4) A (*) FOLLOWING A STRESS VALUE INDICATES A STRESS WITHIN 10 PER CENT OF THE MAXIMUM.
- (5) THE COLD MODULUS HAS BEEN USED IN THIS ANALYSIS.
- (6) THE STRESS INTENSIFICATION FACTORS (ABBREVIATED AS SIF IN THE TABLE HEADING BELOW) ARE AUTOMATICALLY CALCULATED AND APPLIED AT BENDS, ELBOWS, FITERS AND ADMISSIBLE TYPES OF TEES (AS SPECIFICALLY IDENTIFIED IN THE INPUT DESCRIPTION OF THE PIPING SYSTEM). USER ENTERED STRESS INTENSIFICATION FACTORS TAKE PRECEDENCE OVER INTERNALLY CALCULATED VALUES.
- (16) THE EXACT SECTION MODULUS IS USED IN THE STRESS CALCULATIONS UNLESS THE SPECIFIC PIPING CODE OR THE USER EXPLICITLY REQUESTS OTHERWISE. IN THIS ANALYSIS THE SO-CALLED EFFECTIVE MODULUS IS USED FOR THE BRANCH LEG AT REDUCED OUTLET CONNECTIONS. THESE ARE IDENTIFIED WITH AN ASTERISK. THE EXACT SECTION MODULUS IS USED FOR ALL OTHER POINTS.

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INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION STRESS PSI
			AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		
ANCHR		-- S	1553.	2249.	5138.	1400.	13636.	1.00	1.00	29.90	5874.
	STR - (
	>-	10	1553.	2249.	5138.	1700.	10970.	1.00	1.00	29.90	4909.
	RIGID - (
	>-	15	1553.	2249.	5138.	2112.	7304.	1.00	1.00	29.90	3682.
	STR - (
	>-	20N	1553.	2249.	5138.	2740.	1716.	2.61	2.61	29.90	6346.
	BEND - (
	>-	20M	1276.	2417.	5238.	2394.	2871.	2.61	2.61	29.90	5170.
	>-	20F	251.	2721.	1078.	1113.	2345.	2.61	2.61	29.90	2938.
	STR - (
	>-	22N	251.	2721.	1078.	2545.	2283.	2.61	2.61	29.90	3747.
	BEND - (
	>-	22M	1758.	2092.	2945.	4428.	2225.	2.61	2.61	29.90	6026.
	>-	22F	2235.	1573.	4224.	5024.	863.	2.61	2.61	29.90	6921.
	STR - (
165	BR PT	-- 25	2235.	1573.	4224.	3580.	4584.	1.97	1.97	29.90	5677.
	BR PT	-- 25	1351.	1053.	2441.	6317.	2753.	1.97	1.97	29.90	5773.
	STR - (
	>-	30N	1351.	1053.	2441.	2289.	4535.	2.61	2.61	29.90	5891.
	BEND - (
	>-	30M	768.	1531.	1107.	1560.	4932.	2.61	2.61	29.90	4666.
	>-	30F	265.	1692.	3261.	268.	1168.	2.61	2.61	29.90	3632.
	STR - (
	>-	32N	265.	1692.	3261.	1060.	2688.	2.61	2.61	29.90	4555.
	BEND - (
	>-	32M	908.	1453.	4702.	1864.	789.	2.61	2.61	29.90	5351.
	>-	32F	1019.	1377.	4378.	2002.	1572.	2.61	2.61	29.90	5294.
	STR - (
	>-	35	1019.	1377.	4378.	1340.	1807.	1.00	1.00	29.90	1975.
	RIGID - (
	>-	40	1019.	1377.	4378.	905.	4024.	1.00	1.00	29.90	2414.
	STR - (
	ANCHR	-- 45	1019.	1377.	4378.	588.	5636.	1.00	1.00	29.90	2873.
	BR PT	-- 25	534.	484.	1632.	9698.	1763.	1.97	1.97	29.90	8072.
	STR - (
	BR PT	-- 50	534.	484.	1632.	1654.	5333.	1.97	1.97	29.90	4687.

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INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	FLEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION STRESS PSI	
			AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE			
BR PT		50	534.	844.	1632.	1854.	5333.	1.97	1.97	29.90	4687.	
BR PT	STR - (	50	410.	565.	3572.	3096.	4480.	1.97	1.97	29.90	5143.
	>-	140N	410.	565.	3572.	3373.	53.	2.61	2.61	29.90	5136.	
	BEND - (	140M	315.	623.	2695.	3254.	2065.	2.61	2.61	29.90	4916.
	>-	140F	35.	697.	652.	2905.	2867.	2.61	2.61	29.90	4321.	
	STR - (	>-	150N	29.90 35:	1838.	652.	35.	1079.	2.61	2.61	
	BEND - (	150M	315.	623.	508.	315.	1722.	2.61	2.61	29.90	1905.
	>-	150F	410.	565.	1783.	434.	1356.	2.61	2.61	29.90	2386.	
	STR - (>-	155N	410.	565.	1783.	1609.	418.	2.61	2.61	29.90	2548.
166	BEND - (	155M	689.	114.	978.	1957.	1525.	2.61	2.61	29.90	2788.
	>-	155F	564.	412.	374.	1801.	1739.	2.61	2.61	29.90	2646.	
	STR - (>-	160	564.	412.	374.	571.	1633.	1.00	1.00	29.90	710.
	STR - (>-	165	564.	56.	374.	207.	997.	1.00	1.00	29.90	435.
	STR - (>-	170	564.	72.	374.	278.	326.	1.00	1.00	29.90	228.
	STR - (>-	172	564.	72.	374.	917.	344.	1.00	1.00	29.90	421.
	STR - (>-	175N	564.	48.	374.	901.	562.	2.61	2.61	29.90	1087.
	BEND - (	175M	375.	423.	533.	665.	23.	2.61	2.61	29.90	891.
	>-	175F	33.	565.	406.	155.	330.	2.61	2.61	29.90	570.	
	BEND - (	180M	2.	566.	384.	286.	102.	2.61	2.61	29.90	512.
	>-	180F	35.	565.	550.	244.	296.	2.61	2.61	29.90	702.	
	STR - (>-	185	35.	565.	550.	5.	4385.	1.00	1.00	29.90	1773.
	STR - (>-	190N	35.	564.	550.	4620.	3.	2.61	2.61	29.90	4864.

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INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION STRESS PSI
			AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		
		>- 190N	35.	564.	550.	4620.	3.	2.61	2.61	29.90	4864.
	BEND	(190N	424.	374.	390.	5105.	389.	2.61	2.61	29.90	5368.
		>- 190F	564.	35.	0.	5280.	553.	2.61	2.61	29.90	5550.
	STR	(
		>- 195N	564.	35.	0.	4821.	590.	2.61	2.61	29.90	5078.
	BEND	(195N	374.	424.	418.	4584.	420.	2.61	2.61	29.90	4832.
		>- 195F	35.	564.	594.	4072.	3.	2.61	2.61	29.90	4302.
	STR	(
		>- 200	35.	565.	594.	5.	3838.	1.00	1.00	29.90	1558.
	STR	(
		>- 205N	35.	565.	594.	292.	249.	2.61	2.61	29.90	739.
	BEND	(205N	54.	564.	802.	315.	254.	2.61	2.61	29.90	940.
167		>- 205F	41.	565.	954.	299.	111.	2.61	2.61	29.90	1051.
	BEND	(210M	370.	429.	873.	624.	494.	2.61	2.61	29.90	1235.
		>- 210F	564.	54.	255.	867.	998.	2.61	2.61	29.90	1407.
	STR	(
		>- 215	564.	74.	255.	887.	1015.	1.00	1.00	29.90	551.
	STR	(
		>- 220	564.	74.	255.	357.	1686.	1.00	1.00	29.90	699.
	STR	(
	HR PT	-- 225	564.	36.	255.	396.	1869.	2.40	2.40	29.90	1856.
	HR PT	-- 225	341.	339.	786.	636.	4467.	2.40	2.40	29.90	4411.
	STR	(
		>- 230	341.	339.	786.	487.	4055.	2.00	2.00	16.81	5938.
	STR	(
		>- 235	341.	339.	786.	727.	691.	1.00	1.00	16.81	910.
	STR	(
		>- 240N	341.	321.	786.	1162.	3829.	2.44	2.44	16.81	7099.
	BEND	(240N	219.	413.	3356.	1283.	2378.	2.44	2.44	16.81	7501.
		>- 240F	31.	467.	4140.	1533.	467.	2.44	2.44	16.81	7742.
	BEND	(245N	204.	421.	4117.	232.	1608.	2.44	2.44	16.81	7705.

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INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION STRESS PSI
			AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		
	BEND	(245M	204.	421.	4117.	232.	1608.	2.44	2.44	16.81	7705.
		>- 245F	319.	342.	1873.	117.	3808.	2.44	2.44	16.81	7391.
	STR	(>- 250N	319.	398.	1873.	2259.	108.	2.44	2.44	16.81	5115.
	BEND	(250M	372.	350.	1501.	2312.	1007.	2.44	2.44	16.81	5109.
		>- 250F	207.	467.	449.	2147.	1533.	2.44	2.44	16.81	4658.
	STR	(>- 255N	207.	467.	449.	752.	1560.	2.44	2.44	16.81	3115.
	BEND	(255M	372.	350.	886.	917.	1661.	2.44	2.44	16.81	3646.
		>- 255F	319.	398.	1901.	864.	789.	2.44	2.44	16.81	3886.
	STR	(>- 260	319.	372.	1901.	1202.	4194.	1.00	1.00	16.81	3398.
891	ANCHR	-- 265	319.	372.	1901.	589.	8280.	1.00	1.00	16.81	6080.
	BR PT	-- 275	108.	419.	2598.	1032.	531.	2.40	2.40	16.81	4876.
	STR	(>- 270N	108.	419.	2598.	176.	1255.	2.44	2.44	16.81	5033.
	BEND	(270M	174.	396.	2790.	106.	792.	2.44	2.44	16.81	5053.
		>- 270F	354.	248.	1478.	286.	2375.	2.44	2.44	16.81	4896.
	STR	(>- 275N	354.	248.	1478.	1526.	191.	2.44	2.44	16.81	3713.
	BEND	(275M	327.	283.	1246.	1498.	752.	2.44	2.44	16.81	3636.
		>- 275F	108.	419.	414.	1279.	1255.	2.44	2.44	16.81	3202.
	STR	(>- 280N	108.	419.	414.	1940.	772.	2.44	2.44	16.81	3706.
	BEND	(280M	327.	283.	318.	2159.	997.	2.44	2.44	16.81	4177.
		>- 280F	354.	248.	996.	2186.	638.	2.44	2.44	16.81	4527.
	STR	(>- 285	354.	262.	996.	1108.	2869.	1.00	1.00	16.81	2308.
	ANCHR	-- 290	354.	262.	996.	543.	5547.	1.00	1.00	16.81	4042.

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INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION STRESS PSI
			AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		
ANCHR		-- 290	354.	262.	996.	543.	5547.	1.00	1.00	16.81	4042.
ANCHR		-- 305	518.	236.	442.	356.	96.	1.00	1.00	16.81	411.
	STR - (	>- 310	518.	236.	442.	27.	434.	1.00	1.00	16.81	443.
	STR - (	>- 315	518.	236.	442.	281.	750.	1.00	1.00	16.81	653.
	STR - (	>- 320	518.	236.	442.	390.	863.	1.00	1.00	16.81	746.
	RIGID - (	>- 325	518.	236.	442.	631.	1110.	1.00	1.00	16.81	965.
	STR - (	>- 335N	518.	206.	442.	919.	1406.	2.44	2.44	16.81	3023.
	BEND - (	335M	450.	330.	731.	851.	1426.	2.44	2.44	16.81	3158.
		>- 335F	118.	545.	1575.	519.	611.	2.44	2.44	16.81	3076.
169	STR - (	>- 340N	118.	545.	1575.	882.	313.	2.44	2.44	16.81	3189.
	BEND - (	340M	203.	520.	1486.	967.	526.	2.44	2.44	16.81	3220.
		>- 340F	169.	532.	831.	933.	1056.	2.44	2.44	16.81	2848.
	STR - (	>- 350N	169.	532.	831.	1816.	276.	2.44	2.44	16.81	3511.
	BEND - (	350M	486.	274.	425.	2135.	701.	2.44	2.44	16.81	3979.
		>- 350F	518.	206.	160.	2165.	713.	2.44	2.44	16.81	3979.
	STR - (	>- 352	518.	206.	160.	683.	2123.	1.00	1.00	16.81	1596.
	STR - (	>- 355	518.	360.	160.	1687.	645.	1.00	1.00	16.81	1428.
	STR - (	>- 360	518.	360.	160.	2647.	1763.	2.00	2.00	16.81	4547.
	STR - (	>- 365N	518.	360.	160.	1883.	2873.	2.61	2.61	29.90	3594.
	BEND - (	365M	436.	403.	2035.	1842.	2426.	2.61	2.61	29.90	3629.
		>- 365F	169.	608.	3271.	1446.	558.	2.61	2.61	29.90	3783.
	STR - (-- 370	169.	608.	3271.	1079.	733.	1.97	1.97	29.90	2789.

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INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION :	
			AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		STRESS PSI	
BR	PT	-- 370	169.	608.	3271.	1079.	783.	1.97	1.97	29.90	:	2789.
BR	PT	-- 370	279.	833.	1978.	1600.	1610.	1.97	1.97	29.90	:	2378.
	STR	>- 375M	279.	833.	1978.	2182.	1708.	2.61	2.61	29.90	:	3559.
	BEND	<- 375M	778.	408.	2658.	2806.	68.	2.61	2.61	29.90	:	4041.
	STR	>- 375F	822.	311.	1882.	2861.	1805.	2.61	2.61	29.90	:	4046.
	STR	>- 376	822.	311.	1882.	1707.	2663.	2.00	2.00	16.81	:	5255.
	STR	>- 378	822.	305.	1882.	265.	1308.	1.00	1.00	16.81	:	1647.
	STR	>- 379	822.	514.	1882.	817.	3746.	1.00	1.00	16.81	:	3049.
	STR	>- 380M	822.	514.	1882.	3815.	925.	2.44	2.44	16.81	:	7580.
170	BEND	<- 380M	778.	578.	2111.	3772.	370.	2.44	2.44	16.81	:	7553.
	STR	>- 380F	279.	929.	1358.	3272.	1449.	2.44	2.44	16.81	:	6664.
	STR	>- 390M	279.	929.	1358.	947.	1282.	2.44	2.44	16.81	:	3644.
	BEND	<- 390M	503.	829.	2107.	1171.	527.	2.44	2.44	16.81	:	4296.
	STR	>- 390F	432.	868.	2103.	1100.	536.	2.44	2.44	16.81	:	4237.
	STR	>- 395M	432.	368.	2103.	782.	653.	2.44	2.44	16.81	:	4069.
	BEND	<- 395M	887.	392.	1107.	1237.	1752.	2.44	2.44	16.81	:	4202.
	STR	>- 395F	822.	514.	375.	1172.	1825.	2.44	2.44	16.81	:	3831.
	STR	>- 405	822.	349.	375.	805.	1337.	1.00	1.00	16.81	:	1146.
	RIGID	>- 407	822.	349.	375.	498.	929.	1.00	1.00	16.81	:	799.
	STR	>- 409	822.	349.	375.	358.	743.	1.00	1.00	16.81	:	647.
	STR	>- 410	822.	349.	375.	34.	222.	1.00	1.00	16.81	:	312.
	STR	>- 415	822.	349.	375.	453.	335.	1.00	1.00	16.81	:	483.
	ANCHR	-- 415	822.	349.	375.	453.	335.	1.00	1.00	16.81	:	483.

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INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION STRESS PSI
			AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		
ANCHR		-- 415	622.	349.	375.	453.	335.	1.00	1.00	16.81	483.
BR PT		-- 50	499.	509.	2648.	4950.	1761.	1.97	1.97	29.90	4646.
	STR - (	>- 135	499.	509.	2648.	1787.	3676.	2.40	2.40	29.90	4691.
	STR - (	>- 130	499.	321.	2648.	2381.	4156.	1.00	1.00	29.90	2196.
	STR - (	>- 125M	499.	321.	2648.	9514.	1913.	2.61	2.61	29.90	10516.
	BEND - (	125M	579.	130.	530.	9614.	3201.	2.61	2.61	29.90	10607.
		>- 125F	320.	500.	1878.	9290.	2613.	2.61	2.61	29.90	10278.
	STR - (	>- 120	320.	562.	1878.	1531.	1311.	1.00	1.00	29.90	1106.
	STR - (	>- 118M	320.	562.	1878.	5601.	6524.	2.61	2.61	29.90	9200.
171	BEND - (	118M	409.	501.	3468.	5712.	6382.	2.61	2.61	29.90	9660.
		>- 118F	259.	592.	7147.	5525.	2501.	2.61	2.61	29.90	9799.
	STR - (	-- 115	259.	592.	7147.	3447.	4918.	1.97	1.97	29.90	7372.
BR PT		-- 115	1154.	467.	2660.	278.	9103.	1.97	1.97	29.90	7492.
	STR - (	>- 110M	1154.	467.	2660.	9404.	1122.	2.61	2.61	29.90	10284.
	BEND - (	110M	927.	831.	2835.	9120.	698.	2.61	2.61	29.90	10011.
		>- 110F	157.	1235.	1672.	8158.	2109.	2.61	2.61	29.90	8980.
	STR - (	>- 105	157.	1235.	1672.	637.	4299.	1.00	1.00	29.90	1869.
	RIGID - (	>- 100	157.	1235.	1672.	85.	2406.	1.00	1.00	29.90	1176.
	STR - (	>- 95	157.	1235.	1672.	673.	867.	1.00	1.00	29.90	803.
	RIGID - (	>- 90	157.	1235.	1672.	1395.	1026.	2.61	2.61	29.90	2516.
	BEND - (85M	200.	1229.	54.	1842.	2928.	2.61	2.61	29.90	3616.
		>- 85F	440.	1163.	2469.	2142.	3115.	2.61	2.61	29.90	4720.

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INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION STRESS (PSI)
			AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		
		>- 85F	440.	1165.	2469.	2142.	3115.	2.61	2.61	29.90	4720.
	STR - (
		>- 80N	440.	1165.	2469.	5855.	2515.	2.61	2.61	29.90	7144.
	BEND - (	80M	505.	1138.	3581.	7037.	171.	2.61	2.61	29.90	8256.
		>- 80F	1154.	467.	2711.	7848.	2273.	2.61	2.61	29.90	8999.
	STR - (
	ANCHR	-- 75	1154.	467.	2711.	7995.	2220.	1.00	1.00	29.90	3503.
	BR PT	-- 370	1340.	470.	2394.	521.	5249.	1.97	1.97	29.90	4574.
	STR - (
		>- 505N	1340.	2735.	2394.	5572.	599.	2.61	2.61	29.90	6371.
	BEND - (	505M	2880.	991.	1229.	7497.	2213.	2.61	2.61	29.90	8272.
		>- 505F	2733.	1345.	736.	7313.	2531.	2.61	2.61	29.90	8126.
172	STR - (
		>- 510	2733.	1345.	736.	2833.	3628.	2.40	2.40	29.90	4489.
	STR - (
		>- 515N	2733.	1345.	736.	12257.	4133.	2.61	2.61	29.90	13544.
	BEND - (	515M	2880.	991.	2442.	12441.	3540.	2.61	2.61	29.90	13761.
		>- 515F	1340.	2735.	4270.	10517.	873.	2.61	2.61	29.90	11900.
	STR - (
		>- 520N	1340.	2735.	4270.	1730.	10848.	2.61	2.61	29.90	12320.
	BEND - (	520M	1025.	2868.	11690.	1337.	7067.	2.61	2.61	29.90	14348.
		>- 520F	110.	3044.	14264.	192.	854.	2.61	2.61	29.90	14939.
	STR - (
		>- 525	110.	3044.	14264.	1196.	813.	1.00	1.00	29.90	5753.
	STR - (
		>- 530N	110.	3044.	14264.	12127.	6173.	2.61	2.61	29.90	20608. *
	BEND - (	530M	2010.	2286.	14942.	14502.	4536.	2.61	2.61	29.90	22278. *
		>- 530F	2733.	1345.	7848.	15406.	12589.	2.61	2.61	29.90	22357. **
	STR - (
		>- 535N	2733.	1345.	7848.	14419.	528.	2.61	2.61	29.90	17170.
	BEND - (535M	1855.	2416.	5667.	13321.	4738.	2.61	2.61	29.90	15923.

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INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION STRESS PSI
			AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		
	BEND	(535M	1855.	2416.	5667.	13321.	4738.	2.61	2.61	29.90	15923.
		>- 535F	110.	3044.	1147.	10865.	6173.	2.61	2.61	29.90	13119.
	STR	(>- 540N	110.	3044.	1147.	7809.	2984.	2.61	2.61	29.90	8821.
	BEND	(540M	1855.	2416.	1790.	10264.	4106.	2.61	2.61	29.90	11707.
		>- 540F	2733.	1345.	4659.	11362.	2822.	2.61	2.61	29.90	13172.
	STR	(-- 555	2733.	1345.	4659.	12203.	12130.	1.97	1.97	29.90	14076.
	BR PT	-- 555	1603.	2799.	12442.	12827.	5779.	1.97	1.97	29.90	14631.
	STR	(>- 560N	1603.	2799.	12442.	5905.	10848.	2.61	2.61	29.90	18327.
	BEND	(560M	1259.	2970.	2149.	5475.	13999.	2.61	2.61	29.90	15874.
173		>- 560F	178.	3221.	7357.	4124.	8950.	2.61	2.61	29.90	12855.
	STR	(>- 564	178.	3221.	7357.	2625.	609.	1.00	1.00	29.90	3172.
	RIGID	(>- 565	178.	3221.	7357.	2021.	1758.	2.61	2.61	29.90	8184.
	BEND	(568M	1259.	2970.	7468.	3373.	1490.	2.61	2.61	29.90	8706.
		>- 568F	1603.	2799.	5250.	3802.	3865.	2.61	2.61	29.90	7889.
	STR	(>- 570	1603.	2799.	5250.	2187.	3417.	1.00	1.00	29.90	2663.
	RIGID	(-- 575	11.	2799.	5250.	5839.	3184.	N/A	N/A	N/A	N/A
	BR PT	-- 555	263.	91.	312.	624.	1120.	1.97	1.97	29.90	1042.
	STR	(>- 600N	263.	91.	312.	1071.	667.	2.61	2.61	29.90	1359.
	BEND	(600M	138.	242.	715.	915.	305.	2.61	2.61	29.90	1255.
		>- 600F	68.	270.	743.	658.	236.	2.61	2.61	29.90	1066.
	STR	(>- 605	68.	270.	743.	103.	81.	1.00	1.00	29.90	303.
	RIGID	(>- 610	68.	270.	743.	4.	350.	2.61	2.61	29.90	859.

INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION STRESS PSI
			AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		
		>- 610	68.	270.	743.	4.	350.	2.61	2.61	29.90	859.
	BEND	(615M	5.	278.	669.	75.	46.	2.61	2.61	29.90	913.
		>- 615F	61.	272.	679.	157.	415.	2.61	2.61	29.90	847.
	STR	(
		>- 618N	61.	272.	679.	379.	440.	2.61	2.61	29.90	933.
	BEND	(618M	5.	278.	73.	461.	1023.	2.61	2.61	29.90	1176.
		>- 618F	68.	270.	768.	540.	1007.	2.61	2.61	29.90	1439.
	STR	(
		>- 620N	68.	270.	768.	1533.	661.	2.61	2.61	29.90	1921.
	BEND	(620M	234.	150.	54.	1740.	1064.	2.61	2.61	29.90	2133.
		>- 620F	263.	91.	737.	1776.	844.	2.61	2.61	29.90	2195.
174	STR	(
		>- 625N	263.	91.	737.	1095.	1494.	2.61	2.61	29.90	2084.
	BEND	(625M	143.	239.	1552.	1245.	475.	2.61	2.61	29.90	2139.
		>- 625F	61.	272.	1409.	1499.	822.	2.61	2.61	29.90	2316.
	STR	(
		>- 630N	61.	272.	1409.	1810.	5311.	2.61	2.61	29.90	6047.
	BEND	(630M	91.	263.	4848.	1848.	2992.	2.61	2.61	29.90	6261.
		>- 630F	68.	270.	5639.	1820.	1080.	2.61	2.61	29.90	6297.
	STR	(
		>- 635	68.	270.	5639.	1532.	168.	1.00	1.00	29.90	2346.
	STR	(
		>- 640N	68.	270.	5639.	1680.	1183.	2.61	2.61	29.90	6274.
	BEND	(640M	234.	150.	3173.	1887.	4771.	2.61	2.61	29.90	6306.
		>- 640F	263.	91.	1108.	1923.	5564.	2.61	2.61	29.90	6262.
	STR	(
		>- 642	263.	91.	1108.	5352.	1685.	1.00	1.00	29.90	2295.
	STR	(
		>- 645	263.	91.	1108.	5109.	1412.	2.40	2.40	29.90	5215.
	STR	(
	BR OT	-- 655	263.	91.	1108.	986.	4730.	1.97	1.97	29.90	3915.

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INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION STRESS PSI
			AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		
BR PT		-- 655	263.	91.	1108.	986.	4730.	1.97	1.97	29.90	3915.
BR PT		-- 655	918.	596.	1505.	4183.	947.	1.97	1.97	29.90	3589.
	STR -(	>- 660	918.	596.	1505.	2217.	7044.	1.00	1.00	29.90	3024.
	STR -(	>- 665N	918.	596.	1505.	2442.	7551.	2.61	2.61	29.90	8444.
	BEND -(	665M	941.	560.	4332.	2470.	6661.	2.61	2.61	29.90	8699.
		>- 665F	820.	725.	6603.	2319.	4757.	2.61	2.61	29.90	8846.
	STR -(	>- 670N	820.	725.	6603.	5375.	1777.	2.61	2.61	29.90	9093.
	BEND -(	670M	965.	516.	3588.	5557.	5503.	2.61	2.61	29.90	8995.
		>- 670F	545.	949.	1179.	5031.	6005.	2.61	2.61	29.90	8282.
175	STR -(	>- 675	545.	949.	1179.	2563.	689.	1.00	1.00	29.90	1165.
	STR -(	>- 680	545.	984.	1179.	782.	8034.	1.00	1.00	29.90	3274.
BR PT		-- 685	545.	984.	1179.	637.	11707.	2.40	2.40	29.90	11348.
BR PT		-- 685	241.	233.	295.	452.	6586.	2.40	2.40	29.90	6364.
	STR -(	>- 690	241.	233.	295.	377.	6245.	2.00	2.00	16.81	8942.
	STR -(	>- 695	241.	233.	295.	176.	5334.	1.00	1.00	16.81	3816.
	STR -(	>- 700	241.	220.	295.	931.	3171.	1.00	1.00	16.81	2369.
	STR -(	>- 705N	241.	220.	295.	893.	2716.	2.44	2.44	16.81	5004.
	BEND -(	705M	157.	292.	1645.	810.	1968.	2.44	2.44	16.81	4682.
		>- 705F	19.	331.	2468.	634.	69.	2.44	2.44	16.81	4471.
	STR -(	>- 710N	19.	331.	2488.	128.	427.	2.44	2.44	16.81	4400.
	BEND -(	710M	174.	243.	1528.	283.	1891.	2.44	2.44	16.81	4261.
		>- 710F	228.	242.	186.	537.	2247.	2.44	2.44	16.81	3969.

INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION STRESS PSI
			AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		
		>- 710F	228.	242.	186.	337.	2247.	2.44	2.44	16.81	3969.
	STR - (
		>- 715N	228.	242.	186.	10.	1968.	2.44	2.44	16.81	3442.
	BEND - (	715M	174.	283.	1594.	64.	1430.	2.44	2.44	16.81	3730.
		>- 715F	19.	331.	2209.	219.	55.	2.44	2.44	16.81	3866.
	STR - (
		>- 720N	19.	331.	2209.	1133.	1022.	2.44	2.44	16.81	4675.
	BEND - (	720M	174.	283.	769.	1289.	2455.	2.44	2.44	16.81	5010.
		>- 720F	228.	242.	1263.	1342.	2450.	2.44	2.44	16.81	5338.
	STR - (
	ANCHR	-- 725	228.	242.	1263.	1286.	3173.	1.00	1.00	16.81	2605.
	BR PT	-- 685	305.	1186.	5121.	1090.	1475.	2.40	2.40	16.81	9319.
176	STR - (
		>- 730N	305.	1186.	5121.	757.	497.	2.44	2.44	16.81	9053.
	BEND - (	730M	1026.	668.	3358.	1478.	3757.	2.44	2.44	16.81	9143.
		>- 730F	1146.	431.	193.	1599.	4816.	2.44	2.44	16.81	8841.
	STR - (
		>- 735N	1146.	431.	193.	3733.	507.	2.44	2.44	16.81	6567.
	BEND - (	735M	1026.	668.	584.	3613.	437.	2.44	2.44	16.81	6417.
		>- 735F	395.	1186.	811.	2892.	111.	2.44	2.44	16.81	5233.
	STR - (
		>- 740N	395.	1186.	811.	1709.	1333.	2.44	2.44	16.81	4029.
	BEND - (	740M	1026.	668.	458.	2430.	1731.	2.44	2.44	16.81	5255.
		>- 740F	1146.	431.	1637.	2550.	1115.	2.44	2.44	16.81	5622.
	STR - (
	ANCHR	-- 745	1146.	431.	1637.	1636.	2027.	1.00	1.00	16.81	2197.
	BR PT	-- 655	477.	680.	5677.	5169.	2612.	1.97	1.97	29.90	6404.
	STR - (
		>- 800N	477.	680.	5677.	2741.	4705.	2.61	2.61	29.90	8223.
	BEND - (800M	465.	688.	928.	2726.	6762.	2.61	2.61	29.90	7683.

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INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	EXPANSION STRESS PSI
			AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		
	BEND	(800M	465.	688.	928.	2726.	6762.	2.61	2.61	29.90	7683.
		>- 800F	181.	810.	3886.	2371.	4658.	2.61	2.61	29.90	6960.
	STR	(>- 805N	181.	810.	3886.	599.	728.	2.61	2.61	29.90	4180.
	BEND	(805M	335.	760.	3437.	47.	1811.	2.61	2.61	29.90	4062.
		>- 805F	655.	510.	1324.	447.	3289.	2.61	2.61	29.90	3736.
	STR	(>- 815	655.	510.	1324.	1615.	217.	1.00	1.00	29.90	843.
	RIGID	(>- 820	655.	510.	1324.	1913.	565.	1.00	1.00	29.90	961.
	STR	(>- 825N	655.	510.	1324.	2215.	1360.	2.61	2.61	29.90	3049.
	BEND	(825M	335.	760.	200.	2615.	2320.	2.61	2.61	29.90	3660.
177		>- 825F	181.	810.	1956.	3260.	1921.	2.61	2.61	29.90	4453.
	STR	(-- 115	181.	810.	1956.	3725.	2258.	1.97	1.97	29.90	3771.

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 *
 * INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES *
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EXPLANATORY NOTES

THE FORCES AND MOMENTS AT ANY POINT SHOWN BELOW REPRESENT THE ACTION OF THE FAR END OF THE BRANCH ACTING ON THE NEAR END OF THE BRANCH.

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
178	ANCHOR	-- 5	-2235.	251.	-1553.	1400.	-13636.	-5138.
	STRAIGHT - (>- 10	-2235.	251.	-1553.	1700.	-10970.	-5138.
	RIGID - (>- 15	-2235.	251.	-1553.	2112.	-7304.	-5138.
	STRAIGHT - (>- 20M	-2235.	251.	-1553.	2740.	-1716.	-5138.
	(
	BEND - (20M	-2235.	251.	-1553.	2394.	259.	-4320.
	(
	STRAIGHT - (>- 20F	-2235.	251.	-1553.	1113.	1078.	-2345.
	(
	STRAIGHT - (>- 22M	-2235.	251.	-1553.	-2283.	1078.	2545.
(
BEND - (	22M	-2235.	251.	-1553.	-3656.	509.	4428.
(
STRAIGHT - (	>- 22F	-2235.	251.	-1553.	-4224.	-863.	5024.
BRANCH PT.	-- 25	-2235.	251.	-1553.	-4224.	-3580.	4584.	
BRANCH PT.	-- 25	-1351.	265.	-1019.	-2441.	6317.	2753.	
STRAIGHT - (	>- 30M	-1351.	265.	-1019.	-2441.	4535.	2289.
(
BEND - (	30M	-1351.	265.	-1019.	-2069.	3634.	1560.
(
STRAIGHT - (	>- 30F	-1351.	265.	-1019.	-1168.	3261.	268.
(
BEND - (	32M	-1351.	265.	-1019.	1060.	3261.	-2688.
(
BEND - (	32M	-1351.	265.	-1019.	1864.	2766.	-3883.
(
STRAIGHT - (>- 32F	-1351.	265.	-1019.	2002.	1572.	-4378.	
(
STRAIGHT - (>- 35	-1351.	265.	-1019.	1340.	-1807.	-4378.	

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INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)			
			X	Y	Z	X	Y	Z	
	RIGID - (	>- 35	-1351.	265.	-1019.	1340.	-1807.	-4378.
	STRAIGHT - (	>- 40	-1351.	265.	-1019.	905.	-4024.	-4378.
ANCHOR		-- 45	-1351.	265.	-1019.	588.	-5636.	-4378.	
BRANCH PT.	STRAIGHT - (	-- 25	-884.	-14.	-534.	-1783.	-9898.	1632.
BRANCH PT.		-- 50	-884.	-14.	-534.	-1854.	-5333.	1832.	
BRANCH PT.	STRAIGHT - (	-- 50	-564.	-410.	-35.	3096.	-3572.	4480.
		>- 140N	-564.	-410.	-35.	3373.	-3572.	53.	
	BEND - (	( 140M	-564.	-410.	-35.	3254.	-3369.	-445.
		>- 140F	-564.	-410.	-35.	2905.	-2867.	-652.	
	STRAIGHT - (	( 150N	-564.	-410.	-35.	35.	1079.	-652.
179		BEND - ((150M	-564.	-410.	-35.	-315.	1577.	-858.
		>- 150F	-564.	-410.	-35.	-434.	1783.	-1356.	
	STRAIGHT - (	( 155N	-564.	-410.	-35.	-418.	1783.	-1609.
		BEND - ((155M	-564.	-410.	-35.	-387.	1770.	-1957.
		>- 155F	-564.	-410.	-35.	-374.	1739.	-1801.	
	STRAIGHT - (	>- 160	-564.	-410.	-35.	-374.	1633.	-571.
	STRAIGHT - (	>- 165	-564.	-43.	-35.	-374.	497.	207.
	STRAIGHT - (	>- 170	-564.	-63.	-35.	-374.	326.	-278.
	STRAIGHT - (	>- 172	-564.	-63.	-35.	-374.	-344.	917.
		>- 175T	-564.	33.	-35.	-374.	-382.	901.	
		BEND - ((175M	-564.	33.	-35.	-361.	-393.	665.
		>- 175F	-564.	33.	-35.	-330.	-406.	155.	
		BEND - ((180T	-564.	33.	-35.	-286.	-200.	-343.

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INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

PRINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
	BEND -(	180N	-564.	33.	-35.	-286.	-200.	-343.
	(
	>- 180F		-564.	33.	-35.	-244.	298.	-550.
	STRAIGHT -(
	>- 185		-564.	33.	-35.	-5.	4385.	-550.
	STRAIGHT -(
	>- 190N		-564.	3.	-35.	-3.	4620.	-550.
	(
	BEND -(	190N	-564.	3.	-35.	-1.	5105.	-551.
	(
	>- 190F		-564.	3.	-35.	0.	5280.	-553.
	STRAIGHT -(
	>- 195N		-564.	3.	-35.	0.	4821.	-590.
	(
	BEND -(	195N	-564.	3.	-35.	-1.	4584.	-593.
	(
	>- 195F		-564.	3.	-35.	-3.	4072.	-594.
	STRAIGHT -(
180	>- 200		-564.	-41.	-35.	-5.	3838.	-594.
	STRAIGHT -(
	>- 205N		-564.	-41.	-35.	292.	-249.	-594.
	(
	BEND -(	205N	-564.	-41.	-35.	315.	-747.	-387.
	(
	>- 205F		-564.	-41.	-35.	299.	-954.	111.
	(
	BEND -(	210N	-564.	-41.	-35.	268.	-587.	624.
	(
	>- 210F		-564.	-41.	-35.	255.	-998.	867.
	STRAIGHT -(
	>- 215		-564.	65.	-35.	255.	-1015.	887.
	STRAIGHT -(
	>- 220		-564.	65.	-35.	255.	-1686.	-397.
	STRAIGHT -(
BRANCH PT.	-- 225		-564.	7.	-35.	255.	-1869.	-396.
BRANCH PT.	STRAIGHT -(	225	-341.	115.	319.	786.	-4467.	636.
	>- 230		-341.	115.	319.	786.	-4055.	487.
	STRAIGHT -(
	>- 235		-341.	115.	319.	786.	-691.	-727.
	STRAIGHT -(
	>- 240N		-341.	31.	319.	786.	3829.	-1162.
	(
	BEND -(240N	-341.	31.	319.	692.	4055.	-1283.

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INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
	BEND - (	240M	-341.	31.	319.	692.	4055.	-1283.
	)	240F	-341.	31.	319.	467.	4148.	-1533.
	BEND - (	245M	-341.	31.	319.	232.	4048.	-1774.
	)	245F	-341.	31.	319.	117.	3808.	-1873.
	STRAIGHT - (	250M	-341.	207.	319.	-2259.	-108.	-1873.
	)	250F	-341.	207.	319.	-2312.	-349.	-1774.
	STRAIGHT - (	250M	-341.	207.	319.	-2147.	-449.	-1533.
	)	255M	-341.	207.	319.	752.	-449.	1566.
	BEND - (	255M	-341.	207.	319.	917.	-549.	1801.
	)	255F	-341.	207.	319.	864.	-789.	1901.
181	STRAIGHT - (	260M	-341.	-149.	319.	-1202.	-4194.	1901.
	)	265M	-341.	-149.	319.	589.	-8220.	1901.
ANCHOR		225M	-223.	-108.	-354.	-531.	2598.	-1032.
BRANCH PT.	STRAIGHT - (	270M	-223.	-108.	-354.	-176.	2598.	-1255.
	)	270M	-223.	-108.	-354.	106.	2533.	-1413.
	BEND - (	270M	-223.	-108.	-354.	286.	2375.	-1478.
	)	275M	-223.	-108.	-354.	1526.	-191.	-1478.
	BEND - (	275M	-223.	-108.	-354.	1498.	-349.	-1413.
	)	275F	-223.	-108.	-354.	1279.	-414.	-1255.
	STRAIGHT - (	280M	-223.	-108.	-354.	-1940.	-414.	772.
)	280M	-223.	-108.	-354.	-2159.	-480.	930.
	BEND - (280M	-223.	-108.	-354.	-2186.	-638.	996.
)	285M	-223.	-138.	-354.	-1108.	-2869.	996.

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INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
		>- 285	-223.	-138.	-354.	-1108.	-2869.	996.
ANCHOR	STRAIGHT - (	-- 290	-223.	-138.	-354.	543.	-5547.	996.
ANCHOR	STRAIGHT - (	-- 305	-169.	164.	-518.	-356.	96.	442.
	STRAIGHT - (	>- 310	-169.	164.	-518.	-27.	434.	442.
	STRAIGHT - (	>- 315	-169.	164.	-518.	281.	750.	442.
	RIGID - (	>- 320	-169.	164.	-518.	390.	863.	442.
	STRAIGHT - (	>- 325	-169.	164.	-518.	631.	1110.	442.
	(	>- 335M	-169.	118.	-518.	919.	1408.	442.
	BEND - (	( 335M	-169.	118.	-518.	851.	1525.	491.
182	STRAIGHT - (	>- 335F	-169.	118.	-518.	519.	1575.	611.
	(	>- 340M	-169.	118.	-518.	-313.	1575.	882.
	BEND - (	( 340M	-169.	118.	-518.	-679.	1423.	967.
	STRAIGHT - (	>- 340F	-169.	118.	-518.	-831.	1056.	933.
	(	>- 350M	-169.	118.	-518.	-631.	-1816.	278.
	BEND - (	( 350M	-169.	118.	-518.	-796.	-2133.	195.
	STRAIGHT - (	>- 350F	-169.	118.	-518.	-713.	-2165.	160.
	STRAIGHT - (	>- 352	-169.	118.	-518.	-683.	-2123.	160.
	STRAIGHT - (	>- 355	-169.	-318.	-518.	1887.	-645.	160.
	STRAIGHT - (	>- 360	-169.	-318.	-518.	-2647.	1763.	160.
	(	>- 365M	-169.	-318.	-518.	-2873.	1883.	160.
	BEND - (	( 365M	-169.	-318.	-518.	-3154.	1842.	277.
	STRAIGHT - (>- 365F	-169.	-318.	-518.	-3271.	1446.	558.
BRANCH PT.		-- 370	-169.	-318.	-518.	-3271.	1079.	783.

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INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)			
			X	Y	Z	X	Y	Z	
BRANCH PT.		-- 370	-169.	-318.	-518.	-3271.	1079.	783.	
BRANCH PT.		-- 370	-279.	136.	822.	1978.	1600.	-1610.	
	STRAIGHT -(	>- 375N	-279.	136.	822.	1978.	2182.	-1708.
	(BEND -(375M	-279.	136.	822.	1928.	2806.	-1831.
	(	>- 375F	-279.	136.	822.	1805.	2861.	-1882.
	STRAIGHT -(	>- 376	-279.	136.	822.	1707.	2663.	-1882.
	STRAIGHT -(	>- 378	-279.	-124.	822.	-265.	-1308.	-1882.
	STRAIGHT -(	>- 379	-279.	-432.	822.	817.	-3746.	-1882.
	STRAIGHT -(	>- 380N	-279.	-432.	822.	925.	-3815.	-1882.
	(BEND -(380M	-279.	-432.	822.	1231.	-3772.	-1755.
	(	>- 380F	-279.	-432.	822.	1358.	-3272.	-1449.
	STRAIGHT -(	>- 390N	-279.	-432.	822.	1358.	1282.	947.
	(BEND -(390M	-279.	-432.	822.	1117.	1863.	1171.
	(	>- 390F	-279.	-432.	822.	536.	2103.	1100.
	STRAIGHT -(	>- 395N	-279.	-432.	822.	-782.	2103.	653.
	(BEND -(395M	-279.	-432.	822.	-1237.	2022.	456.
	(	>- 395F	-279.	-432.	822.	-1172.	1825.	375.
	STRAIGHT -(	>- 405	-279.	-210.	822.	-805.	1337.	375.
	RIGID -(	>- 407	-279.	-210.	822.	-498.	929.	375.
	STRAIGHT -(	>- 409	-279.	-210.	822.	-352.	743.	375.
	STRAIGHT -(	>- 410	-279.	-210.	822.	34.	222.	375.
	STRAIGHT -(-- 415	-279.	-210.	822.	453.	-335.	375.	
ANCHOR									
BRANCH PT.		-- 50	-520.	396.	-499.	-4950.	-1761.	-2648.	

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INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
BRANCH PT.		-- 50	-320.	396.	-499.	-4950.	-1761.	-2648.
	STRAIGHT -(
		>- 135	-320.	396.	-499.	1787.	3676.	-2648.
	STRAIGHT -(
		>- 130	-320.	-28.	-499.	2381.	4156.	-2648.
	STRAIGHT -(
		>- 125H	-320.	-28.	-499.	1913.	9514.	-2648.
	(
	BEND -(	125H	-320.	-28.	-499.	1888.	9614.	-2638.
	(
		>- 125F	-320.	-28.	-499.	1878.	9290.	-2613.
	STRAIGHT -(
		>- 120	-320.	-259.	-499.	1878.	1311.	1531.
	STRAIGHT -(
		>- 118H	-320.	-259.	-499.	1878.	-6524.	5601.
	(
	BEND -(	118H	-320.	-259.	-499.	2061.	-6964.	5712.
	(
		>- 118F	-320.	-259.	-499.	2501.	-7147.	5525.
	STRAIGHT -(
184	BRANCH PT.	-- 115	-320.	-259.	-499.	3447.	-7147.	4918.
	BRANCH PT.	-- 115	157.	-440.	-1154.	-278.	-9103.	2660.
	STRAIGHT -(
		>- 110H	157.	-440.	-1154.	-1122.	-9404.	2660.
	(
	BEND -(	110H	157.	-440.	-1154.	-1511.	-9120.	2499.
	(
		>- 110F	157.	-440.	-1154.	-1672.	-8158.	2109.
	STRAIGHT -(
		>- 105	157.	-440.	-1154.	-1672.	-4299.	637.
	RIGID -(
		>- 100	157.	-440.	-1154.	-1672.	-2406.	-85.
	STRAIGHT -(
		>- 95	157.	-440.	-1154.	-1672.	-867.	-673.
	RIGID -(
		>- 90	157.	-440.	-1154.	-1672.	1026.	-1395.
	(
	BEND -(	85H	157.	-440.	-1154.	-2095.	2046.	-1842.
	(
		>- 85F	157.	-440.	-1154.	-3115.	2469.	-2142.
	STRAIGHT -(
		>- 80H	157.	-440.	-1154.	-5855.	2469.	-2515.
	(
	BEND -(80H	157.	-440.	-1154.	-7037.	2411.	-2653.

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INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
	BEND - (	80H	157.	-440.	-1154.	-7037.	2411.	-2653.
	(
	>-	80F	157.	-440.	-1154.	-7848.	2273.	-2711.
ANCHOR	STRAIGHT - (	75	157.	-440.	-1154.	-7995.	2220.	-2711.
	(
BRANCH PT.	STRAIGHT - (	370	110.	-457.	-1340.	-5249.	-521.	2394.
	(
	>-	505N	110.	-2733.	-1340.	-5572.	-599.	2394.
	BEND - (	505M	110.	-2733.	-1340.	-7497.	-696.	2434.
	(
	>-	505F	110.	-2733.	-1340.	-7313.	-736.	2531.
	STRAIGHT - (	510	110.	-2733.	-1340.	-3628.	-736.	2833.
	(
	>-	515N	110.	-2733.	-1340.	12257.	-736.	4133.
	BEND - (	515M	110.	-2733.	-1340.	12441.	-776.	4230.
	(
	>-	515F	110.	-2733.	-1340.	10517.	-873.	4270.
	STRAIGHT - (	520N	110.	-2733.	-1340.	-10848.	-1730.	4270.
	(
	BEND - (	520M	110.	-2733.	-1340.	-13263.	-1337.	3269.
	(
	>-	520F	110.	-2733.	-1340.	-14264.	-192.	854.
	STRAIGHT - (	525	110.	-2733.	-1340.	-14264.	813.	-1196.
	(
	>-	530N	110.	-2733.	-1340.	-14264.	6173.	-12127.
	BEND - (	530M	110.	-2733.	-1340.	-13773.	7357.	-14502.
	(
	>-	530F	110.	-2733.	-1340.	-12589.	7848.	-15406.
	STRAIGHT - (	535N	110.	-2733.	-1340.	-528.	7848.	-14419.
	(
	BEND - (	535M	110.	-2733.	-1340.	656.	7327.	-13521.
	(
	>-	535F	110.	-2733.	-1340.	1147.	6173.	-10865.
	STRAIGHT - (540N	110.	-2733.	-1340.	1147.	-2984.	7804.
	(
	BEND - (540	110.	-2733.	-1340.	1038.	-4189.	10284.

