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Title/Desc:
STRUCTRUAL ANALYSIS DESIGN & EVALUATION OF MOCKUP PLATFORM MONORAIL & TANK PLATE CUT OUT [SEC 1 OF 3]

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This document was too large to scan as a whole document, therefore it required breaking into smaller sections.

DOCUMENT NUMBER: SD-WM-ER-521

SECTION 1 OF 3

TITLE: Structural Analysis Design & Evaluation of mock-up platform monorail & Tank Plate Cut-out

DATE: 12-19-95

ORIGINATOR: T. S. Hundal

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STRUCTURAL ANALYSIS, DESIGN AND EVALUATION OF MOCK-UP PLATFORM, MONORAIL, AND TANK PLATE CUT-OUT

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WHC, Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-87RL10930

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Key Words: Double Shell Tank, DST, Mock-up platform, structural seismic analysis, Robotic UT inspection, CMA, seismic, design, finite element analysis, monorail, hoist, trolley, plate cut-out.

Abstract: Platform - Structural analyses were performed for design seismic, live and dead load combinations for the freestanding platform over the partial DST mock-up section. The platform is to be used for Robotic ultrasonic inspection of the tank wall. It is a free standing structure anchored to floor slab with Hilti Kwik bolts.

Monorail - The Monorail, trolley and hoist arrangement was designed and provided for accidental Robot fall.

Plate cut-out - The primary tank plate cut-out section was designed to validate the Robot test results.

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AUTHOR'S NOTE:

This report was initially prepared for the analysis of Mock-up Platform only but later, two more analyses were performed and are included in Appendix C and Appendix D for Monorail Design and Details, and Primary Tank Plate Cut-Out Design and Details, respectively.

So accordingly, it will be noticed that the main body of the report represents the platform analysis whereas the Appendices C and D describe analyses for Monorail and Primary Tank Plate Cut-out. This was done to avoid the cost of writing two SDs and two EDTs.

STRUCTURAL ANALYSIS, DESIGN AND EVALUATION OF DST MOCK-UP PLATFORM

1.0 INTRODUCTION

Structural analyses have been performed for the Hanford Site Double-Shell Tank (DST) mock-up platform (DMP) mounted on the concrete floor slab of 300 Area, highbay building 337. This DMP accommodates the Cable Management Assembly (CMA) frame unit with the hoisting cable reel. The CMA frame stands on four jacks for raising and lowering the unit to suit the various DST riser heights. It is recommended that these jacks be directly bolted to DMP beams. Six loading cases were analyzed including the normal operational vertical deadweight plus live loads, and the deadweight combined with seismic response loads.

The DMP and CMA frame will be used with the DST partial mock-up to test and qualify a robotic ultrasonic examination system. The DMP is a braced steel space frame structure with mixture of welded and bolted joints. It is fabricated from various size structural shapes. The six DMP columns are anchored to the concrete floor with Hilti[1] Kwik bolts through base plates. The CMA unit is prefabricated from structural steel tubes with welded connections, and stands on the support jacks. The objectives of the structural analyses include determining and evaluating the stresses in the frame members and the joints subject to required design seismic, live loads, and dead load combinations. Three dimensional equivalent static finite element analyses of the DMP were performed (ANSYS 1990) to determine the stresses in the members and forces in the joints. The output results were printed for member stresses and joint forces. For these analyses, it was necessary to presume the CMA support racks are anchored (bolted) to the DMP beams. The joint forces were used to calculate the bolt and weld stresses for the joints with methods from AISC 1989 and Blodgett 1982. The member, joints and weld stresses were evaluated and determined to be in conformance with AISC 1989 and AWS 1992, respectively.

2.0 CONCLUSIONS AND RECOMMENDATIONS

The DMP structural analyses (ANSYS) results are the structural member stresses and joint forces. The joint forces were then used to calculate the bolted and welded joint stresses. These calculated members, bolts and welds stresses are all within the allowable values. Each CMA support jack should be anchored (bolted) to the DMP beams with two ½" diameter SAE Grade 8 bolts.

---

[1]Trade Name: Hilti, Incorporated, Tulsa, Oklahoma.

3.0 MATERIALS AND ALLOWABLE STRESSES

The drawings for the DMP (WHC 1995a), specify ASTM A36 steel for all structural members. For CMA frame, the structural steel tubes are ASTM A1020, (WHC 1995b). The steel plates and other components used are ASTM A36. The weld metal used has a specified minimum ultimate strength of 70,000 psi (E70XX Electrodes).

3.1 STRUCTURAL STEEL STRENGTH AND ALLOWABLE STRESSES

The elastic modulus, strength and allowable* stresses used for all the structural steel members and components of the DMP and CMA frames are as follows:

Modulus of Elasticity, E = 29,000,000 psi

ASTM A36 Steel for DMP frame:

Ultimate Tensile Strength, F_u = 58,000 psi

Yield Strength, F_y = 36,000 psi

Allowable Axial Stress, F_t = 0.60 x F_y = 21,600 psi

Allowable Bending Stress, F_b = 0.66 x F_y = 23,760 psi

Allowable Shear Stress, F_v = 0.40 x F_y = 14,400 psi

ASTM A1020 Steel for CMA frame:

Ultimate Tensile Strength, F_u = 52,000 psi

Yield Strength, F_y = 38,000 psi

Allowable Axial Stress, F_t = 0.60 x F_y = 22,800 psi

Allowable Bending Stress, F_b = 0.66 x F_y = 25,080 psi

Allowable Shear Stress, F_v = 0.40 x F_y = 15,200 psi

* Allowable stresses may be increased by 33% for seismic load combinations.

3.2 WELD ALLOWABLE STRENGTH

The ultimate strength and allowable stress for the welds joining the DMP structural members were established in accordance with the Structural Welding Code (AWS 1992), and the Manual of Steel Construction (AISC 1989). These forces per unit length values are determined based on the minimum ultimate strength (F_{uwm}) of the weld metal, and the thickness (t_w) of the weld as follows:

Weld Metal Ultimate Strength, F_{uwm} = 70,000 psi

Fillet Weld Ultimate Strength, F_{uw} = $0.707 \times t_w \times F_{uwm}$ lbs/in

Fillet Weld Allowable* Stress, F_w = $0.30 \times F_{uw} = 14{,}800 \times t_w$ lbs/in

* Allowable stress may be increased by 33% for seismic load combinations.

4.0 CONFIGURATION AND LOADS

The configuration of the DMP structure was obtained from the design drawing H-3-306027 Sh.1 thru 7* (WHC 1995a). It is a braced steel space frame structure with welded and bolted joints. It is fabricated from various structural steel (A36) shapes and plates. The CMA frame assembly is fabricated from A1020 steel tube members as shown on drawing 9213-CMA-ASSY-001 (WHC 1995b).

In lieu of the design load requirements in WHC 1992, the platform structure was analyzed for more realistic actual loads as described below.

The complete DMP assembly was analyzed for dead load plus 75 psf live load on the platform. The CMA frame supports the cable reel from two beams at the top. The reel carries about 6000 lbs total operating load, including the robotic system. The complete structure was further analyzed for: two orthogonal horizontal seismic design response forces of 0.20g and 0.06g combined with the dead load; and a 0.133g vertical seismic design response force combined with the dead load. These seismic forces are appropriate for the safety class 3 (SC3) of the platform (WHC 1992).

*To be issued

5.0 STRUCTURAL ANALYSES AND RESULTS

Three dimension finite element static analyses were conducted for the DMP structure (ANSYS 1990) for the normal deadweight and live loads, and for deadweight combined with the seismic design forces. The frame was modeled as a mixture of welded and bolted connections. It was presumed that the CMA support jacks are bolted to the DMP beams. The six columns bases are anchored to the floor slab with Hilti Kwik bolts and the top of the columns are connected to platform beams with bolts. These columns are idealized as pinned joints.

Six load cases were run. This was necessary to ensure that the analyses results for the DMP will capture the maximum stresses in the members and the maximum forces at the joints. The finite element models are described in detail, and all analyses results are provided in Appendix A.

The analyses results given in Appendix A, include the forces and moments in the members and joints, and the member stresses. The bending, axial, shear, and combined stresses are calculated for each beam element in the DMP model. The maximum bending, shear, and combined stress values in the DMP members and connection joints for various load cases are listed in tables on pages A-221 through A-226 of Appendix A. Tables on page A-220 list the enveloped forces and stress values for all load cases used for the Appendix B design evaluation of members and joints.

Appendix B is the structural design evaluation for the DMP and CMA members and joints using the ANSYS analyses results. The structural member stresses were determined to be within the allowable limits. The stresses in the bolted and welded joints were calculated using methods from AISC 1989 and Blodgett 1982. The calculated stresses in the bolts and welds are within the allowable limits.

6.0 REFERENCES

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DOE, 1989, *Standard Architectural-Civil Design Criteria*, HPS-SDC-4.1, Rev.11. Richland, Washington.

UBC, 1991, *Uniform Building Code*, International Conference of Building Officials, Whittier, California.

WHC, 1992, *Specification for Double Shell Tank Mock-up Test Facility*, WHC-S-0152, Revision 0.

WHC, 1995a, *Double Shell Tank Mock-up Stand Assembly*, Drawing No. H-3-306027 Sht. 1 thru 7.

WHC, 1995b, Double Shell Tank Inspection Final System Design Specification, (WHC-4375-SP-3.0) Vol. 2, *Design Drawings*, Cable Management Assembly, Raytheon Engineers & Constructors, Inc. and RedZone Robotics, Inc.

Figure 1. DMP Frame Assembly.

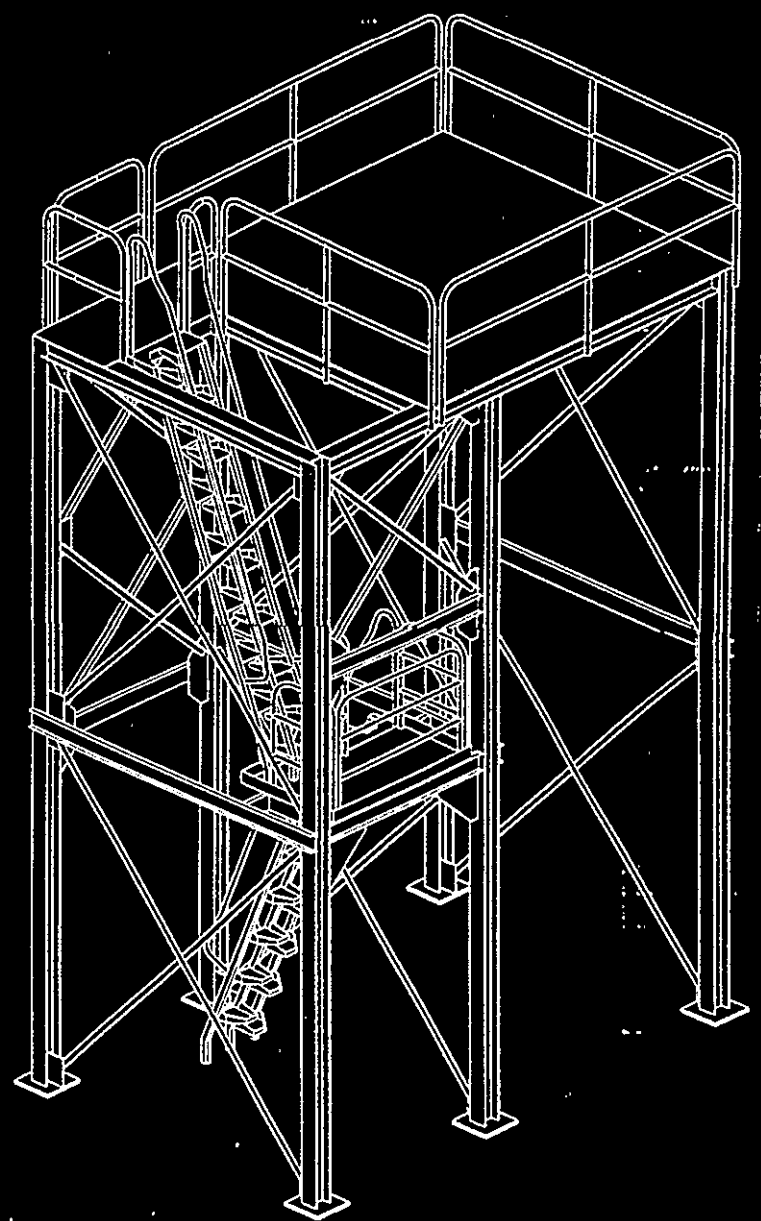


Figure 2. CMA Frame Assembly.

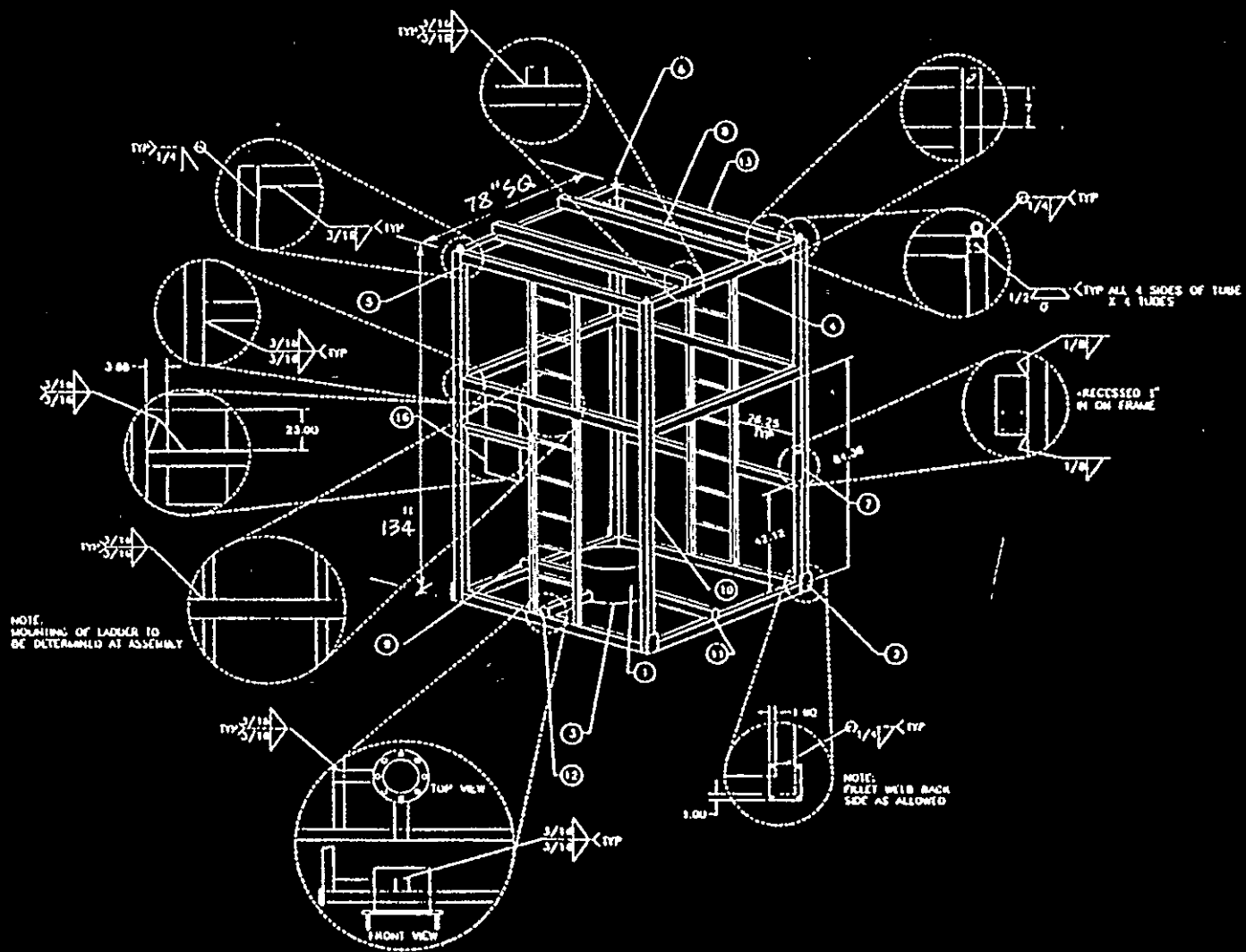
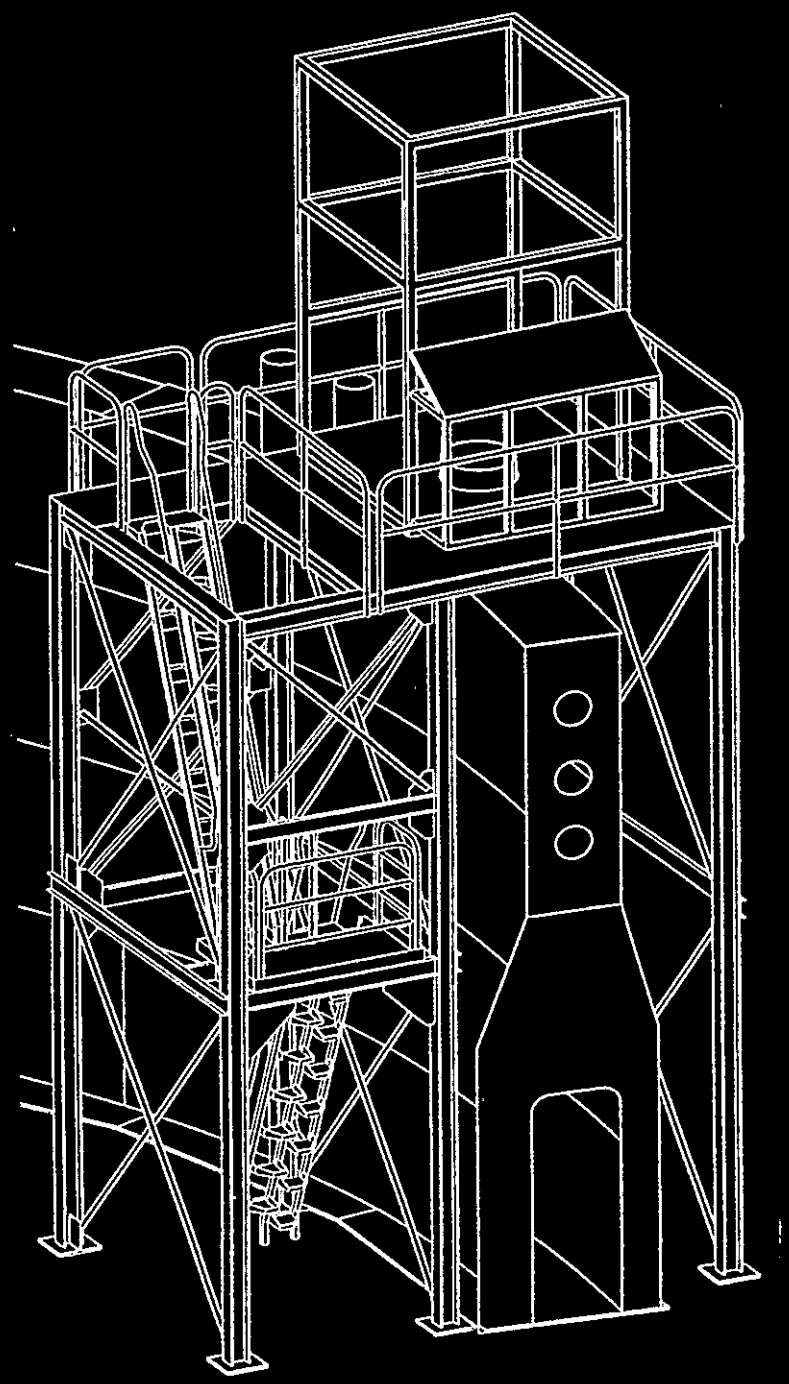


Figure 3. DMP and CMA Frame Assembly.



APPENDIX A

FINITE ELEMENT ANALYSES

INDEPENDENT REVIEW CHECKLIST

Document Reviewed: Structural analysis, design and evaluation of DST Mock-up Platform

Author: T. S. Hundal

Document No. WHC-SD-WM-ER-521, R/0

Yes	No	N/A	
[X]	[ ]	[ ]	Problem completely defined.
[X]	[ ]	[ ]	Necessary assumptions explicitly stated and supported.
[X]	[ ]	[ ]	Computer codes and data files documented.
[X]	[ ]	[ ]	Data used in calculations explicitly stated in document.
[X]	[ ]	[ ]	Data checked for consistency with original source information as applicable.
[ ]	[ ]	[X]	Mathematical derivations checked including dimensional consistency of results.
[X]	[ ]	[ ]	Models appropriate and used within range of validity or use outside range of established validity justified.
[X]	[ ]	[ ]	Hand calculations checked for errors.
[X]	[ ]	[ ]	Code run streams correct and consistent with analysis documentation.
[X]	[ ]	[ ]	Code output consistent with input and with results reported in analysis documentation.
[X]	[ ]	[ ]	Acceptability limits on analytical results applicable and supported. Limits checked against sources.
[X]	[ ]	[ ]	Safety margins consistent with good engineering practices.
[X]	[ ]	[ ]	Conclusions consistent with analytical results and applicable limits.
[X]	[ ]	[ ]	Results and conclusions address all points required in the problem statement.

F. R. Vollert
Reviewer

12/7/95
Date

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Section	Description	Page
A.1	Finite Element Model	A-4
A.2	Applied Loads & Material Properties	A-5
A.3	Finite Element Model ANSYS Inputs and Outputs	A-13
A.4	Summary of ANSYS output results	A-220

A.1 FINITE ELEMENT MODEL

The Double Shell Tank (DST) Mock-up platform (DMP) is mounted on the 300 Area Highbay building 337 floor. This platform is a braced space frame with a steel plate at its top serves as a working area for the Robot operation to be lowered into the DST annulus space and is anchored to the concrete floor with Hilti Kwik bolts. A Cable Management Assembley (CMA) prefabricated steel frame is mounted on the top of the DMP. The CMA frame is supported on four jacks to accomodate the varying heights of diffferent risers on top of the tanks. The DMP is made up of various A36 structural shapes and sizes. See Drawings H-3-306027 Sh.1 thru 7* for details. The CMA is fabricated from A1020 tube steel. See Drawing 9213-CMA-ASSY-001 by RedZone Robotics, Inc., for details.