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INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
	BEND - (	546M	110.	-2733.	-1340.	1638.	-4169.	10264.
	(
	>- 540F		110.	-2733.	-1340.	2822.	-4659.	11362.
BRANCH PT.	STRAIGHT - (	555	110.	-2733.	-1340.	12203.	-4659.	12130.
BRANCH PT.	STRAIGHT - (	555	178.	-2793.	-1603.	12827.	-5779.	12442.
	(	560M	178.	-2793.	-1603.	10848.	-5905.	12442.
	BEND - (	560M	178.	-2793.	-1603.	8379.	-5475.	11419.
	(
	>- 560F		178.	-2793.	-1603.	7357.	-4124.	8950.
	RIGID - (	564	178.	-2793.	-1603.	7357.	-609.	2825.
	(	565	178.	-2793.	-1603.	7357.	2021.	-1758.
186	BEND - (	568M	178.	-2793.	-1603.	6334.	3373.	-4227.
	(
	>- 560F		178.	-2793.	-1603.	3865.	3602.	-5250.
	RIGID - (	570	178.	-2793.	-1603.	-2187.	3417.	-5250.
ANCHOR	RIGID - (	575	178.	-2793.	-1603.	-5839.	3184.	-5250.
BRANCH PT.	STRAIGHT - (	555	-68.	61.	263.	-624.	1120.	-312.
	(	600M	-68.	61.	263.	-667.	1071.	-312.
	BEND - (	600M	-68.	61.	263.	-721.	915.	-290.
	(
	>- 600F		-68.	61.	263.	-743.	658.	-256.
	RIGID - (	605	-68.	61.	263.	-743.	61.	-103.
	(	610	-68.	61.	263.	-743.	-350.	-4.
	BEND - (	615M	-68.	61.	263.	-647.	-582.	75.
	(
	>- 615F		-68.	61.	263.	-415.	-679.	157.
	STRAIGHT - (618M	-68.	61.	263.	440.	-679.	379.
	(
	BEND - (618M	-68.	61.	263.	672.	-775.	461.

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INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
	BEND - (	618M	-68.	61.	263.	672.	-775.	461.
	(
	>- 618F		-68.	61.	263.	768.	-1007.	540.
	STRAIGHT - (
	>- 620N		-68.	61.	263.	768.	-1533.	661.
	(
	BEND - (	620M	-68.	61.	263.	791.	-1740.	714.
	(
	>- 620F		-68.	61.	263.	844.	-1776.	737.
	STRAIGHT - (
	>- 625N		-68.	61.	263.	1095.	-1494.	737.
	(
	BEND - (	625M	-68.	61.	263.	1245.	-1434.	761.
	(
	>- 625F		-68.	61.	263.	1499.	-1409.	822.
	STRAIGHT - (
	>- 630N		-68.	61.	263.	5311.	-1409.	1810.
	(
	BEND - (	630M	-68.	61.	263.	5543.	-1312.	1848.
	(
	>- 630F		-68.	61.	263.	5639.	-1080.	1820.
	STRAIGHT - (
	>- 635		-68.	61.	263.	5639.	168.	1532.
	STRAIGHT - (
	>- 640N		-68.	61.	263.	5639.	1680.	1183.
	(
	BEND - (	640M	-68.	61.	263.	5617.	1887.	1130.
	(
	>- 640F		-68.	61.	263.	5564.	1923.	1108.
	STRAIGHT - (
	>- 642		-68.	61.	263.	5352.	1685.	1108.
	STRAIGHT - (
	>- 645		-68.	61.	263.	5109.	1412.	1108.
	STRAIGHT - (
BRANCH PT.	--	655	-68.	61.	263.	4730.	986.	1108.
BRANCH PT.	STRAIGHT - (	655	-545.	242.	918.	-947.	-4183.	-1505.
	>- 650		-545.	242.	918.	-2217.	-7024.	-1505.
	STRAIGHT - (
	>- 665N		-545.	242.	918.	-2442.	-7551.	-1505.
	(
	BEND - (665M	-545.	242.	918.	-2470.	-7812.	-1453.
	(
	>- 685F		-545.	242.	918.	-2319.	-8033.	-1305.

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INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)			
			X	Y	Z	X	Y	Z	
	STRAIGHT - (	>- 665F	-545.	242.	918.	-2319.	-8033.	-1305.
	(	>- 670H	-545.	242.	918.	-1777.	-8470.	-868.
	BEND - (	( 670H	-545.	242.	918.	-1354.	-8475.	-616.
	(	>- 670F	-545.	242.	918.	-1179.	-7804.	-689.
	STRAIGHT - (	>- 675	-545.	242.	918.	-1179.	-689.	-2563.
	STRAIGHT - (	>- 680	-545.	355.	918.	-1179.	8034.	782.
BRANCH PT.	STRAIGHT - (	-- 685	-545.	355.	918.	-1179.	11707.	-637.
BRANCH PT.	STRAIGHT - (	-- 685	-241.	50.	-228.	295.	6386.	452.
	STRAIGHT - (	>- 690	-241.	50.	-228.	295.	6245.	377.
188	STRAIGHT - (	>- 695	-241.	50.	-228.	295.	5334.	176.
	STRAIGHT - (	>- 700	-241.	-19.	-228.	295.	3171.	-931.
	(	>- 705N	-241.	-19.	-228.	295.	2716.	-893.
	BEND - (	( 705M	-241.	-19.	-228.	229.	2555.	-810.
	(	>- 705F	-241.	-19.	-228.	66.	2488.	-634.
	STRAIGHT - (	>- 710H	-241.	-19.	-228.	-128.	2488.	-427.
	(BEND - ((710M	-241.	-19.	-228.	-263.	2417.	-257.
	(	>- 710F	-241.	-19.	-228.	-337.	2247.	-186.
	STRAIGHT - (	>- 715N	-241.	-19.	-228.	-10.	-1968.	-186.
	(BEND - ((715M	-241.	-19.	-228.	-64.	-2139.	-116.
	(	>- 715F	-241.	-19.	-228.	-219.	-2209.	55.
	STRAIGHT - (>- 720H	-241.	-19.	-228.	-1133.	-2209.	1022.	
	(BEND - ((720M	-241.	-19.	-228.	-1289.	-2280.	1192.
	(>- 720F	-241.	-19.	-228.	-1342.	-2450.	1263.	

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INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
		>- 726F	-241.	-19.	-228.	-1342.	-2450.	1263.
	STRAIGHT -(
ANCHOR		-- 725	-241.	-19.	-228.	-1286.	-3173.	1263.
BRANCH PT.		-- 6A5	-304.	305.	1146.	-1475.	5121.	-1090.
	STRAIGHT -(
		>- 730N	-304.	305.	1146.	757.	5121.	-497.
	(
	BEND -(	730N	-304.	305.	1146.	1478.	5031.	-282.
	(
	STRAIGHT -(	>- 730F	-304.	305.	1146.	1599.	4816.	-193.
		>- 735N	-304.	305.	1146.	-3733.	-507.	-193.
	(
	BEND -(	735N	-304.	305.	1146.	-3613.	-722.	-104.
	(
	STRAIGHT -(	>- 735F	-304.	305.	1146.	-2892.	-811.	111.
		>- 740N	-304.	305.	1146.	1709.	-811.	1333.
	(
	BEND -(	740N	-304.	305.	1146.	2430.	-900.	1548.
	(
	STRAIGHT -(	>- 740F	-304.	305.	1146.	2550.	-1115.	1637.
ANCHOR		-- 745	-304.	305.	1146.	1636.	-2027.	1637.
BRANCH PT.		-- 655	477.	-181.	-655.	5677.	5169.	2612.
	STRAIGHT -(
		>- 800N	477.	-181.	-655.	5677.	4705.	2741.
	(
	BEND -(	800N	477.	-181.	-655.	5437.	4125.	2726.
	(
	STRAIGHT -(	>- 800F	477.	-181.	-655.	4858.	3686.	2371.
		>- 805N	477.	-181.	-655.	599.	3886.	-728.
	(
	BEND -(	805N	477.	-181.	-655.	-47.	3711.	-1150.
	(
	STRAIGHT -(	>- 805F	477.	-181.	-655.	-407.	3289.	-1324.
		>- 815	477.	-181.	-655.	-1615.	217.	-1324.
	RIGID -(
		>- 820	477.	-181.	-655.	-1913.	-565.	-1324.
	STRAIGHT -(
		>- 825N	477.	-181.	-655.	-2215.	-1580.	-1324.

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INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
		>- 825N	477.	-181.	-655.	-2215.	-1360.	-1324.
	BEND - (	825N	477.	-181.	-655.	-2615.	-1782.	-1499.
		(>- 825F	477.	-181.	-655.	-3260.	-1956.	-1921.
BRANCH PT.	STRAIGHT - (-- 115	477.	-181.	-655.	-3725.	-1956.	-2258.

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 *
 * DISPLACEMENTS AND ROTATIONS *
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DISPLACEMENTS (INCHES)

ROTATIONS (DEGREES) ABOUT

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
ANCHOR		-- 5	-.000	.000	-.000	.000	-.000	-.000
	STRAIGHT - (	>- 10	-.004	-.000	.046	.003	-.027	-.015
	RIGID - (	>- 15	-.014	-.002	.109	.004	-.028	-.015
	STRAIGHT - (	>- 20N	-.036	-.006	.206	.015	-.049	-.046
	BEND - (	20M	-.052	-.027	.237	.054	-.077	-.070
		>- 20F	-.076	-.066	.238	.080	-.088	-.108
	STRAIGHT - (	>- 22N	-.127	-.150	.200	.078	-.082	-.107
191	BEND - (	22M	-.129	-.190	.195	.045	-.091	-.055
		>- 22F	-.097	-.208	.211	.027	-.109	.016
	STRAIGHT - (
BRANCH PT.		-- 25	-.030	-.199	.251	.009	-.116	.032
BRANCH PT.		-- 25	-.030	-.199	.251	.009	-.116	.032
	STRAIGHT - (	>- 30N	.038	-.186	.290	-.001	-.099	.040
	BEND - (	30M	.067	-.161	.302	-.027	-.039	.069
		>- 30F	.067	-.121	.295	-.061	-.016	.083
	STRAIGHT - (	>- 32N	.029	-.037	.266	-.061	.001	.078
	BEND - (	32M	.017	-.006	.242	-.039	.001	.049
		>- 32F	.013	.003	.206	-.009	.011	.039
	STRAIGHT - (	>- 35	.005	.001	.109	-.002	.011	.013
	RIGID - (>- 40	.002	.000	.046	-.002	.011	.012
	STRAIGHT - (-- 45	.000	-.000	.000	-.000	.000	.000
ANCHOR		-- 45	.000	-.000	.000	-.000	.000	.000

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DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
ANCHOR		-- 45	.000	-.000	.000	-.000	.000	.000
BRANCH PT.	STRAIGHT - (	-- 25	-.030	-.199	.251	.009	-.116	.032
BRANCH PT.		-- 50	-.199	-.199	.451	-.008	-.189	.054
BRANCH PT.	STRAIGHT - (	-- 50	-.199	-.199	.451	-.008	-.189	.054
		>- 140H	-.325	.104	.475	.038	-.256	.087
	BEND - (	( 140H	-.362	.133	.500	.087	-.271	.098
		>- 140F	-.424	.126	.542	.133	-.307	.108
	STRAIGHT - (
		>- 150H	-.889	-.088	.812	.152	-.319	.097
	BEND - (	( 150H	-.954	-.101	.858	.149	-.299	.088
		>- 150F	-.991	-.079	.899	.144	-.288	.068
192	STRAIGHT - (
		>- 155H	-.997	-.061	.913	.143	-.286	.067
	BEND - (	( 155H	-.993	-.023	.960	.131	-.276	.040
		>- 155F	-.962	-.005	1.019	.123	-.253	.012
	STRAIGHT - (
		>- 160	-.848	.000	1.174	.120	-.243	.005
	STRAIGHT - (
		>- 165	-.151	.000	2.005	.104	-.200	-.001
	STRAIGHT - (
		>- 170	.582	-.000	2.744	.087	-.177	-.002
	STRAIGHT - (
		>- 172	1.313	.000	3.439	.070	-.177	.009
	STRAIGHT - (
		>- 175H	1.334	.001	3.458	.069	-.177	.010
	BEND - (	( 175H	1.367	.018	3.496	.069	-.181	.022
		>- 175F	1.376	.054	3.523	.066	-.181	.028
	BEND - ((180H	1.357	.083	3.549	.062	-.182	.028
		>- 180F	1.321	.086	3.588	.058	-.179	.026
	STRAIGHT - (
		>- 185	1.065	-.000	3.868	.056	-.148	.017

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DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
		>- 185	1.065	-.000	3.868	.056	-.148	.017
	STRAIGHT - (
		>- 190M	1.052	-.005	3.864	.056	-.145	.016
	(
	BEND - (	190M	1.045	-.014	3.925	.059	-.073	.014
	(
		>- 190F	1.076	-.017	3.946	.061	.004	.007
	STRAIGHT - (
		>- 195M	1.578	-.017	3.768	.061	.125	-.007
	(
	BEND - (	195M	1.598	-.014	3.725	.058	.194	-.014
	(
		>- 195F	1.570	-.005	3.674	.056	.258	-.017
	STRAIGHT - (
		>- 200	1.548	-.000	3.658	.056	.261	-.018
	STRAIGHT - (
		>- 205M	1.126	.086	3.378	.058	.285	-.028
	(
	BEND - (	205M	1.071	.083	3.339	.062	.281	-.028
	(
		>- 205F	1.045	.054	3.313	.067	.277	-.026
	(
	BEND - (	210M	1.054	.018	3.280	.067	.274	-.021
	(
		>- 210F	1.087	.001	3.225	.064	.263	-.009
	STRAIGHT - (
		>- 215	1.106	.000	3.197	.064	.262	-.008
	STRAIGHT - (
		>- 220	1.639	-.000	2.240	.076	.215	.001
	STRAIGHT - (
BRANCH PT.		-- 225	2.039	-.001	2.017	.079	.198	-.003
BRANCH PT.		-- 225	2.039	-.001	2.017	.079	.198	-.003
	STRAIGHT - (
		>- 230	2.089	-.001	1.965	.082	.188	-.001
	STRAIGHT - (
		>- 235	2.495	-.000	1.690	.126	.086	-.006
	STRAIGHT - (
		>- 240M	3.042	-.094	1.367	.185	.178	-.061
	(
	BEND - (240M	3.074	-.094	1.346	.186	.251	-.090
	(
		>- 240F	3.101	-.072	1.553	.152	.279	-.123
	(
	BEND - (245	3.103	-.035	1.363	.160	.300	-.130

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DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
	BEND - (	245H	3.103	-.035	1.365	.160	.300	-.130
	(
	>-	245F	3.661	.000	1.347	.164	.367	-.120
	STRAIGHT - (
	>-	250H	2.635	.357	.904	.114	.454	-.234
	(
	BEND - (	250H	1.952	.359	.872	.059	.461	-.247
	(
	>-	250F	1.885	.334	.856	.006	.468	-.277
	STRAIGHT - (
	>-	255H	1.339	-.017	.686	-.020	.446	-.277
	(
	BEND - (	255H	1.274	-.044	.877	.000	.432	-.240
	(
	>-	255F	1.198	-.054	.649	.022	.407	-.222
	STRAIGHT - (
	>-	260	.427	-.000	.463	.015	.305	-.121
	STRAIGHT - (
194 ANCHOR	--	265	.000	.000	-.000	-.000	.000	-.000
BRANCH PT.								
	STRAIGHT - (	275	2.039	-.001	2.017	.079	.196	-.003
	(
	>-	270H	2.040	.043	2.033	.078	.212	-.007
	(
	BEND - (	270H	2.029	.079	2.032	.077	.223	-.018
	(
	>-	270F	1.994	.103	2.009	.082	.263	-.014
	STRAIGHT - (
	>-	275H	1.273	.340	1.499	.124	.315	-.104
	(
	BEND - (	275H	1.220	.346	1.459	.161	.318	-.113
	(
	>-	275F	1.181	.328	1.419	.194	.324	-.138
	STRAIGHT - (
	>-	280H	.898	-.072	1.043	.161	.304	-.147
	(
	BEND - (	280H	.860	-.094	1.007	.133	.295	-.127
	(
	>-	280F	.810	-.091	.968	.081	.278	-.116
	STRAIGHT - (
	>-	285	.237	-.000	.528	.014	.206	-.063
	STRAIGHT - (
ANCHOR	--	290	.000	.000	.000	-.000	.000	-.000
ANCHOR	--	305	.000	.000	.000	-.000	.000	.000

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DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
ANCHOR		-- 305	-.000	.000	-.000	-.000	.000	.000
	STRAIGHT -(	>- 310	.000	.001	.088	-.002	.002	.005
	STRAIGHT -(	>- 315	.002	.001	.170	-.001	.007	.009
	STRAIGHT -(	>- 320	.003	.001	.199	.000	.009	.011
	RIGID -(	>- 325	.006	.001	.264	.000	.009	.011
	STRAIGHT -(	>- 335N	.010	-.000	.341	.006	.018	.015
	BEND -(	( 335N	.017	-.015	.371	.027	.050	.028
	STRAIGHT -(	>- 335F	.026	-.049	.378	.044	.065	.048
	STRAIGHT -(	>- 340N	.043	-.119	.363	.045	.079	.053
	BEND -(	( 340N	.065	-.146	.351	.044	.087	.075
	STRAIGHT -(	>- 340F	.101	-.146	.334	.046	.107	.098
	STRAIGHT -(	>- 350N	.345	-.023	.208	.022	.098	.111
	BEND -(	( 350N	.381	-.007	.209	.014	.052	.121
	STRAIGHT -(	>- 350F	.397	-.000	.238	-.002	.000	.127
	STRAIGHT -(	>- 352	.397	.000	.249	-.003	-.002	.128
	STRAIGHT -(	>- 355	.340	-.000	.634	.019	-.051	.135
	STRAIGHT -(	>- 360	.199	-.090	1.260	-.003	-.019	.147
	STRAIGHT -(	>- 365N	.196	-.089	1.292	-.007	-.017	.147
	BEND -(	( 365N	.212	-.072	1.330	-.045	.011	.160
	STRAIGHT -(	>- 365F	.252	-.037	1.342	-.061	.036	.178
BRANCH PT.		-- 370	.284	-.010	1.336	-.067	.037	.179
BRANCH PT.	STRAIGHT -(-- 370	.284	-.010	1.336	-.067	.037	.179
	STRAIGHT -(>- 375N	.318	.010	1.351	-.064	.040	.177

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DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
		>- 375H	.315	.016	1.331	-.064	.040	.177
		(
	BEND -	(375H	.349	.042	1.304	-.062	.077	.163
		(
		>- 375F	.347	.045	1.258	-.046	.119	.162
	STRAIGHT -	(
		>- 376	.328	.038	1.227	-.043	.123	.158
	STRAIGHT -	(
		>- 37B	-.156	-.000	.601	-.002	.162	.016
	STRAIGHT -	(
		>- 379	-.385	-.000	.216	.008	.072	-.071
	STRAIGHT -	(
		>- 380H	-.388	.000	.205	.009	.068	-.074
		(
	BEND -	(380H	-.379	-.002	.174	.019	-.022	-.081
		(
		>- 380F	-.345	-.015	.171	.019	-.106	-.105
	STRAIGHT -	(
		>- 390H	-.101	-.145	.318	.059	-.126	-.110
		(
	BEND -	(390H	-.064	-.147	.339	.058	-.105	-.085
		(
		>- 390F	-.041	-.121	.394	.063	-.095	-.058
	STRAIGHT -	(
		>- 395H	-.023	-.050	.375	.062	-.077	-.052
		(
	BEND -	(395H	-.013	-.016	.370	.037	-.058	-.028
		(
		>- 395F	-.006	.000	.341	.008	-.017	-.013
	STRAIGHT -	(
		>- 405	-.002	.001	.264	.001	-.006	-.009
	RIGID -	(
		>- 407	-.000	.001	.199	.000	-.005	-.009
	STRAIGHT -	(
		>- 409	.006	.001	.170	-.001	-.003	-.008
	STRAIGHT -	(
		>- 410	.000	.001	.088	-.002	.000	-.004
	STRAIGHT -	(
ANCHOR		-- 415	.000	.000	-.000	-.000	.000	-.000
BRANCH PT.		-- 50	-.199	-.199	.451	-.008	-.189	.054
	STRAIGHT -	(
		>- 135	-.870	-.017	1.107	-.058	-.159	-.053
	STRAIGHT -	(
		>- 130	-.918	-.000	1.164	-.052	-.146	-.063

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DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT			
			X	Y	Z	X AXIS	Y AXIS	Z AXIS	
	STRAIGHT - (	>- 130	-.918	-.000	1.164	-.052	-.148	-.063
	(	>- 125H	-1.117	.062	1.811	.014	.063	-.169
	BEND - (	125H	-1.079	.043	1.833	.048	.204	-.189
	(	>- 125F	-1.025	-.000	1.796	.067	.343	-.229
	STRAIGHT - (	>- 120	-.408	-.828	.319	.139	.499	-.245
	(	>- 118H	.198	-1.496	-1.262	.209	.423	-.142
	BEND - (	118H	.239	-1.501	-1.315	.245	.332	-.058
	(	>- 118F	.256	-1.469	-1.287	.301	.291	.025
BRANCH PT.	STRAIGHT - (	-- 115	.242	-1.396	-1.166	.312	.258	.043
197 BRANCH PT.	STRAIGHT - (	-- 115	.242	-1.396	-1.166	.312	.258	.043
	(	>- 110H	.339	-1.521	-1.092	.309	.226	.055
	BEND - (	110H	.355	-1.582	-1.048	.303	.089	.061
	(	>- 110F	.324	-1.619	-1.030	.305	-.038	.084
	STRAIGHT - (	>- 105	.193	-1.681	-1.072	.292	-.077	.092
	RIGID - (	>- 100	.132	-1.713	-1.099	.291	-.077	.092
	STRAIGHT - (	>- 95	.080	-1.738	-1.121	.286	-.081	.091
	RIGID - (	>- 90	.017	-1.770	-1.149	.286	-.081	.091
	(BEND - (85H	-.011	-1.799	-1.184	.271	-.055	.067
	(	>- 85F	-.016	-1.832	-1.254	.229	-.035	.038
	STRAIGHT - (	>- 80H	.001	-1.929	-1.344	.210	-.021	.026
	(BEND - (80H	.002	-1.975	-1.361	.115	-.020	.005
	(>- 80F	.000	-2.000	-1.333	.005	-.001	.002	
ANCHOR	STRAIGHT - (-- 75	-.000	-2.000	-1.320	.000	-.000	.000	