The purpose of the analysis is to determine the forces in the joints and stresses in the members mof the DMP and CMA. The analysis loads are: the deadweight od DMP and CMA frames and the hoisting reel weight (approx. 6000 lbs) including the weight of the Robot. To acccomplish this, three dimensional finite element model was generated for both frames using the ANSYS computer program. For seismic events, a 0.12g free field horizontal accelration value was used as per SDC-4.1. Applied seismic loads were computed and applied as per UBC 1991 methods. The maximum computed horizontal accelration value was applied in one direction and a thirty percent of this computed value was applied in the other orthogonal horizontal dierection combined with the dead loads. Various boudary conditions were applied to reperesent the field coditions. See page A-14 for the model geometry and configuration. Six load cases were run to get the maximum reactions, forces and/or stresses in the joints and/or members. These load cases are as follows:

Load Case 1. DL + LL
Load Case 2. DL +0.2g (x) + 0.06g (z)
Load Case 3. DL +0.2g (-x) +0.06g (z)
Load Case 4. DL +0.06g (x) +0.2g (z)
Laod Case 5. DL +0.06g (x) +0.2g (-z)
Load Case 6. DL +0.133g (y)

(Note: x,y,z are the directions in which the seismic accelrations were applied to represent the seismic loads)

The output for maximum forces and/or stresses for joints and members were tabulated for each load case and the enveloped values were compiled in the final table. The final enveloped values were used to design and/or evaluate the joint and members. The design and evaluation of members and joints is given in Appendix B.

*To be issued

A.2 APPLIED LOADS AND MATERIAL PROPERTIES

(1) Drawing _____ (2) Doc. No. _____ (3) Page 1 of ____
(4) Building _____ (5) Rev. _____ (6) Job No. _____
(7) Subject DST MOCK-UP PLATFORM
(8) Originator L.E. ULBRICHT [signature] Date 8/24/93
(9) Checker [signature] Date 7/10/95

(10)
LOAD CONDITIONS:

STATIC:

UNIFORM PLATFORM LOAD OF 75 lbf/ft² FOR LIGHT MANUFACTURING PLATFORM (UBC 1991, TABLE 23-A)

SEISMIC:

FOR SAFETY CLASS 3 COMPONENTS, SDC 4.1 (DOE 1989) SPECIFIES THE FOLLOWING SEISMIC DESIGN CRITERIA

$Z = 0.12g$ = ZERO PERIOD ACCELERATION
$I = 1.25$ = IMPORTANCE FACTOR

PER UCRL 1990, THE STATIC EQUIVALENT METHOD SPECIFIED BY UBC 1991 IS APPROPRIATE FOR EQUIPMENT AND NON-STRUCTURAL ELEMENTS (SC3 & SC4).

$$F_p = Z I C_p W_p$$

WHERE: F_p = THE EQUIVALENT STATIC LOAD APPLIED TO THE COMPONENT TO REPRESENT SEISMIC LOADING
$C_p = 2(.75) = 1.5$ = HORIZONTAL FORCE FACTOR PER TABLE 23-P AND PARA. 2336(b) OF UBC 1991
W_p = SEISMIC DEAD LOAD: PER PARA. 2334a OF UBC 1991, THE 75 lb/ft² LIVE LOAD IS EXCLUDED

$$F_p = 0.12(1.25)(1.5)W_p = 0.2W_p$$

THEREFORE, USE A HORIZONTAL ACCELERATION OF $a_h = 0.2g$

THE VERTICAL ACCELERATION IS $a_v = \frac{2}{3}a_h = \frac{2}{3}(0.2g) = 0.133g$. (UCRL 1990, SECT. 4.4.1)

PER SECTION 4.4.3 OF UCRL 15910, THE EARTHQUAKE DIRECTIONAL COMPONENTS ARE COMBINED BY ADDING 100% OF THE HORIZONTAL SEISMIC FORCES IN ONE DIRECTION WITH 30% OF THE HORIZONTAL SEISMIC FORCE IN THE ORTHOGONAL DIRECTION. ALSO, FOR SAFETY CLASS 3 COMPONENTS, THE VERTICAL SEISMIC ACCELERATION IS NOT COMBINED WITH THE HORIZONTAL ACCELERATION.

THEREFORE, THE LOAD CONDITIONS, IN TERMS OF ACCELERATION, ARE AS FOLLOWS. NOTE: THE 75 lbf/ft² PLATFORM LOADING DOES NOT APPLY TO THE SEISMIC CONDITIONS.

1) $a_x = 0.2g$, $a_y = 1g$, $a_z = 0.06g$
2) $a_x = 0.06g$, $a_y = 1g$, $a_z = 0.2g$
3) $a_x = 0$ $a_y = 1.133g$, $a_z = 0$

NOTE: Y IS VERTICAL

BD-6400-060.1 (12/87)

ANALYTICAL CALCULATIONS

Subject DST MOCK-UP PLATFORM
Originator T Stundel Date 7-10-95
Checker Date

PLATFORM SAFETY CLASSIFICATION (SC) IS 3

PLATFORM LOADING

DL
$\frac{1}{4}''$ PL = 10.2 psf
LL = 75.0 psf (Ref. UBC, 91)

(1) { DL+LL = 85.2 psf (STATIC)
DL of CMA = 6000 lbs

SEISMIC (Ref. SDC-4.1)

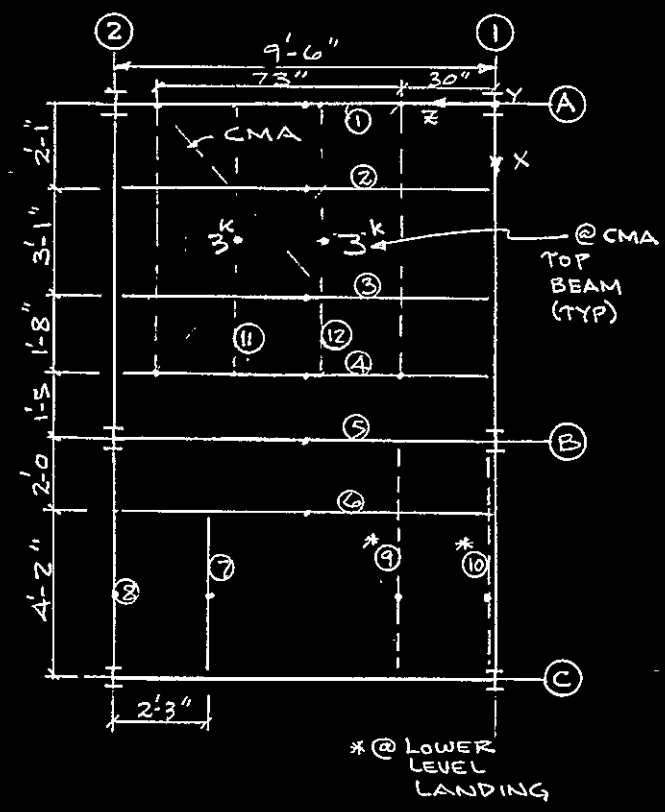
$F_p = .2 W_p$

∴ THREE SEISMIC LOADING CASES

2) $a_x = .2g$, $a_y = 1g$ $a_z = .06g$

3) $a_x = .06g$, $a_y = 1g$ $a_z = .2g$

4) $a_x = 0$ $a_y = 1.133g$ $a_z = 0$



CALCULATE (DL+LL) for BEAMS @ MID SPAN

			DL ONLY @ 10.2 psf
BEAM 1	= 85.2 (9.5 x 2.1)/2	= 850#	105#
2	= 85.2 (9.5 x 5.2)/2	= 2104#	252
3	= 85.2 (9.5 x 4.75)/2	= 1922	230
4	= 85.2 (9.5 x 3.1)/2	= 1255	150
5	= 85.2 (9.5 x 3.42)/2	= 1384	166
6	= 85.2 (9.5 x 2)/2	= 809	97
7 & 8	= 85.2 (4.2 x 2.25)/2	= 403 + *150 = 553	48 + *150 = 198
9 & 10	= 85.2 (6.2 x 2.25)/2	= 594 + *300 = 894	71 + *300 = 371

*DL of STAIRS (ASSUMED)

20#/ft x 15' = 300#

ANALYTICAL CALCULATIONS

Subject DST MOCK-UP PLATFORM
Originator [signature] Date 7-10-95
Checker ____ Date ____

SEISMIC LOADS

.2g & .06g & .133g

BEAM	NODE	F_Y	$.2F_Y$	$.06F_Y$	$1.133F_Y$
1	20	105	21	6	119
2	23	252	50	15	286
3	26	230	46	14	261
4	29	150	30	9	170
5	54	166	33	10	188
6	55	97	19	6	110
7 & 8	49,57	198	40	12	224
9 & 10	60,62	371	74	22	420
11 & 12	41,42	3000	600	180	3399

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Rev. 0

DESIGN CALCULATION

(1) Drawing _____ (2) Doc. No. _____ (3) Page 4 of ____
(4) Building _____ (5) Rev. _____ (6) Job No. _____
(7) Subject DST MOCK-UP PLATFORM
(8) Originator [signature] Date 8/24/93
(9) Checker [signature] Date 7/10/95

(10)

ALLOWABLE STRESSES:

STATIC:

STRUCTURAL MEMBERS: ASTM-A36 REF AISC 1989

TENSION: $F_T = 0.6\,F_y = 0.6(36{,}000) = 21{,}600\ lbf/in^2$

BENDING: $F_b = 0.6\,F_y = 21{,}600\ lbf/in^2$ or CALCULATED CASE by CASE

SHEAR: $F_V = 0.4\,F_y = 0.4(36{,}000) = 14{,}400\ lbf/in^2$

COMPRESSION: F_c → BASED ON BUCKLING CRITERIA, EVALUATED CASE BY CASE

PLATE: ASTM-A36, REF AISC 1989

TENSION: $F_T = 0.6\,F_y = 21{,}600\ lbf/in^2$

BENDING ABOUT MINOR AXIS: $F_b = 0.75\,F_y = 0.75(36{,}000) = 27{,}000\ lbf/in^2$

SHEAR: $F_V = 0.4\,F_y = 14{,}400\ lbf/in^2$

WELDS: E70XX ROD REF AISC 1989, TABLE J2.5

SHEAR: $F_V = 0.3$(NOM. TENSILE STRENGTH OF WELD METAL)

$F_V = 0.3(70{,}000) = 21{,}000\ lbf/in^2$

BOLTS: REF AISC 1989 TABLE J3.2 & TABLE J3.7

THE FOLLOWING VALUES ARE FOR FULLY PRELOADED BOLTS IN OVERSIZE HOLES

ASTM A325 BOLTS $F_T = 44{,}000\ lbf/in^2$, $F_V = 15{,}000\ lbf/in^2$

BOLT SIZE	AREA	PRELOAD	TENSILE LOAD	SHEAR LOAD
1/2 in	0.19 in²	12,000 lbf	8360 lbf	2850 lbf
5/8 in	0.3 in²	19,000 lbf	13,200 lbf	4500 lbf

ANCHOR BOLTS: REF SDC 4.2 (DOE 1992) TABLE 11

HILTI KWIK BOLT II IN 3000 lbf/in² CONCRETE

BOLT SIZE	EMBEDMENT	TENSILE LOAD	SHEAR LOAD
5/8 in	2 3/4 in	1750 lbf	2530 lbf
5/8 in	4 in	2670 lbf	2750 lbf
3/4 in	3 1/4 in	2170 lbf	3410 lbf
3/4 in	4 3/4 in	3870 lbf	3710 lbf

STRESS COMBINATIONS:

STRUCTURAL MEMBERS: TENSION AND BENDING: $\frac{f_T}{F_T} + \frac{f_{bx}}{F_{bx}} + \frac{f_{bz}}{F_{bz}} \le 1$

COMPRESSION AND BENDING: IF $\frac{f_c}{F_c} < 0.15$, $\frac{f_c}{F_c} + \frac{f_{bx}}{F_{bx}} + \frac{f_{bz}}{F_{bz}} \le 1$

INTERACTION FOR BOLTS & ANCHOR BOLTS:

$$\frac{f_T}{F_T} + \frac{f_V}{F_V} \le 1$$

(1) Drawing _____ (2) Doc. No. _____ (3) Page 5 of ____
(4) Building _____ (5) Rev. _____ (6) Job No. _____
(7) Subject DST MOCK-UP PLATFORM
(8) Originator [signature] Date 8/24/93
(9) Checker [signature] Date 7/10/95

(10)

ALLOWABLE STRESSES (CONT.):

SEISMIC:

PER AISC 1989, PARA A5.2 AND UBC 1991, PARA. 2303(d), THE ALLOWABLE SEISMIC STRESSES ARE 1/3 GREATER THAN STATIC ALLOWABLES. THIS DOES NOT APPLY TO ANCHOR BOLTS.

STRUCTURAL MEMBERS: ASTM A36

TENSION: $F_T = 4/3\,(21,600) = 28,800$ lbf/in²
BENDING: $F_b = 4/3\,(21,600) = 28,800$ lbf/in²
SHEAR: $F_V = 4/3\,(14,400) = 19,200$ lbf/in²
COMPRESSION: $F_c = 4/3\,(F_c$ FOR STATIC$)$

PLATE: ASTM A36

TENSION: $F_T = 4/3(21,600) = 28,800$ lbf/in²
BENDING (MINOR AXIS): $F_b = 4/3\,(27,000) = 36,000$ lbf/in²
SHEAR: $F_V = 4/3\,(14,400) = 19,200$ lbf/in²

WELDS: E70xx ROD

SHEAR: $F_V = 4/3(21,000) = 28,000$ lbf/in²

BOLTS:

TENSION: $F_T = \frac{4}{3}(44,000) = 58,667$ lbf/in²
SHEAR: $F_V = 4/3\,(15,000) = 20,000$ lbf/in²

BOLT SIZE	TENSILE LOAD	SHEAR LOAD
1/2 in	4/3(8360) = 11,147 lbf	4/3(2850) = 3800 lbf
5/8 in	4/3(13,200) = 17,600 lbf	4/3(4500) = 6000 lbf

ANCHOR BOLTS: HKB-II IN 3000 lbf/in²

NO INCREASE FOR SEISMIC LOAD → SEE STATIC ALLOWABLES

STRESS COMBINATIONS:

SAME AS FOR STATIC CONDITIONS

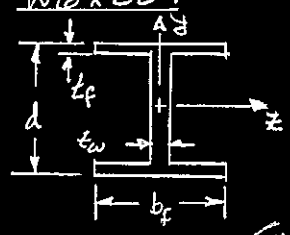
DESIGN CALCULATION

(1) Drawing _____ (2) Doc. No. _____ (3) Page 6 of ____
(4) Building _____ (5) Rev. _____ (6) Job No. _____
(7) Subject DST Mock-Up Platform
(8) Originator L E Ulbilt Date 8/24/93
(9) Checker [signature] Date 7/10/95

(10)

SECTIONAL PROPERTIES OF STRUCTURAL MEMBERS: REF AISC 1989

W6x20:



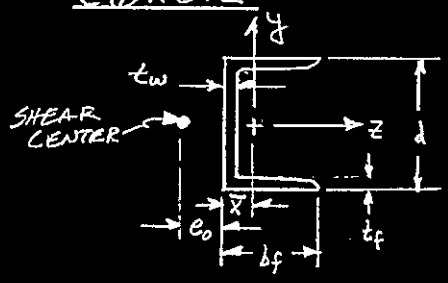
$A = 5.87\ in^2$
$d = 6.2\ in$
$t_w = 0.26\ in$
$b_f = 6.02\ in$
$t_f = 0.365\ in$

$I_z = 41.4\ in^4$
$I_y = 13.3\ in^4$
$r_z = 2.66\ in$
$r_y = 1.5\ in$
$J = 0.24\ in^4$

$S_z = 13.4\ in^3$
$S_y = 4.41\ in^3$

SHEAR AREA $= A_s = d t_w = 6.2(.26) = 1.612\ in^2$

C6x8.2:



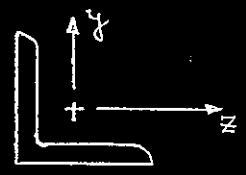
$A = 2.4\ in^2$
$d = 6\ in$
$t_w = 0.2\ in$
$b_f = 1.92\ in$
$t_f = 0.343\ in$
$\bar{X} = 0.511\ in$
$e_o = 0.599\ in$

$I_z = 13.1\ in^4$
$I_y = 0.693\ in$
$r_z = 2.34\ in$
$r_y = 0.537\ in$
$J = 0.08\ in^4$

$S_z = 4.38\ in^3$
$S_y = .492\ in^3$

SHEAR AREA $= A_s = d t_w = 6(.2) = 1.2\ in^2$

L2x2x1/4:

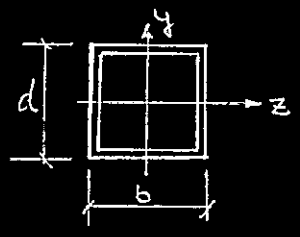


$A = 0.938\ in^2$
$r_{min} = 0.391\ in$
$wt/ft = 3.19\ lbf/ft$

DECK PLATE:

1/4" PLATE
UNITWEIGHT $= 0.2836\ lb/in^3$

TS 3x3x1/4 (A-1020)



$A = 2.59\ in^2$
$d = b = 3"$

$I_y = I_z = 3.16\ in^4$
$J = 5.35\ in^4$
$r = 1.10"$

$S = 2.10\ in^3$

(1) Drawing _____ (2) Doc. No. _____ (3) Page 7 of ____
(4) Building _____ (5) Rev. _____ (6) Job No. _____
(7) Subject DST MOCK-UP PLATFORM
(8) Originator [signature] Date 8/24/93
(9) Checker [signature] Date 7/10/95

(10)

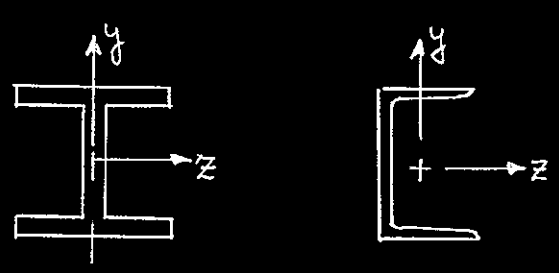
STATIC EVALUATION:

THE PLATFORM IS ANALYZED USING ANSYS 4.4a (ANSYS 1989). THE INPUT LISTINGS AND RESULTS ARE PESENTED IN THE ATTACHMENTS. A SUMMARY OF THE RESULTING MAXIMUM VALUES FOR STRESSES AND FORCES ARE TABULATED ON PAGE A-220. THE NOTATION IS AS FOLLOWS.

f_x, f_y, f_z = ELEMENT END NODE FORCES lbf
m_x, m_y, m_z = " " " MOMENTS lbf-in
SAX = AXIAL STRESS IN STRUCTURAL MEMBERS, lbf/in²
$SBY = \frac{My}{Sy}$ = BENDING STRESS IN BEAMS AND COLUMNS, lbf/in²
$SBZ = \frac{Mz}{Sz}$ = BENDING STRESS IN BEAMS AND COLUMNS, lbf/in²
$SG1 = SAX + |SBY| + |SBZ|$, lbf/in²
$SG3 = SAX - |SBY| - |SBZ|$, lbf/in²
PREFIXES I AND J, DENOTE START AND END NODE OF AN ELEMENT

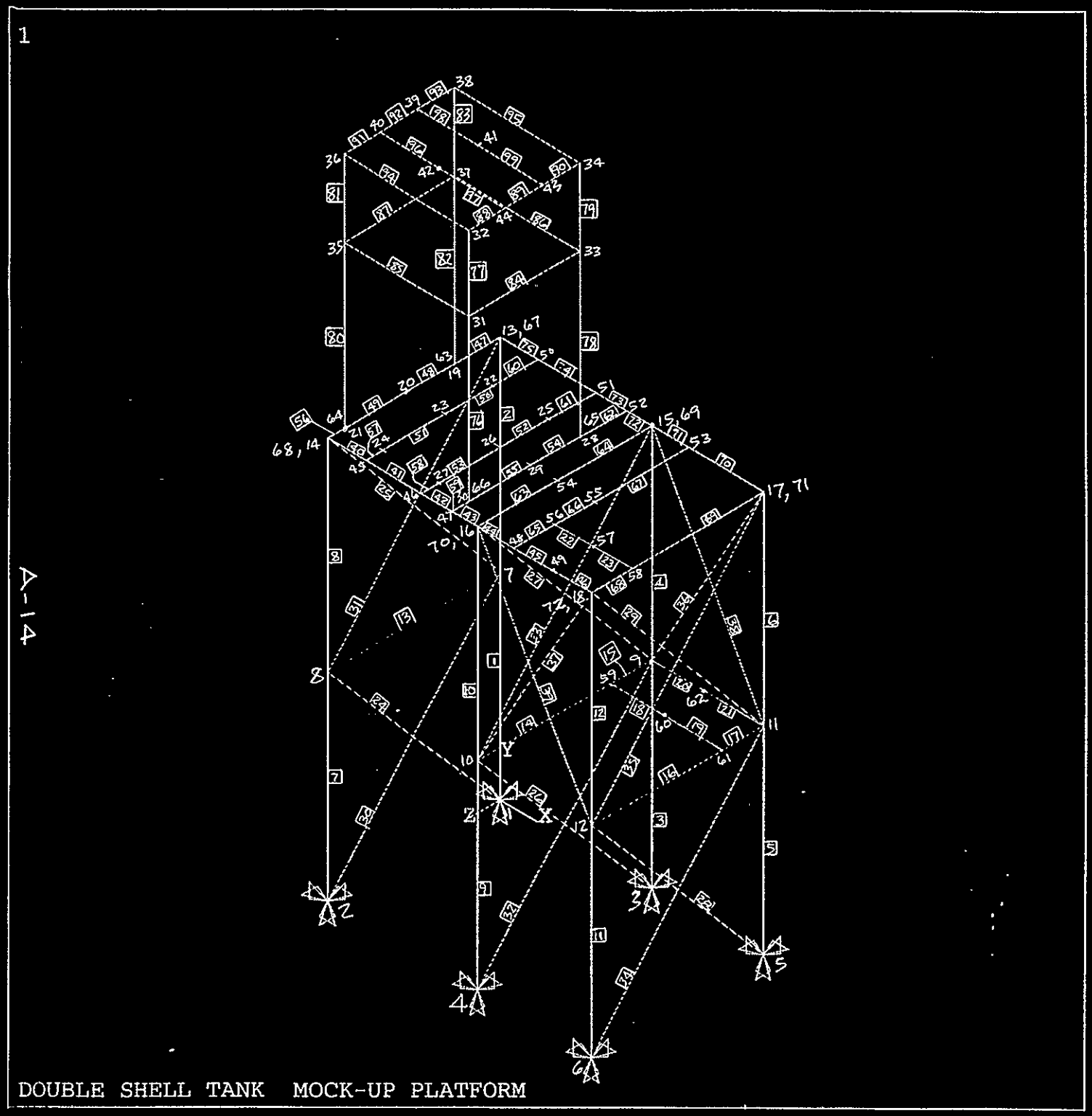
THE MAXIMUM STRESSES FOR BEAMS AND COLUMNS ARE BASED ON THE MAXIMUM OF SG1 AND SG3 VALUES, AND AS SUCH THE REPORTED STRESSES OCCUR AT A SINGLE NODE. THE MAXIMUM SHEAR FORCES REPORTED ARE THE MAXIMUM VALUE FOR ALL ELEMENTS OF THAT TYPE, AND AS SUCH, THESE MAXIMUMS MAY NOT OCCUR AT THE SAME NODE. THEREFORE, BEAM CONNECTIONS DESIGNED FOR THE REPORTED MAXIMUM SHEAR FORCES WILL BE CONSERVATIVE.

THE STRESSES AND FORCES FOR THE BEAMS AND COLUMNS ARE REPORTED IN THE ELEMENT'S COORDINATE SYSTEM AS SHOWN BELOW.



THE BASEPLATE REACTION FORCES ARE REPORTED IN GLOBAL COORDINATES (Y - VERTICAL). THE MAXIMUMS REPORTED IN THE FOLLOWING TABLE MAY NOT OCCUR AT THE SAME NODE.

A.3 FINITE ELEMENT MODEL, ANSYS INPUTS AND OUTPUTS


1
ANSYS 4.4A1
JUL 19 1995
14:51:24
PLOT NO. 1
POST1 ELEMENTS
TYPE NUM
TDIS
XV =1
YV =1
ZV =1
DIST=249.909
XF =86.5
YF =206.5
ZF =57
DOUBLE SHELL TANK MOCK-UP PLATFORM

```
/prep7

/title,DOUBLE SHELL TANK  MOCK-UP PLATFORM

et,1,4,,,,,,1  *3-D Beam W6X20 beam
et,2,8              *3-D Spar  L2x2x1/4
et,3,4              *3-D Beam W6x20 Column
et,4,4              *3-D Beam (TS3x3x1/4)A1020
et,5,4              *3-D Beam C6x8.2

r,1,5.87,41.4,13.3,6.02,6.20,      *W6x20 beam
rmore,,.24
r,2,.938                  *L2x2x1/4
r,3,5.87,41.4,13.3,6.02,6.20,      *W6x20 column
rmore,,.24
r,4,2.59,3.16,3.16,3,3,       *TS3x3x1/4
rmore,,5.35
r,5,2.4,13.1,.693,1.92,6,         *C6x8.2 beam
rmore,,.08

mp,ex,1,29e6                  *Steel
mp,dens,1,7.34e-4             *Mass density of steel

n,1
n,2,,,114
n,3,99
n,4,99,,114
n,5,173
n,6,173,,114
ngen,2,6,1,6,1,,129
ngen,2,6,7,12,1,,132
n,19,,261,30
n,20,,261,57
n,21,,261,103
ngen,2,3,19,21,1,25
ngen,2,3,22,24,1,37
ngen,2,3,25,27,1,20
n,31,82,365,103
n,32,82,413,103
ngen,2,2,31,32,1,,,-73
ngen,2,4,31,32,1,-82
ngen,2,4,33,34,1,-82
n,39,,413,54
n,40,,413,79
ngen,3,2,39,40,1,41
n,45,25,261,114
n,46,62,261,114
n,47,82,261,114
n,48,123,261,114
n,49,148,261,114
n,50,25,261
n,51,62,261
n,52,82,261
n,53,123,261
n,54,99,261,57
n,55,123,261,57
n,56,123,261,87
n,57,148,261,87
n,58,173,261,87
n,59,99,129,27
n,60,136,129,27
n,61,173,129,27
n,62,136,129
n,63,,261,30
n,64,,261,103
n,65,82,261,30
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```
n,66,82,261,103
n,67,,261
n,68,,261,114
n,69,99,261
n,70,99,261,114
n,71,173,261
n,72,173,261,114

Mat,1
Type,3
real,3          *W6x20 columns
e,1,7
e,7,13
e,3,9
e,9,15
e,5,11
e,11,17
egen,2,1,1,6,1

Type,5
real,5          *C6x8.2
e,7,8
e,10,59
e,59,9
e,12,61
e,61,11
e,59,60
e,60,61
e,9,62
e,62,11
e,56,57
e,57,58
Type,2
real,2          *L2x2x1/4
e,1,8
e,7,14
egen,3,2,24,25,1
e,2,7
e,8,13
egen,3,2,30,31,1
e,9,17
e,10,18
e,11,15
e,12,16

Type,1
real,1          *W6x20 Beams
e,68,45
e,45,46
e,46,47
e,47,70
e,70,48
e,48,49
e,49,72
e,67,19
e,19,20
e,20,21
egen,4,3,48,49,1
e,21,68
e,24,45
e,27,46
e,30,47
e,22,50
e,25,51
e,28,52
e,70,54
```

```
e,54,69
e,48,56
e,56,55
e,55,53
e,72,58
e,58,71
e,53,71
e,53,69
e,69,52
e,52,51
e,51,50
e,50,67

Type,4
real,4
e,66,31
e,31,32
e,65,33
e,33,34
e,64,35
e,35,36
e,63,37
e,37,38
e,31,33
e,31,35
e,37,33
e,37,35
e,32,44
e,44,43
e,43,34
e,36,40
e,40,39
e,39,38
e,32,36
e,38,34
e,40,42
e,42,44
e,39,41
e,41,43

cp,1,ux,19,63        *CMA Jack legs bases (nodes 63 - 66)
cp,2,uy,19,63
cp,3,uz,19,63
cp,4,ux,21,64
cp,5,uy,21,64
cp,6,uz,21,64
cp,7,ux,28,65
cp,8,uy,28,65
cp,9,uz,28,65
cp,10,ux,30,66
cp,11,uy,30,66
cp,12,uz,30,66
cp,13,ux,13,67
cp,14,uy,13,67
cp,15,uz,13,67
cp,16,ux,14,68
cp,17,uy,14,68
cp,18,uz,14,68
cp,19,ux,15,69
cp,20,uy,15,69
cp,21,uz,15,69
cp,22,ux,16,70
cp,23,uy,16,70
cp,24,uz,16,70
cp,25,ux,17,71
cp,26,uy,17,71
```

```
cp,27,uz,17,71
cp,28,ux,18,72
cp,29,uy,18,72
cp,30,uz,18,72

d,1,ux,,,6,,uy,uz          *Pinnned column bases

iter,1,1,1
f,20,fy,-850
f,23,fy,-2104
f,26,fy,-1922
f,29,fy,-1255
f,54,fy,-1384
f,55,fy,-809
f,49,fy,-553
f,57,fy,-553
f,60,fy,-894
f,62,fy,-894
f,41,fy,-3000
f,42,fy,-3000
acel,,386.4                      * (DL + LL)  Static Analysis
lwrite
f,20,fy,-105    $f,20,fx,21     $f,20,fz,6
f,23,fy,-252    $f,23,fx,50     $f,23,fz,15
f,26,fy,-230    $f,26,fx,46     $f,26,fz,14
f,29,fy,-150    $f,29,fx,30     $f,29,fz,9
f,54,fy,-166    $f,54,fx,33     $f,54,fz,10
f,55,fy,-97     $f,55,fx,19     $f,55,fz,6
f,49,fy,-198    $f,49,fx,40     $f,49,fz,12
f,57,fy,-198    $f,57,fx,40     $f,57,fz,12
f,60,fy,-371    $f,60,fx,74     $f,60,fz,22
f,62,fy,-371    $f,62,fx,74     $f,62,fz,22
f,41,fy,-3000   $f,41,fx,600    $f,41,fz,180
f,42,fy,-3000   $f,42,fx,600    $f,42,fz,180
acel,-77.28,386.4,-23.18         *DL + Seismic [.2g(x),1g(y),.06g(z)]
lwrite
f,20,fy,-105    $f,20,fx,-21    $f,20,fz,6
f,23,fy,-252    $f,23,fx,-50    $f,23,fz,15
f,26,fy,-230    $f,26,fx,-46    $f,26,fz,14
f,29,fy,-150    $f,29,fx,-30    $f,29,fz,9
f,54,fy,-166    $f,54,fx,-33    $f,54,fz,10
f,55,fy,-97     $f,55,fx,-19    $f,55,fz,6
f,49,fy,-198    $f,49,fx,-40    $f,49,fz,12
f,57,fy,-198    $f,57,fx,-40    $f,57,fz,12
f,60,fy,-371    $f,60,fx,-74    $f,60,fz,22
f,62,fy,-371    $f,62,fx,-74    $f,62,fz,22
f,41,fy,-3000   $f,41,fx,-600   $f,41,fz,180
f,42,fy,-3000   $f,42,fx,-600   $f,42,fz,180
acel,77.28,386.4,-23.18          *DL + Seismic[ -.2g(x),1g(y),.06g(z)]
lwrite
f,20,fy,-105    $f,20,fx,6      $f,20,fz,21
f,23,fy,-252    $f,23,fx,15     $f,23,fz,50
f,26,fy,-230    $f,26,fx,14     $f,26,fz,46
f,29,fy,-150    $f,29,fx,9      $f,29,fz,30
f,54,fy,-166    $f,54,fx,10     $f,54,fz,33
f,55,fy,-97     $f,55,fx,6      $f,55,fz,19
f,49,fy,-198    $f,49,fx,12     $f,49,fz,40
f,57,fy,-198    $f,57,fx,12     $f,57,fz,40
f,60,fy,-371    $f,60,fx,22     $f,60,fz,74
f,62,fy,-371    $f,62,fx,22     $f,62,fz,74
f,41,fy,-3000   $f,41,fx,180    $f,41,fz,600
f,42,fy,-3000   $f,42,fx,180    $f,42,fz,600
acel,-23.18,386.4,-77.28         *DL + Seismic [.06g(x), 1g(y),.2g(z)]
lwrite
f,20,fy,-105    $f,20,fx,6      $f,20,fz,-21
f,23,fy,-252    $f,23,fx,15     $f,23,fz,-50
```

```
f,26,fy,-230    $f,26,fx,14     $f,26,fz,-46
f,29,fy,-150    $f,29,fx,9      $f,29,fz,-30
f,54,fy,-166    $f,54,fx,10     $f,54,fz,-33
f,55,fy,-97     $f,55,fx,6      $f,55,fz,-19
f,49,fy,-198    $f,49,fx,12     $f,49,fz,-40
f,57,fy,-198    $f,57,fx,12     $f,57,fz,-40
f,60,fy,-371    $f,60,fx,22     $f,60,fz,-74
f,62,fy,-371    $f,62,fx,22     $f,62,fz,-74
f,41,fy,-3000   $f,41,fx,180    $f,41,fz,-600
f,42,fy,-3000   $f,42,fx,180    $f,42,fz,-600
acel,-23.18,386.4,77.28          *DL + Seismic [.06g(x), 1g(y),-.2g(z)]
lwrite
fdele,all
f,20,fy,-119
f,23,fy,-286
f,26,fy,-261
f,29,fy,-170
f,54,fy,-188
f,55,fy,-110
f,49,fy,-224
f,57,fy,-224
f,60,fy,-420
f,62,fy,-420
f,41,fy,-3399
f,42,fy,-3399
acel,,437.79              *DL + Seismic[ 0g(x), 1.133g(y), 0g(z)]
lwrite
afwrite
finish
/input,27
finish
```

```
/post1
/title, DOUBLE SHELL TANK MOCK-UP PLATFORM ANALYSIS
stress,ifx,4,1 $stress,ify,4,2          $stress,ifz,4,3
stress,imx,4,4 $stress,imy,4,5      $stress,imz,4,6
stress,jfx,4,7 $stress,jfy,4,8          $stress,jfz,4,9
stress,jmx,4,10$stress,jmy,4,11     $stress,jmz,4,12
stress,isax,4,13$stress,isby,4,14   $stress,isbz,4,15
stress,jsax,4,16$stress,jsby,4,17   $stress,jsbz,4,18
stress,isg1,4,19 $stress,isg3,4,20
stress,jsg1,4,21 $stress,jsg3,4,22
stress,sax,8,3
store
set,1
*create,mres
esel,type,1                 *W6x20 Beam
esort,isg1,,1,3
prstrs,isg1,ifx,ify,ifz,imx,imy,imz
esort,isg3,,1,3
prstrs,isg3,ifx,ify,ifz,imx,imy,imz
esort,jsg1,,1,3
prstrs,jsg1,jfx,jfy,jfz,jmx,jmy,jmz
esort,jsg3,,1,3
prstrs,jsg3,jfx,jfy,jfz,jmx,jmy,jmz
esel,type,2                 *L2x2x1/4
esort,sax,,1,3
prstrs,sax
esel,type,3                 *W6x20 Column
prrfor                      *Reactions at Column bases
esort,isg1,,1,3
prstrs,isg1,ifx,ify,ifz,imx,imy,imz
esort,isg3,,1,3
prstrs,isg3,ifx,ify,ifz,imx,imy,imz
esort,jsg1,,1,3
prstrs,jsg1,jfx,jfy,jfz,jmx,jmy,jmz
esort,jsg3,,1,3
prstrs,jsg3,jfx,jfy,jfz,jmx,jmy,jmz
esel,elem,2,12,2            *Forces at the top of columns
prstrs,jfx,jfy,jfz,jmx,jmy,jmz
esel, type,4                *TS3x3x1/4   CMA Frame
esort,isg1,,1,3
prstrs,isg1,ifx,ify,ifz,imx,imy,imz
esort,isg3,,1,3
prstrs,isg3,ifx,ify,ifz,imx,imy,imz
esort,jsg1,,1,3
prstrs,jsg1,jfx,jfy,jfz,jmx,jmy,jmz
esort,jsg3,,1,3
prstrs,jsg3,jfx,jfy,jfz,jmx,jmy,jmz
esel,elem,88,99
prstrs,ifx,ify,ifz,imx,imy,imz
prstrs,jfx,jfy,jfz,jmx,jmy,jmz
esel,elem,76,82,2           *Forces at the 4 - CMA jack bases
prstrs,ifx,ify,ifz,imx,imy,imz
esel,type,5                 *C6x8.2
esort,isg1,,1,3
prstrs,isg1,ifx,ify,ifz,imx,imy,imz
esort,isg3,,1,3
prstrs,isg3,ifx,ify,ifz,imx,imy,imz
esort,jsg1,,1,3
prstrs,jsg1,jfx,jfy,jfz,jmx,jmy,jmz
esort,jsg3,,1,3
prstrs,jsg3,jfx,jfy,jfz,jmx,jmy,jmz
*end
/outp,static
/title,DST MOCK-UP PLATFORM STATIC ANALYSIS
*use,mres
/outp,seismx
```

```
set,2
/title,DST MOCK-UP PLATFORM SEISMIC ANALYSIS [DL + 0.2g:x  + .06g:z]
*use,mres
/outp,seism-x
set,3
/title,DST MOCK-UP PLATFORM SEISMIC ANALYSIS [DL +0.2g:-x  + .06g:z]
*use,mres
/outp,seismz
set,4
/title,DST MOCK-UP PLATFORM SEISMIC ANALYSIS [DL + .06g:x + .2g:z]
*use,mres
/outp,seism-z
set,5
/title,DST MOCK-UP PLATFORM SEISMIC ANALYSIS [DL + .06g:x + .2g:-z]
*use,mres
/outp,seismy
set,6
/title,DST MOCK-UP PLATFORM SEISMIC ANALYSIS [DL + .133g:y]
*use,mres
/outp,model
/title,DST MOCK-UP PLATFORM FRAME MODEL
set,1
nall
eall
nlist
elist
finish
```

```
/*****************************************************************************/
/*****************************************************************************/
/***                                                                       ***/
/***      L     PPP   DDD       BBB    AA   N   N  N   N  EEEE  RRR        ***/
/***      L     P  P  D  D      B  B  A  A  NN  N  NN  N  E     R  R       ***/
/***      L     PPP   D  D      BBB   AAAA  N N N  N N N  EEE   RRR        ***/
/***      L     P     D  D      B  B  A  A  N  NN  N  NN  E     R  R       ***/
/***      LLLL  P     DDD       BBB   A  A  N   N  N   N  EEEE  R  R       ***/
/***                                                                       ***/
/*****************************************************************************/
/*****************************************************************************/

          8888        4  555555   8888       1
         8    8      44  5       8    8     11
         8    8     4 4  5       8    8    1 1
 w  w  w 8    8    4  4  5       8    8   1  1
 w  w  w  8888    4   4  55555    8888      1
 w  w  w 8    8  4    4       5  8    8     1
 w  w  w 8    8  4444444       5  8    8     1
 w  w  w 8    8       4       5  8    8     1
 w  w  w 8    8       4  5    5  8    8     1
  ww ww   8888        4   5555    8888      1


 EEEEEE   2222       1    0000    8888   555555
 E       2    2     11   0    0  8    8  5
 E            2    1 1   0    0  8    8  5
 E            2   1  1   0   00  8    8  5
 EEEEE       2       1   0  0 0   8888   55555
 E          2        1   0 0  0  8    8       5
 E         2         1   00   0  8    8       5
 E        2          1   0    0  8    8       5
 E       2           1   0    0  8    8  5    5
 EEEEEE  222222      1    0000    8888    5555


 TTTTTTT         H    H  U    U  N    N  DDDD      AA    L            /  2222    9999    2222    0000    GGGGG  W     W  W     W
    T            H    H  U    U  NN   N  D   D    A  A   L           / 2    2  9    9  2    2  0    0  G      W     W  W     W
    T            H    H  U    U  N N  N  D    D  A    A  L          /       2  9    9       2  0    0  G      W     W  W     W
    T            H    H  U    U  N N  N  D    D  A    A  L         /        2  9    9       2  0   00  G      W     W  W     W
    T            HHHHHH  U    U  N  N N  D    D  A    A  L        /       2   9    9      2   0  0 0  G  GGG  W     W  W     W
    T            H    H  U    U  N  N N  D    D  AAAAAA  L       /       2     99999     2    0 0  0  G    G  W     W  W     W  /
    T            H    H  U    U  N   NN  D    D  A    A  L      /       2          9    2     00   0  G    G  W  W  W  W  W  W  /
    T            H    H  U    U  N    N  D    D  A    A  L     /       2           9   2      0    0  G    G  W W W W W W W W /
    T            H    H  U    U  N    N  D   D   A    A  L    /       2            9  2       0    0  G    G  WW   WW WW   WW/
    T            H    H   UUUU   N    N  DDDD    A    A  LLLLLL /     222222   9999   222222   0000    GGGGG  W     W  W     W/


HOST:  sun1
USER:  w84581
JOB:   E21085
CLASS: T HUNDAL/2920GWW/211
```

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FOR SUPPORT CALL Larry Gannon PHONE 509-376-2604 TWX

DOUBLE SHELL TANK HOCK-UP PLATFORM 15.1264 AUG 1,1995 CP= 1.600

***** POST1 NODE LISTING *****

NODE	X	Y	Z	THXY	THYZ	THXZ
1	.00000000E+00	.00000000E+00	.00000000E+00	.00000000E+00	.00000000E+00	.00000000E+00
2	.00000000E+00	.00000000E+00	114.00000	.00000000E+00	.00000000E+00	.00000000E+00
3	99.000000	.00000000E+00	.00000000E+00	.00000000E+00	.00000000E+00	.00000000E+00
4	99.000000	.00000000E+00	114.00000	.00000000E+00	.00000000E+00	.00000000E+00
5	173.00000	.00000000E+00	.00000000E+00	.00000000E+00	.00000000E+00	.00000000E+00
6	173.00000	.00000000E+00	114.00000	.00000000E+00	.00000000E+00	.00000000E+00
7	.00000000E+00	129.00000	.00000000E+00	.00000000E+00	.00000000E+00	.00000000E+00
8	.00000000E+00	129.00000	114.00000	.00000000E+00	.00000000E+00	.00000000E+00
9	99.000000	129.00000	.00000000E+00	.00000000E+00	.00000000E+00	.00000000E+00
10	99.000000	129.00000	114.00000	.00000000E+00	.00000000E+00	.00000000E+00
11	173.00000	129.00000	.00000000E+00	.00000000E+00	.00000000E+00	.00000000E+00
12	173.00000	129.00000	114.00000	.00000000E+00	.00000000E+00	.00000000E+00
13	.00000000E+00	261.00000	.00000000E+00	.00000000E+00	.00000000E+00	.00000000E+00
14	.00000000E+00	261.00000	114.00000	.00000000E+00	.00000000E+00	.00000000E+00
15	99.000000	261.00000	.00000000E+00	.00000000E+00	.00000000E+00	.00000000E+00
16	99.000000	261.00000	114.00000	.00000000E+00	.00000000E+00	.00000000E+00
17	173.00000	261.00000	.00000000E+00	.00000000E+00	.00000000E+00	.00000000E+00
18	173.00000	261.00000	114.00000	.00000000E+00	.00000000E+00	.00000000E+00
19	.00000000E+00	261.00000	30.000000	.00000000E+00	.00000000E+00	.00000000E+00
20	.00000000E+00	261.00000	57.000000	.00000000E+00	.00000000E+00	.00000000E+00
21	.00000000E+00	261.00000	103.00000	.00000000E+00	.00000000E+00	.00000000E+00
22	25.000000	261.00000	30.000000	.00000000E+00	.00000000E+00	.00000000E+00
23	25.000000	261.00000	57.000000	.00000000E+00	.00000000E+00	.00000000E+00
24	25.000000	261.00000	103.00000	.00000000E+00	.00000000E+00	.00000000E+00
25	62.000000	261.00000	30.000000	.00000000E+00	.00000000E+00	.00000000E+00
26	62.000000	261.00000	57.000000	.00000000E+00	.00000000E+00	.00000000E+00
27	62.000000	261.00000	103.00000	.00000000E+00	.00000000E+00	.00000000E+00
28	82.000000	261.00000	30.000000	.00000000E+00	.00000000E+00	.00000000E+00
29	82.000000	261.00000	57.000000	.00000000E+00	.00000000E+00	.00000000E+00
30	82.000000	261.00000	103.00000	.00000000E+00	.00000000E+00	.00000000E+00
31	82.000000	365.00000	103.00000	.00000000E+00	.00000000E+00	.00000000E+00
32	82.000000	413.00000	103.00000	.00000000E+00	.00000000E+00	.00000000E+00
33	82.000000	365.00000	30.000000	.00000000E+00	.00000000E+00	.00000000E+00
34	82.000000	413.00000	30.000000	.00000000E+00	.00000000E+00	.00000000E+00
35	.00000000E+00	365.00000	103.00000	.00000000E+00	.00000000E+00	.00000000E+00
36	.00000000E+00	413.00000	103.00000	.00000000E+00	.00000000E+00	.00000000E+00
37	.00000000E+00	365.00000	30.000000	.00000000E+00	.00000000E+00	.00000000E+00
38	.00000000E+00	413.00000	30.000000	.00000000E+00	.00000000E+00	.00000000E+00
39	.00000000E+00	413.00000	54.000000	.00000000E+00	.00000000E+00	.00000000E+00
40	.00000000E+00	413.00000	79.000000	.00000000E+00	.00000000E+00	.00000000E+00
41	41.000000	413.00000	54.000000	.00000000E+00	.00000000E+00	.00000000E+00
42	41.000000	413.00000	79.000000	.00000000E+00	.00000000E+00	.00000000E+00
43	82.000000	413.00000	54.000000	.00000000E+00	.00000000E+00	.00000000E+00
44	82.000000	413.00000	79.000000	.00000000E+00	.00000000E+00	.00000000E+00
45	25.000000	261.00000	114.00000	.00000000E+00	.00000000E+00	.00000000E+00