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DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
ANCHOR		75	.000	-2.000	-1.320	.000	-.000	.000
BRANCH PT.	STRAIGHT -(	370	.284	-.010	1.336	-.067	.037	.179
	>-	505H	.289	-.000	1.367	-.074	.037	.183
	(
	BEND -(	505H	.280	.038	1.396	-.172	.019	.197
	(
	>-	505F	.241	.092	1.369	-.284	.006	.231
	STRAIGHT -(
	>-	510	.105	.213	1.196	-.311	.001	.244
	STRAIGHT -(
	>-	515H	-.589	.734	.466	-.217	-.019	.320
	(
	BEND -(	515H	-.856	.780	.458	-.053	-.059	.375
	(
	>-	515F	-.696	.785	.499	.138	-.066	.398
	STRAIGHT -(
	>-	520H	-.812	.515	.842	.135	-.085	.478
	(
	BEND -(	520H	-.852	.467	.873	.061	-.109	.446
	(
	>-	520F	-.900	.390	.868	-.053	-.121	.417
	STRAIGHT -(
	>-	525	-.933	.324	.849	-.079	-.120	.417
	STRAIGHT -(
	>-	530H	-1.109	-.013	.755	-.215	-.074	.368
	(
	BEND -(	530H	-1.166	-.048	.724	-.252	-.066	.171
	(
	>-	530F	-1.193	-.017	.660	-.386	-.083	-.050
	STRAIGHT -(
	>-	535H	-.862	.378	-.204	-.495	.086	-.297
	(
	BEND -(	535H	-.773	.383	-.306	-.524	.120	-.503
	(
	>-	535F	-.690	.288	-.376	-.547	.200	-.682
	STRAIGHT -(
	>-	540H	-.390	-.733	-.692	-.526	.220	-.701
	(
	BEND -(	540H	-.303	-.836	-.769	-.507	.170	-.567
	(
	>-	540F	-.198	-.836	-.871	-.462	.142	-.406
	STRAIGHT -(
BRANCH PT.		555	.286	-.529	-1.493	-.365	.084	-.255

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DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
BRANCH PT.		-- 555	.268	-.529	-1.493	-.365	.064	-.255
BRANCH PT.	STRAIGHT -(-- 555	.268	-.529	-1.493	-.365	.064	-.255
	>- 560H	.297	-.476	-1.462	-.350	.057	-.234	
	(
	BEND -(560H	.284	-.413	-1.423	-.183	-.028	-.143
	(
	>- 560F	.241	-.392	-1.420	-.105	-.100	.014	
	STRAIGHT -(
	>- 564	.145	-.405	-1.469	-.066	-.109	.038	
	RIGID -(
	>- 565	.072	-.419	-1.507	-.065	-.109	.038	
	(
	BEND -(568H	.027	-.421	-1.508	-.047	-.069	.028
	(
	>- 568F	.003	-.418	-1.473	-.003	-.015	.028	
	STRAIGHT -(
	>- 570	.000	-.420	-1.378	.000	-.000	.001	
	RIGID -(
ANCHOR		-- 575	-.000	-.420	-1.320	.000	-.000	.000
BRANCH PT.	STRAIGHT -(-- 555	.288	-.529	-1.493	-.365	.064	-.255
	>- 600H	.279	-.583	-1.524	-.366	.066	-.256	
	(
	BEND -(600H	.249	-.632	-1.557	-.373	.080	-.254
	(
	>- 600F	.204	-.614	-1.557	-.376	.092	-.255	
	STRAIGHT -(
	>- 605	.107	-.497	-1.515	-.379	.093	-.255	
	RIGID -(
	>- 610	.035	-.409	-1.483	-.380	.093	-.253	
	(
	BEND -(615H	-.023	-.378	-1.436	-.381	.090	-.255
	(
	>- 615F	-.086	-.597	-1.359	-.385	.090	-.253	
	STRAIGHT -(
	>- 618H	-.258	-.540	-1.096	-.385	.084	-.251	
	(
	BEND -(618H	-.320	-.560	-1.019	-.375	.079	-.245
	(
	>- 618F	-.372	-.532	-.978	-.384	.065	-.238	
	STRAIGHT -(
	>- 620	-.468	-.432	-.951	-.385	.060	-.236	

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DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
		>- 620H	-.466	-.432	-.951	-.365	.060	-.236
	BEND - (	620H	-.501	-.562	-.926	-.358	.036	-.224
		>- 620F	-.513	-.280	-.885	-.345	.010	-.218
	STRAIGHT - (	625H	-.510	.017	-.703	-.338	-.003	-.210
	BEND - (	625H	-.529	.062	-.639	-.321	-.018	-.213
		>- 625F	-.569	.047	-.565	-.301	-.021	-.208
	STRAIGHT - (	630H	-1.155	-.591	.237	-.210	-.070	-.173
	BEND - (	630H	-1.169	-.642	.275	-.148	-.055	-.146
		>- 630F	-1.141	-.683	.295	-.127	-.048	-.119
	STRAIGHT - (	635	-.932	-.794	.345	-.063	-.052	-.105
200	STRAIGHT - (	640H	-.679	-.911	.404	.014	-.042	.090
	BEND - (	640H	-.638	-.922	.393	.045	-.016	-.054
		>- 640F	-.622	-.910	.355	.119	.013	-.027
	STRAIGHT - (	642	-.635	-.810	.201	.154	.024	-.017
	STRAIGHT - (	645	-.660	-.665	.025	.192	.036	-.007
	STRAIGHT - (	655	-.716	-.376	.250	.249	.049	.010
BRANCH PT.		-- 655	-.716	-.376	.250	.249	.049	.010
BRANCH PT.	STRAIGHT - (	655	-.716	-.376	.250	.249	.049	.010
		>- 660	-.744	-.109	-.481	.234	-.005	-.009
	STRAIGHT - (	665H	-.742	-.064	-.522	.230	-.017	-.012
		>- 665H	-.738	-.046	-.547	.211	-.070	-.006
	BEND - (	665H	-.730	-.041	-.577	.194	-.109	.012
	STRAIGHT - (670H	-.708	-.044	-.644	.190	-.129	.007
		>- 670H	-.666	-.047	-.680	.144	-.211	.039
	BEND - (670H	-.666	-.047	-.680	.144	-.211	.039

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DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
	BEND - (	670H	-.668	-.047	-.680	.144	-.211	.039
	(
	>- 670F		-.613	-.044	-.648	.114	-.325	.036
	STRAIGHT - (
	>- 675		-.272	-.000	-.056	.092	-.386	.013
	STRAIGHT - (
	>- 680		.146	.000	.674	.065	-.321	-.003
	STRAIGHT - (
BRANCH PT.	-- 685		.322	-.001	.916	.054	-.249	-.002
BRANCH PT.	-- 685		.322	-.001	.916	.054	-.249	-.002
	STRAIGHT - (
	>- 690		.388	-.001	.991	.055	-.231	-.001
	STRAIGHT - (
	>- 695		.564	.000	1.144	.081	-.137	.004
	STRAIGHT - (
	>- 700		.981	-.000	1.237	.076	.028	-.011
	STRAIGHT - (
201	>- 705H		1.069	-.006	1.220	.079	.052	-.018
	(
	BEND - (	705H	1.099	-.023	1.203	.097	.107	-.039
	(
	>- 705F		1.104	-.057	1.179	.116	.127	-.056
	STRAIGHT - (
	>- 710H		1.094	-.095	1.158	.116	.138	-.058
	(
	BEND - (	710H	1.075	-.119	1.128	.111	.159	-.080
	(
	>- 710F		1.042	-.116	1.091	.103	.207	-.096
	STRAIGHT - (
	>- 715H		.171	.233	.320	.091	.217	-.113
	(
	BEND - (	715H	.135	.233	.284	.090	.177	-.102
	(
	>- 715F		.111	.208	.258	.087	.161	-.089
	STRAIGHT - (
	>- 720H		.038	.031	.188	.076	.114	-.080
	(
	BEND - (	720H	.023	.003	.165	.047	.089	-.044
	(
	>- 720F		.011	-.005	.132	.016	.034	-.020
	STRAIGHT - (
ANCHOR	-- 725		.000	.000	.000	.000	.000	-.000
BRANCH PT.	-- 685		.322	-.001	.916	.054	-.249	-.002

DISPLACEMENTS AND ROTATIONS (CONTINUED)

PRINT DESIGNATION	ELEMENT DESIGNATION	ELEM. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
BRANCH PT.	STRAIGHT - (	685	.322	-.001	.916	.054	-.249	-.002
	> 730S		.319	-.087	.895	.051	-.196	-.008
	BEND - (	730M	.326	-.114	.873	.078	-.155	-.048
	> 730F		.338	-.112	.837	.116	-.055	-.080
	STRAIGHT - (	735H	.138	.291	.068	.040	.099	-.098
	BEND - (	735M	.118	.278	.038	-.048	.088	-.095
	> 735F		.099	.242	.038	-.126	.082	-.090
	STRAIGHT - (	740H	.027	.066	.155	-.135	.065	-.078
	BEND - (	740M	.014	.028	.159	-.086	.049	-.044
	> 740F		.007	.007	.132	-.026	.019	-.026
ANCHOR	STRAIGHT - (	745	.000	-.000	-.000	-.000	.000	-.000
BRANCH PT.	STRAIGHT - (	855	-.716	-.376	-.250	.249	.049	.010
	> 800M		-.716	-.374	-.258	.258	.056	.013
	BEND - (	805M	-.715	-.368	-.297	.301	.153	.054
	> 800F		-.699	-.365	-.372	.381	.172	.092
	STRAIGHT - (	805M	-.563	-.363	-.919	.413	.232	.101
	BEND - (	805M	-.526	-.395	-.996	.417	.245	.105
	> 805F		-.469	-.472	-1.024	.413	.284	.113
	STRAIGHT - (	815	-.067	-1.023	-1.028	.401	.305	.093
	RIGID - (	820	.038	-1.160	-1.028	.401	.305	.092
	STRAIGHT - (825M	.144	-1.299	-1.028	.394	.302	.087
	BEND - (825M	.204	-1.369	-1.057	.359	.277	.074
	> 825F		.236	-1.596	-1.119	.316	.262	.046

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DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
	STRAIGHT - (	625F	.236	-1.396	-1.119	.316	.262	.046
BRANCH PT.		115	.242	-1.396	-1.166	.312	.258	.043

203

DYNAFLEX

PAGE 75

```

*****
*
* STATIC SOLUTION ACCURACY CHECKS *
*
*****

```

EACH BASIC STATIC SOLUTION COMPRISING EACH LOAD OR LOADING COMBINATION
 SPECIFIED IN THIS RUN HAS BEEN SUBJECTED TO EQUILIBRIUM AND
 COMPATIBILITY CHECKS FOR ALL POINTS IN THE SYSTEM:

LOADING = THERMAL

 STATIC EQUILIBRIUM AND COMPATIBILITY HAVE BEEN SATISFIED FOR THIS
 BASIC STATIC SOLUTION AT ALL POINTS IN THE SYSTEM.

204

DYNAFLEX

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FOREWORD

THE FOLLOWING REPORT WAS GENERATED BY THE DYNAFLEX PIPING ANALYSIS PROGRAM. THE PROGRAM ACCOMMODATES THE WIDEST RANGE OF PRACTICAL SITUATIONS ENCOUNTERED IN MODERN PIPING SYSTEMS INCLUDING DYNAMIC AS WELL AS THERMAL, WEIGHT AND PRESSURE EFFECTS.

FOR FURTHER INFORMATION OR PROMPT ASSISTANCE IN USING THE DYNAFLEX PROGRAM, PLEASE CONTACT YOUR LOCAL COMPUTER CENTER REPRESENTATIVE OR:

ENGINEERING SERVICES MANAGER
 AUTON COMPUTING CORPORATION
 1 METRO PLAZA
 505 THORNALL STREET
 EISON, N.J. 08817

THE STRESS FORMULATION OF
 ANSI B31.1 - 1977
 INCLUDING THE LATEST MANDATORY UPDATES
 HAS BEEN APPLIED IN THIS ANALYSIS

THE TABLE OF CONTENTS APPEARS AT THE END OF THIS REPORT.

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*****
*
*
* STEARNS - ROGER CORP
*
* LORE SOLAR PILOT PLANT - GUE - C-21700
*
* OIL EXTR + CHARG. (T/n-10-10-C-5/3)
*
*
* 1/28/80
*
*
*****

```

DYNAFLEX (MOD204F-UCC)

 LAST UPDATE - 12/25/79

INPUT DATA - (CARD IMAGES)

LINE NUMBER	TYPE	LCS	FRONT	TO	DELTA X	DELTA Y	DELTA Z	RADIUS	ADDITIONAL DATA	LINE NUMBER
32	:	:	:	:230:	1-3-1/2	:	:	:	:SIF=2.0	: 32
33	:	:	:	:235:	10-6-1/2	:	:	:	:OD=8.625,WT=.322,	: 33
34	:	:	:	:240:	15-2	:	:	:	:UNIF=25.8	: 34
35	:	:	:	:245:		:2-0	:	:L	:	: 35
36	:	:	:	:250:			:1-13-6	:L	:	: 36
37	:	:	:	:255:		:1-11-1	:	:L	:	: 37
38	:	:	:	:260:			:1-11-0	:	:	: 38
39	:	:	:	:265:			:1-12-0	:	:	: 39
40	:	:	:	:225:	27-0	:2-0	:	:L	:TEMP=525.	: 40
41	:	:	:	:275:			:1-13-6	:L	:	: 41
42	:	:	:	:280:		:1-11-1	:	:L	:	: 42
43	:	:	:	:285:			:1-11-0	:	:	: 43
44	:	:	:	:290:			:1-12-0	:	:	: 44
45	:	:	:	:305:	31-0		:2-0	:	:MAT=LCS,OD=8.625,	: 45
	:	:	:	:				:	:WT=.322,UNIF=25.40,	:
	:	:	:	:				:	:TEMP=580.	:
46	:	:	:	:315:			:1-10-7/16	:	:	: 46
47	:	:	:	:320:			:0-8	:	:	: 47
48	:	:	:	:325:			:1-5-9/16	:	:RIGID,WEIGHT=374.	: 48
49	:	:	:	:335:			:2-9	:L	:	: 49
50	:	:	:	:340:		:3-7-1/4	:	:L	:	: 50
51	:	:	:	:350:	7-6-1/2		:	:L	:	: 51
52	:	:	:	:352:			:1-3	:	:	: 52
53	:	:	:	:355:			:8-9	:	:	: 53
54	:	:	:	:360:			:1-4-3	:	:SIF=2.0	: 54
55	:	:	:	:365:			:1-11-1/2	:L	:OD=10.75,WT=.365,	: 55
	:	:	:	:				:	:UNIF=35.6	:
56	:	:	:	:370:	1-11-1/2		:	:	:WLT	: 56
57	:	:	:	:375:	1-11-1/2		:	:L	:TEMP=580.	: 57
58	:	:	:	:376:			:1-11-1/2	:	:SIF=2.0	: 58
59	:	:	:	:378:			:1-4-3	:	:OD=8.625,WT=.322,UNIF:	: 59
	:	:	:	:				:	:25.40	:
60	:	:	:	:379:			:8-9	:	:	: 60
61	:	:	:	:380:			:1-3	:L	:	: 61
62	:	:	:	:389:	7-6-1/2		:	:L	:	: 62
63	:	:	:	:395:		:3-7-1/4	:	:L	:	: 63
64	:	:	:	:405:			:2-9	:	:	: 64
65	:	:	:	:407:			:1-5-9/16	:	:RIGID,WEIGHT=374.	: 65
66	:	:	:	:409:			:0-8	:	:	: 66
67	:	:	:	:410:			:1-10-7/16	:	:	: 67

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INPUT DATA - (CARD IMAGES)

LINE NUMBER	:1	:4	:7	:10	:13	:25	:37	:49	:60	ADDITIONAL DATA	LINE NUMBER
68	:	:	:	415	:	:	-2-0	:	:	:	68
69	:	:	150	1135	:	:	17-0	:	:	UD=10.75, kI=.365,	69
	:	:	:	:	:	:	:	:	:	TEMP=525., UNIF=36.2,	
	:	:	:	:	:	:	:	:	:	SIF=2.4	
70	:	:	:	130	:	:	1-6	:	:	:	70
71	:	:	:	125	:	:	16-0	:L	:	:	71
72	:	:	:	120	17-3	:	:	:	:	:	72
73	:	:	:	113	16-11-1/2	:	:	:L	:	:	73
74	:	:	:	115	3-1-3/4	:	:	:	:	WLT	74
75	:	:	:	110	:	:	3-2	:L	:	TEMP=525.	75
76	:	:	:	105	-4-7-1/8	:	:	:	:	:	76
77	:	:	:	100	-1-7-11/16	:	:	:	:	RIGID, WEIGHT=398.	77
78	:	:	:	95	-1-4	:	:	:	:	:	78
79	:	:	:	96	-1-7-11/16	:	:	:	:	RIGID, WEIGHT=398.	79
80	:	:	:	85	-1-3	:	:	:L	:	:	80
81	:	:	:	86		-4-10-1/2	:	:L	:	:	81
82	:	:	:	75	:	:	1-7	:	:	:	82
83	:	:	137	1505	:	:	1-11-1/2	:L	:	UD=10.75, kI=.365,	83
	:	:	:	:	:	:	:	:	:	UNIF=35.6, TEMP=580.	
	:	:	:	:	:	:	:	:	:	SIF=2.4	
84	:	:	:	516		14-0	:	:	:	:	84
85	:	:	:	515		13-1-1/4	:	:L	:	:	85
86	:	:	:	520			10-3-13/16	:L	:	:	86
87	:	:	:	525	-2-0	:	:	:	:	:	87
88	:	:	:	536	-5-3	:	:	:L	:	:	88
89	:	:	:	535		11-6	:	:L	:	:	89
90	:	:	:	545	4-4	:	:	:L	:	:	90
91	:	:	:	555		8-5	:	:	:	WLT	91
92	:	:	:	560			1-11-1/2	:L	:	:	92
93	:	:	:	560	-3-5-5/16	:	:	:	:	:	93
94	:	:	:	565	-1-7-11/16	:	:	:	:	RIGID, WEIGHT=398.	94
95	:	:	:	568	-1-3	:	:	:L	:	:	95
96	:	:	:	573			3-5	:	:	:	96
97	:	:	:	575			1-3-11/16	:	:	RIGID, WEIGHT=344.	97
98	:	:	155	600			1-11-1/2	:L	:	:	98
99	:	:	:	605	-3-5-5/16	:	:	:	:	:	99
100	:	:	:	610	-1-7-11/16	:	:	:	:	RIGID, WEIGHT=398.	100
101	:	:	:	615	-1-3	:	:	:L	:	:	101
102	:	:	:	618		5-4	:	:L	:	:	102
103	:	:	:	620	-4-6	:	:	:L	:	:	103
104	:	:	:	625			6-7-11/16	:L	:	:	104
105	:	:	:	630		-17-0	:	:L	:	:	105

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INPUT DATA - (CARD IMAGES)

LINE NUMBER	FYP	LOC	F	10	DELTA X	DELTA Y	DELTA Z	RADIUS	ADDITIONAL DATA	LINE NUMBER
106	:	:	:	635	5-0	:	:	:	:	106
107	:	:	:	640	7-0	:	:	L	:	107
108	:	:	:	642	:	:	-4-9	:	:	108
109	:	:	:	645	:	:	-4-0	:	SIF=2.4	109
110	:	:	:	655	:	:	-6-3	:	ALT	110
111	:	:	:	660	:	:	-5-3	:	TEMP=580.	111
112	:	:	:	665	:	:	-1-5-3/8	L	:	112
113	:	:	:	670	-2-0-5/8	:	-2-0-5/8	L	:	113
114	:	:	:	675	9-0	:	:	:	:	114
115	:	:	:	680	9-6	:	:	:	:	115
116	:	:	:	685	4-0	:	:	:	SIF=2.4	116
117	:	:	:	690	1-6	:	:	:	SIF=2.0	117
118	:	:	:	695	4-0	:	:	:	OD=6.625, WT=.322, UNIF=25.4	118
119	:	:	:	700	9-6	:	:	:	:	119
120	:	:	:	705	3-9	:	:	L	:	120
121	:	:	:	710	-2-10-5/16	:	:	L	:	121
122	:	:	:	715	:	:	-19-6	L	:	122
123	:	:	:	720	-6-0-3/16	:	:	L	:	123
124	:	:	:	725	:	:	-4-0	:	:	124
125	:	:	:	685	730	-2-11-3/8	:	L	TEMP=580.	125
126	:	:	:	735	:	:	-19-6	L	:	126
127	:	:	:	740	-6-0-3/16	:	:	L	:	127
128	:	:	:	745	:	:	-4-0	:	:	128
129	:	:	:	655	800	1-11-1/2	:	L	OD=10.75, WT=.365, UNIF=36.2, TEMP=70.	129
130	:	:	:	805	-9-0	:	:	L	:	130
131	:	:	:	815	:	:	7-8-5/16	:	:	131
132	:	:	:	820	:	:	1-7-11/16	:	RIGID, WEIGHT=398.	132
133	:	:	:	825	:	:	2-11	L	:	133
134	:	:	:	115	-1-11-1/2	:	:	:	:	134
135	ANG	5	:	:	:	:	:	:	:	135
136	ANC	45	:	:	:	:	:	:	:	136
137	ANC	265	:	:	:	:	:	:	:	137
138	ANC	290	:	:	:	:	:	:	:	138
139	ANC	305	:	:	:	:	:	:	:	139
140	ANC	415	:	:	:	:	:	:	:	140
141	ANG	725	:	:	:	:	:	:	:	141
142	ANC	745	:	:	:	:	:	:	:	142
143	ANC	75	:	:	-2.0	:	-1.32	:	:	143
144	ANC	575	:	:	-.42	:	-1.32	:	:	144

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INPUT DATA - (CARD IMAGES)

LINE NUMBER	TYP	LOC	FRMT	DELTA X	DELTA Y	DELTA Z	RADIUS	ADDITIONAL DATA	LINE NUMBER
145	:RAD:	125:F	:	:	:RIGID	:	:	:	145
146	:RAD:	130:	:	:	:RIGID	:	:	:	146
147	:RAD:	160:	:	:	:RIGID	:	:	:	147
148	:RAD:	165:	:	:	:RIGID	:	:	:	148
149	:RAD:	170:	:	:	:RIGID	:	:	:	149
150	:RAD:	172:	:	:	:RIGID	:	:	:	150
151	:RAD:	185:	:	:	:RIGID	:	:	:	151
152	:RAD:	188:	:	:	:RIGID	:	:	:	152
153	:RAD:	215:	:	:	:RIGID	:	:	:	153
154	:RAD:	220:	:	:	:RIGID	:	:	:	154
155	:RAD:	235:	:	:	:RIGID	:	:	:	155
156	:RAD:	245:F	:	:	:RIGID	:	:	:	156
157	:RAD:	260:	:	:	:RIGID	:	:	:	157
158	:RAD:	285:	:	:	:RIGID	:	:	:	158
159	:RAD:	352:	:	:	:RIGID	:	:	:	159
160	:RAD:	355:	:	:	:RIGID	:	:	:	160
161	:RAD:	370:	:	:	:RIGID	:	:	:	161
162	:RAD:	379:	:	:	:RIGID	:	:	:	162
163	:RAD:	505:N	:	:	:RIGID	:	:	:	163
164	:RAD:	675:	:	:	:RIGID	:	:	:	164
165	:RAD:	580:	:	:	:RIGID	:	:	:	165
166	:RAD:	695:	:	:	:RIGID	:	:	:	166
167	:RAD:	700:	:	:	:RIGID	:	:	:	167
168	:CCC:	451:	:	16-9	10-0	10-0	:	:	168
169	:CCC:	265:	:	135-5	-1-0-5/8	-15-3	:	:	169
170	:CCC:	270:	:	110-5	-1-0-5/8	-15-3	:	:	170
171	:CCC:	305:	:	21-6	-1-1	-0-11	:	:	171
172	:CCC:	415:	:	140-6	-1-1	-0-11	:	:	172
173	:CCC:	75:	:	26-9	-6-5	53-0	:	:	173
174	:CCC:	575:	:	26-9	32-2	53-0	:	:	174
175	:CCC:	725:	:	75-9	-1-0-1/8	3-9	:	:	175
176	:CCC:	1745:	:	157-9	-1-7-3/16	4-9	:	:	176
177	:n6:	:	:	:	:	:	:	:LOC(20N,32F,140F, :250N,275N,335N,395F, :310,410,120,515F,525, :535F,625N,635,642, :715N,735N,800N,825N, :555,615N), :USE TABLE 1	177
178	:F0:	409:	:	:	-160.	:	:	:	178
179	:F0:	315:	:	:	-160.	:	:	:	179

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(+UNIF)

LOADING - RESTRAINED WEIGHT

DYMAFLEX

 * FORCES AND MOMENTS ON ANCHORS AND RESTRAINTS *
 * *****
 * *****

EXPLANATORY NOTES

THE FORCES AND MOMENTS SHOWN BELOW ARE THE ACTIONS OF THE PIPING SYSTEM ON THE ANCHORS AND RESTRAINTS.

LOC.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
	Y	Z	RESULTANT	Y	Z	RESULTANT
5	21.	343.	344.	267.	152.	111.
15	19.	341.	342.	205.	125.	7.
265	2.	306.	308.	582.	46.	50.
290	2.	313.	313.	600.	35.	22.
345	1.	123.	123.	44.	19.	60.
415	0.	121.	121.	44.	63.	79.
75	6.	1334.	1334.	1270.	293.	712.
575	7.	1072.	1072.	2645.	23.	248.
725	2.	105.	105.	918.	52.	133.
745	0.	239.	241.	950.	27.	10.

RESTRAINTS

291	0.	1011.	0.	0.	0.	0.
325	0.	941.	0.	0.	0.	0.

DYNAPLEX LOADING - RESTRAINED W/RT (+U,IF) (U,IF)

FORCES AND MOMENTS ON ANCHORS AND RESTRAINTS (CONTINUED)

EXPLANATORY NOTES

THE FORCES AND MOMENTS SHOWN BELOW ARE THE ACTIONS OF THE PIPING SYSTEM ON THE ANCHORS AND RESTRAINTS.

LOC. FORCES (POUNDS) MOMENTS (FOOT-POUNDS)

NO. X Y Z RESULTANT X Y Z RESULTANT

LOC. NO.	X	Y	Z	RESULTANT	X	Y	Z	RESULTANT
167f	0.	2307.	0.	2307.	0.	0.	0.	0.
160	0.	1274.	0.	1274.	0.	0.	0.	0.
165	0.	1414.	0.	1414.	0.	0.	0.	0.
170	0.	1570.	0.	1570.	0.	0.	0.	0.
172	0.	1094.	0.	1094.	0.	0.	0.	0.
165	0.	1120.	0.	1120.	0.	0.	0.	0.
206	0.	1118.	0.	1118.	0.	0.	0.	0.
215	0.	1003.	0.	1003.	0.	0.	0.	0.
220	0.	1755.	0.	1755.	0.	0.	0.	0.
235	0.	1024.	0.	1024.	0.	0.	0.	0.
245f	0.	709.	0.	709.	0.	0.	0.	0.
254f	0.	1141.	0.	1141.	0.	0.	0.	0.
260	0.	720.	0.	720.	0.	0.	0.	0.
275A	0.	1239.	0.	1239.	0.	0.	0.	0.
295	0.	706.	0.	706.	0.	0.	0.	0.
310	0.	640.	0.	640.	0.	0.	0.	0.

FORCES AND MOMENTS ON ANCHORS AND RESTRAINTS (CONTINUED)

EXPLANATORY NOTES

THE FORCES AND MOMENTS SHOWN BELOW ARE THE ACTIONS OF THE PIPING SYSTEM
ON THE ANCHORS AND RESTRAINTS.

LOC. NO.	FORCES (POUNDS)				MOMENTS (FOOT-POUNDS)			
	X	Y	Z	RESULTANT	X	Y	Z	RESULTANT
RESTRAINTS (CONTINUED)								
435N	0.	-606.	0.	606.	0.	0.	0.	0.
352	0.	-357.	0.	357.	0.	0.	0.	0.
355	0.	-659.	0.	659.	0.	0.	0.	0.
378	0.	-856.	0.	856.	0.	0.	0.	0.
379	0.	-351.	0.	351.	0.	0.	0.	0.
395F	0.	-814.	0.	814.	0.	0.	0.	0.
410	0.	-634.	0.	634.	0.	0.	0.	0.
130	0.	-1583.	0.	1583.	0.	0.	0.	0.
125F	0.	-1129.	0.	1129.	0.	0.	0.	0.
126	0.	-1498.	0.	1498.	0.	0.	0.	0.
505N	0.	-2310.	0.	2310.	0.	0.	0.	0.
515F	0.	-578.	0.	578.	0.	0.	0.	0.
525	0.	-745.	0.	745.	0.	0.	0.	0.
535F	0.	-1414.	0.	1414.	0.	0.	0.	0.
555	0.	-1370.	0.	1370.	0.	0.	0.	0.
610	0.	-1356.	0.	1356.	0.	0.	0.	0.

DYNAPLEX LEADING - RESTRAINED HEIGHT (+UNIF) PAGE 60

FORCES AND MOMENTS ON ARCHES AND RESTRAINTS (CONTINUED)

EXPLANATORY NOTES

THE FORCES AND MOMENTS SHOWN BELOW ARE THE ACTIONS OF THE PIPING SYSTEM

ON THE ARCHES AND RESTRAINTS.

LOC.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
	X	Y	Z	X	Y	Z
RESTRAINTS (CONTINUED)						
525H	0.	-1616.	0.	1616.	0.	0.
635	0.	-931.	0.	931.	0.	0.
642	0.	-541.	0.	541.	0.	0.
675	0.	-1339.	0.	1339.	0.	0.
689	0.	-626.	0.	626.	0.	0.
695	0.	-631.	0.	631.	0.	0.
700	0.	-1109.	0.	1109.	0.	0.
715H	0.	-1299.	0.	1299.	0.	0.
735H	0.	-1329.	0.	1329.	0.	0.
800H	0.	-2268.	0.	2268.	0.	0.
925H	0.	-2547.	0.	2547.	0.	0.

 *
 * INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS *

 *

THE MAXIMUM STRESS OF 1975. OCCURS AT POINT 025H

EXPLANATORY NOTES

- (1) THE FORCES AND MOMENTS SHOWN BELOW ARE WITH REFERENCE TO THE ELEMENT LOCAL AXES.
- (2) THE STRESSES SHOWN BELOW ARE CALCULATED IN ACCORDANCE WITH THE
 ANSI B31.1 - 1977
 PIPING CODE (INCLUDING ALL MANDATORY UPDATES)
- (3) A (**) FOLLOWING A STRESS VALUE INDICATES THE MAXIMUM STRESS FOR THIS LOADING CONDITION.
- (4) A (*) FOLLOWING A STRESS VALUE INDICATES A STRESS WITHIN 10 PER CENT OF THE MAXIMUM.
- (5) THE COLD MODULUS HAS BEEN USED IN THIS ANALYSIS.
- (6) THE STRESS INTENSIFICATION FACTORS (ABBREVIATED AS SIF IN THE TABLE HEADING BELOW) ARE
 AUTOMATICALLY CALCULATED AND APPLIED AT BENDS, ELBOWS, MITERS AND ADMISSIBLE TYPES OF TEES
 (AS SPECIFICALLY IDENTIFIED IN THE INPUT DESCRIPTION OF THE PIPING SYSTEM). USER ENTERED
 STRESS INTENSIFICATION FACTORS TAKE PRECEDENCE OVER INTERNALLY CALCULATED VALUES.
- (14) THE EXACT SECTION MODULUS IS USED IN THE STRESS CALCULATIONS
 UNLESS THE SPECIFIC PIPING CODE OR THE USER EXPLICITLY
 REQUESTS OTHERWISE. IN THIS ANALYSIS THE SO-CALLED EFFECTIVE
 MODULUS IS USED FOR THE BRANCH LEG AT REDUCED
 GATE CONNECTIONS. THESE ARE IDENTIFIED WITH AN ASTERISK.
 THE EXACT SECTION MODULUS IS USED FOR ALL OTHER POINTS.

INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LCC NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	LONGITUDINAL STRESS PSI	
			AXIAL	RESIDUAL SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		:	:
ANCHR	STR	-- 5	10.	344.	11.	207.	152.	1.00	1.00	29.90	:	103.
		>- 10	10.	253.	11.	148.	127.	1.00	1.00	29.90	:	78.
RIGID	STR	-- 15	10.	207.	11.	185.	91.	1.00	1.00	29.90	:	83.
		>- 20N	10.	614.	11.	569.	38.	2.61	2.61	29.90	:	447.
	BEND	-- 20A	388.	375.	27.	61.	1.	2.61	2.61	29.90	:	52.
		>- 20F	463.	24.	11.	118.	38.	2.61	2.61	29.90	:	98.
	STR	-- 22N	295.	24.	11.	85.	97.	2.61	2.61	29.90	:	102.
	BEND	-- 22M	171.	141.	73.	14.	53.	2.61	2.61	29.90	:	71.
		>- 22F	21.	145.	85.	137.	23.	2.61	2.61	29.90	:	128.
	STR	-- 25	21.	14.	85.	40.	273.	1.97	1.97	29.90	:	171.
218	BR PT	-- 25	19.	23.	122.	27.	192.	1.97	1.97	29.90	:	136.
	STR	-- 30N	19.	113.	122.	112.	13.	2.61	2.61	29.90	:	130.
	BEND	-- 30M	147.	120.	80.	12.	88.	2.61	2.61	29.90	:	94.
		>- 30F	264.	21.	2.	73.	112.	2.61	2.61	29.90	:	105.
	STR	-- 32N	431.	21.	2.	94.	31.	2.61	2.61	29.90	:	78.
	BEND	-- 32M	353.	365.	13.	89.	7.	2.61	2.61	29.90	:	71.
		>- 32F	8.	542.	7.	575.	22.	2.61	2.61	29.90	:	451.
	STR	-- 35	8.	206.	7.	183.	70.	1.00	1.00	29.90	:	79.
	RIGID	-- 40	8.	251.	7.	148.	102.	1.00	1.00	29.90	:	72.
	STR	-- 45	8.	342.	7.	205.	125.	1.00	1.00	29.90	:	96.
	ANCHR	-- 25	2.	11.	81.	66.	207.	1.97	1.97	29.90	:	137.
	BR PT	-- 50	2.	407.	81.	673.	55.	1.97	1.97	29.90	:	520.

INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	LONGITUDINAL: STRESS PSI	
			AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE			
BR	PT	-- 50	2.	407.	81.	873.	55.	1.97	1.97	29.90	520.	
BR	PT	-- 50	1055.	0.	0.	678.	61.	1.97	1.97	29.90	403.	
	STR	(	>- 140N	1657.	0.	0.	677.	63.	2.61	2.61	29.90	533.
	BEND	-(	140N	1225.	1225.	44.	52.	44.	2.61	2.61	29.90	64.
		(	>- 140F	0.	1808.	63.	1515.	0.	2.61	2.61	29.90	1188.
	STR	(	>- 150N	0.	38.	63.	99.	1.	2.61	2.61	29.90	92.
	BEND	-(	150N	80.	80.	43.	34.	45.	2.61	2.61	29.90	56.
		(	>- 150F	189.	0.	2.	17.	63.	2.61	2.61	29.90	51.
	STR	(	>- 155N	223.	0.	2.	63.	17.	2.61	2.61	29.90	51.
	BEND	-(	155N	211.	211.	11.	37.	14.	2.61	2.61	29.90	32.
		(	>- 155F	0.	374.	18.	335.	2.	2.61	2.61	29.90	263.
	STR	(	>- 160	0.	670.	18.	1802.	2.	1.00	1.00	29.90	723.
		(	>- 165	0.	703.	18.	2168.	5.	1.00	1.00	29.90	870.
	STR	(	>- 170	0.	815.	18.	2660.	7.	1.00	1.00	29.90	1067.
		(	>- 172	0.	643.	18.	1022.	10.	1.00	1.00	29.90	410.
	STR	(	>- 175N	0.	413.	18.	806.	10.	2.61	2.61	29.90	632.
	BEND	-(	175N	238.	239.	5.	473.	20.	2.61	2.61	29.90	371.
		(	>- 175F	262.	0.	10.	18.	359.	2.61	2.61	29.90	282.
	BEND	-(	180N	132.	132.	261.	60.	246.	2.61	2.61	29.90	265.
		(	>- 180F	0.	111.	358.	190.	10.	2.61	2.61	29.90	318.
	STR	(>- 185	0.	445.	358.	1019.	12.	1.00	1.00	29.90	433.
	STR	(>- 190N	0.	651.	358.	12.	741.	2.61	2.61	29.90	645.

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INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT	ELEM	LEG.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	LONGITUDINAL STRESS	
			AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN-PLANE	OUT-OF-PLANE		PSI	
		>- 190N	0.	651.	356.	12.	741.	2.61	2.61	29.90	645.	
BEND	(	190N	0.	575.	42.	12.	237.	2.61	2.61	29.90	189.	
		>- 190F	0.	500.	4.	12.	335.	2.61	2.61	29.90	263.	
STR	(	195N	0.	497.	4.	14.	354.	2.61	2.61	29.90	278.	
BEND	(	195M	0.	573.	62.	14.	227.	2.61	2.61	29.90	185.	
		>- 195F	0.	648.	336.	14.	746.	2.61	2.61	29.90	641.	
STR	(	200	0.	438.	336.	1022.	14.	1.00	1.00	29.90	432.	
		>- 205N	0.	118.	336.	138.	13.	2.61	2.61	29.90	285.	
BEND	(	205M	137.	137.	247.	2.	229.	2.61	2.61	29.90	264.	
		>- 205F	269.	0.	12.	336.	79.	2.61	2.61	29.90	271.	
220	BEND	(	210N	243.	243.	47.	453.	2.61	2.61	29.90	361.	
		>- 210F	0.	419.	79.	793.	13.	2.61	2.61	29.90	625.	
STR	(	215	0.	458.	79.	1012.	13.	1.00	1.00	29.90	407.	
STR	(	220	0.	832.	79.	2980.	15.	1.00	1.00	29.90	1196.	
STR	(	225	0.	526.	79.	764.	16.	2.40	2.40	29.90	555.	
BR PT	--	225	2.	158.	40.	725.	14.	2.40	2.40	29.90	525.	
STR	(	230	2.	59.	40.	866.	14.	2.00	2.00	16.81	928.	
STR	(	235	2.	510.	40.	1534.	13.	1.00	1.00	16.81	1096.	
STR	(	240N	2.	261.	40.	227.	13.	2.44	2.44	16.81	302.	
BEND	(	240M	214.	216.	37.	28.	20.	2.44	2.44	16.81	66.	
		>- 240F	346.	2.	13.	40.	66.	2.44	2.44	16.81	102.	
BEND	(	245N	275.	275.	56.	69.	39.	2.44	2.44	16.81	127.	

INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	LONGITUDINAL STRESS PSI	
		AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		:	:
BEND	(245N	275.	275.	56.	69.	39.	2.44	2.44	16.81	:	127.
	>- 245F	0.	432.	68.	360.	11.	2.44	2.44	16.81	:	479.
STR	(250N	0.	833.	66.	762.	7.	2.44	2.44	16.81	:	998.
BEND	(250M	559.	559.	54.	187.	42.	2.44	2.44	16.81	:	260.
	>- 250F	748.	2.	9.	40.	66.	2.44	2.44	16.81	:	102.
STR	(255M	254.	2.	9.	40.	52.	2.44	2.44	16.81	:	86.
BEND	(255M	149.	149.	42.	106.	29.	2.44	2.44	16.81	:	154.
	>- 255F	0.	168.	50.	239.	11.	2.44	2.44	16.81	:	319.
STR	(260	0.	376.	50.	797.	27.	1.00	1.00	16.81	:	570.
ANCHR	-- 265	0.	308.	50.	582.	46.	1.00	1.00	16.81	:	418.
BR PT	-- 225	368.	2.	30.	39.	119.	2.40	2.40	16.81	:	165.
STR	(270N	314.	2.	30.	119.	40.	2.44	2.44	16.81	:	168.
BEND	(270M	192.	192.	50.	35.	9.	2.44	2.44	16.81	:	61.
	>- 270F	0.	229.	42.	141.	28.	2.44	2.44	16.81	:	195.
STR	(275N	0.	842.	42.	827.	7.	2.44	2.44	16.81	:	1081.