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FOR SUPPORT CALL Larry Gannon PHONE 509-376-2604 TWX

DOUBLE SHELL TANK MOCK-UP PLATFORM 15.1264 AUG 1,1995 CP= 1.610

***** POST1 NODE LISTING *****

NODE	X	Y	Z	THXY	THYZ	THXZ
46	62.000000	261.00000	114.00000	.00000000E+00	.00000000E+00	.00000000E+00
47	82.000000	261.00000	114.00000	.00000000E+00	.00000000E+00	.00000000E+00
48	123.00000	261.00000	114.00000	.00000000E+00	.00000000E+00	.00000000E+00
49	148.00000	261.00000	114.00000	.00000000E+00	.00000000E+00	.00000000E+00
50	25.000000	261.00000	.00000000E+00	.00000000E+00	.00000000E+00	.00000000E+00
51	62.000000	261.00000	.00000000E+00	.00000000E+00	.00000000E+00	.00000000E+00
52	82.000000	261.00000	.00000000E+00	.00000000E+00	.00000000E+00	.00000000E+00
53	123.00000	261.00000	.00000000E+00	.00000000E+00	.00000000E+00	.00000000E+00
54	99.000000	261.00000	57.000000	.00000000E+00	.00000000E+00	.00000000E+00
55	123.00000	261.00000	57.000000	.00000000E+00	.00000000E+00	.00000000E+00
56	123.00000	261.00000	87.000000	.00000000E+00	.00000000E+00	.00000000E+00
57	148.00000	261.00000	87.000000	.00000000E+00	.00000000E+00	.00000000E+00
58	173.00000	261.00000	87.000000	.00000000E+00	.00000000E+00	.00000000E+00
59	99.000000	129.00000	27.000000	.00000000E+00	.00000000E+00	.00000000E+00
60	136.00000	129.00000	27.000000	.00000000E+00	.00000000E+00	.00000000E+00
61	173.00000	129.00000	27.000000	.00000000E+00	.00000000E+00	.00000000E+00
62	136.00000	129.00000	.00000000E+00	.00000000E+00	.00000000E+00	.00000000E+00
63	.00000000E+00	261.00000	30.000000	.00000000E+00	.00000000E+00	.00000000E+00
64	.00000000E+00	261.00000	103.00000	.00000000E+00	.00000000E+00	.00000000E+00
65	82.000000	261.00000	30.000000	.00000000E+00	.00000000E+00	.00000000E+00
66	82.000000	261.00000	103.00000	.00000000E+00	.00000000E+00	.00000000E+00
67	.00000000E+00	261.00000	.00000000E+00	.00000000E+00	.00000000E+00	.00000000E+00
68	.00000000E+00	261.00000	114.00000	.00000000E+00	.00000000E+00	.00000000E+00
69	99.000000	261.00000	.00000000E+00	.00000000E+00	.00000000E+00	.00000000E+00
70	99.000000	261.00000	114.00000	.00000000E+00	.00000000E+00	.00000000E+00
71	173.00000	261.00000	.00000000E+00	.00000000E+00	.00000000E+00	.00000000E+00
72	173.00000	261.00000	114.00000	.00000000E+00	.00000000E+00	.00000000E+00

PRINT ELEMENT LISTING

[illegible] ANALYSIS SYSTEM REVISION 4.4 A137 32207 MAY 1,1990
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DOUBLE SHELL TANK MOCK-UP PLATFORM 13.6333 JUL 13,1995 CP= .990

***** POST1 ELEMENT LISTING *****

ELEM	TYPE	STIF	MAT	ESYS	NODES		
1	3	4	1	0	1	7	0
2	3	4	1	0	7	13	0
3	3	4	1	0	3	9	0
4	3	4	1	0	9	15	0
5	3	4	1	0	5	11	0
6	3	4	1	0	11	17	0
7	3	4	1	0	2	8	0
8	3	4	1	0	8	14	0
9	3	4	1	0	4	10	0
10	3	4	1	0	10	16	0
11	3	4	1	0	6	12	0
12	3	4	1	0	12	18	0
13	5	4	1	0	7	8	0
14	5	4	1	0	10	59	0
15	5	4	1	0	59	9	0
16	5	4	1	0	12	61	0
17	5	4	1	0	61	11	0
18	5	4	1	0	59	60	0
19	5	4	1	0	60	61	0
20	5	4	1	0	9	62	0
21	5	4	1	0	62	11	0
22	5	4	1	0	56	57	0
23	5	4	1	0	57	58	0
24	2	8	1	0	1	8	
25	2	8	1	0	7	14	
26	2	8	1	0	3	10	
27	2	8	1	0	9	16	
28	2	8	1	0	5	12	
29	2	8	1	0	11	18	
30	2	8	1	0	2	7	
31	2	8	1	0	8	13	
32	2	8	1	0	4	9	
33	2	8	1	0	10	15	
34	2	8	1	0	6	11	
35	2	8	1	0	12	17	
36	2	8	1	0	9	17	
37	2	8	1	0	10	18	
38	2	8	1	0	11	15	
39	2	8	1	0	12	16	
40	1	4	1	0	68	45	0
41	1	4	1	0	45	46	0
42	1	4	1	0	46	47	0
43	1	4	1	0	47	70	0
44	1	4	1	0	70	48	0
45	1	4	1	0	48	49	0

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FOR SUPPORT CALL Larry Gannon PHONE 509-376-2604 TWX

DOUBLE SHELL TANK MOCK-UP PLATFORM 13.6333 JUL 13,1995 CP= .990

***** POST1 ELEMENT LISTING *****

ELEM	TYPE	STIF	MAT	ESYS	NODES		
46	1	4	1	0	49	72	0
47	1	4	1	0	67	19	0
48	1	4	1	0	19	20	0
49	1	4	1	0	20	21	0
50	1	4	1	0	22	23	0
51	1	4	1	0	23	24	0
52	1	4	1	0	25	26	0
53	1	4	1	0	26	27	0
54	1	4	1	0	28	29	0
55	1	4	1	0	29	30	0
56	1	4	1	0	21	68	0
57	1	4	1	0	24	45	0
58	1	4	1	0	27	46	0
59	1	4	1	0	30	47	0
60	1	4	1	0	22	50	0
61	1	4	1	0	25	51	0
62	1	4	1	0	28	52	0
63	1	4	1	0	70	54	0
64	1	4	1	0	54	69	0
65	1	4	1	0	48	56	0
66	1	4	1	0	56	55	0
67	1	4	1	0	55	53	0
68	1	4	1	0	72	58	0
69	1	4	1	0	58	71	0
70	1	4	1	0	53	71	0
71	1	4	1	0	53	69	0
72	1	4	1	0	69	52	0
73	1	4	1	0	52	51	0
74	1	4	1	0	51	50	0
75	1	4	1	0	50	67	0
76	4	4	1	0	66	31	0
77	4	4	1	0	31	32	0
78	4	4	1	0	65	33	0
79	4	4	1	0	33	34	0
80	4	4	1	0	64	35	0
81	4	4	1	0	35	36	0
82	4	4	1	0	63	37	0
83	4	4	1	0	37	38	0
84	4	4	1	0	31	33	0
85	4	4	1	0	31	35	0
86	4	4	1	0	37	33	0
87	4	4	1	0	37	35	0
88	4	4	1	0	32	44	0
89	4	4	1	0	44	43	0
90	4	4	1	0	43	34	0

```
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FOR SUPPORT CALL Larry Gannon      PHONE 509-376-2604      TWX

DOUBLE SHELL TANK  MOCK-UP PLATFORM                                          13.6333  JUL 13,1995 CP=      1.000

        ***** POST1 ELEMENT LISTING *****

  ELEM  TYPE STIF MAT  ESYS     NODES

    91    4    4    1    0      36    40     0
    92    4    4    1    0      40    39     0
    93    4    4    1    0      39    38     0
    94    4    4    1    0      32    36     0
    95    4    4    1    0      38    34     0
    96    4    4    1    0      40    42     0
    97    4    4    1    0      42    44     0
    98    4    4    1    0      39    41     0
    99    4    4    1    0      41    43     0

***** ROUTINE COMPLETED *****  CP =        1.000

***** END OF INPUT ENCOUNTERED ON FILE18

***** RUN COMPLETED *****  CP=        1.0200   TIME=   13.6333
NEW TITLE= DST MOCK-UP PLATFORM STATIC ANALYSIS

USE MACRO FILE  mres

ESEL  FOR LABEL= TYPE  FROM     1 TO     1 BY    1

    36  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

SORT ON ISIG  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
/*****************************************************************************/
/*****************************************************************************/
/***                                                                       ***/
/***      L     FFF   DDD       BBB    AA   N   N  N   N  EEEE  RRR       ***/
/***      L     F  F  D  D      B  B  A  A  NN  N  NN  N  E     R  R      ***/
/***      L     FFF   D  D      BBB   AAAA  N N N  N N N  EEE   RRR       ***/
/***      L     F     D  D      B  B  A  A  N  NN  N  NN  E     R  R      ***/
/***      LLLL  F     DDD       BBB   A  A  N   N  N   N  EEEE  R  R      ***/
/***                                                                       ***/
/*****************************************************************************/
/*****************************************************************************/

         8888        4  555555   8888       1
        8    8      44  5       8    8     11
        8    8     4 4  5       8    8    1 1
 w  w  w 8    8    4  4  5       8    8   1  1
 w  w  w  8888    4   4  55555    8888      1
 w  w  w 8    8  4    4       5  8    8      1
 w  w  w 8    8  4444444       5  8    8      1
 w  w  w 8    8       4       5  8    8      1
 w  w  w 8    8       4  5    5  8    8      1
  ww ww   8888        4   5555    8888       1


 EEEEEE   2222       1    0000    8888   555555
 E       2    2     11   0    0  8    8  5
 E            2    1 1   0    0  8    8  5
 E            2   1  1   0   00  8    8  5
 EEEEE       2       1   0  0 0   8888   55555
 E          2        1   0 0  0  8    8       5
 E         2         1   00   0  8    8       5
 E        2          1   0    0  8    8       5
 E       2           1   0    0  8    8  5    5
 EEEEEE  222222      1    0000    8888    5555


 TTTTTTT         H    H  U    U  N    N  DDDD      AA    L            /  2222    9999    2222    0000    GGGGG  W     W W     W
    T            H    H  U    U  NN   N  D   D    A  A   L           / 2    2  9    9  2    2  0    0  G      W     W W     W
    T            H    H  U    U  N N  N  D    D  A    A  L          /      2  9    9       2  0    0  G      W     W W     W
    T            H    H  U    U  N N  N  D    D  A    A  L         /       2  9    9       2  0   00  G      W     W W     W
    T            HHHHHH  U    U  N  N N  D    D  A    A  L        /      2   9    9      2   0  0 0  G  GGG  W     W W     W
    T            H    H  U    U  N  N N  D    D  AAAAAA  L       /      2     99999     2    0 0  0  G    G  W     W W     W   /
    T            H    H  U    U  N   NN  D    D  A    A  L      /      2          9    2     00   0  G    G  W   W  W H   W  W  /
    T            H    H  U    U  N    N  D    D  A    A  L     /      2           9  2      0    0  G    G  W W W W W W W W W /
    T            H    H  U    U  N    N  D   D   A    A  L    /      2           9  2      0    0  G    G  WW   WW WW   WW/
    T            H    H   UUUU   N    N  DDDD    A    A  LLLLLL /    222222   9999   222222   0000    GGGGG  W     W W     W/


HOST:  sun1
USER:  w84581
JOB:   E21085
CLASS: T HUNDAL/2920GWW/211
```

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```
NEW TITLE= DST MOCK-UP PLATFORM STATIC ANALYSIS  DL + LL

USE MACRO FILE  mres
ESEL  FOR LABEL= TYPE  FROM     1 TO     1 BY    1
    36  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.
SORT ON ISG1  ORDER= 0  KABS= 1  NMAX=    3
SORT COMPLETED FOR     3 VALUES.
PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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    FOR SUPPORT CALL Larry Gannon      PHONE 509-376-2604      TWX

DS1 MOCK-UP PLATFORM STATIC ANALYSIS  DL + LL                                  15.1258  AUG  1,1995 CP=       .390

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     1  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG1        IFX         IFY         IFZ         IMX         IMY         IMZ
    55    5558.9     -16.982     -916.50      1.8481     -.90255     -44.873     -74064.
    62    4843.9     -37.426     -2129.5     -10.624     -.90255      94.772     -64318.
    54    4840.4     -16.982      383.45      1.8481     -.90255     -94.772     -64318.

MINIMUMS
ELEMENT    54          62          62          62          62          54          55
VALUE    4840.4     -37.426     -2129.5     -10.624     -.90255     -94.772     -74064.

MAXIMUMS
ELEMENT    55          54          54          54          55          62          54
VALUE    5558.9     -16.982      383.45      1.8481     -.90255      94.772     -64318.

SORT ON ISG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM STATIC ANALYSIS  DL + LL                                  15.1258  AUG  1,1995 CP=       .400

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     1  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG3        IFX         IFY         IFZ         IMX         IMY         IMZ
    55   -5553.1     -16.982     -916.50      1.8481     -.90255     -44.873     -74064.
    54   -4834.6     -16.982      383.45      1.8481     -.90255     -94.772     -64318.
    62   -4831.1     -37.426     -2129.5     -10.624     -.90255      94.772     -64318.

MINIMUMS
ELEMENT    55          62          62          62          62          54          55
VALUE    -5553.1     -37.426     -2129.5     -10.624     -.90255     -94.772     -74064.

MAXIMUMS
ELEMENT    62          54          54          54          55          62          54
VALUE    -4831.1     -16.982      383.45      1.8481     -.90255      94.772     -64318.

SORT ON JSG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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```
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DST MOCK-UP PLATFORM STATIC ANALYSIS  DL + LL                                    15.1258  AUG  1,1995 CP=       .400

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     1  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG1        JFX         JFY         JFZ         JMX         JMY         JMZ
    54     5558.9      16.982     -338.50     -1.8481      .90255      44.873      74064.
    48     4754.1      153.80     -129.01      1.6209     -.72422     -60.209      62959.
    50     4701.3      13.316     -1051.9     -.21466     -.57301      14.332      62712.

MINIMUMS
ELEMENT    50          50          50          54          48          48          50
VALUE     4701.3      13.316     -1051.9     -1.8481     -.72422     -60.209      62712.

MAXIMUMS
ELEMENT    54          48          48          48          54          54          54
VALUE     5558.9      153.80     -129.01      1.6209      .90255      44.873      74064.

SORT ON JSG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM STATIC ANALYSIS  DL + LL                                  15.1258  AUG  1,1995 CP=       .410

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     1  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG3        JFX         JFY         JFZ         JMX         JMY         JMZ
    54   -5553.1     16.982     -338.50     -1.8481      .90255      44.873      74064.
    48   -4701.7     153.80     -129.01      1.6209     -.72422     -60.209      62959.
    50   -4696.8     13.316     -1051.9     -.21466     -.57301      14.332      62712.

MINIMUMS
ELEMENT    54          50          50          54          48          48          50
VALUE    -5553.1     13.316     -1051.9     -1.8481     -.72422     -60.209      62712.

MAXIMUMS
ELEMENT    50          48          48          48          54          54          54
VALUE    -4696.8     153.80     -129.01      1.6209      .90255      44.873      74064.

ESEL  FOR LABEL= ELEM  FROM    56 TO    62 BY    1

     7  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM STATIC ANALYSIS  DL + LL                                    15.1258  AUG  1,1995 CP=       .410

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     1  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        JFX            JFY            JFZ            JMX            JMY            JMZ
    56     174.25011      2561.9574      14.111900     -.72421999      169.58556     -48.854641
    57     13.315805      1146.9544     -.21465741     -.57300653      2.0967398      39.983966
    58    -7.0231010      1055.9581     -.18187601      .20600048     -12.139705      120.30091
    59     36.759311      2776.5812     -13.590244      .90255270     -189.63304     -298.20431
    60     13.315805      1146.8369     -.21465741     -.57300653     -26.567685      46.681102
    61    -7.0231010      1055.8331     -.18187601      .20600048     -8.5941599      127.42844
    62     37.425952      2179.4705      10.623806      .90255270      223.94211     -317.42197

MINIMUMS
ELEMENT      58             61             59             56             59             62
VALUE    -7.0231010      1055.8331     -13.590244     -.72421999     -189.63304     -317.42197

MAXIMUMS
ELEMENT      56             59             56             62             62             61
VALUE     174.25011      2776.5812      14.111900      .90255270      223.94211      127.42844

ESEL  FOR LABEL= ELEM  FROM    64 TO    67 BY    3

     2  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM STATIC ANALYSIS  DL + LL                                    15.1258  AUG  1,1995 CP=       .420

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     1  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        JFX            JFY            JFZ            JMX            JMY            JMZ
    64     207.05094      786.82354      .53042214     -.40920827E-01  40.831012      168.36459
    67     18.503022      568.55890      .84098868     -4.2065319      37.638533      .78466647E-02

MINIMUMS
ELEMENT      67             67             64             67             67             67
VALUE      18.503022      568.55890      .53042214     -4.2065319      37.638533      .78466647E-02

MAXIMUMS
ELEMENT      64             64             67             64             64             64
VALUE      207.05094      786.82354      .84098868     -.40920827E-01  40.831012      168.36459

ESEL  FOR LABEL= ELEM  FROM    69 TO    69 BY    1

     1  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM STATIC ANALYSIS  DL + LL                                  15.1258  AUG  1,1995 CP=       .430

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     1  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        JFX            JFY            JFZ            JMX            JMY            JMZ
    69   -10.764487      164.73693      2.1267978      19.390014      106.52648      30.013878

MINIMUMS
ELEMENT      69             69             69             69             69             69
VALUE    -10.764487      164.73693      2.1267978      19.390014      106.52648      30.013878

MAXIMUMS
ELEMENT      69             69             69             69             69             69
VALUE    -10.764487      164.73693      2.1267978      19.390014      106.52648      30.013878

ESEL  FOR LABEL= ELEM  FROM    47 TO    47 BY    1

     1  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM STATIC ANALYSIS  DL + LL                                    15.1258  AUG  1,1995 CP=       .430

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     1  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        IFX            IFY            IFZ            IMX            IMY            IMZ
    47    -173.58347     1989.0942      10.102150      .72421999     -199.09037     55.073878

MINIMUMS
ELEMENT      47             47             47             47             47             47
VALUE    -173.58347     1989.0942      10.102150      .72421999     -199.09037     55.073878

MAXIMUMS
ELEMENT      47             47             47             47             47             47
VALUE    -173.58347     1989.0942      10.102150      .72421999     -199.09037     55.073878

ESEL  FOR LABEL= ELEM  FROM    63 TO    65 BY    2

     2  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DS1 MOCK-UP PLATFORM STATIC ANALYSIS  DL + LL                                    15.1258  AUG  1,1995 CP=       .430

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     1  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        IFX            IFY            IFZ            IMX            IMY            IMZ
    63    -207.05094     786.96769     -.53042214     .40920827E-01  19.637111     -160.14811
    65    -18.970191     722.58625     -4.2780505     -7.5164473     139.22089      1.6715960

MINIMUMS
ELEMENT      63             65             65             65             63             63
VALUE    -207.05094     722.58625     -4.2780505     -7.5164473     19.637111     -160.14811

MAXIMUMS
ELEMENT      65             63             63             63             65             65
VALUE    -18.970191     786.96769     -.53042214     .40920827E-01  139.22089      1.6715960

ESEL  FOR LABEL= ELEM  FROM    68 TO    68 BY    1

     1  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM STATIC ANALYSIS  DL + LL                                  15.1258  AUG  1,1995 CP=       .440

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     1  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        IFX            IFY            IFZ            IMX            IMY            IMZ
    68     11.231656      319.73448      1.3102641      50.489453      31.583310      -28.297561

MINIMUMS
ELEMENT      68             68             68             68             68             68
VALUE      11.231656      319.73448      1.3102641      50.489453      31.583310      -28.297561

MAXIMUMS
ELEMENT      68             68             68             68             68             68
VALUE      11.231656      319.73448      1.3102641      50.489453      31.583310      -28.297561

ESEL  FOR LABEL= TYPE  FROM     2 TO     2 BY    1

    16  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

SORT ON SAX   ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM STATIC ANALYSIS  DL + LL                                    15.1258  AUG  1,1995 CP=       .450

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     1  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        SAX
    32    -523.91244
    26    -519.29011
    33    -443.45126