BEND	(275M	565.	565.	25.	246.	34.	2.44	2.44	16.81	:	326.
	>- 275F	756.	2.	6.	16.	40.	2.44	2.44	16.81	:	57.
STR	(280N	262.	2.	6.	17.	24.	2.44	2.44	16.81	:	40.
BEND	(280M	155.	155.	13.	51.	20.	2.44	2.44	16.81	:	74.
	>- 280F	0.	177.	22.	191.	4.	2.44	2.44	16.81	:	251.
STR	(285	0.	339.	22.	759.	14.	1.00	1.00	16.81	:	542.
ANCHR	-- 290	0.	313.	22.	600.	35.	1.00	1.00	16.81	:	430.

INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT	FLEM	LOC.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	LONGITUDINAL STRESS (PSI)
			AXIAL	RESISTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN-PLANE	OUT-OF-PLANE		
TYPE	TYPE	NO.									
ANCHR		-- 290	0.	313.	22.	600.	35.	1.00	1.00	16.81	430.
ANCHR		-- 305	3.	123.	60.	44.	19.	1.00	1.00	16.81	55.
STR	(	>- 310	3.	409.	60.	310.	16.	1.00	1.00	16.81	226.
STR	(	>- 315	3.	308.	60.	360.	13.	1.00	1.00	16.81	261.
STR	(	>- 320	3.	112.	60.	446.	13.	1.00	1.00	16.81	322.
NIGIO	(	>- 325	3.	299.	60.	309.	10.	1.00	1.00	16.81	225.
STR	(	>- 335N	3.	414.	60.	298.	6.	2.44	2.44	16.81	397.
BEND	(	335M	265.	260.	47.	20.	38.	2.44	2.44	16.81	83.
STR	(	>- 335F	329.	3.	6.	82.	61.	2.44	2.44	16.81	134.
STR	(	>- 340N	242.	3.	6.	63.	78.	2.44	2.44	16.81	131.
BEND	(	340M	142.	140.	59.	2.	48.	2.44	2.44	16.81	99.
STR	(	>- 340F	1.	157.	75.	123.	9.	2.44	2.44	16.81	189.
STR	(	>- 350N	1.	142.	75.	25.	167.	2.44	2.44	16.81	241.
BEND	(	350M	3.	184.	19.	27.	55.	2.44	2.44	16.81	84.
STR	(	>- 350F	3.	226.	5.	26.	121.	2.44	2.44	16.81	162.
STR	(	>- 352	3.	117.	5.	179.	26.	1.00	1.00	16.81	129.
STR	(	>- 355	3.	495.	5.	1223.	13.	1.00	1.00	16.81	873.
STR	(	>- 360	3.	274.	5.	350.	7.	2.00	2.00	16.81	375.
STR	(	>- 365N	3.	328.	5.	8.	137.	2.61	2.61	29.90	107.
BEND	(	365M	3.	403.	29.	9.	232.	2.61	2.61	29.90	184.
STR	(>- 365F	1.	478.	341.	7.	535.	2.61	2.61	29.90	497.
BR PT		-- 370	1.	532.	341.	5.	892.	1.97	1.97	29.90	566.

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INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

MEMBER NO.	MEMBER TYPE	MEMBER LENGTH (IN)	MEMBER WEIGHT (LBS)	MEMBER CENTER OF GRAVITY (IN)	MEMBER AREA (SQ IN)	MEMBER MOMENT OF INERTIA (IN ⁴)	MEMBER SECTION MODULUS (IN ³)	MEMBER STRESS (PSI)
370	STR	0.	529.	18.	867.	1.97	29.90	548.
375M	BEND	0.	475.	16.	511.	2.61	29.90	475.
375M	STR	2.	401.	13.	206.	2.61	29.90	164.
375F	STR	3.	326.	12.	149.	2.61	29.90	118.
376	STR	3.	272.	16.	361.	2.00	16.81	387.
376	STR	3.	497.	16.	1243.	7.	16.81	888.
379	STR	3.	113.	16.	169.	4.	16.81	121.
380N	STR	3.	224.	16.	4.	2.44	16.81	147.
380N	BEND	2.	181.	29.	3.	2.44	16.81	104.
380F	STR	0.	139.	81.	1.	2.44	16.81	264.
390N	STR	0.	160.	81.	126.	14.	16.81	197.
390M	BEND	100.	143.	68.	1.	2.44	16.81	107.
390F	STR	205.	3.	16.	64.	79.	16.81	134.
395N	STR	332.	5.	16.	75.	64.	16.81	130.
395M	BEND	263.	266.	50.	32.	2.44	16.81	95.
395F	STR	3.	416.	63.	313.	17.	16.81	418.
405	RIGID	3.	303.	63.	299.	17.	16.81	219.
407	STR	3.	106.	63.	441.	16.	16.81	319.
409	STR	3.	144.	63.	357.	16.	16.81	259.
410	STR	3.	405.	63.	306.	19.	16.81	224.
415	ANCHR	3.	121.	63.	44.	20.	16.81	57.

INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT ELEM TYPE TYPE	LBC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	LONGITUDINAL STRESS PSI
		AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN-PLANE	OUT-OF-PLANE		
ANCHR	-- 415	3.	121.	63.	44.	20.	1.00	1.00	16.81	57.
BR PT	-- 50	2.	647.	19.	1551.	55.	1.97	1.97	29.90	919.
STR	>- 135	2.	657.	19.	1631.	21.	2.40	2.40	29.90	1178.
STR	>- 130	2.	611.	19.	2702.	18.	1.00	1.00	29.90	1085.
STR	>- 125N	2.	474.	19.	16.	122.	2.61	2.61	29.90	96.
BEND	-(125H	3.	549.	110.	17.	354.	2.61	2.61	29.90	291.
STR	>- 125F	2.	625.	538.	16.	693.	2.61	2.61	29.90	688.
STR	>- 120	2.	723.	538.	2441.	11.	1.00	1.00	29.90	1003.
STR	>- 118H	2.	430.	538.	262.	37.	2.61	2.61	29.90	470.
BEND	-(118M	359.	356.	407.	149.	353.	2.61	2.61	29.90	436.
STR	>- 118F	581.	3.	39.	342.	536.	2.61	2.61	29.90	499.
BR PT	-- 115	727.	3.	39.	533.	338.	1.97	1.97	29.90	374.
BR PT	-- 115	33.	747.	172.	1080.	28.	1.97	1.97	29.90	648.
STR	>- 110N	33.	600.	172.	39.	210.	2.61	2.61	29.90	215.
BEND	-(110H	27.	525.	236.	31.	765.	2.61	2.61	29.90	628.
STR	>- 110F	6.	450.	891.	4.	802.	2.61	2.61	29.90	940.
RIGID	>- 105	6.	195.	891.	1874.	107.	1.00	1.00	29.90	634.
STR	>- 100	6.	267.	891.	1814.	161.	1.00	1.00	29.90	614.
RIGID	>- 95	6.	369.	891.	1392.	206.	1.00	1.00	29.90	666.
STR	>- 90	6.	325.	891.	414.	260.	2.61	2.61	29.90	797.
BEND	-(85F	633.	641.	826.	346.	417.	2.61	2.61	29.90	775.
STR	>- 85F	975.	34.	301.	692.	649.	2.61	2.61	29.90	891.

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INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	FLEX TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION (IN (3))	LONGITUDINAL STRESS	
			AXIAL	REQUANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN-PLANE	OUT-OF-PLANE		PSI	
	STR	>- 85F	975.	34.	301.	692.	649.	2.61	2.61	29.90	891.	
		>- 80N	1158.	34.	301.	770.	705.	2.61	2.61	29.90	852.	
	BEND	- (80N	848.	895.	714.	299.	290.	2.61	2.61	29.90	648.	
	STR	>- 80F	33.	1308.	712.	838.	294.	2.61	2.61	29.90	893.	
ANCHR		-- 75	33.	1334.	712.	1278.	293.	1.00	1.00	29.90	599.	
HR PT	STR	-- 370	0.	1061.	25.	13.	667.	1.97	1.97	29.90	396.	
		>- 505N	0.	1196.	25.	1438.	12.	2.61	2.61	29.90	1127.	
	BEND	- (505M	792.	793.	10.	412.	26.	2.61	2.61	29.90	324.	
	STR	>- 505F	1046.	1.	11.	11.	24.	2.61	2.61	29.90	22.	
	STR	>- 510	837.	1.	11.	21.	10.	2.40	2.40	29.90	19.	
225		>- 515N	66.	1.	11.	7.	8.	2.61	2.61	29.90	12.	
	BEND	- (515M	99.	99.	2.	49.	13.	2.61	2.61	29.90	40.	
	STR	>- 515F	0.	215.	7.	206.	10.	2.61	2.61	29.90	163.	
		>- 520N	0.	232.	7.	1.	306.	2.61	2.61	29.90	240.	
	BEND	- (520N	1.	307.	118.	0.	18.	2.61	2.61	29.90	93.	
	STR	>- 520F	1.	381.	51.	1.	402.	2.61	2.61	29.90	318.	
	STR	>- 525	1.	306.	51.	709.	1.	1.00	1.00	29.90	285.	
		>- 530N	1.	2.	51.	93.	2.	2.61	2.61	29.90	83.	
	BEND	- (530N	51.	52.	38.	123.	35.	2.61	2.61	29.90	105.	
	STR	>- 530F	148.	1.	2.	160.	51.	2.61	2.61	29.90	132.	
		>- 535N	833.	1.	2.	170.	49.	2.61	2.61	29.90	139.	
	BEND	- (535N	642.	641.	33.	152.	36.	2.61	2.61	29.90	125.	

INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	LONGITUDINAL STRESS PSI		
			AXIAL	RESISTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN- PLANE	OUT-OF- PLANE		:	:	
	BEND	-(535M	642.	641.	35.	152.	36.	2.61	2.61	29.90	:	125.	:
		>- 535F	1.	942.	49.	989.	2.	2.61	2.61	29.90	:	776.	:
	STR	-(540M	1.	68.	49.	167.	0.	2.61	2.61	29.90	:	152.	:
		>- 540F	116.	114.	34.	79.	34.	2.61	2.61	29.90	:	72.	:
	BEND	-(540M	116.	114.	34.	79.	34.	2.61	2.61	29.90	:	72.	:
		>- 540F	237.	1.	0.	11.	48.	2.61	2.61	29.90	:	39.	:
	STR	-(555	770.	1.	0.	46.	18.	1.97	1.97	29.90	:	30.	:
	BR PT	-- 555	12.	460.	260.	369.	56.	1.97	1.97	29.90	:	270.	:
	STR	-(560M	12.	406.	260.	61.	63.	2.61	2.61	29.90	:	215.	:
		>- 560F	14.	331.	279.	62.	95.	2.61	2.61	29.90	:	236.	:
	BEND	-(560M	14.	331.	279.	62.	95.	2.61	2.61	29.90	:	236.	:
		>- 560F	7.	257.	377.	54.	128.	2.61	2.61	29.90	:	315.	:
	STR	-(564	7.	90.	377.	507.	27.	1.00	1.00	29.90	:	254.	:
226	RIGID	-(565	7.	367.	377.	6.	279.	2.61	2.61	29.90	:	368.	:
		>- 565	14.	442.	215.	2.	104.	2.61	2.61	29.90	:	186.	:
	BEND	-(568M	14.	442.	215.	2.	104.	2.61	2.61	29.90	:	186.	:
		>- 568F	12.	517.	248.	1.	201.	2.61	2.61	29.90	:	250.	:
	STR	-(570	12.	641.	248.	1499.	14.	1.00	1.00	29.90	:	610.	:
	RIGID	-(575	11.	1072.	248.	2645.	23.	N/A	N/A	N/A	:	N/A	:
	ANCHR	-- 575	13.	140.	242.	323.	56.	1.97	1.97	29.90	:	241.	:
	BR PT	-- 555	13.	140.	242.	323.	56.	1.97	1.97	29.90	:	241.	:
	STR	-(600M	13.	16.	242.	52.	243.	2.61	2.61	29.90	:	272.	:
		>- 600F	5.	17.	321.	42.	41.	2.61	2.61	29.90	:	256.	:
	BEND	-(600M	5.	17.	321.	42.	41.	2.61	2.61	29.90	:	256.	:
		>- 600F	6.	65.	203.	29.	230.	2.61	2.61	29.90	:	242.	:
	STR	-(605	6.	231.	203.	92.	1.	1.00	1.00	29.90	:	90.	:
	RIGID	-(610	6.	669.	203.	845.	20.	2.61	2.61	29.90	:	681.	:
		>- 610	6.	669.	203.	845.	20.	2.61	2.61	29.90	:	681.	:

INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	LONGITUDINAL STRESS PSI		
			AXIAL	PERPENDIC SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		:	:	
		>- 610	6.	689.	203.	645.	20.	2.61	2.61	29.90	:	681.	:
	BEND	-(615N	424.	416.	162.	247.	119.	2.61	2.61	29.90	:	274.	:
		>- 615F	520.	14.	35.	83.	188.	2.61	2.61	29.90	:	163.	:
	STR	-(618N	272.	14.	35.	102.	146.	2.61	2.61	29.90	:	143.	:
	BEND	-(618N	144.	136.	124.	26.	67.	2.61	2.61	29.90	:	112.	:
		>- 618F	6.	124.	130.	112.	51.	2.61	2.61	29.90	:	141.	:
	STR	-(620N	6.	32.	139.	77.	206.	2.61	2.61	29.90	:	200.	:
	BEND	-(620F	13.	104.	33.	66.	177.	2.61	2.61	29.90	:	156.	:
		>- 620F	13.	179.	101.	85.	25.	2.61	2.61	29.90	:	106.	:
	STR	-(625N	13.	1322.	101.	1418.	61.	2.61	2.61	29.90	:	1116.	:
227	BEND	-(625N	891.	873.	31.	285.	110.	2.61	2.61	29.90	:	241.	:
		>- 625F	1173.	14.	54.	151.	94.	2.61	2.61	29.90	:	146.	:
	STR	-(630N	69.	14.	54.	10.	33.	2.61	2.61	29.90	:	50.	:
		>- 630N	8.	13.	66.	2.	4.	2.61	2.61	29.90	:	52.	:
	BEND	-(630F	6.	62.	49.	36.	38.	2.61	2.61	29.90	:	56.	:
	STR	-(635	6.	442.	49.	1278.	22.	1.00	1.00	29.90	:	513.	:
	STR	-(640N	6.	52.	49.	95.	273.	2.61	2.61	29.90	:	230.	:
	BEND	-(640N	13.	24.	168.	104.	238.	2.61	2.61	29.90	:	242.	:
		>- 640F	13.	99.	269.	104.	7.	2.61	2.61	29.90	:	226.	:
	STR	-(642	13.	365.	269.	818.	83.	1.00	1.00	29.90	:	347.	:
	STR	-(645	13.	66.	269.	562.	60.	2.40	2.40	29.90	:	452.	:
BR PT		-- 655	13.	504.	269.	24.	2599.	1.97	1.97	29.90	:	1548.	:

INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	LONGITUDINAL STRESS PSI	
			AXIAL	RESISTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		:	:
BR	PT	-- 655	13.	564.	269.	24.	2599.	1.97	1.97	29.90	:	1548.
BR	PT	-- 655	19.	639.	509.	149.	2743.	1.97	1.97	29.90	:	1656.
	STR	>- 660	19.	240.	509.	436.	198.	1.00	1.00	29.90	:	281.
	STR	>- 665M	19.	169.	509.	246.	200.	2.61	2.61	29.90	:	470.
	BEND	- (665M	68.	114.	547.	176.	9.	2.61	2.61	29.90	:	451.
	STR	>- 665F	80.	53.	502.	135.	217.	2.61	2.61	29.90	:	442.
	STR	>- 670M	19.	8.	502.	215.	109.	2.61	2.61	29.90	:	437.
	BEND	- (670M	23.	66.	442.	208.	246.	2.61	2.61	29.90	:	429.
	STR	>- 670F	2.	143.	167.	152.	408.	2.61	2.61	29.90	:	366.
	STR	>- 675	2.	608.	167.	2988.	35.	1.00	1.00	29.90	:	1201.
228	STR	>- 680	2.	713.	167.	653.	143.	1.00	1.00	29.90	:	277.
BR	PT	-- 685	2.	408.	167.	1588.	219.	2.40	2.40	29.90	:	1164.
BR	PT	-- 685	2.	185.	63.	1578.	192.	2.40	2.40	29.90	:	1149.
	STR	>- 690	2.	299.	63.	1216.	175.	2.00	2.00	16.81	:	1317.
	STR	>- 695	2.	117.	63.	412.	131.	1.00	1.00	16.81	:	312.
	STR	>- 700	2.	397.	63.	1742.	24.	1.00	1.00	16.81	:	1244.
	STR	>- 705M	2.	605.	63.	425.	2.	2.44	2.44	16.81	:	561.
	BEND	- (705M	399.	396.	47.	12.	38.	2.44	2.44	16.81	:	60.
	STR	>- 705F	520.	11.	10.	147.	52.	2.44	2.44	16.81	:	204.
	STR	>- 710M	473.	11.	10.	42.	146.	2.44	2.44	16.81	:	199.
	BEND	- (710M	297.	313.	109.	96.	95.	2.44	2.44	16.81	:	227.
	STR	>- 710F	11.	369.	144.	386.	11.	2.44	2.44	16.81	:	541.

INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LOC. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	LONGITUDINAL STRESS PSI
			AXIAL	MOMENTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN PLANE	OUT-OF PLANE		
	STR	>- 710F	11.	389.	144.	388.	11.	2.44	2.44	16.81	541.
	STR	>- 715N	11.	743.	144.	1076.	43.	2.44	2.44	16.81	1419.
	BEND	(715M	487.	503.	133.	562.	70.	2.44	2.44	16.81	759.
	STR	>- 715F	658.	11.	45.	353.	142.	2.44	2.44	16.81	500.
	STR	>- 720N	441.	11.	45.	308.	135.	2.44	2.44	16.81	443.
	BEND	(720M	274.	290.	126.	179.	63.	2.44	2.44	16.81	297.
	STR	>- 720F	11.	357.	133.	91.	46.	2.44	2.44	16.81	219.
ANCHR		-- 725	11.	195.	133.	918.	52.	1.00	1.00	16.81	663.
BR PT	STR	-- 685	593.	30.	26.	10.	104.	2.40	2.40	16.81	138.
	STR	>- 730N	488.	30.	26.	162.	10.	2.44	2.44	16.81	215.
229	BEND	(730M	336.	294.	12.	49.	25.	2.44	2.44	16.81	74.
	STR	>- 730F	30.	403.	10.	241.	26.	2.44	2.44	16.81	317.
	STR	>- 735N	30.	787.	10.	976.	27.	2.44	2.44	16.81	1275.
	BEND	(735M	548.	505.	12.	443.	26.	2.44	2.44	16.81	579.
	STR	>- 735F	702.	30.	27.	250.	10.	2.44	2.44	16.81	329.
	STR	>- 740N	486.	30.	27.	371.	10.	2.44	2.44	16.81	485.
	BEND	(740M	335.	292.	12.	258.	26.	2.44	2.44	16.81	339.
	STR	>- 740F	30.	401.	10.	31.	27.	2.44	2.44	16.81	55.
ANCHR		-- 745	30.	239.	10.	990.	27.	1.00	1.00	16.81	707.
BR PT	STR	-- 655	8.	1204.	143.	165.	241.	1.97	1.57	29.90	193.
	STR	>- 800N	8.	1011.	143.	1112.	143.	2.61	2.61	29.90	686.
	BEND	(800M	656.	667.	191.	248.	28.	2.61	2.61	29.90	246.

INTERNAL FORCES, MOMENTS AND STRESS CALCULATIONS (CONTINUED)

POINT TYPE	ELEM TYPE	LMB. NO.	FORCES (POUNDS)		MOMENTS (FOOT-POUNDS)			SIF		SECTION MODULUS (IN (3))	LONGITUDINAL STRESS PSI		
			AXIAL	RESULTANT SHEAR	TORSION	IN-PLANE BENDING	OUT-OF-PLANE BENDING	IN-PLANE	OUT-OF-PLANE		:	:	
	BEND - (	800M	656.	667.	191.	248.	28.	2.61	2.61	29.90	:	246.	:
	>-	800F	860.	32.	104.	92.	183.	2.61	2.61	29.90	:	180.	:
	STR - (:		:
	>-	805N	361.	32.	104.	387.	141.	2.61	2.61	29.90	:	333.	:
	BEND - (	805M	224.	180.	176.	301.	33.	2.61	2.61	29.90	:	275.	:
	>-	805F	31.	211.	151.	95.	94.	2.61	2.61	29.90	:	156.	:
	STR - (:		:
	>-	815	31.	284.	151.	352.	46.	1.00	1.00	29.90	:	147.	:
	RIGID - (:		:
	>-	820	31.	741.	151.	1173.	33.	1.00	1.00	29.90	:	475.	:
	STR - (:		:
	>-	825N	31.	1678.	151.	2515.	21.	2.61	2.61	29.90	:	1975. **	:
	BEND - (	825M	1156.	1111.	118.	1075.	99.	2.61	2.61	29.90	:	851.	:
	>-	825F	1527.	32.	11.	525.	160.	2.61	2.61	29.90	:	430.	:
	STR - (:		:
	BR PT	-- 115	1473.	32.	11.	547.	165.	1.97	1.97	29.90	:	339.	:

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 * INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES *

EXPLANATORY NOTES

THE FORCES AND MOMENTS AT ANY POINT SHOWN BELOW REPRESENT THE ACTION OF THE FAR END OF THE BRANCH ACTING ON THE NEAR END OF THE BRANCH.

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
ANCHOR		5	21.	-343.	10.	207.	152.	-11.
	STRAIGHT - (
	> 10		21.	-252.	10.	-148.	127.	-11.
	RIGID - (
	> 15		21.	206.	10.	-185.	91.	-11.
	STRAIGHT - (
	> 20N		21.	-614.	10.	568.	38.	-11.
	(
	BEND - (	20M	21.	-539.	10.	61.	19.	-19.
	(
	> 20F		21.	-463.	10.	-116.	11.	-36.
	STRAIGHT - (
	> 22N		21.	-245.	10.	-97.	11.	-85.
	(
	BEND - (	22M	21.	-220.	10.	-89.	14.	-14.
	(
	> 22F		21.	-145.	10.	-85.	23.	137.
	STRAIGHT - (
BRANCH PT.		25	21.	-10.	10.	-85.	40.	273.
BRANCH PT.		25	19.	-21.	8.	122.	-27.	192.
	STRAIGHT - (
	> 30N		19.	113.	8.	122.	-13.	112.
	(
	BEND - (	30M	19.	186.	8.	119.	-5.	-12.
	(
	> 30F		19.	264.	8.	112.	-2.	-73.
	STRAIGHT - (
	> 32N		19.	431.	8.	94.	-2.	-31.
	(
	BEND - (32M	19.	507.	8.	-89.	5.	-14.
	(
	> 32F		19.	582.	8.	-575.	22.	-7.
	STRAIGHT - (
	> 35		19.	-207.	8.	163.	70.	-7.

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INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

PRINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
	RIGID -(	35	19.	-207.	8.	183.	70.	-7.
	STRAIGHT -(	40	19.	250.	8.	146.	102.	-7.
ANCHOR		45	19.	341.	8.	-205.	125.	-7.
BRANCH PT.	STRAIGHT -(	25	2.	11.	2.	-267.	66.	81.
BRANCH PT.		50	2.	407.	2.	873.	55.	81.
BRANCH PT.	STRAIGHT -(	56	0.	1055.	-0.	-678.	0.	61.
		> 140N	0.	1657.	-0.	-677.	0.	63.
	(
	BEND -(	140M	0.	1733.	-0.	-52.	0.	63.
	(
	STRAIGHT -(	> 140F	0.	1698.	-0.	1515.	-0.	63.
		> 150N	0.	38.	-0.	-99.	-1.	63.
	(
	BEND -(	150M	0.	113.	-0.	-34.	-2.	63.
	(
	STRAIGHT -(	> 150F	0.	189.	-0.	17.	-2.	63.
		> 155N	0.	223.	-0.	17.	-2.	63.
	(
	BEND -(	155M	0.	298.	-0.	17.	-2.	-37.
	(
	STRAIGHT -(	> 155F	0.	374.	-0.	18.	-2.	-335.
	STRAIGHT -(	> 160	0.	-670.	-0.	18.	-2.	-1802.
	STRAIGHT -(	> 165	0.	-703.	-0.	18.	-5.	-2168.
	STRAIGHT -(	> 174	0.	-815.	-0.	18.	-7.	-2660.
	STRAIGHT -(	> 172	0.	643.	-0.	18.	-10.	-1022.
	STRAIGHT -(	> 175H	0.	-413.	-0.	18.	-10.	-806.
	(
	BEND -(175M	0.	-337.	-0.	18.	-10.	-473.
	(
	STRAIGHT -(> 175F	0.	-262.	-0.	18.	-10.	-359.
	(
	BEND -(180M	0.	-187.	-0.	-60.	-10.	-359.

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INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
	BEND - (	1804	0.	-167.	-0.	-60.	-10.	-359.
		(
	STRAIGHT - (	186F	0.	-111.	-0.	-190.	-10.	-358.
		(
	STRAIGHT - (	185	0.	445.	-0.	1015.	-12.	-358.
		(
	STRAIGHT - (	190H	0.	-651.	-0.	741.	-12.	-358.
		(
	BEND - (	190H	0.	-575.	-0.	197.	-12.	-136.
		(
	STRAIGHT - (	195F	0.	-500.	-0.	-4.	-12.	335.
		(
	STRAIGHT - (	195H	0.	497.	-0.	-4.	-14.	354.
		(
	BEND - (	195K	0.	573.	-0.	-204.	-14.	-117.
		(
	STRAIGHT - (	195F	0.	648.	-0.	-746.	-14.	-336.
		(
	STRAIGHT - (	200	0.	-438.	-0.	-1022.	-14.	-336.
		(
	STRAIGHT - (	205A	0.	116.	-0.	136.	-13.	-336.
		(
	BEND - (	205H	0.	193.	-0.	2.	-12.	-336.
		(
	STRAIGHT - (	205F	0.	269.	-0.	-79.	-12.	-336.
		(
	BEND - (	2104	0.	344.	-0.	-79.	-12.	-453.
		(
	STRAIGHT - (	210F	0.	419.	-0.	-79.	-13.	-793.
		(
	STRAIGHT - (	215	0.	458.	-0.	-79.	-13.	-1012.
		(
	STRAIGHT - (	220	0.	832.	-0.	-79.	-15.	-2980.