MINIMUMS
ELEMENT      32
VALUE    -523.91244

MAXIMUMS
ELEMENT      33
VALUE    -443.45126

ESEL  FOR LABEL= TYPE  FROM    3 TO     3 BY    1

    12  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT REACTION FORCES PER NODE
```

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```
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DST MOCK-UP PLATFORM STATIC ANALYSIS  DL + LL                                    15.1261  AUG  1,1995 CP=       .450

        ***** POST1 REACTION FORCE LISTING *****

 LOAD STEP     1  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 THE FOLLOWING X,Y,Z FORCES ARE IN GLOBAL COORDINATES

   NODE       FX              FY              FZ              MX              MY              MZ
     1    .39009381E-04   3883.6887       206.83713      .00000000E+00   .00000000E+00   .00000000E+00
     2   -.39009381E-04   4484.2244      -207.45216      .00000000E+00   .00000000E+00   .00000000E+00
     3    30.256864       6421.5330       343.57008      .00000000E+00   .00000000E+00   .00000000E+00
     4    4.8723838       6612.3807      -336.82375      .00000000E+00   .00000000E+00   .00000000E+00
     5   -26.811030       1316.2975       70.028201      .00000000E+00   .00000000E+00   .00000000E+00
     6   -8.3182184       1115.8920      -76.159514      .00000000E+00   .00000000E+00   .00000000E+00

TOTAL    -.19675639E-09   23834.016      -.19453239E-09   .00000000E+00   .00000000E+00   .00000000E+00

SORT ON ISG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DSI MOCK-UP PLATFORM STATIC ANALYSIS  DL + LL                                  15.1261  AUG  1,1995 CP=       .460

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     1  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELM      ISG1        IFX         IFY         IFZ         IMX         IMY         IMZ
     9   -1059.8     6221.2     -4.8724     -11.400     .00000E+00  .11369E-12 -.45475E-12
     [illegible]  [illegible]  [illegible]  [illegible]  .00000E+00  .00000E+00  .22737E-12
     6    846.17    -73.937      25.139      21.017     .00000E+00 -2585.3      3318.4

MINIMUMS
ELEMENT     9           6           3           9           9           6           9
VALUE    -1059.8     -73.937     -30.257     -11.400     .00000E+00 -2585.3     -.45475E-12

MAXIMUMS
ELEMENT     6           9           6           3           9           9           6
VALUE    846.17      6221.2      25.139      21.017      .00000E+00  .11369E-12  3318.4

SORT ON ISG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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```
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DST MOCK-UP PLATFORM STATIC ANALYSIS  DL + LL                                    15.1261  AUG  1,1995 CP=       .460

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     1  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM       ISG3        IFX         IFY         IFZ         IMX         IMY         IMZ
    4    -1660.5      4677.3     -29.013      19.313     .41633E-16  -2549.3     -3829.8
   10    -1362.3      5843.2      4.6952     -10.728     .21094E-14   1416.0      619.77
    9    -1059.8      6221.2     -4.8724     -11.400     .00000E+00  .11369E-12 -.45475E-12

MINIMUMS
ELEMENT      4           4           4           9           9           4           4
VALUE    -1660.5      4677.3     -29.013     -11.400     .00000E+00  -2549.3     -3829.8

MAXIMUMS
ELEMENT      9           9          10           4          10          10          10
VALUE    -1059.8      6221.2      4.6952      19.313     .21094E-14   1416.0      619.77

SORT ON JSG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM STATIC ANALYSIS  DL + LL                                    15.1261  AUG  1,1995 CP=       .470

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     1  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG1        JFX         JFY         JFZ         JMX         JMY         JMZ
    10   -957.99     -5623.4     -4.6952      10.728     -.21094E-14  .11369E-12  .56843E-11
     [illegible]   [illegible]   [illegible]   -19.313     -.41[illegible]E-16  .45475E-12  .90949E-12
     5    688.40     -1022.8     -26.811     -20.677      .00000E+00 -2667.3      3458.6

MINIMUMS
ELEMENT     10          10          5           5           10          5           4
VALUE     -957.99     -5623.4     -26.811     -20.677     -.21094E-14  -2667.3     [illegible]E-12

MAXIMUMS
ELEMENT      5           5           4          10           5           4           5
VALUE      688.40     -1022.8      29.013      10.728      .00000E+00  .45475E-12  3458.6

SORT ON JSG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST HOCK-UP PLATFORM STATIC ANALYSIS  DL + LL                                    15.1261  AUG  1,1995 CP=       .470

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     1  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG3        JFX         JFY         JFZ         JMX         JMY         JMZ
    3    -1897.2     -5818.9      30.257     -21.017     .00000E+00 -2711.2     -3903.1
    9    -1403.1     -6006.5      4.8724      11.400     .00000E+00  1470.6     -628.54
    5    -1036.9     -1022.8     -26.811     -20.677     .00000E+00 -2667.3      3458.6

MINIMUMS
ELEMENT     3           9           5           3           3           3           3
VALUE    -1897.2     -6006.5     -26.811     -21.017     .00000E+00 -2711.2     -3903.1

MAXIMUMS
ELEMENT     5           5           3           9           3           9           5
VALUE    -1036.9     -1022.8      30.257      11.400     .00000E+00  1470.6      3458.6

ESEL  FOR LABEL= ELEM  FROM     2 TO    12 BY    2

     6  ELEMENTS (OF    99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

A-45

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WST MOCK-UP PLATFORM STATIC ANALYSIS  DL + LL                                    15.1261  AUG  1,1995 CP=       .470

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     1  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        JFX            JFY            JFZ            JMX            JMY            JMZ
    2    -3126.5413      .39009381E-04  -1.7244524     .00000000E+00  -.71054274E-14   .00000000E+00
    4    -4457.5381      29.013313      -19.312861     -.41633363E-16   .45474735E-12   .90949470E-12
    6     293.69526     -25.139250      -19.585690      .00000000E+00  -.22737368E-12   .45474735E-12
    8    -3724.6594     -.39009381E-04   1.9952025      .00000000E+00   .00000000E+00   .00000000E+00
   10    -5623.4033     -4.6952154       10.727525     -.21094237E-14   .11368684E-12   .56843419E-11
   12     398.54221      8.0661321       10.850573      .00000000E+00  -.11368684E-12   .90949470E-12

MINIMUMS
ELEMENT      10              6              6              10              6              2
VALUE    -5623.4033     -25.139250      -19.585690     -.21094237E-14  -.22737368E-12   .00000000E+00

MAXIMUMS
ELEMENT       6              4             12               2              4             10
VALUE     293.69526      29.013313       10.850573      .00000000E+00   .45474735E-12   .56843419E-11

ESEL  FOR LABEL= TYPE  FROM     4 TO     4 BY    1

    24  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

SORT ON ISG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

A-4C

```
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DST MOCK-UP PLATFORM STATIC ANALYSIS  DL + LL                                    15.1261  AUG  1,1995 CP=       .480

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     1  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG1        IFX         IFY         IFZ         IMX         IMY         IMZ
    99    22647.      2.4326     -1499.6      .99401      38.810     -8.8971     -47702.
    97    22647.      2.4334     -1500.4      .99401      38.818      8.8977     -47702.
    92    8945.0      467.28      6.3346     -1.9121     -30.343      53.085     -19171.

MINIMUMS
ELEMENT    92          99          97          92          92          99          99
VALUE     8945.0      2.4326     -1500.4     -1.9121     -30.343     -8.8971     -47702.

MAXIMUMS
ELEMENT    99          92          92          99          97          92          92
VALUE     22647.      467.28      6.3346      .99401      38.818      53.085     -19171.

SORT ON ISG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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[illegible]                                                                  15.1261  AUG  1,1995 CP=       .490

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP=    1  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM       JSG3        IFX         IFY         IFZ         IMX         IMY         IMZ
    99    -22649.      2.4326     -1499.6      .99401      38.810     -8.8971     -47702.
    97    -22649.      2.4334     -1500.4      .99401      38.818      8.8977     -47702.
    92    -9305.8      467.28      6.3346     -1.9121     -30.343      53.085     -19171.

MINIMUMS
ELEMENT     99          99          97          92          92          99          99
VALUE     -22649.      2.4326     -1500.4     -1.9121     -30.343     -8.8971     -47702.

MAXIMUMS
ELEMENT     92          92          92          99          97          92          92
VALUE     -9305.8      467.28      6.3346      .99401      38.818      53.085     -19171.

SORT ON JSG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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DST HOCK-UP PLATFORM STATIC ANALYSIS  DL + LL                                    15.1261  AUG  1,1995 CP=       .490

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     1  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG1        JFX         JFY         JFZ         JMX         JMY         JMZ
    98    22647.     -2.4326     -1500.4     -.99401     -38.810      8.8971     47702.
    96    22647.     -2.4334     -1499.6     -.99401     -38.818     -8.8977     47702.
    77    13227.     -1591.9     -288.99      469.00     -5.1264      18068.     11092.

MINIMUMS
ELEMENT    77          77          98          98          96          96          77
VALUE     13227.     -1591.9     -1500.4     -.99401     -38.818     -8.8977     11092.

MAXIMUMS
ELEMENT    98          98          77          77          77          77          98
VALUE     22647.     -2.4326     -288.99      469.00     -5.1264      18068.     47702.

SORT ON JSG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM STATIC ANALYSIS  DL + LL                                    15.1261  AUG  1,1995 CP=       .500

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     1  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG3        JFX         JFY         JFZ         JMX         JMY         JMZ
    98   -22649.    -2.4326     -1500.4     -.99401     -38.810      8.8971     47702.
    96   -22649.    -2.4334     -1499.6     -.99401     -38.818     -8.8977     47702.
    77   -14456.    -1591.9     -288.99      469.00     -5.1264      18068.     11092.

MINIMUMS
ELEMENT    98          77          98          98          96          96          77
VALUE    -22649.    -1591.9     -1500.4     -.99401     -38.818     -8.8977     11092.

MAXIMUMS
ELEMENT    77          98          77          77          77          77          98
VALUE    -14456.    -2.4326     -288.99      469.00     -5.1264      18068.     47702.

ESEL  FOR LABEL= ELEM  FROM    88 TO    99 BY    1

   12  ELEMENTS (OF    99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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```
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DST MOCK-UP PLATFORM STATIC ANALYSIS  DL + LL                                  15.1261  AUG  1,1995 CP=       .510

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     1  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1
```

ELEM	IFX	IFY	IFZ	IMX	IMY	IMZ
88	468.26533	1560.1488	-4.3450909	14400.180	49.342508	18093.266
89	467.27132	12.029642	-1.9116709	-30.265466	-5.2875613	-19099.930
90	466.27730	-1536.0796	.52094696	-14430.152	-21.221877	-19132.308
91	466.28656	1553.7095	.52131867	-14430.276	8.7161071	17945.211
92	467.28057	6.3345975	-1.9121013	-30.343289	53.084517	-19171.080
93	468.27458	-1542.5193	-4.3447192	14400.076	54.933543	-19138.702
94	284.64903	-31.770708	-.73456941	25.327261	44.216147	3308.4986
95	284.61848	31.770507	.73457754	25.300958	-44.214952	-3308.6460
96	2.4334199	1529.7453	.99401065	38.817864	-31.856762	14399.933
97	2.4334199	-1500.3721	.99401065	38.817864	8.8976751	-47702.216
98	2.4326179	1530.4897	.99401239	38.810234	-49.651558	14430.419
99	2.4326179	-1499.6277	.99401239	38.810234	-8.8970502	-47702.253
MINIMUMS						
ELEMENT	98	93	88	91	98	99
VALUE	2.4326179	-1542.5193	-4.3450909	-14430.276	-49.651558	-47702.253
MAXIMUMS						
ELEMENT	93	88	99	88	93	88
VALUE	468.27458	1560.1488	.99401239	14400.180	54.933543	18093.266

PRINT ELEMENT STRESS ITEMS PER ELEMENT

```
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DST MOCK-UP PLATFORM STATIC ANALYSIS  DL + LL                                    15.1261  AUG  1,1995 CP=       .510

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     1  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        JFX            JFY            JFZ            JMX            JMY            JMZ
    88   -468.26533     -1542.5191     4.3450909     -14400.180     54.939673      19138.748
    89   -467.27132      6.3345975     1.9116709      30.265466     53.079335      19171.118
    90   -466.27730      1553.7093     -.52094696     14430.152     8.7191503      -17945.159
    91   -466.28656     -1536.0798     -.52131867     14430.276     -21.227755     19132.262
    92   -467.28057      12.029642     1.9121013      30.343289     -5.2819848     19099.892
    93   -468.27458      1560.1490     4.3447192      -14400.076    49.339717      -18093.318
    94   -284.64903     -28.463998     .73456941      -25.327261    16.018545      -3444.0737
    95   -284.61848      28.464198     -.73457754     -25.300958    -16.020407     3444.2046
    96   -2.4334199     -1499.6279     -.99401065     -38.817864    -8.8976751     47702.216
    97   -2.4334199      1530.4895     -.99401065     -38.817864    -49.652112     -14430.445
    98   -2.4326179     -1500.3723     -.99401239     -38.810234    8.8970502      47702.253
    99   -2.4326179      1529.7450     -.99401239     -38.810234    -31.857458     -14399.887

MINIMUMS
ELEMENT      93             88             99             88             97             93
VALUE    -468.27458     -1542.5191     -.99401239     -14400.180     -49.652112     -18093.318

MAXIMUMS
ELEMENT      98             93             88             91             88             98
VALUE    -2.4326179      1560.1490      4.3450909      14430.276      54.939673      47702.253

ESEL  FOR LABEL= ELEM  FROM    76 TO    82 BY    2

     4  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM STATIC ANALYSIS  DL + LL                                  15.1261  AUG  1,1995 CP=       .520

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     1  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        IFX            IFY            IFZ            IMX            IMY            IMZ
    76     1765.1858     -11.742129      19.777229     .00000000E+00  -.68212103E-12  .00000000E+00
    78     1746.0747     -12.471922     -20.443870     .00000000E+00   .00000000E+00  .00000000E+00
    80     1746.0747      12.490958      20.449579     .00000000E+00  -.45474735E-12  -.17053026E-12
    82     1765.1858      11.723093     -19.782939     .00000000E+00   .45474735E-12  .00000000E+00

MINIMUMS
ELEMENT      78             78             78             76             76             80
VALUE      1746.0747     -12.471922     -20.443870     .00000000E+00  -.68212103E-12  -.17053026E-12

MAXIMUMS
ELEMENT      76             80             80             76             82             76
VALUE      1765.1858      12.490958      20.449579     .00000000E+00   .45474735E-12  .00000000E+00

ESEL  FOR LABEL= TYPE  FROM     5 TO     5 BY    1

    11  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

SORT ON ISG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

A-5W

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DST MOCK UP PLATFORM STATIC ANALYSIS  PL = LL                                    15.1261  AUG  1,1995 CP=       .520

          ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     1  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG1        IFX         I[illegible]          [illegible]          IMX          IMY          IMZ
    19    3892.9     -1.2854     -446.98     -.16193      .31395E-01  -3.8877     -16973.
    21    2294.4     -124.12     -434.10     -.11145      .26134E-01   3.3104     -9773.2
    20    1827.5     -124.12      485.09     -.11145      .26134E-01   7.4339      7709.2

MINIMUMS
ELEMENT    20          21          19          19          21          19          19
VALUE     1827.5     -124.12     -446.98     -.16193      .26134E-01  -3.8877     -16973.

MAXIMUMS
ELEMENT    19          19          20          20          19          20          20
VALUE     3892.9     -1.2854      485.09     -.11145      .31395E-01   7.4339      7709.2

SORT ON ISG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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DST MOCK-UP PLATFORM STATIC ANALYSIS  DL + LL                                    15.1261  AUG  1,1995 CP=       .530

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     1  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM       ISG3        IFX        IFY        IFZ        IMX        IMY        IMZ
    19    -3891.8    -1.2854    -446.98    -.16193   .31395E-01 -3.8877    -16973.
    21    -2191.0    -124.12    -434.10    -.11145   .26134E-01  3.3104    -9773.2
    20    -1724.1    -124.12     485.09    -.11145   .26134E-01  7.4339     7709.2

MINIMUMS
ELEMENT     19         21         19         19         21         19         19
VALUE    -3891.8    -124.12    -446.98    -.16193   .26134E-01 -3.8877    -16973.

MAXIMUMS
ELEMENT     20         19         20         20         19         20         20
VALUE    -1724.1    -1.2854     485.09    -.11145   .31395E-01  7.4339     7709.2

SORT ON JSG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM STATIC ANALYSIS  DL + LL                                    15.1261  AUG  1,1995 CP=       .530

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     1  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG1        JFX         JFY         JFZ         JMX         JMY         JMZ
    18    3892.9      1.2854     -447.02      .16193    -.31395E-01  3.8877      16973.
    20    2294.4      124.12     -459.90      .11145    -.26134E-01 -3.3104      9773.2
    22    1624.0      3.4371     -275.34     -.46717     7.2619      .13474      7084.4

MINIMUMS
ELEMENT    22          18          20          22          18          20          22
VALUE     1624.0      1.2854     -459.90     -.46717    -.31395E-01 -3.3104      7084.4

MAXIMUMS
ELEMENT    18          20          22          18          22          18          18
VALUE     3892.9      124.12     -275.34      .16193      7.2619      3.8877      16973.

SORT ON JSG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM STATIC ANALYSIS  DL + LL                                    15.1261  AUG  1,1995 CP=       .540

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     1  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG3        JFX         JFY         JFZ         JMX         JMY         JMZ
    18   -3891.8      1.2854     -447.02      .16193     -.31395E-01  3.8877      16973.
    20   -2191.0      124.12     -459.90      .11145     -.26134E-01 -3.3104      9773.2
    22   -1621.1      3.4371     -275.34     -.46717      7.2619      .13474      7084.4

MINIMUMS
ELEMENT    18          18          20          22          18          20          22
VALUE    -3891.8      1.2854     -459.90     -.46717     -.31395E-01 -3.3104      7084.4

MAXIMUMS
ELEMENT    22          20          22          18          22          18          18
VALUE    -1621.1      124.12     -275.34      .16193      7.2619      3.8877      16973.

ESEL  FOR LABEL= ELEM  FROM    18 TO    22 BY    4

     2  ELEMENTS (OF     99  DEFINED) SELECTED BY ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM STATIC ANALYSIS  DL + LL                                    15.1261  AUG  1,1995 CP=       .540

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     1  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        IFX            IFY            IFZ            IMX            IMY            IMZ
    18    -1.2853841     472.20434     -.16193440     .31394996E-01   2.1038737     32.426529
    22    -3.4370619     292.35393      .46716892     -7.2618729     -11.813959     11.722979

MINIMUMS
ELEMENT      22             22             18             22             22             22
VALUE     -3.4370619     292.35393     -.16193440     -7.2618729     -11.813959     11.722979

MAXIMUMS
ELEMENT      18             18             22             18             18             18
VALUE     -1.2853841     472.20434      .46716892     .31394996E-01   2.1038737     32.426529

ESEL  FOR LABEL= ELEM  FROM    19 TO    23 BY    4

     2  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM STATIC ANALYSIS  DL + LL                                  15.1261  AUG  1,1995 CP=       .550

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     1  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        JFX            JFY            JFZ            JMX            JMY            JMZ
    19     1.2853841      472.16614      .16193440      -.31394996E-01  9.8792720      -31.013205
   -23     3.4370619      294.68019      -.46716892      7.2618729      -11.544488      -69.879467

MINIMUMS
ELEMENT      19             23             23             19             23             23
VALUE      1.2853841      294.68019      -.46716892      -.31394996E-01 -11.544488      -69.879467

MAXIMUMS
ELEMENT      23             19             19             23             19             19
VALUE      3.4370619      472.16614      .16193440      7.2618729      9.8792720      -31.013205
USE LOAD STEP     2  ITERATION     0  SECTION   1  FOR LOAD CASE     1

DISPLACEMENT STORED FOR   72 NODES

***WARNING ***                          CP=       .580   TIME=  15.12611
DATA FOR STRESS LABEL IFX  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 IFX  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .580   TIME=  15.12611
DATA FOR STRESS LABEL IFY  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 IFY  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .580   TIME=  15.12611
DATA FOR STRESS LABEL IFZ  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 IFZ  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .580   TIME=  15.12611
DATA FOR STRESS LABEL IMX  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 IMX  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .580   TIME=  15.12611
DATA FOR STRESS LABEL IMY  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 IMY  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .580   TIME=  15.12611
DATA FOR STRESS LABEL IMZ  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 IMZ  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .580   TIME=  15.12611
DATA FOR STRESS LABEL JFX  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JFX  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .580   TIME=  15.12611
DATA FOR STRESS LABEL JFY  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JFY  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .580   TIME=  15.12611
DATA FOR STRESS LABEL JFZ  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JFZ  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .580   TIME=  15.12611
```

```
DATA FOR STRESS LABEL JMX  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JMX  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .580   TIME=  15.12611
DATA FOR STRESS LABEL JMY  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JMY  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .580   TIME=  15.12611
DATA FOR STRESS LABEL JMZ  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JMZ  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .590   TIME=  15.12611
DATA FOR STRESS LABEL ISAX HAS NOT BEEN STORED FOR ALL ELEMENTS.
 ISAX DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .590   TIME=  15.12611
DATA FOR STRESS LABEL ISBY HAS NOT BEEN STORED FOR ALL ELEMENTS.
 ISBY DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .590   TIME=  15.12611
DATA FOR STRESS LABEL ISBZ HAS NOT BEEN STORED FOR ALL ELEMENTS.
 ISBZ DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO
```

```
***WARNING ***                                CP=       .590   TIME=  15.12611
DATA FOR STRESS LABEL JSAX HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JSAX DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                                CP=       .590   TIME=  15.12611
DATA FOR STRESS LABEL JSBY HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JSBY DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                                CP=       .590   TIME=  15.12611
DATA FOR STRESS LABEL JSBZ HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JSBZ DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                                CP=       .590   TIME=  15.12611
DATA FOR STRESS LABEL ISG1 HAS NOT BEEN STORED FOR ALL ELEMENTS.
 ISG1 DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                                CP=       .590   TIME=  15.12611
DATA FOR STRESS LABEL ISG3 HAS NOT BEEN STORED FOR ALL ELEMENTS.
 ISG3 DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                                CP=       .590   TIME=  15.12611
DATA FOR STRESS LABEL JSG1 HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JSG1 DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                                CP=       .590   TIME=  15.12611
DATA FOR STRESS LABEL JSG3 HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JSG3 DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                                CP=       .590   TIME=  15.12611
DATA FOR STRESS LABEL SAX  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 SAX  DATA FOR TYPE   1. STIF   4. ELEMENTS WILL BE SET TO ZERO
 SAX  DATA FOR TYPE   3. STIF   4. ELEMENTS WILL BE SET TO ZERO
 SAX  DATA FOR TYPE   4. STIF   4. ELEMENTS WILL BE SET TO ZERO
 SAX  DATA FOR TYPE   5. STIF   4. ELEMENTS WILL BE SET TO ZERO

STRESSES STORED FOR   23  SELECTED ITEMS

ITERATION SUMMARY INFORMATION STORED

NODAL FORCES STORED FOR   99 ELEMENTS

REACTIONS STORED FOR   18 REACTIONS

FOR LOAD STEP=     2  ITERATION=     1  SECTION=   1
 TIME=   .000000E+00   LOAD CASE=  1
 TITLE= DOUBLE SHELL TANK  MOCK-UP PLATFORM

NEW TITLE= DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + 0.2g:x  + .06g:z

USE MACRO FILE  mres

ESEL  FOR LABEL= TYPE  FROM     1 TO     1 BY    1

    36  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

SORT ON ISG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + 0.2g:x  + .06g:z                    15.1261  AUG  1,1995 CP=       .600

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     2  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM       ISG1        IFX         IFY         IFZ         IMX         IMY         IMZ
    62     5769.3     -103.74     -2311.1      341.29     -5.4878     -2425.7     -69481.
    54     5747.5      24.331     -205.83      4.2674     -5.4878      2425.7     -69481.
    55     5282.6      36.027     -400.78     -34.723     -5.4878      2419.5     -63317.

MINIMUMS
ELEMENT     55          62          62          55          62          62          62
VALUE     5282.6     -103.74     -2311.1     -34.723     -5.4878     -2425.7     -69481.

MAXIMUMS
ELEMENT     62          55          54          62          62          54          55
VALUE     5769.3      36.027     -205.83      341.29     -5.4878      2425.7     -63317.

SORT ON ISG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

A-62

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + 0.2g:x  + .06g:z                    15.1261  AUG  1,1995 CP=       .610

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     2  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM       ISG3        IFX         IFY         IFZ         IMX         IMY         IMZ
    54    -5755.8      24.331     -205.83      4.2674     -5.4878      2425.7     -69481.
    62    -5734.0     -103.74     -2311.1      341.29     -5.4878     -2425.7     -69481.
    55    -5294.8      36.027     -400.78     -34.723     -5.4878      2419.5     -63317.

MINIMUMS
ELEMENT     54          62          62          55          54          62          62
VALUE     -5755.8     -103.74     -2311.1     -34.723     -5.4878     -2425.7     -69481.

MAXIMUMS
ELEMENT     55          55          54          62          54          54          55
VALUE     -5294.8      36.027     -205.83      341.29     -5.4378      2425.7     -63317.

[illegible]  ORDER= 0  KABS= 1  NMAX=    3

[illegible]

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
[illegible] ANALYSIS SYSTEM  REVISION 4.4      4137   32207                MAY 1,1990
[illegible] 1971, 1978, 1982, 1983, 1985, 1987, 1989, 1990   SWANSON ANALYSIS SYSTEMS, INC. AS UNPUBLISHED WORK.
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FOR SUPPORT CALL Larry Gannon      PHONE 509-376-26[illegible]      TWX

[illegible] ANALYSIS [illegible] + 0.2g:x  + .06g:z                    15.1261  AUG  1,1995 CP=       .610

      ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     2  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG1        JFX         JFY         JFZ         JMX         JMY         JMZ
    54    5284.1     -27.027      250.78      4.7227      5.4878     -2419.5      63317.
    55    3328.2     -40.621      477.36      50.039      5.4878     -470.02      43120.
    43    2692.1     -863.85      3945.8     -211.29      324.65     -214.89     -37268.

MINIMUMS
ELEMENT    43          43          54          43          54          54          43
VALUE     2692.1     -863.85      250.78     -211.29      5.4878     -2419.5     -37268.

MAXIMUMS
ELEMENT    54          54          43          55          43          43          54
VALUE     5284.1     -27.027      3945.8      50.039      324.65     -214.89      63317.

SORT ON JSG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

A-64

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + 0.2g:x  + .06g:z                    15.1261  AUG  1,1995 CP=       .620

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     2  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG3        JFX         JFY         JFZ         JMX         JMY         JMZ
    54   -5293.3     -27.027      250.78      4.7227      5.4878     -2419.5      63317.
    55   -3342.1     -40.621      477.36      50.039      5.4878     -470.02      43120.
    43   -2986.4     -863.85      3945.8     -211.29      324.65     -214.89     -37268.

MINIMUMS
ELEMENT    54          43          54          43          54          54          43
VALUE    -5293.3     -863.85      250.78     -211.29      5.4878     -2419.5     -37268.

MAXIMUMS
ELEMENT    43          54          43          55          43          43          54
VALUE    -2986.4      27.027      3945.8      50.039      324.65     -214.89      63317.