		(
BRANCH PT.		225	0.	-526.	-0.	-79.	-16.	764.
		(
BRANCH PT.	STRAIGHT - (	225	-2.	-158.	-0.	40.	14.	725.
		(
	STRAIGHT - (	230	-2.	-59.	-0.	40.	14.	866.
		(
	STRAIGHT - (235	-2.	-510.	-0.	40.	13.	-1534.
		(
	STRAIGHT - (240H	-2.	261.	-0.	40.	13.	227.
		(
	BEND - (240A	-2.	304.	-0.	40.	13.	28.

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INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

JOINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
	BEND - (	240M	-2.	304.	-0.	40.	13.	28.
	)	240F	-2.	346.	-0.	40.	13.	-66.
	BEND - (	245M	-2.	309.	-0.	-69.	12.	-67.
	)	245F	-2.	432.	-0.	-360.	11.	-68.
	STRAIGHT - (	250M	-2.	-833.	-0.	-762.	-7.	-68.
	)	250F	-2.	-798.	-0.	-187.	-9.	-67.
	STRAIGHT - (	250M	-2.	-748.	-0.	40.	-9.	-66.
	)	255M	-2.	-254.	-0.	40.	-9.	-52.
	BEND - (	255M	-2.	-211.	-0.	106.	-9.	-50.
	)	255F	-2.	-168.	-0.	239.	-11.	-50.
	STRAIGHT - (	260	-2.	376.	-0.	-797.	-27.	-50.
234	ANCHOR	265	-2.	308.	-0.	-582.	-46.	-50.
	BRANCH PT.	225	-2.	-368.	-0.	-119.	-30.	39.
	STRAIGHT - (	270M	-2.	-314.	-0.	-119.	-30.	40.
	)	270M	-2.	-271.	-0.	-35.	-29.	42.
	BEND - (	270M	-2.	-271.	-0.	-35.	-29.	42.
	)	270F	-2.	-229.	-0.	141.	-26.	42.
	STRAIGHT - (	275M	-2.	-442.	-0.	-827.	-7.	42.
	)	275M	-2.	-799.	-0.	-246.	-6.	42.
	BEND - (	275M	-2.	-799.	-0.	-246.	-6.	42.
	)	275F	-2.	-756.	-0.	-16.	-6.	40.
	STRAIGHT - (	280M	-2.	-262.	-0.	-17.	-6.	24.
	)	280M	-2.	-220.	-0.	51.	-5.	23.
	BEND - (	280M	-2.	-220.	-0.	51.	-5.	23.
	)	280F	-2.	-177.	-0.	191.	-4.	22.
	STRAIGHT - (	285	-2.	-339.	-0.	-759.	14.	22.
	)	285	-2.	-339.	-0.	-759.	14.	22.

INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

JOINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
BRANCH PT.		370	1.	532.	3.	341.	-5.	-892.
BRANCH PT.	STRAIGHT - (	370	0.	-529.	3.	-326.	-16.	-867.
	)	375F	0.	-475.	3.	-326.	-16.	-511.
	BEND - (	375M	0.	-401.	3.	-170.	-13.	-122.
	)	375F	0.	-326.	3.	149.	-12.	16.
	STRAIGHT - (	376	0.	-272.	3.	361.	-12.	16.
	)	376	0.	497.	3.	-1243.	-7.	16.
	STRAIGHT - (	379	0.	113.	3.	-169.	-4.	16.
	)	380M	0.	-224.	3.	-111.	-4.	16.
	BEND - (	380M	0.	-181.	3.	33.	-3.	73.
	)	380F	0.	-139.	3.	81.	-1.	185.
	STRAIGHT - (	390M	0.	169.	3.	81.	14.	126.
	)	390M	0.	203.	3.	81.	16.	-1.
	BEND - (	390F	0.	245.	3.	79.	16.	-64.
	)	395M	0.	332.	3.	75.	16.	-64.
	BEND - (	395M	0.	374.	3.	-32.	16.	-63.
	)	395F	0.	416.	3.	-313.	17.	-63.
	STRAIGHT - (	405	0.	-303.	3.	299.	17.	-63.
	RIGID - (	407	0.	108.	3.	441.	18.	-63.
	)	409	0.	144.	3.	357.	18.	-63.
	STRAIGHT - (410	0.	405.	3.	-306.	19.	-63.
)	415	0.	-121.	3.	44.	20.	-63.
ANCHOR		415	0.	-121.	3.	44.	20.	-63.
BRANCH PT.		50	2.	-647.	2.	1551.	55.	19.

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INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
BRANCH PT.		50	2.	-647.	2.	1951.	55.	19.
	STRAIGHT - (
	>	135	2.	657.	2.	1621.	21.	19.
	STRAIGHT - (
	>	130	2.	611.	2.	2702.	18.	19.
	STRAIGHT - (
	>	125N	2.	474.	2.	-122.	-16.	19.
	(
	BEND - (	125N	2.	544.	2.	328.	-17.	-172.
	(
	>	125F	2.	625.	2.	538.	-16.	-693.
	STRAIGHT - (
	>	120	2.	723.	2.	538.	11.	-2441.
	STRAIGHT - (
	>	110N	2.	430.	2.	538.	37.	262.
	(
	BEND - (	110N	2.	506.	2.	538.	38.	-149.
	(
	>	110F	2.	581.	2.	536.	39.	-342.
	STRAIGHT - (
BRANCH PT.		115	2.	727.	2.	533.	39.	-338.
BRANCH PT.		115	6.	-747.	33.	1080.	28.	-172.
	STRAIGHT - (
	>	110N	6.	-599.	33.	-210.	39.	-172.
	(
	BEND - (	110N	6.	-524.	33.	-708.	31.	-374.
	(
	>	110F	6.	-449.	33.	-891.	4.	-802.
	STRAIGHT - (
	>	105	6.	-192.	33.	-891.	-107.	-1874.
	RIGID - (
	>	100	6.	265.	33.	-891.	-161.	-1814.
	STRAIGHT - (
	>	95	6.	367.	33.	-891.	-206.	-1392.
	RIGID - (
	>	90	6.	825.	33.	-891.	-260.	-414.
	(
	BEND - (	85F	6.	900.	33.	-878.	-209.	348.
	(
	>	85F	6.	975.	33.	-849.	-301.	692.
	STRAIGHT - (
	>	80N	6.	1156.	33.	-770.	-301.	705.
	(
	BEND - (80N	6.	1233.	33.	-299.	-299.	710.

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INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
		X	Y	Z	X	Y	Z
MEMBER	STRAIGHT - (	0.	1233.	33.	299.	710.	
	→ 94F	0.	1300.	33.	030.	712.	
	75	0.	1334.	33.	1276.	712.	
BRANCH PT.	STRAIGHT - (	1.	1061.	0.	667.	13.	25.
	→ 505H	1.	1196.	0.	1438.	12.	25.
	MEMBER	1.	1121.	0.	412.	11.	25.
	→ 505F	1.	1046.	0.	11.	11.	24.
	STRAIGHT - (	1.	637.	0.	10.	11.	21.
	→ 510	1.	66.	0.	7.	11.	28.
	MEMBER	1.	140.	0.	49.	11.	7.
	→ 515F	1.	215.	0.	208.	10.	7.
	STRAIGHT - (	1.	232.	0.	306.	1.	7.
	→ 520H	1.	307.	0.	70.	0.	96.
	MEMBER	1.	381.	0.	51.	1.	402.
	→ 520F	1.	306.	0.	51.	1.	709.
	STRAIGHT - (	1.	2.	0.	51.	2.	93.
	→ 530H	1.	73.	0.	51.	2.	123.
	MEMBER	1.	146.	0.	51.	2.	160.
	→ 535H	1.	833.	0.	49.	2.	170.
	STRAIGHT - (	1.	907.	0.	49.	2.	152.
	→ 545H	1.	922.	0.	49.	2.	989.
	MEMBER	1.	86.	0.	49.	0.	187.
	→ 540H	1.	163.	0.	48.	0.	79.
	STRAIGHT - (
	→ 540H						

INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESTINATION	ELEMENT DESIGNATION	LOC. ID.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
	BEND - (	549H	1.	163.	0.	48.	0.	79.
	(
	> 540F		1.	237.	0.	48.	0.	11.
	STRAIGHT - (
BRANCH PT.		555	1.	770.	0.	46.	0.	14.
BRANCH PT.		555	7.	-460.	-12.	369.	-56.	260.
	STRAIGHT - (
	> 560H		7.	-406.	-12.	63.	-61.	260.
	(
	BEND - (	560H	7.	-331.	-12.	-265.	-62.	130.
	(
	> 560F		7.	-256.	-12.	-377.	-54.	-128.
	STRAIGHT - (
	> 564		7.	-89.	-12.	-377.	-27.	-507.
	RIGID - (
	> 565		7.	367.	-12.	-377.	-6.	-279.
	(
	BEND - (	560H	7.	442.	-12.	-224.	2.	77.
	(
	> 568F		7.	516.	-12.	201.	1.	248.
239	STRAIGHT - (
	> 570		7.	681.	-12.	1499.	-14.	248.
	RIGID - (
ANCHOR		575	7.	1072.	-12.	2645.	-23.	248.
BRANCH PT.		555	-6.	-146.	13.	-323.	56.	-242.
	STRAIGHT - (
	> 600H		-6.	-86.	13.	-243.	52.	-242.
	(
	BEND - (	600H	-6.	-11.	13.	-196.	42.	-255.
	(
	> 600F		-6.	64.	13.	-203.	29.	-230.
	STRAIGHT - (
	> 605		-6.	231.	13.	-203.	1.	92.
	RIGID - (
	> 610		-6.	-669.	13.	-203.	-20.	845.
	(
	BEND - (	615H	-6.	-595.	13.	-199.	-31.	267.
	(
	> 615F		-6.	-526.	13.	-148.	-35.	83.
	STRAIGHT - (
	> 618H		-6.	-272.	13.	-146.	-35.	102.
	(
	BEND - (	618H	-6.	-198.	13.	-135.	-40.	26.

INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
	BEND - (	618H	-6.	-198.	13.	-135.	-40.	26.
	(
	STRAIGHT - (	618F	-6.	-125.	13.	-130.	-51.	-112.
	(	620H	-6.	29.	13.	-130.	-77.	-206.
	BEND - (	620H	-6.	164.	13.	-102.	-86.	-149.
	(
	STRAIGHT - (	620F	-6.	179.	13.	25.	-85.	-101.
	(	625H	-6.	-132.	13.	1418.	-61.	-101.
	BEND - (	625H	-6.	-1247.	13.	285.	-56.	-99.
	(
	STRAIGHT - (	625F	-6.	-173.	13.	-151.	-54.	-94.
	(	630H	-6.	-69.	13.	33.	-54.	-10.
	BEND - (	630H	-6.	6.	13.	44.	-49.	2.
	(
240	STRAIGHT - (	630F	-6.	81.	13.	49.	-38.	-36.
	(	635H	-6.	442.	13.	49.	22.	-1278.
	STRAIGHT - (	635H	-6.	442.	13.	49.	22.	-1278.
	(	640H	-6.	-51.	13.	49.	95.	273.
	BEND - (	640H	-6.	24.	13.	49.	104.	287.
	(
	STRAIGHT - (	640F	-6.	99.	13.	-7.	104.	269.
	(	642H	-6.	365.	13.	-818.	83.	269.
	STRAIGHT - (	642H	-6.	365.	13.	-818.	83.	269.
	(	645H	-6.	88.	13.	-562.	60.	269.
	STRAIGHT - (	645H	-6.	88.	13.	-562.	60.	269.
BRANCH PT.		655H	-6.	564.	13.	-2599.	24.	269.
BRANCH PT.		655H	2.	-639.	-19.	-2743.	189.	509.
	STRAIGHT - (	655H	2.	-639.	-19.	-2743.	189.	509.
	(	660H	2.	-240.	-19.	-436.	198.	509.
	STRAIGHT - (	660H	2.	-240.	-19.	-436.	198.	509.
	(	665H	2.	-169.	-19.	-246.	200.	509.
	BEND - (	665H	2.	-131.	-19.	-176.	201.	509.
	(
	STRAIGHT - (	665F	2.	-94.	-19.	-135.	202.	509.

INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
	STRAIGHT - (	> 665F	2.	-94.	-19.	-135.	202.	509.
	(	> 670M	2.	-8.	-19.	-109.	203.	507.
	BEND - (	( 670M	2.	67.	-19.	-130.	167.	491.
	(	> 670F	2.	142.	-19.	-167.	181.	397.
	STRAIGHT - (	> 675	2.	-607.	-19.	-167.	35.	-2986.
	STRAIGHT - (	> 680	2.	-712.	-19.	-167.	-143.	-653.
BRANCH PT.	STRAIGHT - (	-- 685	2.	-408.	-19.	-167.	-219.	1588.
BRANCH PT.	STRAIGHT - (	-- 685	2.	185.	11.	-63.	-192.	1570.
	STRAIGHT - (	> 690	2.	299.	11.	-63.	-175.	1216.
	STRAIGHT - (	> 695	2.	-116.	11.	-63.	-131.	-412.
241	STRAIGHT - (	> 700	2.	396.	11.	-63.	-24.	-1742.
	(	> 705M	2.	-605.	11.	-63.	-2.	-425.
	BEND - (	( 705M	2.	-562.	11.	-60.	6.	-12.
	(	> 705F	2.	-520.	11.	-52.	10.	147.
	STRAIGHT - (	> 710M	2.	-473.	11.	-42.	10.	146.
	(	BEND - (710M	2.	-431.	11.	96.	10.	145.
	(	> 710F	2.	-369.	11.	388.	11.	144.
	STRAIGHT - (	> 715M	2.	-743.	11.	-1076.	43.	100.
	(	BEND - (715M	2.	-701.	11.	-562.	44.	100.
	(	> 715F	2.	-658.	11.	-353.	45.	142.
	STRAIGHT - (	> 720M	2.	-441.	11.	-308.	45.	135.
	(	BEND - (720M	2.	-399.	11.	-179.	45.	134.
	(	> 720F	2.	-357.	11.	91.	46.	133.

INTERNAL FORCES AND MOMENTS ORIENTED TO X Y AND Z AXES (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	FORCES (POUNDS)			MOMENTS (FOOT-POUNDS)		
			X	Y	Z	X	Y	Z
	STRAIGHT - (	729F	2.	-357.	11.	91.	46.	133.
ANCHOR		725	2.	-195.	11.	910.	52.	133.
BRANCH PT.	STRAIGHT - (	685	0.	-593.	-30.	-104.	-26.	10.
	(	730W	0.	-488.	-30.	-162.	-26.	10.
	BEND - (	730H	0.	-445.	-30.	-49.	-26.	10.
	(	730F	0.	-463.	-30.	241.	-26.	10.
	STRAIGHT - (	735M	0.	-787.	-30.	-976.	-27.	10.
	(	735M	0.	-745.	-30.	-443.	-27.	10.
	BEND - (	735I	0.	-702.	-30.	-250.	-27.	10.
	(	740N	0.	-486.	-30.	-371.	-27.	10.
	BEND - (	740N	0.	-443.	-30.	-258.	-27.	10.
	(	740F	0.	-401.	-30.	31.	-27.	10.
ANCHOR	STRAIGHT - (	745	0.	-239.	-30.	990.	-27.	10.
BRANCH PT.	STRAIGHT - (	655	5.	1203.	31.	143.	-165.	-241.
	(	809H	5.	-1010.	31.	143.	-143.	-1112.
	BEND - (	809H	5.	-935.	31.	155.	-115.	-248.
	(	809F	5.	-860.	31.	183.	-104.	92.
	STRAIGHT - (	805H	5.	-761.	31.	387.	-104.	141.
	(	805H	5.	-246.	31.	301.	-101.	148.
	BEND - (	805F	5.	-210.	31.	95.	-94.	151.
	STRAIGHT - (	815	5.	204.	31.	332.	-46.	151.
	RIGID - (	820	5.	741.	31.	1173.	-33.	151.
	STRAIGHT - (	825L	5.	-1678.	31.	2515.	-21.	151.

 * DISPLACEMENTS AND ROTATIONS *

POINT DESIGNATION	ELEMENT NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
		X	Y	Z	X AXIS	Y AXIS	Z AXIS
ANCHOR	-- 5	.000	-.000	.000	.000	.000	-.000
	> 10	.000	-.000	.000	.000	.000	-.000
	> 15	.000	-.000	.000	.000	.000	-.000
	> 20N	.000	-.000	.000	.001	.001	-.000
BEND	(20M	.001	-.001	-.000	.005	.001	-.000
	> 20F	.001	-.001	-.001	.004	.001	-.000
	> 22N	.000	-.001	-.003	.004	.001	-.001
BEND	(22M	.000	-.001	-.004	.003	.001	-.002
	> 22F	.000	-.002	-.004	.002	.001	-.001
BRANCH PT.	-- 25	.000	-.002	-.004	.002	.001	.000
BRANCH PT.	-- 25	.000	-.002	-.004	.002	.001	.000
	> 30N	.000	-.002	-.004	.002	.001	.001
BEND	(30M	-.000	-.001	-.004	.003	-.000	.001
	> 30F	-.000	-.001	-.004	.004	-.001	.001
	> 32N	-.000	-.001	-.001	.005	-.001	.000
BEND	(32M	-.000	-.001	-.000	.005	-.001	.000
	> 32F	-.000	-.000	-.000	.001	-.000	.000
	> 35	-.000	-.000	-.000	.000	-.000	.000
	> 40	-.000	-.000	-.000	.000	-.000	.000
ANCHOR	-- 45	-.000	-.000	-.000	.000	-.000	.000

POINT DESIGNATION	ELEMENT DESIGNATION	LUC.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
ANCHOR	45	000	000	000	000	000	000	000
BRANCH PT.	25	000	002	004	002	001	000	000
BRANCH PT.	50	001	003	004	003	001	001	001
BRANCH PT.	50	001	003	004	003	001	001	001
	140N	001	003	007	006	001	002	002
	140M	002	002	009	013	001	003	003
	140F	002	000	009	003	001	003	003
	150N	001	002	009	002	001	004	004
	150M	001	002	009	001	000	004	004
	150F	002	002	009	001	000	005	005
	151N	002	002	009	001	000	005	005
	151M	003	002	009	001	000	006	006
	151F	004	001	009	001	000	003	003
	160	004	000	009	001	000	002	002
	165	004	000	009	002	000	000	000
	170	004	000	008	003	000	003	003
	172	004	000	006	004	001	013	013
	175	004	001	006	004	001	012	012
	175A	004	001	005	004	001	003	003
	175B	004	003	005	004	001	003	003
	175C	003	002	004	004	000	007	007
	175F	002	002	004	002	002	009	009
	180	000	000	004	003	002	015	015

DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESTINATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT			
			X	Y	Z	X AXIS	Y AXIS	Z AXIS	
		> 185	.006	-.006	-.004	.003	.002	-.015	
	STRAIGHT - (	> 190N	.006	-.000	-.004	.004	.002	-.015
	(BEAD - (190N	.000	-.003	-.004	.011	.001	-.018
	(	> 190F	.001	-.003	-.004	.011	.001	-.017
	STRAIGHT - (	> 195N	.001	-.008	-.007	.011	.001	-.017
	(BEAD - (195N	.000	-.003	-.007	.011	.001	-.018
	(	> 195F	.000	-.000	-.007	.004	.000	-.016
	STRAIGHT - (	> 200	.000	-.000	-.007	.003	.000	-.015
	STRAIGHT - (	> 205N	.000	.001	-.007	.002	.000	-.010
	(BEAD - (205N	.000	.002	-.007	.003	.001	-.008
	(	> 205F	.001	.002	-.008	.002	.003	-.004
205	BEAD - (	> 210N	.002	.002	-.008	.001	.002	-.002
	(	> 210F	.001	.001	-.009	.001	.002	-.010
	STRAIGHT - (	> 215	.001	-.000	-.009	.000	.002	-.011
	STRAIGHT - (	> 220	.001	-.000	-.015	-.003	.001	-.000
	STRAIGHT - (BRANCH PT. -	225	.001	-.009	-.017	-.004	.001	-.009
	BRANCH PT. -	225	.001	-.009	-.017	-.004	.001	-.009	
	STRAIGHT - (	> 230	.001	-.011	-.017	-.004	.001	-.007
	STRAIGHT - (	> 235	.001	-.000	-.020	-.002	.002	-.000
	STRAIGHT - (	> 240N	.001	-.004	-.027	.001	.003	-.015
	(BEAD - (240N	.000	-.001	-.027	.001	.003	-.018
	(	> 240F	.002	-.000	-.027	.002	.002	-.017
	(BEAD - (245N	.005	-.000	-.027	.002	.002	-.016

DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
ANCHOR		305	.000	.000	.000	-.000	.000	-.000
	STRAIGHT -(	> 310	.000	-.000	.000	.001	.000	-.001
	STRAIGHT -(	> 315	.000	-.001	.000	.001	.000	-.001
	STRAIGHT -(	> 320	.000	-.001	.000	-.000	.000	-.001
	RIGID -(	> 325	.000	-.001	.000	-.001	.000	-.001
	STRAIGHT -(	> 335H	.000	-.000	.000	-.001	.000	-.002
	(
	BEND -(	> 335H	.000	-.000	-.000	.003	.000	-.002
	(
		> 335F	-.000	-.000	-.001	.002	-.000	-.004
	STRAIGHT -(	> 340H	-.001	-.001	-.001	.001	-.000	-.004
	(
	BEND -(	> 340H	-.002	-.001	-.001	-.000	-.001	-.005
	(
		> 340F	-.002	-.002	-.001	-.001	-.001	-.004
	STRAIGHT -(	> 350H	-.002	-.002	-.000	-.003	-.000	-.003
	(
	BEND -(	> 350H	-.002	-.001	-.000	-.004	.000	.005
	(
		> 350F	-.002	-.000	-.000	-.003	.001	.005
	STRAIGHT -(	> 352	-.002	-.000	-.000	-.003	.001	.005
	STRAIGHT -(	> 355	-.000	-.000	-.000	.010	.002	.005
	STRAIGHT -(	> 360	.005	-.011	-.000	-.018	.002	.005
	STRAIGHT -(	> 365H	.005	-.003	-.000	-.018	.002	.005
	(
	BEND -(	> 365H	.005	-.004	-.000	-.018	.002	.004
	(
		> 365F	.006	-.002	-.000	-.016	.001	-.001
	STRAIGHT -(	> 370	.006	-.002	-.001	-.015	.001	-.002
BRANCH PT.		== 370	.006	-.002	-.001	-.015	.001	-.002
	STRAIGHT -(	> 375H	.006	-.003	-.001	-.016	.001	-.003

DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
		> 375N	.006	-.003	-.001	-.016	.001	-.003
	BEND - (	( 375N	.005	-.005	-.001	-.018	.001	-.008
		> 375F	.005	-.009	-.001	-.018	.001	-.008
	STRAIGHT - (	( 376	.005	-.012	-.001	-.018	.001	-.008
	STRAIGHT - (	> 376	.005	-.012	-.001	-.018	.001	-.008
		> 378	.003	-.000	-.001	.010	.000	-.007
	STRAIGHT - (	( 379	.002	-.000	-.001	-.003	.000	-.006
	STRAIGHT - (	> 380N	.002	-.000	-.001	-.003	.000	-.006
		(380N	.002	-.001	-.001	-.004	.000	-.006
	BEND - (	( 380F	.002	-.002	-.001	-.003	.000	-.003
	STRAIGHT - (	> 390N	.002	-.002	-.001	-.000	.000	.004
		(390N	.002	-.001	-.001	.000	.000	.005
	BEND - (	( 390F	.001	-.001	-.001	.002	-.000	.004
	STRAIGHT - (	> 395N	.000	-.001	-.001	.002	-.000	.004
		(395N	-.000	-.000	-.000	.003	-.000	.003
	BEND - (	( 395F	-.000	-.000	-.000	.001	-.000	.002
	STRAIGHT - (	> 405	-.000	-.001	-.000	-.001	-.000	.002
	RIGID - (	> 407	-.000	-.001	-.000	-.000	-.000	.002
	STRAIGHT - (	> 409	-.000	-.001	-.000	.001	-.000	.001
	STRAIGHT - (	> 410	-.000	-.000	-.000	.001	-.000	.001
	STRAIGHT - (	> 415	-.000	.000	-.000	-.000	-.000	.000
ANCHOR		>> 50	.001	-.003	-.004	.003	.001	.001
BRANCH PT.	STRAIGHT - (	> 135	.008	-.001	-.004	-.005	.002	.002
	STRAIGHT - (	> 136	.008	-.000	-.004	.001	.002	.002

DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT			
			X	Y	Z	X AXIS	Y AXIS	Z AXIS	
	STRAIGHT -(	> 130	.008	-.000	-.004	.001	.002	.002
	(	> 125N	.017	-.004	-.004	-.014	.002	.003
	BEND -(	125F	.010	-.001	-.004	-.013	.002	.002
	(	> 125F	.018	-.000	-.005	-.009	.002	-.005
	STRAIGHT -(	> 120	.016	-.000	-.011	.011	.002	-.003
	(	> 110N	.016	-.010	-.018	.031	.003	.011
	BEND -(	110M	.017	-.008	-.016	.034	.001	.011
	(	> 110F	.015	-.007	-.009	.040	-.001	.007
	STRAIGHT -(	-- 115	.012	-.007	.007	.042	-.001	.006
BRANCH PT.	STRAIGHT -(	-- 115	.012	-.007	.007	.042	-.001	.006
	(	> 110N	.012	-.024	.007	.044	-.001	.005
	BEND -(	110M	.012	-.032	.007	.037	-.000	.002
	(	> 110F	.012	-.034	.007	.031	.000	-.009
	STRAIGHT -(	> 105	.012	-.026	.007	.024	-.000	-.017
	RIGID -(	> 100	.012	-.020	.007	.024	-.000	-.017
	STRAIGHT -(	> 95	.012	-.015	.007	.021	-.001	-.021
	RIGID -(	> 90	.012	-.007	.007	.021	-.001	-.021
	(BEND -(85M	.010	-.003	.005	.018	-.001	-.022
	(	> 85F	.007	-.001	.003	.008	.001	-.013
	STRAIGHT -(	> 80N	.001	-.001	-.000	.005	-.000	-.010
	(BEND -(80M	-.000	-.001	-.000	-.004	.001	-.003
	(	> 80F	-.000	-.000	-.000	-.001	.000	-.001
	STRAIGHT -(	-- 75	.000	-.000	-.000	-.000	.000	-.000
ANCHOR									

DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