ESEL  FOR LABEL - ELEM  FROM    56 TO    62 BY    1

     7  ELEMENTS (OF     95  DEFINED) SELECTED BY  ESEL  COMMAND.

THERE ARE 14  STRESS ITEMS PER ELEMENT
```

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                                  REVISION 4.4      A137   32207              MAY 1,1990
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + 0.2g:x  + .06g:z                    15.1261  AUG  1,1995 CP=       .620

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     2  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        JFX            JFY            JFZ            JMX            JMY            JMZ
    56    -337.70201      968.11341      405.45046     -4.9230593      2909.5475     -28.685280
    57     299.31254      220.76835     -16.737147     -3.9587966     -2264.9989      26.661054
    58    -235.24987      209.77844     -9.2592379      1.0228906     -1893.6519      280.99004
    59    -128.11279      3983.9922      394.94655      5.4878454      3854.2524     -603.61104
    60     325.69805      221.02288     -104.69539     -3.9587966     -4656.6558      12.153028
    61    -209.86437      210.01278     -93.217483      1.0228906     -3947.5212      267.63265
    62     106.74011      2361.0833     -351.27844      5.4878454     -7962.8349     -602.40322

MINIMUMS
ELEMENT      56             58             62             56             62             59
VALUE     -337.70201      209.77844     -351.27844     -4.9230593     -7962.8349     -603.61104

MAXIMUMS
ELEMENT      60             59             56             59             59             58
VALUE      325.69805      3983.9922      405.45046      5.4878454      3854.2524      280.99004

ESEL  FOR LABEL= ELEM  FROM    64 TO    67 BY    3

     2  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + 0.2g:x  + .06g:z                    15.1261  AUG  1,1995 CP=       .630

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     2  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        JFX            JFY            JFZ            JMX            JMY            JMZ
    64    309.84344      177.90003     -57.586415     5.6783521     -2127.1349     328.02144
    67    23.765865      170.83057     -56.299058    -6.7413946     -2109.4312     1.1487131

MINIMUMS
ELEMENT      67             67             64             67             64             67
VALUE     23.765865      170.83057     -57.586415    -6.7413946     -2127.1349     1.1487131

MAXIMUMS
ELEMENT      64             64             67             64             67             64
VALUE     309.84344      177.90003     -56.299058     5.6783521     -2109.4312     328.02144

ESEL  FOR LABEL= ELEM  FROM    69 TO    69 BY    1

     1  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

A-67

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + 0.2g:x  + .06g:z                    15.1261  AUG  1,1995 CP=       .630

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     2  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        JFX            JFY            JFZ            JMX            JMY            JMZ
    69    103.33371      122.33710     -43.720841      6.8454177     -1520.5337      3.9787269

MINIMUMS
ELEMENT      69             69             69             69             69             69
VALUE     103.33371      122.33710     -43.720841      6.8454177     -1520.5337      3.9787269

MAXIMUMS
ELEMENT      69             69             69             69             69             69
VALUE     103.33371      122.33710     -43.720841      6.8454177     -1520.5337      3.9787269

ESEL  FOR LABEL= ELEM  FROM    47 TO    47 BY    1

     1  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + 0.2g:x  + .06g:z                    15.1261  AUG  1,1995 CP=       .640

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     2  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        IFX            IFY            IFZ            IMX            IMY            IMZ
    47     113.44323      343.91439      379.74522      4.9230593     -8500.8329     10.531339

MINIMUMS
ELEMENT      47             47             47             47             47             47
VALUE      113.44323      343.91439      379.74522      4.9230593     -8500.8329     10.531339

MAXIMUMS
ELEMENT      47             47             47             47             47             47
VALUE      [illegible]    343.91439      379.74522      4.9230593     -8500.8329     10.531339

ESEL  FOR LABEL= ELEM  FROM    63 TO    65 BY    2

    2  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + 0.2g:x  + .06g:z                    15.1261  AUG  1,1995 CP=       .640

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     2  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        IFX            IFY            IFZ            IMX            IMY            IMZ
    63    -288.45793     177.89120     -13.371830     -5.6783521     -393.09641     -328.52485
    65     5.8278478     232.12330     -10.930242     -28.579577     -570.62206      6.9085210

MINIMUMS
ELEMENT      63             63             63             65             65             63
VALUE     -288.45793     177.89120     -13.371830     -28.579577     -570.62206     -328.52485

MAXIMUMS
ELEMENT      65             65             65             63             63             65
VALUE      5.8278478     232.12330     -10.930242     -5.6783521     -393.09641      6.9085210

ESEL  FOR LABEL= ELEM  FROM    68 TO    68 BY    1

     1  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + 0.2g:x  + .06g:z                    15.1261  AUG  1,1995 CP=       .650

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     2  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        IFX            IFY            IFZ            IMX            IMY            IMZ
   68   -90.114710      183.32560      -30.773171      21.196327      -268.28957      -3.0288888

MINIMUMS
ELEMENT      68             68             68             68             68             68
VALUE    -90.114710      183.32560      -30.773171      21.196327      -268.28957      -3.0288888

MAXIMUMS
ELEMENT      68             68             68             68             68             68
VALUE    -90.114710      183.32560      -30.773171      21.196327      -268.28957      -3.0288888

ESEL  FOR LABEL= TYPE  FROM     2 TO     2 BY    1

   16  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

SORT ON SAX   ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + 0.2g:x  + .06g:z                    15.1261  AUG  1,1995 CP=       .660

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     2  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        SAX
    39    -2410.0296
    37     2363.3012
    38    -2294.7139

MINIMUMS
ELEMENT       39
VALUE     -2410.0296

MAXIMUMS
ELEMENT       37
VALUE      2363.3012

ESEL  FOR LABEL= TYPE  FROM     3 TO     3 BY    1

    12  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT REACTION FORCES PER NODE
```

```
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FOR SUPPORT CALL Larry Gannon      PHONE 509-376-2604      TWX

1ST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + 0.2g:x  + .06g:z                    15.1261  AUG  1,1995 CP=       .660

        ***** POST1 REACTION FORCE LISTING *****

 LOAD STEP     2  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 THE FOLLOWING X,Y,Z FORCES ARE IN GLOBAL COORDINATES

   NODE       FX              FY              FZ              MX              MY              MZ
     1   -56.616804      69.182625      -218.66510      .00000000E+00   .00000000E+00   .00000000E+00
     2   -56.622130      3482.3922      -389.76837      .00000000E+00   .00000000E+00   .00000000E+00
     3   -794.03812     -1251.2984      -108.69349      .00000000E+00   .00000000E+00   .00000000E+00
     4   -606.45787      2098.3037      -146.80850      .00000000E+00   .00000000E+00   .00000000E+00
     5   -817.10390      5868.1417       260.53036      .00000000E+00   .00000000E+00   .00000000E+00
     6   -617.36442      4487.2944      -281.48738      .00000000E+00   .00000000E+00   .00000000E+00

TOTAL    -2950.2032      14754.016      -884.89248      .00000000E+00   .00000000E+00   .00000000E+00

SORT ON ISG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + 0.2g:x  + .06g:z                    15.1261  AUG  1,1995 CP=       .660

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     2  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG1        IFX         IFY         IFZ         IMX         IMY         IMZ
    12    5582.2      2035.4     -555.64     -13.950     .00000E+00  971.35     -76245.
    10    5310.7      3151.7     -545.03     -14.734    -.63061E-13  1074.8     -74845.
     4    3434.6      1349.7     -326.04      .93216     .35527E-14 -993.14     -45937.

MINIMUMS
ELEMENT     4           4          12          10          10          4          12
VALUE     3434.6      1349.7     -555.64     -14.734    -.63061E-13 -993.14     -76245.

MAXIMUMS
ELEMENT    12          10           4           4           4          10           4
VALUE     5582.2      3151.7     -326.04      .93216     .35527E-14  1074.8     -45937.

SORT ON ISG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + 0.2g:x  + .06g:z                    15.1261  AUG  1,1995 CP=       .670

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     2  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG3        IFX         IFY         IFZ         IMX         IMY         IMZ
    10   -6384.5     3151.7     -545.03     -14.734     -.63061E-13  1074.8     -74845.
    12   -6275.7     2035.4     -555.64     -13.950      .00000E+00  971.35     -76245.
     4   -3894.4     1349.7     -326.04      .93216      .35527E-14 -993.14     -45937.

MINIMUMS
ELEMENT    10          4          12          10          10          4          12
VALUE    -6384.5     1349.7     -555.64     -14.734     -.63061E-13 -993.14     -76245.

MAXIMUMS
ELEMENT     4          10          4           4           4          10          4
VALUE    -3894.4     3151.7     -326.04      .93216      .35527E-14  1074.8     -45937.

SORT ON JSG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DS1 HOCK-UP PLATFORM SEISMIC ANALYSIS  DL + 0.2g:x  + .06g:z                    15.1261  AUG  1,1995 CP=       .670

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     2  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG1        JFX         JFY         JFZ         JMX         JMY         JMZ
    3    8000.1      1361.2     -746.51     -18.427     .00000E+00 -1546.1      99070.
    5    7100.4     -5340.4     -771.57     -18.422     .00000E+00 -1545.4      .10230E+06
    9    5446.5     -1708.4     -558.93     -1.9479     .00000E+00  579.71      74872.

MINIMUMS
ELEMENT     9           5           5           3           3           3           9
VALUE     5446.5     -5340.4     -771.57     -18.427     .00000E+00 -1546.1      74872.

MAXIMUMS
ELEMENT     3           3           9           9           3           9           5
VALUE     8000.1      1361.2     -558.93     -1.9479     .00000E+00  579.71      .10230E+06

SORT ON JSG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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     FOR SUPPORT CALL Larry Gannon      PHONE 509-376-2604      TWX

DST HOCK UP PLATFORM SEISMIC ANALYSIS  DL + 0.2g:x  + .06g:z                    15.1261  AUG  1,1995 CP=       .680

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     2  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG3        JFX         JFY         JFZ         JMX         JMY         JMZ
     5   -8919.9     -5340.4     -771.57     -18.422     .00000E+00 -1545.4     .10230E+06
     3   -7536.3      1361.2     -746.51     -18.427     .00000E+00 -1546.1     99070.
    11   -6530.6     -3945.6     -569.83     -1.4140     .00000E+00  648.58     76279.

MINIMUMS
ELEMENT     5           5           5           3           5           3          11
VALUE    -8919.9     -5340.4     -771.57     -18.427     .00000E+00 -1546.1     76279.

MAXIMUMS
ELEMENT    11           3          11          11           5          11           5
VALUE    -6530.6      1361.2     -569.83     -1.4140     .00000E+00  648.58     .10230E+06

ESEL  FOR LABEL= ELEM  FROM     2 TO    12 BY    2

     6  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + 0.2g:x  + .06g:z                    15.1261  AUG  1,1995 CP=       .680

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     2  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        JFX            JFY            JFZ            JMX            JMY            JMZ
    2    -440.25536      51.847092      -5.4185889     -.19539925E-13  -.17053026E-12   .17735147E-10
    4    -1129.8977      369.98687      -14.115379     -.35527137E-14   .39790393E-12  -.11687007E-09
    6    -1430.7246      346.59079      -14.928966      .00000000E+00  -.56843419E-13   .28649083E-10
    8    -1860.2765      51.841766      -1.5834951      .00000000E+00   .17053026E-12   .32287062E-10
   10    -2931.9671      588.98601       1.5510638      .63060668E-13   .17053026E-12  -.76852302E-10
   12    -1815.6585      599.58823       .76712955      .00000000E+00  -.28421709E-13   .61390892E-10

MINIMUMS
ELEMENT      10              8              6              2              2              4
VALUE    -2931.9671      51.841766      -14.928966     -.19539925E-13  -.17053026E-12  -.11687007E-09

MAXIMUMS
ELEMENT       2             12             10             10              4             12
VALUE    -440.25536      599.58823       1.5510638      .63060668E-13   .39790393E-12   .61390892E-10

ESEL  FOR LABEL= TYPE  FROM     4 TO     4 BY    1

    24  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

SORT ON ISG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + 0.2g:x  + .06g:z                    15.1261  AUG  1,1995 CP=       .690

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     2  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG1        IFX         IFY         IFZ         IMX         IMY         IMZ
    97    23482.      245.93     -1576.0      145.72      422.50     -1965.5     -47703.
    99    23447.      358.93     -1570.8      48.389      124.87     -1983.3     -47703.
    85    18411.     -292.90     -933.55     -.59766      103.85     -21.740     -38525.

MINIMUMS
ELEMENT    85          85          97          85          85          99          99
VALUE     18411.     -292.90     -1576.0     -.59766      103.85     -1983.3     -47703.

MAXIMUMS
ELEMENT    97          99          85          97          97          85          85
VALUE     23482.      358.93     -933.55      145.72      422.50     -21.740     -38525.

SORT ON ISG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + 0.2g:x  + .06g:z                    15.1261  AUG  1,1995 CP=       .690

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     2  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG3        IFX         IFY         IFZ         IMX         IMY         IMZ
    99   -23724.     358.93     -1570.8      48.389      124.87     -1983.3     -47703.
    97   -23672.     245.93     -1576.0      145.72      422.50     -1965.5     -47703.
    85   -18184.    -292.90     -933.55     -.59766      103.85     -21.740     -38525.

MINIMUMS
ELEMENT    99          85          97          85          85          99          99
VALUE    -23724.    -292.90     -1576.0     -.59766      103.85     -1983.3     -47703.

MAXIMUMS
ELEMENT    85          99          85          97          97          85          85
VALUE    -18184.     358.93     -933.55      145.72      422.50     -21.740     -38525.

SORT ON JSG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + 0.2g:x  + .06g:z                    15.1261  AUG  1,1995 CP=       .700

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     2  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG1        JFX         JFY         JFZ         JMX         JMY         JMZ
    96    23713.      354.07     -1424.0      34.276     -422.50      1965.5      47703.
    98    23678.      241.07     -1429.2      131.61     -124.87      1983.3      47703.
    82    23362.     -77.464     -345.69      118.22      .00000E+00  12533.      36746.

MINIMUMS
ELEMENT    82          82          98          96          96          96          82
VALUE     23362.     -77.464     -1429.2      34.276     -422.50      1965.5      36746.

MAXIMUMS
ELEMENT    96          96          82          98          82          82          98
VALUE     23713.      354.07     -345.69      131.61      .00000E+00  12533.      47703.

SORT ON JSG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + 0.2g:x  + .06g:z                    15.1261  AUG  1,1995 CP=       .700

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     2  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM       JSG3        JFX         JFY         JFZ         JMX         JMY         JMZ
    77    -24201.     -2092.3     -617.92      593.50     -476.31      23172.      26109.
    98    -23492.      241.07     -1429.2      131.61     -124.87      1983.3      47703.
    96    -23440.      354.07     -1424.0      34.276     -422.50      1965.5      47703.

MINIMUMS
ELEMENT     77          77          98          96          77          96          77
VALUE    -24201.     -2092.3     -1429.2      34.276     -476.31      1965.5      26109.

MAXIMUMS
ELEMENT     96          96          77          77          98          77          98
VALUE    -23440.      354.07     -617.92      593.50     -124.87      23172.      47703.

ESEL  FOR LABEL= ELEM  FROM    88 TO    99 BY    1

    12  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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DST MOCK-UP PLATFORM SEISMIC ANALYSIS DL + 0.2g:x + .06g:z 15.1261 AUG 1,1995 CP= .710

***** POST1 ELEMENT STRESS LISTING *****

LOAD STEP 2 ITERATION= 1 SECTION= 1
TIME= .00000E+00 LOAD CASE= 1

ELEM	IFX	IFY	IFZ	IMX	IMY	IMZ
88	518.01534	1765.4240	-358.71342	17318.785	3582.0771	23506.530
89	369.42717	141.63093	-103.23552	-213.90725	-938.54545	-18229.587
90	318.12971	-1477.6966	265.39467	-17533.006	-3435.8419	-21415.932
91	603.33474	1573.3741	-291.22150	-11511.648	3348.1786	20742.046
92	566.19425	101.67309	72.399411	-214.73206	-3075.6595	-17229.878
93	431.67492	-1375.9626	323.16186	11295.004	-4669.5417	-19667.027
94	259.20579	-326.87357	-75.481677	334.85510	3105.7704	-8790.3227
95	309.63220	-243.53282	-65.071616	24.226722	2650.7832	-14597.814
96	-360.09498	1454.0713	-36.082888	422.50273	-523.16664	11296.916
97	245.92849	-1576.0460	145.72384	422.50273	-1965.5271	-47702.602
98	-247.08960	1459.2715	-133.41767	124.87475	3449.7781	11509.736
99	358.93387	-1570.8459	48.389059	124.87475	-1983.3084	-47702.988

MINIMUMS						
ELEMENT	96	97	88	90	93	99
VALUE	-360.09498	-1576.0460	-358.71342	-17533.006	-4669.5417	-47702.988

MAXIMUMS						
ELEMENT	91	88	93	88	88	88
VALUE	603.33474	1765.4240	323.16186	17318.785	3582.0771	23506.530

PRINT ELEMENT STRESS ITEMS PER ELEMENT

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DSF MOCK-UP PLATFORM SEISMIC ANALYSIS DL + 0.2g:x + .06g:z 15.1261 AUG 1,1995 CP= .710

***** POST1 ELEMENT STRESS LISTING *****

LOAD STEP 2 ITERATION= 1 SECTION= 1
TIME= .00000E+00 LOAD CASE= 1

ELEM	JFX	JFY	JFZ	JMX	JMY	JMZ
88	-516.95774	-1747.7943	355.18749	-17318.785	4984.7338	18652.090
89	-368.32550	-123.26669	99.562675	213.90725	3473.5229	21540.807
90	-317.07212	1495.3262	-268.92060	17533.006	-2975.9413	-14260.341
91	-602.27714	-1555.7444	287.69556	11511.648	3598.8261	16807.376
92	-565.09259	-83.308846	-76.072259	214.73206	1219.7636	19542.153
93	-430.61732	1393.5923	-326.68779	-11295.004	-3128.6541	-13567.632
94	-247.15885	266.63887	71.868218	-334.85510	2935.5753	-15543.687
95	-321.67914	303.76753	61.458158	-24.226722	2536.9376	-7841.5001
96	354.07151	-1423.9540	34.276158	-422.50273	1965.5271	47702.602
97	-251.95197	1606.1634	-147.53057	-422.50273	-4046.1884	-17532.692
98	241.06613	-1429.1541	131.61094	-124.87475	1983.3084	47702.988
99	-364.95734	1600.9632	-50.195789	-124.87475	-37.680992	-17319.099
MINIMUMS						
ELEMENT	91	88	93	88	97	97
VALUE	-602.27714	-1747.7943	-326.68779	-17318.785	-4046.1884	-17532.692
MAXIMUMS						
ELEMENT	96	97	88	90	88	98
VALUE	354.07151	1606.1634	355.18749	17533.006	4984.7338	47702.988

ESEL FOR LABEL= ELEM FROM 76 TO 82 BY 2

4 ELEMENTS (OF 99 DEFINED) SELECTED BY ESEL COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT

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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + 0.2g:x  + .06g:z                    15.1261  AUG  1,1995 CP=       .720

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     2  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        IFX            IFY            IFZ            IMX            IMY            IMZ
    76     3488.3189      341.24475     -86.392776     .00000000E+00  .25437430E-11  .50590643E-11
    78     2516.9654      337.02199     -128.07462     .00000000E+00  .14068746E-11  -.22168933E-11
    80     863.37777      365.27253     -84.068866     .00000000E+00  .25437430E-11  .86970431E-11
    82     153.85879      360.96490     -122.80441     .00000000E+00  .14068746E-11  .30524916E-10

MINIMUMS
ELEMENT      82             78             79             76             78             78
VALUE     153.85879      337.02199     -128.07462     .00000000E+00  .14068746E-11  -.22168933E-11

MAXIMUMS
ELEMENT      76             80             80             76             76             82
VALUE     3488.3189      365.27253     -84.068866     .00000000E+00  .25437430E-11  .30524916E-10

ESEL  FOR LABEL= TYPE  FROM     5 TO     5 BY    1

    11  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

SORT ON ISG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + 0.2g:x  + .06g:z                    15.1261  AUG  1,1995 CP=       .730

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     2  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG1        IFX         IFY         IFZ         IMX         IMY         IMZ
    20    13376.     -111.89     -1309.1     -30.032      .35708      846.59     -53082.
    19    1992.6      22.436     -187.95     -5.3124      .32374     -235.76     -7315.6
    15    1890.4     -126.78     -187.10      61.747     -50.469     -870.22     -2760.3

MINIMUMS
ELEMENT    15          15          20          20          15          15          20
VALUE     1890.4     -126.78     -1309.1     -30.032     -50.469     -870.22     -53082.

MAXIMUMS
ELEMENT    20          19          15          15          20          20          15
VALUE     13376.      22.436     -187.10      61.747      .35708      846.59     -2760.3

SORT ON ISG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + 0.2g:x  + .06g:z                    15.1261  AUG  1,1995 CP=       .730

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     2  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 [illegible]          IFX          IFY          IFZ          IMX          IMY          IMZ
    20   [illegible]    -111.89      -1309.1      -30.032      .35708       846.59      -53082.
    19   [illegible]    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]    [illegible]
    15   -1784.8      -126.78      -187.10      61.747      -50.469      -870.22      [illegible]

MINIMUMS
ELEMENT     20          15          20          20          15          15          20
VALUE    -13282.     -126.78     -1309.1     -30.032     -50.469     -870.22     -53082.

MAXIMUMS
ELEMENT     15          19          15          15          20          20          15
VALUE    -1784.8      22.436     -187.10      61.747      .35708      846.59     -2760.3

SORT ON JSG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + 0.2g:x  + .06g:z                    15.1261  AUG  1,1995 CP=       .740

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     2  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG1        JFX         JFY         JFZ         JMX         JMY         JMZ
    21    14234.      27.812      1730.5      5.0100     -.35708      449.96     -59383.
    18    2023.4      51.564     -183.05      27.312     -.32374      235.76      7315.6
    15    1807.6      127.88      205.48     -65.423      50.469     -846.59     -2539.6

MINIMUMS
ELEMENT    15          21          18          15          21          15          21
VALUE     1807.6      27.812     -183.05     -65.423     -.35708     -846.59     -59383.

MAXIMUMS
ELEMENT    21          15          21          18          15          21          18
VALUE     14234.      127.88      1730.5      27.312      50.469      449.96      7315.6

SORT ON JSG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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Accession #: D195067914

Document #: SD-WM-ER-521

Title/Desc:
STRUCTRUAL ANALYSIS DESIGN & EVALUATION OF MOCKUP PLATFORM MONORAIL & TANK PLATE CUT OUT [SEC 2 OF 3]

Pages: 102

This document was too large to scan as a whole document, therefore it required breaking into smaller sections.

DOCUMENT NUMBER: SD-WM-ER-521

SECTION 2 OF 3

TITLE: Structural Analysis Design & Evaluation of mock-up platform monorail & Tank Plate Cut-out

DATE: 12-19-95

ORIGINATOR: T. S. Hundal

CO:

RECIPIENT:

CO:

REFERENCES:

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PST MOCK-UP PLATFORM SEISMIC ANALYSIS DL + 0.2g:x + .06g:z 15.1261 AUG 1,1995 CP= .740

***** POST1 ELEMENT STRESS LISTING *****

[illegible] STATIC [illegible] SECTION= 1
TIME= [illegible] LOAD CASE= 1

ELEM	JSG3	JFX	JFY	JFZ	JMX	JMY	JMZ
21	-14211.	27.812	1730.5	5.0100	-.35708	449.96	-59383.
18	-1980.4	51.564	-183.05	27.312	-.32374	235.76	7315.6
15	-1701.1	127.88	205.48	-65.423	50.469	-846.59	-2539.6

MINIMUMS							
ELEMENT	21	21	18	15	21	15	21
VALUE	-14211.	27.812	-183.05	-65.423	-.35708	-846.59	-59383.

MAXIMUMS							
ELEMENT	15	15	21	18	15	21	18
VALUE	-1701.1	127.88	1730.5	27.312	50.469	449.96	7315.6

ESEL FOR LABEL= ELEM FROM 18 TO 22 BY 4

2 ELEMENTS (OF 99 DEFINED) SELECTED BY ESEL COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT

A-89

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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + 0.2g:x  + .06g:z                    15.1261  AUG  1,1995 CP=       .750

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     2  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        IFX            IFY            IFZ            IMX            IMY            IMZ
    18    -56.601013     208.23236     -28.823228     .32373893      802.74501     -76.933295
    22    -10.271055     116.16264     -12.208204    -.74922899      214.10089      35.320971

MINIMUMS
ELEMENT       18             22             18             22             22             18
VALUE     -56.601013     116.16264     -28.823228    -.74922899      214.10089     -76.933295

MAXIMUMS
ELEMENT       22             18             22             18             18             22
VALUE     -10.271055     208.23236     -12.208204     .32373893      802.74501      35.320971

ESEL  FOR LABEL= ELEM  FROM    19 TO    23 BY    4

     2  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + 0.2g:x  + .06g:z                    15.1261  AUG  1,1995 CP=       .750

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     2  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        JFX            JFY            JFZ            JMX            JMY            JMZ
    19    -27.473084     213.13813      3.8015204     -.32373893     404.37068     -104.58002
    23    -36.535767     115.87147     -1.8334907      .74922899     45.266935     -28.041745

MINIMUMS
ELEMENT      23             23             23             19             23             19
VALUE     -36.535767     115.87147     -1.8334907     -.32373893     45.266935     -104.58002

MAXIMUMS
ELEMENT      19             19             19             23             19             23
VALUE     -27.473084     213.13813      3.8015204      .74922899     404.37068     -28.041745
USE LOAD STEP     3  ITERATION     0  SECTION   1  FOR LOAD CASE     1

DISPLACEMENT STORED FOR   72 NODES

***WARNING ***                          CP=       .770   TIME=  15.12611
DATA FOR STRESS LABEL IFX  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 IFX  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .770   TIME=  15.12611
DATA FOR STRESS LABEL IFY  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 IFY  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .770   TIME=  15.12611
DATA FOR STRESS LABEL IFZ  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 IFZ  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .770   TIME=  15.12611
DATA FOR STRESS LABEL IMX  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 IMX  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .770   TIME=  15.12611
DATA FOR STRESS LABEL IMY  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 IMY  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .770   TIME=  15.12611
DATA FOR STRESS LABEL IMZ  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 IMZ  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .770   TIME=  15.12611
DATA FOR STRESS LABEL JFX  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JFX  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .770   TIME=  15.12611
DATA FOR STRESS LABEL JFY  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JFY  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .770   TIME=  15.12611
DATA FOR STRESS LABEL JFZ  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JFZ  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .770   TIME=  15.12611
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```
DATA FOR STRESS LABEL JMX  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JMX  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .780   TIME=  15.12611
DATA FOR STRESS LABEL JMY  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JMY  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .780   TIME=  15.12611
DATA FOR STRESS LABEL JMZ  HAS NOT BEEN STORED FOR ALL ELEMENTS
 JMZ  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .780   TIME=  15.12611
DATA FOR STRESS LABEL ISAX HAS NOT BEEN STORED FOR ALL ELEMENTS.
 ISAX DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .780   TIME=  15.12611
DATA FOR STRESS LABEL ISBY HAS NOT BEEN STORED FOR ALL ELEMENTS.
 ISBY DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .780   TIME=  15.12611
DATA FOR STRESS LABEL ISBZ HAS NOT BEEN STORED FOR ALL ELEMENTS.
 ISBZ DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO
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***WARNING ***                                CP=       .780   TIME=  15.12611
DATA FOR STRESS LABEL JSAX HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JSAX DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                                CP=       .780   TIME=  15.12611
DATA FOR STRESS LABEL JSBY HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JSBY DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                                CP=       .780   TIME=  15.12611
DATA FOR STRESS LABEL JSBZ HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JSBZ DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                                CP=       .780   TIME=  15.12611
DATA FOR STRESS LABEL ISG1 HAS NOT BEEN STORED FOR ALL ELEMENTS.
 ISG1 DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                                CP=       .780   TIME=  15.12611
DATA FOR STRESS LABEL ISG3 HAS NOT BEEN STORED FOR ALL ELEMENTS.
 ISG3 DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                                CP=       .780   TIME=  15.12611
DATA FOR STRESS LABEL JSG1 HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JSG1 DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                                CP=       .780   TIME=  15.12611
DATA FOR STRESS LABEL JSG3 HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JSG3 DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                                CP=       .780   TIME=  15.12611
DATA FOR STRESS LABEL SAX  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 SAX  DATA FOR TYPE   1. STIF   4. ELEMENTS WILL BE SET TO ZERO
 SAX  DATA FOR TYPE   3. STIF   4. ELEMENTS WILL BE SET TO ZERO
 SAX  DATA FOR TYPE   4. STIF   4. ELEMENTS WILL BE SET TO ZERO
 SAX  DATA FOR TYPE   5. STIF   4. ELEMENTS WILL BE SET TO ZERO

STRESSES STORED FOR   23  SELECTED ITEMS

ITERATION SUMMARY INFORMATION STORED

NODAL FORCES STORED FOR   99 ELEMENTS

REACTIONS STORED FOR   18 REACTIONS

FOR LOAD STEP=     3  ITERATION=     1  SECTION=   1
 TIME=   .000000E+00   LOAD CASE=  1
 TITLE= DOUBLE SHELL TANK  MOCK-UP PLATFORM

NEW TITLE= DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL +0.2g:-x  + .06g:z


USE MACRO FILE  mres

ESEL  FOR LABEL= TYPE  FROM     1 TO     1 BY    1

    36  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

SORT ON ISG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST HOCK-UP PLATFORM SEISMIC ANALYSIS  DL +0.2g:-x  + .06g:z                    15.1261  AUG  1,1995 CP=       .790

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     3  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG1        IFX         IFY         IFZ         IMX         IMY         IMZ
    48    5944.6     -433.17     -225.94      9.1017      .91852     -3090.2     -69064.
    49    5357.8     -424.48     -375.89      39.092      .91852     -2723.1     -62357.
    56    3429.0     -333.12     -3947.5      395.95      .91852     -572.63     -43305.

MINIMUMS
ELEMENT    56          48          56          48          56          48          48
VALUE     3429.0     -433.17     -3947.5      9.1017      .91852     -3090.2     -69064.

MAXIMUMS
ELEMENT    48          56          48          56          48          56          56
VALUE     5944.6     -333.12     -225.94      395.95      .91852     -572.63     -43305.

SORT ON ISG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL +0.2g:-x  + .06g:z                    15.1261  AUG  1,1995 CP=       .800

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     3  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM       ISG3        IFX         IFY         IFZ         IMX         IMY         IMZ
    48    -5797.1     -433.17     -225.94      9.1017      .91852     -3090.2     -69064.
    49    -5213.2     -424.48     -375.89      39.092      .91852     -2723.1     -62357.
    56    -3315.5     -333.12     -3947.5      395.95      .91852     -572.63     -43305.

MINIMUMS
ELEMENT     48          48          56          48          56          48          48
VALUE     -5797.1     -433.17     -3947.5      9.1017      .91852     -3090.2     -69064.

MAXIMUMS
ELEMENT     56          56          48          56          48          56          56
VALUE     -3315.5     -333.12     -225.94      395.95      .91852     -572.63     -43305.

SORT ON JSG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL +0.2g:-x  + .06g:z                    15.1261  AUG  1,1995 CP=       .810

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     3  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG1        JFX         JFY         JFZ         JMX         JMY         JMZ
    47    5966.5      561.65     -2284.3      327.15     -.91852      3090.2      69064.
    48    5358.9      430.48      270.89     -18.092     -.91852      2723.1      62357.
    49    3443.7      419.88      452.47     -54.408     -.91852      572.63      43305.

MINIMUMS
ELEMENT     49          49          47          49          48          49          49
VALUE     3443.7      419.88     -2284.3     -54.408     -.91852      572.63      43305.

MAXIMUMS
ELEMENT     47          47          49          47          47          47          47
VALUE     5966.5      561.65      452.47      327.15     -.91852      3090.2      69064.

SORT ON JSG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL +0.2g:-x  + .06g:z                    15.1261  AUG  1,1995 CP=       .810

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     3  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG3        JFX         JFY         JFZ         JMX         JMY         JMZ
    47   -5775.2     561.65     -2284.3      327.15     -.91852      3090.2     69064.
    48   -5212.2     430.48      270.89     -18.092     -.91852      2723.1     62357.
    49   -3300.7     419.88      452.47     -54.408     -.91852      572.63     43305.

MINIMUMS
ELEMENT    47          49          47          49          48          49          49
VALUE    -5775.2     419.88     -2284.3     -54.408     -.91852      572.63     43305.

MAXIMUMS
ELEMENT    49          47          49          47          47          47          47
VALUE    -3300.7     561.65      452.47      327.15     -.91852      3090.2     69064.

ESEL  FOR LABEL= ELEM  FROM    56 TO    62 BY    1

     7  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL +0.2g:-x  + .06g:z                    15.1261  AUG  1,1995 CP=       .820

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     3  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        JFX          JFY          JFZ          JMX          JMY          JMZ
    56    332.02146    3965.8222   -399.61511   -.91852193   -3802.9931   -218.79834
    57   -301.91988    220.85637   -8.3852263   -.65537463    943.74494    217.02671
    58    207.76434    209.77815    .70715177    .70333824    1398.1934    38.931195
    59   -66.316481    966.3503   -408.97941    1.9217565   -3416.6046   -84.128361
    60   -275.53437    220.93485    79.373019   -.65537463    3188.1592    212.55329
    61    233.14985    210.01508    84.665397    .70333824    3468.0419    25.311921
    62    160.16741    370.67741    385.68373    1.9217565    9174.2945   -61.743994

MINIMUMS
ELEMENT      57           58           59           56           56           56
VALUE    -301.91988    209.77615   -408.97941   -.91852193   -3802.9931   -218.79834

MAXIMUMS
ELEMENT      56           56           62           62           62           57
VALUE    332.02146    3965.8222    385.68373    1.9217565    9174.2945    217.02671

ESEL  FOR LABEL= ELEM  FROM    64 TO    67 BY    3

     2  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL +0.2g:-x  + .06g:z                    15.1261  AUG  1,1995 CP=       .820

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     3  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        JFX            JFY            JFZ            JMX            JMY            JMZ
    64    -76.994356     177.99988      79.140572      1.4863722      3366.9775      37.436069
    67     24.707920     170.79959      75.669872     -1.7815603      3180.6428     -2.6186053

MINIMUMS
ELEMENT       64             67             67             67             67             67
VALUE     -76.994356     170.79959      75.669872     -1.7815603      3180.6428     -2.6186053

MAXIMUMS
ELEMENT       67             64             64             64             64             64
VALUE      24.707920     177.99988      79.140572      1.4863722      3366.9775      37.436069

ESEL  FOR LABEL= ELEM  FROM    69 TO    69 BY    1

     1  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL +0.2g:-x  + .06g:z                    15.1261  AUG  1,1995 CP=       .830

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     3  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        JFX            JFY            JFZ            JMX            JMY            JMZ
    69    -79.746844     122.42088      64.703889      3.3091129      2635.5710      3.2515341

MINIMUMS
ELEMENT      69             69             69             69             69             69
VALUE    -79.746844     122.42088      64.703889      3.3091129      2635.5710      3.2515341

MAXIMUMS
ELEMENT      69             69             69             69             69             69
VALUE    -79.746844     122.42088      64.703889      3.3091129      2635.5710      3.2515341

ESEL  FOR LABEL= ELEM  FROM    47 TO    47 BY    1

     1  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DS1 MOCK-UP PLATFORM SEISMIC ANALYSIS  DL +0.2g:-x  + .06g:z                    15.1261  AUG  1,1995 CP=       .830

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     3  ITERATION=     1  SECTION=  1
 TIME=     .00000E+00     LOAD CASE=  1

 ELEM        IFX            IFY            IFZ            IMX            IMY            IMZ
    47    -564.64925      2334.2533     -337.14241     .91852193      6874.1964      214.19022

MINIMUMS
ELEMENT      47             47             47             47             47             47
VALUE     -564.64925      2334.2533     -337.14241     .91852193      6874.1964      214.19022

MAXIMUMS
ELEMENT      47             47             47             47             47             47
VALUE     -564.64925      2334.2533     -337.14241     .91852193      6874.1964      214.19022

ESEL  FOR LABEL= ELEM  FROM    63 TO    65 BY    2

     2  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL +0.2g:-x  + .06g:z                    15.1261  AUG  1,1995 CP=       .840

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     3  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        IFX            IFY            IFZ            IMX            IMY            IMZ
    63     98.379865      177.79134     -8.1823272     -1.4863722      1610.4278     -49.323076
    65    -12.424140      231.86155     -3.8467770     -4.3447984      1575.1497      6.0717303

MINIMUMS
ELEMENT      65             63             63             65             65             63
VALUE    -12.424140      177.79134     -8.1823272     -4.3447984      1575.1497     -49.323076

MAXIMUMS
ELEMENT      63             65             65             63             63             65
VALUE     98.379865      231.86155     -3.8467770     -1.4863722      1610.4278      6.0717303

ESEL  FOR LABEL= ELEM  FROM    68 TO    68 BY    1

     1  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL +0.2g:-x  + .06g:z                    15.1261  AUG  1,1995 CP=       .840

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     3  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        IFX            IFY            IFZ            IMX            IMY            IMZ
    68     110.27578      183.53454      5.1963282      10.174337      1331.0923      -3.7174474

MINIMUMS
ELEMENT      68             68             68             68             68             68
VALUE      110.27578      183.53454      5.1963282      10.174337      1331.0923      -3.7174474

MAXIMUMS
ELEMENT      68             68             68             68             68             68
VALUE      110.27578      183.53454      5.1963282      10.174337      1331.0923      -3.7174474

ESEL  FOR LABEL= TYPE  FROM     2 TO     2 BY    1

    16  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

SORT ON SAX   ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL +0.2g:-x  + .06g:z                    15.1261  AUG  1,1995 CP=       .850

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     3  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        SAX
    37    -2355.5475
    39     2334.3229
    36    -2188.6574

MINIMUMS
ELEMENT      37
VALUE     -2355.5475

MAXIMUMS
ELEMENT      39
VALUE      2334.3229

ESEL  FOR LABEL= TYPE  FROM     3 TO     3 BY    1

    12  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT REACTION FORCES PER NODE
```

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```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL +0.2g:-x  + .06g:z                    15.1261  AUG  1,1995 CP=       .850

        ***** POST1 REACTION FORCE LISTING *****

 LOAD STEP     3  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 THE FOLLOWING X,Y,Z FORCES ARE IN GLOBAL COORDINATES

   NODE      FX              FY              FZ              MX              MY              MZ
     1    56.617684       2938.4683       120.33618      .00000000E+00   .00000000E+00   .00000000E+00
     2    56.621249       5202.9510      -283.08980      .00000000E+00   .00000000E+00   .00000000E+00
     3    828.34448       6223.3959       144.34324      .00000000E+00   .00000000E+00   .00000000E+00
     4    605.03472       7177.7764      -550.43789      .00000000E+00   .00000000E+00   .00000000E+00
     5    803.67226      -4475.8384      -331.73168      .00000000E+00   .00000000E+00   .00000000E+00
     6    599.91285      -2312.7370       15.687471      .00000000E+00   .00000000E+00   .00000000E+00

TOTAL     2950.2032       14754.016      -884.89248      .00000000E+00   .00000000E+00   .00000000E+00

SORT ON ISG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL +0.2g:-x  + .06g:z                    15.1261  AUG  1,1995 CP=       .860

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     3  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG1        IFX         IFY         IFZ         IMX         IMY         IMZ
    12    5981.8     -1175.7      538.64     -14.639     .00000E+00  1062.2      74001.
    10    5154.5      4014.2      543.59     -14.903    -.15987E-13  1097.1      74654.
     6    3935.2     -1404.1      328.24      1.2576     .00000E+00 -1036.1      46228.

MINIMUMS
ELEMENT     6           6           6          10          10           6           6
VALUE    3935.2     -1404.1      328.24     -14.903    -.15987E-13 -1036.1      46228.

MAXIMUMS
ELEMENT    12          10          10           6          12          10          10
VALUE    5981.8      4014.2      543.59      1.2576     .00000E+00  1097.1      74654.

SORT ON ISG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL +0.2g:-x  + .06g:z                    15.1261  AUG  1,1995 CP=       .860

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     3  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM       ISG3        IFX         IFY         IFZ         IMX         IMY         IMZ
    10    -6522.2     4014.2      543.59     -14.903    -.15987E-13  1097.1      74654.
    12    -5581.3    -1175.7      538.64     -14.639     .00000E+00  1062.2      74001.
     4    -3888.7     2628.6      304.35      .61920     .17764E-14 -951.83      43075.

MINIMUMS
ELEMENT     10          12          4          10          10          4           4
VALUE    -6522.2     -1175.7      304.35     -14.903    -.15987E-13 -951.83      43075.

MAXIMUMS
ELEMENT      4          10          10          4           4          10          10
VALUE    -3888.7      4014.2      543.59      .61920     .17764E-14  1097.1      74654.