ANCHOR		75	.000	-.000	-.000	-.000	.000	-.000
BRANCH PT.		370	.006	-.002	-.001	-.015	.001	-.002
	STRAIGHT - (	505N	.006	-.006	-.001	-.014	.001	-.002
	(
	BEND - (	505N	.006	.001	-.001	-.001	.002	-.002
	(
	STRAIGHT - (	505F	.007	.001	-.001	.001	.002	-.003
	STRAIGHT - (	510	.000	.001	.000	.002	.002	-.003
	(
	BEND - (	515N	.015	.001	.004	.002	.002	-.003
	(
	BEND - (	515N	.016	.000	.005	.002	.002	-.003
	(
	STRAIGHT - (	515F	.017	-.000	.005	.004	.002	-.003
	(
	BEND - (	520N	.021	-.002	.005	-.003	.003	-.003
	(
	BEND - (	520N	.021	-.001	.005	-.005	.003	-.004
	(
	STRAIGHT - (	520F	.022	-.000	.005	-.004	.003	-.001
	(
	STRAIGHT - (	525	.022	-.000	.006	-.004	.003	.000
	(
	BEND - (	530N	.022	-.001	.004	-.004	.003	.002
	(
	BEND - (	530N	.021	-.002	.008	-.003	.003	.004
	(
	STRAIGHT - (	530F	.020	-.002	.008	-.003	.003	.006
	(
	BEND - (	535N	.007	-.002	.003	-.002	.003	.009
	(
	BEND - (	535N	.005	-.001	.003	-.001	.003	.010
	(
	STRAIGHT - (	535F	.004	-.000	.002	-.001	.002	.002
	(
	BEND - (	540N	.004	-.001	-.001	-.000	.002	.000
	(
	BEND - (	540N	.004	-.001	-.001	.000	.002	.002
	(
	STRAIGHT - (	540F	.004	-.000	-.002	.001	.002	.003
	(
BRANCH PT.		555	-.001	-.000	-.000	.001	.002	.003

250

DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT	ELEMENT	LOC.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
STATION	DESCRIPTION		X	Y	Z	X	Y	Z
BRANCH PT.		555	.001	.000	.000	.001	.002	.003
	STRAIGHT - (	555	.001	.000	.000	.001	.002	.003
	(	5600	.000	.000	.000	.001	.002	.003
	(	5600	.000	.001	.000	.001	.001	.004
	STRAIGHT - (	560F	.000	.002	.000	.000	.000	.002
	(	564	.000	.002	.000	.002	.000	.001
	RIGID - (	565	.000	.003	.000	.002	.000	.001
	(	5604	.000	.002	.000	.004	.000	.002
	(	560F	.000	.001	.000	.003	.000	.001
	STRAIGHT - (	570	.000	.000	.000	.000	.000	.000
	(	575	.000	.000	.000	.000	.000	.000
ANCHOR		555	.001	.000	.000	.001	.002	.003
	STRAIGHT - (	604	.001	.000	.000	.001	.002	.003
	(	600	.001	.000	.000	.001	.003	.002
	(	600F	.002	.000	.001	.001	.003	.000
	STRAIGHT - (	605	.002	.000	.002	.002	.003	.000
	(	610	.002	.000	.003	.002	.003	.000
	(	6150	.001	.004	.004	.003	.004	.004
	STRAIGHT - (	615F	.000	.002	.005	.005	.004	.010
	(	6100	.007	.002	.009	.006	.004	.010
	(	6105	.005	.002	.010	.008	.005	.011
	STRAIGHT - (	610	.005	.005	.012	.008	.005	.011
	(	6200	.010	.000	.014	.009	.004	.010

DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT DESIGNATION	ELEMENT DESIGNATION	LOC. NO.	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
			X	Y	Z	X AXIS	Y AXIS	Z AXIS
		> 620H	.010	-.009	.014	-.009	.004	.010
	BEND - (	620H	.011	-.010	.014	-.010	.003	.007
		> 620F	.011	-.008	.015	-.011	.002	.007
	STRAIGHT - (	625H	.012	-.000	.015	-.006	.001	.006
	BEND - (	625H	.013	-.000	.014	.006	.000	.005
		> 625F	.014	-.001	.013	.006	-.000	.003
	STRAIGHT - (	630H	.021	-.001	-.000	.004	-.002	.002
	BEND - (	630H	.022	-.001	-.001	.004	-.002	.002
		> 630F	.022	-.001	-.001	.004	-.003	.002
	STRAIGHT - (	635	.022	-.000	.002	.005	-.003	-.003
	STRAIGHT - (	640H	.022	-.007	.005	.006	-.002	-.006
	BEND - (	640H	.022	-.007	.005	.007	-.001	-.002
		> 640F	.022	-.006	.005	.008	.001	-.001
	STRAIGHT - (	642	.021	-.000	.005	.006	.001	.002
	STRAIGHT - (	645	.020	.003	.005	.002	.002	.004
BRANCH PT.		-- 655	.017	-.001	.005	-.013	.002	.008
BRANCH PT.	STRAIGHT - (	655	.017	-.001	.005	-.013	.002	.008
		> 660	.013	-.026	.005	-.027	.004	.015
	STRAIGHT - (	665H	.012	-.031	.005	-.028	.005	.016
	BEND - (	665H	.012	-.034	.006	-.029	.005	.016
		> 665F	.013	-.037	.008	-.030	.005	.017
	STRAIGHT - (	670H	.015	-.042	.013	-.031	.006	.019
	BEND - (	670H	.017	-.044	.016	-.030	.005	.022

DISPLACEMENTS AND ROTATIONS (CONTINUED)

POINT IDENTIFICATION	ELEMENT LOCATION	DISPLACEMENTS (INCHES)			ROTATIONS (DEGREES) ABOUT		
		X	Y	Z	X AXIS	Y AXIS	Z AXIS
ANCHOR	6700	.017	.044	.016	.030	.005	.022
STRAIGHT - (	6701	.016	.041	.017	.029	.006	.026
STRAIGHT - (	6702	.010	.000	.005	.032	.008	.015
STRAIGHT - (	6800	.010	.000	.010	.036	.007	.007
BRANCH PT.	6805	.010	.006	.016	.037	.006	.003
BRANCH PT.	6805	.010	.006	.016	.037	.006	.003
STRAIGHT - (	6900	.010	.006	.017	.038	.005	.001
STRAIGHT - (	6905	.010	.000	.021	.039	.003	.009
STRAIGHT - (	7000	.010	.000	.022	.042	.000	.017
STRAIGHT - (	7050	.010	.010	.022	.043	.000	.026
BEND - (	7050	.010	.014	.019	.043	.001	.031
STRAIGHT - (	7055	.011	.016	.013	.044	.001	.029
STRAIGHT - (	7100	.006	.016	.005	.045	.001	.028
BEND - (	7100	.002	.019	.002	.044	.002	.025
STRAIGHT - (	7105	.001	.025	.005	.038	.003	.024
STRAIGHT - (	7150	.008	.000	.005	.035	.001	.011
BEND - (	7150	.007	.004	.003	.016	.001	.010
STRAIGHT - (	7155	.006	.004	.002	.006	.001	.008
STRAIGHT - (	7200	.000	.004	.001	.001	.000	.000
BEND - (	7200	.000	.004	.000	.006	.001	.001
STRAIGHT - (	7205	.000	.000	.000	.007	.001	.002
ANCHOR	7250	.000	.000	.000	.000	.000	.000
BRANCH PT.	6845	.010	.000	.016	.037	.006	.003

POINT	ELEMENT	LOC.	DISPLACEMENTS (INCHES)	ROTATIONS (DEGREES) ABOUT
-----	-----	---	-----	-----
POSITION	DESCRIPTION	---	X AXIS	Y AXIS
-----	-----	---	-----	-----
STRAIGHT - (		115	.014	.001
		115	.007	.001
		115	.012	.007
		115	.007	.042
		115	.007	.006

HANGER DESIGN DATA

EXPLANATORY NOTES:

- (1) ALL MOVEMENTS SHOWN BELOW REFER TO THE INITIAL EXPANSION LOADING CASE WHEREIN TENTATIVE HANGER LOCATIONS HAVE NOT BEEN VERTICALLY RESTRAINED AND ALL WEIGHT EFFECTS HAVE BEEN SUPPRESSED.
- (2) THE WEIGHT REACTIONS SHOWN BELOW REFER TO THE WEIGHT LOADING CASE WHEREIN TENTATIVE HANGER LOCATIONS HAVE BEEN RIGIDLY RESTRAINED IN THE VERTICAL DIRECTION AND ALL THERMAL EFFECTS INCLUDING IMPOSED ANCHOR MOVEMENTS HAVE BEEN SUPPRESSED.
- (3) IN THE FOLLOWING TABLE VSH DENOTES A VARIABLE SPRING HANGER AND CSH DENOTES A CONSTANT SUPPORT HANGER.
- (4) THE SUPPORT LOADS IN THE INSTALLED CONDITION HAVE BEEN CALCULATED TO PRODUCE THE CORRECT WEIGHT BALANCE IN THE OPERATING CONDITION.
- (5) IF THE FREE VERTICAL MOVEMENT EXCEEDS THE MAXIMUM RIGID SUPPORT DISPLACEMENT CRITERION OF .10 IN., A VARIABLE SPRING IS SELECTED. IF A VARIABLE SPRING HANGER CANNOT BE FOUND WHICH SATISFIES BOTH THE LOAD VARIATION CRITERION SELECTED BY THE USER AND THE WORKING RANGE OF THE SPRINGS LISTED IN SPRING TABLE (1) OF THE USER'S MANUAL, A CONSTANT SUPPORT HANGER IS RECOMMENDED.
- (6) THE SO-CALLED "THEORETICAL" SPRING INSTALLATION LOAD SHOWN BELOW PRESUPPOSES THAT THE HANGER LOCATION IS RESTRAINED AGAINST VERTICAL MOVEMENT WHILE THE SPRING IS SET TO THE COLD LOAD.
- (7) THE NOMINAL ROD DIAMETER FOR RIGID HANGERS IS TAKEN FROM ANSI B31.1 - 1977 TABLE 121.2.2(A), (CARRYING CAPACITIES OF THREADED ASTM A 107 HOT ROLLED CARBON STEEL) ASSUMING A ROD TEMPERATURE OF 650 DEGREES FAHRENHEIT. A MINIMUM 1/2 IN. DIAMETER ROD WILL BE SELECTED FOR ALL PIPE WHICH IS NOMINALLY 2-1/2 IN. OD OR LARGER.

HANGER DESIGN DATA TABLE

HANGER LNG. NO.	SUPPORT LOAD (POUNDS)	FREE VERTICAL MOVEMENT (INCHES)	HORIZONTAL MOVEMENT (INCHES)		PRELIMINARY HANGER SELECTION		SWING	
			1	2	TYPE	SPECIFICATION	LENGTH (FEET)	ANGLE (DEG)
20N	1011.	-.01	-.04	.21	RIGID	REQUIRED MINIMUM CROSS SECTIONAL ROOT AREA = .13 3/4 IN BASED ON AN ALLOWABLE STRESS OF 9000 PSI	N/A	N/A
32F	981.	.00	.01	.21	RIGID	REQUIRED MINIMUM CROSS SECTIONAL ROOT AREA = .13 3/4 IN BASED ON AN ALLOWABLE STRESS OF 9000 PSI	N/A	N/A
140F	2307.	.13	-.43	.54	VSH	1 - SHORT RANGE SPRING. SPRING RATE = 900 LBS/IN THEORETICAL SPRING INSTALLATION LOAD = 2420 LBS SPRING LOAD IN THE OPERATING CONDITION = 2307 LBS	N/A	N/A
250N	1181.	.36	2.07	.88	VSH	1 - SHORT RANGE SPRING. SPRING RATE = 520 LBS/IN THEORETICAL SPRING INSTALLATION LOAD = 1368 LBS SPRING LOAD IN THE OPERATING CONDITION = 1181 LBS	N/A	N/A
275N	1239.	.29	1.29	1.37	VSH	1 - SHORT RANGE SPRING. SPRING RATE = 520 LBS/IN THEORETICAL SPRING INSTALLATION LOAD = 1389 LBS SPRING LOAD IN THE OPERATING CONDITION = 1239 LBS	N/A	N/A
266 310	640.	.00	.00	.09	RIGID	REQUIRED MINIMUM CROSS SECTIONAL ROOT AREA = .13 3/4 IN BASED ON AN ALLOWABLE STRESS OF 9000 PSI	N/A	N/A
335N	868.	-.00	.01	.34	RIGID	REQUIRED MINIMUM CROSS SECTIONAL ROOT AREA = .13 3/4 IN BASED ON AN ALLOWABLE STRESS OF 9000 PSI	N/A	N/A
305F	814.	.02	-.01	.34	RIGID	REQUIRED MINIMUM CROSS SECTIONAL ROOT AREA = .13 3/4 IN BASED ON AN ALLOWABLE STRESS OF 9000 PSI	N/A	N/A
410	634.	.00	.00	.09	RIGID	REQUIRED MINIMUM CROSS SECTIONAL ROOT AREA = .13 3/4 IN BASED ON AN ALLOWABLE STRESS OF 9000 PSI	N/A	N/A
120	1498.	-.83	-.41	.32	VSH	1 - SHORT RANGE SPRING. SPRING RATE = 520 LBS/IN THEORETICAL SPRING INSTALLATION LOAD = 1068 LBS SPRING LOAD IN THE OPERATING CONDITION = 1498 LBS	N/A	N/A
515F	578.	.78	-.70	.50	VSH	1 - SHORT RANGE SPRING. SPRING RATE = 300 LBS/IN THEORETICAL SPRING INSTALLATION LOAD = 814 LBS SPRING LOAD IN THE OPERATING CONDITION = 578 LBS	N/A	N/A
525	745.	.32	-.94	.65	VSH	1 - SHORT RANGE SPRING. SPRING RATE = 300 LBS/IN THEORETICAL SPRING INSTALLATION LOAD = 842 LBS SPRING LOAD IN THE OPERATING CONDITION = 745 LBS	N/A	N/A

HANGER DESIGN DATA TABLE

HANGER LOC. NO.	SUPPORT LOAD (LBS)	FREE VERTICAL MOVEMENT (INCHES)	HORIZONTAL MOVEMENT (INCHES)		Z	PRELIMINARY HANGER SELECTION		SWING	
			X	Y		TYPE	SPECIFICATION	LENGTH (FEET)	ANGLE (DEG)
525F	1414.	.29	-.69	-.37		VSH	1 - SHORT RANGE SPRING. SPRING RATE = 680 LBS/IN THEORETICAL SPRING INSTALLATION LOAD = 1611 LBS SPRING LOAD IN THE OPERATING CONDITION = 1414 LBS	N/A	N/A
555	1370.	-.53	.29	-1.49		VSH	1 - SHORT RANGE SPRING. SPRING RATE = 520 LBS/IN THEORETICAL SPRING INSTALLATION LOAD = 1094 LBS SPRING LOAD IN THE OPERATING CONDITION = 1370 LBS	N/A	N/A
610	1356.	-.41	.03	-1.48		VSH	1 - SHORT RANGE SPRING. SPRING RATE = 520 LBS/IN THEORETICAL SPRING INSTALLATION LOAD = 1141 LBS SPRING LOAD IN THE OPERATING CONDITION = 1356 LBS	N/A	N/A
625N	1816.	.02	-.51	-.70		RIGID	REQUIRED MINIMUM CROSS SECTIONAL ROOT AREA = .30 SQ IN BASED ON AN ALLOWABLE STRESS OF 9000 PSI	N/A	N/A
635	931.	-.79	-.93	.35		VSH	1 - MIDDLE RANGE SPRING. SPRING RATE = 200 LBS/IN THEORETICAL SPRING INSTALLATION LOAD = 772 LBS SPRING LOAD IN THE OPERATING CONDITION = 931 LBS	N/A	N/A
257 642	581.	-.81	-.64	.20		VSH	1 - SHORT RANGE SPRING. SPRING RATE = 224 LBS/IN THEORETICAL SPRING INSTALLATION LOAD = 400 LBS SPRING LOAD IN THE OPERATING CONDITION = 581 LBS	N/A	N/A
715N	1299.	.23	.17	.32		VSH	1 - SHORT RANGE SPRING. SPRING RATE = 520 LBS/IN THEORETICAL SPRING INSTALLATION LOAD = 1420 LBS SPRING LOAD IN THE OPERATING CONDITION = 1299 LBS	N/A	N/A
735N	1329.	.29	.14	.07		VSH	1 - SHORT RANGE SPRING. SPRING RATE = 520 LBS/IN THEORETICAL SPRING INSTALLATION LOAD = 1480 LBS SPRING LOAD IN THE OPERATING CONDITION = 1329 LBS	N/A	N/A
800N	2266.	-.37	-.72	-.26		VSH	1 - SHORT RANGE SPRING. SPRING RATE = 900 LBS/IN THEORETICAL SPRING INSTALLATION LOAD = 1931 LBS SPRING LOAD IN THE OPERATING CONDITION = 2266 LBS	N/A	N/A
825N	2547.	-1.30	.14	-1.03		VSH	1 - MIDDLE RANGE SPRING. SPRING RATE = 450 LBS/IN THEORETICAL SPRING INSTALLATION LOAD = 1963 LBS SPRING LOAD IN THE OPERATING CONDITION = 2547 LBS	N/A	N/A

DYNAPLEX

*
* STATIC SOLUTION ACCURACY CHECKS *
*

EACH BASIC STATIC SOLUTION COMPRISING EACH LOAD OR LOADING COMBINATION SPECIFIED IN THIS RUN HAS BEEN SUBJECTED TO EQUILIBRIUM AND COMPATABILITY CHECKS FOR ALL POINTS IN THE SYSTEM:

LOADING - FREEZE THERMAL

STATIC EQUILIBRIUM AND COMPATIBILITY HAVE BEEN SATISFIED FOR THIS BASIC STATIC SOLUTION AT ALL POINTS IN THE SYSTEM.

LOADING - RESTRAINED LIGHT (NO IF)

STATIC EQUILIBRIUM AND COMPATIBILITY HAVE BEEN SATISFIED FOR THIS BASIC STATIC SOLUTION AT ALL POINTS IN THE SYSTEM.

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STMPD 194

Department of Energy
San Francisco Operations Office
1333 Broadway
Oakland, California 94612

Reply To: DOE Solar One Project Office
P.O. Box 366
Daggett, CA 92327

OCT 19 1984

Mr. Robert L. Gervais
Solar One Project Office
McDonnell Douglas Astronautics Corp.
P.O. Box 366
Daggett, CA 92327

Subject: Contractor Clearance of Contract DE-AC03-79SF10499
Solar One Reports for DOE/TIC Inclusion.

Dear Bob:

Enclosed are copies of covers and title pages of nine reports prepared by McDonnell Douglas Astronautics Corporation for the Solar One Project under the above referenced contract. In preparation for delivery of these documents to DOE/TIC, I have prepared a SAN form 70 "Request for Patent Clearance" and a DOE form RA-426 "Recommendations for Announcement and Distribution of Documents" for each document.

Please have the appropriate MDAC personnel complete and sign these forms. As agreed, SAN form 70 should be forwarded to SAN/OPC by your office with copies of the completed SAN form 70 and the transmittal letter being sent to me. The completed DOE form RA-426 should be sent directly back to me.

The documents covered by this letter are:

<u>Primary Document No.</u>	<u>Secondary No.</u>	<u>Brief Title</u>
DOE/SF/10499-T108	STMPD 193	PSS Final Design Calculations (Book 18 of 26)
DOE/SF/10499-T109	STMPD 194	PSS Final Design Calculations (Book 19 of 26)
DOE/SF/10499-T110	STMPD 195	PSS Final Design Calculations (Book 20 of 26)
DOE/SF/10499-T111	STMPD 196	PSS Final Design Calculations (Book 21 of 26)
DOE/SF/10499-T112	STMPD 197	PSS Final Design Calculations (Book 22 of 26)

DOE/SF/10499-T113	STMPO 198	PSS Final Design Calculations (Book 23 of 26)
DOE/SF/10499-T114	STMPO 199	PSS Final Design Calculations (Book 24 of 26)
DOE/SF/10499-T115	STMPO 200	PSS Final Design Calculations (Book 25 of 26)
DOE/SF/10499-T116	STMPO 201	PSS Final Design Calculations (Book 26 of 26)

If you should have any questions or concerns please do not hesitate to contact me by telephone at, (619) 254-2672.

Sincerely,



S.D. Elliott, Jr., Director
DOE Solar One Project Office

SDE/aks
Project File: CCC010.RNO(SA3:)

Encl: Nine Document Covers W/forms 70 and RA-426

cc: Roger Gaither, SAN/OPC
W.D. Matheny, DOE/TIC
Mike Lopez, DOE/SAN (FGS)
Mary Soderstrum, B&McD



**DEPARTMENT OF ENERGY
SAN FRANCISCO OPERATIONS OFFICE**

**CONTRACTOR REQUEST FOR PATENT CLEARANCE
FOR RELEASE OF UNCLASSIFIED DOCUMENT**

TO: Roger S. Gaither, Asst. Chief for Prosecution
Office of Patent Counsel/Livermore Office
P.O. Box 808, L-376
Livermore, California 94550

FROM: McDonnell Douglas Corporation
3855 Lakewood Blvd.
Long Beach, CA 90846

Prime Contract No. DE-AC03-79SF10499
Subcontract No. (N/A)
Report No. (STIMPO 194) DOE/SF/10499-T109
Date of Report September 1980
Name & Phone No. of DOE Technical Representative S.D. Elliott, Jr. (619) 254-2672

- Document Title: Plant Support Subsystem Final Design Calculations
(Book 19 of 26)
- Type of Document: Technical Report, Conference Paper, Journal Article, Abstract or Summary,
 Copy of Oral Presentation, Other (please specify): _____
(Routine)
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 - Contractor Invention Docket No. _____
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4. Title <u>Plant Support Subsystem Final Design Calculations (Book 19 of 26)</u>		
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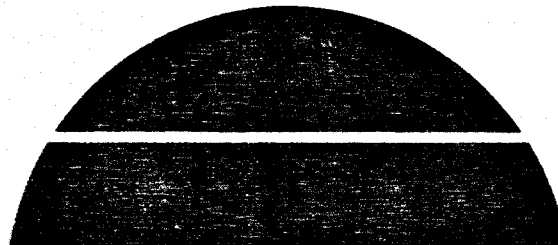
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DE-AC03-79SF10499

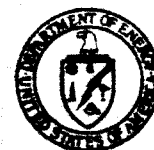
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**10 MWe Solar Thermal
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1. DOE Report No. DOE/SF/10499-T109 (STIMPO 194)	2. Contract No. DE-AC03-79SF10499	3. Subject Category No. UC-62, 62c, 62d
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4. Title
Plant Support Subsystem Final Design Calculations (Book 19 of 26)

5. Type of Document ("x" one)
 a. Scientific and technical report
 b. Conference paper: Title of conference _____
 _____ Date of conference _____

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CONTRACTOR REQUEST FOR PATENT CLEARANCE
FOR RELEASE OF UNCLASSIFIED DOCUMENT

Prime Contract No. DE-AC03-79SF10499
Subcontract No. (N/A)
Report No. (STMPU 194) DOE/SF/10499-T109
Date of Report September 1980
Name & Phone No. of DOE Technical Representative S.D. Elliott, Jr. (619) 254-2672

TO: Roger S. Gaither, Asst. Chief for Prosecution
Office of Patent Counsel/Livermore Office
P.O. Box 808, L-376
Livermore, California 94550

FROM: McDonnell Douglas Corporation
3855 Lakewood Blvd.
Long Beach, CA 90846

- Document Title: Plant Support Subsystem Final Design Calculations
(Book 19 of 26)
- Type of Document: Technical Report, Conference Paper, Journal Article, Abstract or Summary,
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Reviewing/Submitting Official: Name (Print/Type) John P. Scholl
Title Asst. Chief Patent Counsel, MDC (MS 122-23)
Signature [Signature] Date 6 NOV 84

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