SORT ON JSG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL +0.2g:-x  + .06g:z                    15.1261  AUG  1,1995 CP=       .870

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     3  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG1        JFX         JFY         JFZ         JMX         JMY         JMZ
    5    8583.1      4334.0      756.14     -17.862     .00000E+00 -1473.2     -.10031E+06
    3    7097.5     -5826.7      780.81     -18.103     .00000E+00 -1504.3     -.10350E+06
   11    6111.8      2518.4      552.38     -1.6589     .00000E+00  616.99     -74028.

MINIMUMS
ELEMENT    11          3          11          3          5          3          3
VALUE    6111.8     -5826.7      552.38     -18.103     .00000E+00 -1504.3     -.10350E+06

MAXIMUMS
ELEMENT     5          5          3          11          5          11         11
VALUE    8583.1      4334.0      780.81     -1.6589     .00000E+00  616.99     -74028.

SORT ON JSG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR    3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL +0.2g:-x  + .06g:z                    15.1261  AUG  1,1995 CP=       .870

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     3  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG3        JFX         JFY         JFZ         JMX         JMY         JMZ
    3   -9082.7     -5826.7      780.81     -18.103     .00000E+00 -1504.3     -.10350E+06
    5   -7106.4      4334.0      756.14     -17.862     .00000E+00 -1473.2     -.10031E+06
    9   -6832.2     -6332.3      557.50     -.93366     .00000E+00  710.55     -74688.

MINIMUMS
ELEMENT     3           9           9           3           3           3           3
VALUE   -9082.7     -6332.3      557.50     -18.103     .00000E+00 -1504.3     -.10350E+06

MAXIMUMS
ELEMENT     9           5           3           9           3           9           9
VALUE   -6832.2      4334.0      780.81     -.93366     .00000E+00  710.55     -74688.

ESEL  FOR LABEL= ELEM  FROM     2 TO    12 BY    2

     3  ELEMENTS (OF     9  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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ANALYSIS SYSTEM  REVISION 4.4        4137   32287                MAY 1,1990
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                                                                  15.1261  AUG  1,1995 CP=       .870

      ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     3  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1
```

ELEM	JFX	JFY	JFZ	JMX	JMY	JMZ
2	-2426.7507	-51.846211	-6.2623304	.88817842E-14	-.14210855E-12	-.61390892E-10
4	-2408.8530	-348.30374	-13.802425	-.17763568E-14	.39790393E-12	.36834535E-10
6	1623.8695	-372.18795	-14.440792	.00000000E+00	-.56843419E-13	.62300387E-10
8	-4224.7374	-51.842646	-2.4654869	.00000000E+00	.00000000E+00	.40472514E-10
10	-3794.4696	-587.53806	1.7200574	.15987212E-13	.51159077E-12	.40927262E-11
12	1395.4173	-582.58911	1.4555630	.00000000E+00	.56843419E-13	.11368684E-10
MINIMUMS						
ELEMENT	8	10	6	4	2	2
VALUE	-4224.7374	-587.53806	-14.440792	-.17763568E-14	-.14210855E-12	-.61390892E-10
MAXIMUMS						
ELEMENT	6	8	10	10	10	6
VALUE	1623.8695	-51.842646	1.7200574	.15987212E-13	.51159077E-12	.62300387E-10

```
ESEL  FOR LABEL= TYPE  FROM     4 TO     4 BY    1

    24  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

SORT ON ISG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL +0.2g:-x  + .06g:z                    15.1261  AUG  1,1995 CP=       .880

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     3  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG1        IFX         IFY         IFZ         IMX         IMY         IMZ
    97    23713.     -354.07     -1423.7     33.676     -446.67     -1965.5     -47702.
    99    23678.     -241.06     -1429.4     131.01     -149.05     -1983.3     -47702.
    86    18159.     -293.67      901.68     18.370     -197.67     -805.27      37210.

 MINIMUMS
 ELEMENT    86          97          99          86          97          99          99
 VALUE    18159.     -354.07     -1429.4     18.370     -446.67     -1983.3     -47702.

 MAXIMUMS
 ELEMENT    97          99          86          99          99          86          86
 VALUE    23713.     -241.06      901.68     131.01     -149.05     -805.27      37210.

SORT ON ISG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL +0.2g:-x  + .06g:z                    15.1261  AUG  1,1995 CP=       .890

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     3  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG3        IFX         IFY         IFZ         IMX         IMY         IMZ
    99   -23492.     -241.06     -1429.4      131.01     -149.05     -1983.3     -47702.
    97   -23439.     -354.07     -1423.7      33.676     -446.67     -1965.5     -47702.
    86   -17932.     -293.67      901.68      18.370     -197.67     -805.27      37210.

MINIMUMS
ELEMENT     99          97          99          86          97          99          99
VALUE    -23492.     -354.07     -1429.4      18.370     -446.67     -1983.3     -47702.

MAXIMUMS
ELEMENT     86          99          86          99          99          86          86
VALUE    -17932.     -241.06      901.68      131.01     -149.05     -805.27      37210.

SORT ON JSG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL +0.2g:-x  + .06g:z                    15.1261  AUG  1,1995 CP=       .890

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     3  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG1        JFX         JFY         JFZ         JMX         JMY         JMZ
    96    23481.     -245.93     -1576.3      146.32      446.67      1965.5      47702.
    98    23446.     -358.94     -1570.6      46.989      149.05      1983.3      47702.
    78    23336.     -84.179      345.58      117.84     .00000E+00   12494.     -36735.

MINIMUMS
ELEMENT    78          98          96          98          78          96          78
VALUE     23336.     -358.94     -1576.3      48.989     .00000E+00   1965.5     -36735.

MAXIMUMS
ELEMENT    96          78          78          96          96          78          98
VALUE     23481.     -84.179      345.58      146.32      446.67      12494.      47702.

SORT ON JSG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL +0.2g:-x  + .06g:z                    15.1261  AUG  1,1995 CP=       .900

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     3  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG3        JFX         JFY         JFZ         JMX         JMY         JMZ
    81   -24235.     -2095.4      619.35      594.58      475.36      23204.     -26146.
    98   -23723.     -358.94     -1570.6      48.989      149.05      1983.3      47702.
    96   -23671.     -245.93     -1576.3      146.32      446.67      1965.5      47702.

MINIMUMS
ELEMENT    81          81          96          98          98          96          81
VALUE    -24235.     -2095.4     -1576.3      48.989      149.05      1965.5     -26146.

MAXIMUMS
ELEMENT    96          96          81          81          81          81          98
VALUE    -23671.     -245.93      619.35      594.58      475.36      23204.      47702.

ESEL  FOR LABEL= ELEM  FROM    88 TO    99 BY    1

    12  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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DST MOCK-UP PLATFORM SEISMIC ANALYSIS DL +0.2g:-x + .06g:z 15.1261 AUG 1,1995 CP= .900

***** POST1 ELEMENT STRESS LISTING *****

LOAD STEP 3 ITERATION= 1 SECTION= 1
TIME= .00000E+00 LOAD CASE= 1

ELEM	IFX	IFY	IFZ	IMX	IMY	IMZ
88	602.75429	1571.3193	292.37034	11520.913	-3365.5557	20694.372
89	566.21397	99.860043	-71.250941	232.95112	3061.2584	-17252.403
90	432.29480	-1378.0171	-322.00551	-11288.016	4659.2289	-19668.403
91	518.64788	1767.4788	359.86595	-17310.634	-3599.4868	23554.532
92	369.45955	143.44397	104.38842	232.92742	924.17908	-18206.733
93	317.56193	-1475.6421	-354.24955	17543.461	3425.7083	-21414.228
94	247.44061	267.70973	72.315597	-350.18612	-2953.9039	15586.142
95	322.27530	302.69619	61.010789	-39.593751	-2518.6251	7800.4661
96	251.95159	1606.4052	-148.13074	-446.66942	4070.8056	17543.562
97	-354.07188	-1423.7122	33.675994	-446.66942	-1965.5166	-47701.644
98	364.96522	1600.7218	-50.795951	-149.05188	62.270709	17310.533
99	-241.05825	-1429.3955	131.01078	-149.05188	-1983.3253	-47701.655

MINIMUMS						
ELEMENT	97	93	90	91	91	99
VALUE	-354.07188	-1475.6421	-322.00551	-17310.634	-3599.4868	-47701.655

MAXIMUMS						
ELEMENT	88	91	91	93	90	91
VALUE	602.75429	1767.4788	359.86595	17543.461	4659.2289	23554.532

PRINT ELEMENT STRESS ITEMS PER ELEMENT

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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL +0.2g:-x  + .06g:z                    15.1261  AUG  1,1995 CP=       .910

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     3  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1
```

ELEM	JFX	JFY	JFZ	JMX	JMY	JMZ
88	-601.69669	-1553.6896	-288.84441	-11520.913	-3609.0213	16805.734
89	-565.11230	-81.495804	74.923789	-232.95112	-1234.0743	19519.351
90	-431.23720	1395.6468	325.53144	11288.016	3111.2145	-13615.563
91	-517.59028	-1749.8491	-356.34001	17310.634	-4994.9847	18653.403
92	-368.35788	-125.07973	-100.71557	-232.92742	-3487.9790	21563.280
93	-316.50433	1493.2718	267.77558	-17543.461	2958.5944	-14212.738
94	-259.48756	-327.94464	-75.929056	350.18612	-3124.1269	8835.6949
95	-310.22836	-242.46148	-64.624248	39.593751	-2632.4115	14550.998
96	-245.92812	-1576.2878	146.32401	446.66942	1965.5166	47701.644
97	360.09535	1453.8295	-35.482723	446.66942	547.76289	-11287.961
98	-358.94175	-1570.6045	48.989221	149.05188	1983.3253	47701.655
99	247.08172	1459.5129	-132.81751	149.05188	-3425.1545	-11520.968
MINIMUMS						
ELEMENT	88	91	91	93	91	93
VALUE	-601.69669	-1749.8491	-356.34001	-17543.461	-4994.9847	-14212.738
MAXIMUMS						
ELEMENT	97	93	90	91	90	98
VALUE	360.09535	1493.2718	325.53144	17310.634	3111.2145	47701.655

```
ESEL  FOR LABEL= ELEM  FROM    76 TO    82 BY    2

     4  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL +0.2g:-x  + .06g:z                    15.1261  AUG  1,1995 CP=       .910

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     3  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        IFX            IFY            IFZ            IMX            IMY            IMZ
    76     856.66250     -365.84350     -83.670638     .00000000E+00  .34532377E-11  -.19610980E-10
    78     160.57406     -360.86140     -122.42774     .00000000E+00  -.45048409E-11  .39790393E-12
    80     3495.0341     -341.54421     -86.761626     .00000000E+00  -.20037305E-11  -.50590643E-11
    82     2510.2502     -336.25507     -128.48066     .00000000E+00  -.21174174E-11  -.68780537E-11

MINIMUMS
ELEMENT      78             76             82             76             78             76
VALUE     160.57406     -365.84350     -128.48066     .00000000E+00  -.45048409E-11  -.19610980E-10

MAXIMUMS
ELEMENT      80             82             76             76             76             78
VALUE     3495.0341     -336.25507     -83.670638     .00000000E+00  .34532377E-11  .39790393E-12

ESEL  FOR LABEL= TYPE  FROM     5 TO     5 BY    1

    11  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

SORT ON ISG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL +0.2g:-x  + .06g:z                    15.1261  AUG  1,1995 CP=       .920

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     3  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG1        IFX         IFY         IFZ         IMX         IMY         IMZ
    20    14408.      31.853      1756.4      4.5357    -.98358E-02 -433.87      60348.
    19    2021.0     -51.018     -183.02      26.307    -.80652E-01 -234.20     -7315.6
    17    1730.7      248.55     -186.60     -60.851      51.184      865.04     -2777.0

MINIMUMS
ELEMENT    17          19          17          17          19          20          19
VALUE     1730.7     -51.018     -186.60     -60.851    -.80652E-01 -433.87     -7315.6

MAXIMUMS
ELEMENT    20          17          20          19          17          17          20
VALUE     14408.      248.55      1756.4      26.307      51.184      865.04      60348.

SORT ON ISG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL +0.2g:-x  + .06g:z                    15.1261  AUG  1,1995 CP=       .920

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     3  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG3        IFX         IFY         IFZ         IMX         IMY         IMZ
   20    -14435.     31.853      1756.4      4.5357     -.98358E-02 -433.87      60348.
   19    -1978.5     -51.018     -183.02     26.307     -.80652E-01 -234.20     -7315.6
   17    -1937.8     248.55      -186.60     -60.851     51.184      865.04      -2777.0

MINIMUMS
ELEMENT    20          19          17          17          19          20          19
VALUE    -14435.     -51.018     -186.60     -60.851     -.80652E-01 -433.87     -7315.6

MAXIMUMS
ELEMENT    17          17          20          19          17          17          20
VALUE    -1937.8     248.55      1756.4      26.307      51.184      865.04      60348.

SORT ON JSG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL +0.2g:-x  + .06g:z                    15.1261  AUG  1,1995 CP=       .930

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     3  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG1        JFX         JFY         JFZ         JMX         JMY         JMZ
    21    13542.      52.221     -1335.0     -29.557     .98358E-02  -827.57      54033.
    18    1990.2     -22.982     -187.98     -4.3070     .80652E-01   234.20      7315.6
    17    1618.0     -247.45      204.98      64.527     -51.184      827.57     -2509.3

MINIMUMS
ELEMENT    17          17          21          21          17          21          17
VALUE    1618.0     -247.45     -1335.0     -29.557     -51.184     -827.57     -2509.3

MAXIMUMS
ELEMENT    21          21          17          17          18          17          21
VALUE    13542.      52.221      204.98      64.527     .80652E-01   827.57      54033.

SORT ON JSG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL +0.2g:-x  + .06g:z                    15.1261, AUG  1,1995 CP=       .930

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     3  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM       JSG3        JFX         JFY         JFZ         JMX         JMY         JMZ
    21    -13499.      52.221     -1335.0     -29.557     .98358E-02  -827.57      54033.
    18    -2009.3     -22.982     -187.98     -4.3070     .80652E-01   234.20      7315.6
    17    -1824.2     -247.45      204.98      64.527     -51.184      827.57     -2509.3

MINIMUMS
ELEMENT     21          17          21          21          17          21          17
VALUE    -13499.     -247.45     -1335.0     -29.557     -51.184     -827.57     -2509.3

MAXIMUMS
ELEMENT     17          21          17          17          18          17          21
VALUE    -1824.2      52.221      204.98      64.527     .80652E-01   827.57      54033.

ESEL  FOR LABEL= ELEM  FROM    18 TO    22 BY    4

     2  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL +0.2g:-x  + .06g:z                    15.1261  AUG  1,1995 CP=       .940

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     3  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        IFX            IFY            IFZ            IMX            IMY            IMZ
   18     28.019022      213.16043      2.7961779     -.80651967E-01  -365.60875     105.43119
   22     14.864850      115.86991      5.1017295     -.98123925      -222.60203     6.1263587

MINIMUMS
ELEMENT      22             22             18             22             18             22
VALUE     14.864850      115.86991      2.7961779     -.98123925      -365.60875     6.1263587

MAXIMUMS
ELEMENT      18             18             22             18             22             18
VALUE     28.019022      213.16043      5.1017295     -.80651967E-01  -222.60203     105.43119

ESEL  FOR LABEL= ELEM  FROM    19 TO    23 BY    4

     2  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL +0.2g:-x  + .06g:z                    15.1261  AUG  1,1995 CP=       .940

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     3  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        JFX            JFY            JFZ            JMX            JMY            JMZ
    19     56.055076      208.21006     -27.817886     .80651967E-01  -767.11160      77.732706
    23     31.941972      116.16420     -19.143424     .98123925      -383.52680     -13.483450

MINIMUMS
ELEMENT      23             23             19             19             19             23
VALUE      31.941972      116.16420     -27.817886     .80651967E-01  -767.11160     -13.483450

MAXIMUMS
ELEMENT      19             19             23             23             23             19
VALUE      56.055076      208.21006     -19.143424     .98123925      -383.52680      77.732706
USE LOAD STEP     4  ITERATION     0  SECTION   1  FOR LOAD CASE     1

DISPLACEMENT STORED FOR   72 NODES

***WARNING ***                          CP=       .970   TIME=  15.12611
DATA FOR STRESS LABEL IFX  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 IFX  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .980   TIME=  15.12611
DATA FOR STRESS LABEL IFY  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 IFY  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .980   TIME=  15.12611
DATA FOR STRESS LABEL IFZ  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 IFZ  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .980   TIME=  15.12611
DATA FOR STRESS LABEL IMX  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 IMX  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .980   TIME=  15.12611
DATA FOR STRESS LABEL IMY  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 IMY  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .980   TIME=  15.12611
DATA FOR STRESS LABEL IMZ  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 IMZ  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .980   TIME=  15.12611
DATA FOR STRESS LABEL JFX  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JFX  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .980   TIME=  15.12611
DATA FOR STRESS LABEL JFY  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JFY  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .980   TIME=  15.12611
DATA FOR STRESS LABEL JFZ  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JFZ  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .980   TIME=  15.12611
```

```
DATA FOR STRESS LABEL JMX  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JMX  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .980   TIME=  15.12611
DATA FOR STRESS LABEL JMY  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JMY  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .980   TIME=  15.12611
DATA FOR STRESS LABEL JMZ  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JMZ  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .980   TIME=  15.12611
DATA FOR STRESS LABEL ISAX HAS NOT BEEN STORED FOR ALL ELEMENTS.
 ISAX DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .980   TIME=  15.12611
DATA FOR STRESS LABEL ISBY HAS NOT BEEN STORED FOR ALL ELEMENTS.
 ISBY DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=       .980   TIME=  15.12611
DATA FOR STRESS LABEL ISBZ HAS NOT BEEN STORED FOR ALL ELEMENTS.
 ISBZ DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO
```

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```
***WARNING ***                                CP=       .980   TIME=  15.12611
DATA FOR STRESS LABEL JSAX HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JSAX DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                                CP=       .980   TIME=  15.12611
DATA FOR STRESS LABEL JSBY HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JSBY DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                                CP=       .990   TIME=  15.12611
DATA FOR STRESS LABEL JSBZ HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JSBZ DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                                CP=       .990   TIME=  15.12611
DATA FOR STRESS LABEL ISG1 HAS NOT BEEN STORED FOR ALL ELEMENTS.
 ISG1 DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                                CP=       .990   TIME=  15.12611
DATA FOR STRESS LABEL ISG3 HAS NOT BEEN STORED FOR ALL ELEMENTS.
 ISG3 DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                                CP=       .990   TIME=  15.12611
DATA FOR STRESS LABEL JSG1 HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JSG1 DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                                CP=       .990   TIME=  15.12611
DATA FOR STRESS LABEL JSG3 HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JSG3 DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                                CP=       .990   TIME=  15.12611
DATA FOR STRESS LABEL SAX  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 SAX  DATA FOR TYPE   1. STIF   4. ELEMENTS WILL BE SET TO ZERO
 SAX  DATA FOR TYPE   3. STIF   4. ELEMENTS WILL BE SET TO ZERO
 SAX  DATA FOR TYPE   4. STIF   4. ELEMENTS WILL BE SET TO ZERO
 SAX  DATA FOR TYPE   5. STIF   4. ELEMENTS WILL BE SET TO ZERO

STRESSES STORED FOR   23  SELECTED ITEMS

ITERATION SUMMARY INFORMATION STORED

NODAL FORCES STORED FOR   99 ELEMENTS

REACTIONS STORED FOR   18 REACTIONS

FOR LOAD STEP=     4  ITERATION=     1  SECTION=   1
 TIME=   .000000E+00   LOAD CASE=  1
 TITLE= DOUBLE SHELL TANK  MOCK-UP PLATFORM

NEW TITLE= DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:z

USE MACRO FILE  mres

ESEL  FOR LABEL= TYPE  FROM     1 TO     1 BY    1

    36  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

SORT ON ISG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:z                    15.1261  AUG  1,1995 CP=      1.000

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     4  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG1        IFX         IFY         IFZ         IMX         IMY         IMZ
    59    3017.0      379.05     -3541.6     -128.52     -9.0101     -819.25     -38678.
    43    2999.1      194.77     -3518.4      373.05     -200.88     -4304.3     -27487.
    55    2912.1      32.871      77.322     -30.497     -9.0101      689.27     -36882.

MINIMUMS
ELEMENT    55          55          59          59          43          43          59
VALUE    2912.1      32.871     -3541.6     -128.52     -200.88     -4304.3     -38678.

MAXIMUMS
ELEMENT    59          59          55          43          59          55          43
VALUE    3017.0      379.05      77.322      373.05     -9.0101      689.27     -27487.

SORT ON ISG3  ORDER= 0  KABS= 1  NMAX=   3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:z                    15.1261  AUG  1,1995 CP=      1.000

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     4  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG3        IFX         IFY         IFZ         IMX         IMY         IMZ
    59   -3146.1     379.05     -3541.6     -128.52     -9.0101     -819.25     -38678.
    43   -3065.5     194.77     -3518.4      373.05     -200.88     -4304.3     -27487.
    55   -2923.3     32.871      77.322     -30.497     -9.0101      689.27     -36882.

MINIMUMS
ELEMENT    59          55          59          59          43          43          59
VALUE    -3146.1     32.871     -3541.6     -128.52     -200.88     -4304.3     -38678.

MAXIMUMS
ELEMENT    55          59          55          43          59          55          43
VALUE    -2923.3     379.05      77.322      373.05     -9.0101      689.27     -27487.

SORT ON JSG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:z                    15.1261  AUG  1,1995 CP=      1.010

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     4  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG1        JFX         JFY         JFZ         JMX         JMY         JMZ
    55    3073.4     -48.187     -.73914      35.091      9.0101      819.25      38678.
    54    2917.2     -2.8709     -227.32      21.497      9.0101     -689.27      36882.
    43    2877.1     -196.47      3546.7     -378.71      200.88     -2085.6     -32567.

MINIMUMS
ELEMENT    43          43          54          43          55          43          43
VALUE     2877.1     -196.47     -227.32     -378.71      9.0101     -2085.6     -32567.

MAXIMUMS
ELEMENT    55          54          43          55          43          55          55
VALUE     3073.4     -2.8709      3546.7      35.091      200.88      819.25      38678.

SORT ON JSG3  ORDER= 0  KABS= 1  NMAX=   3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST HOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:z                    15.1261  AUG  1,1995 CP=      1.020

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     4  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG3        JFX         JFY         JFZ         JMX         JMY         JMZ
    55   -3089.8     -48.187     -.73914      35.091      9.0101      819.25      38678.
    43   -2944.1     -196.47      3546.7     -378.71      200.88     -2085.6     -32567.
    54   -2918.2     -2.8709     -227.32      21.497      9.0101     -689.27      36882.

MINIMUMS
ELEMENT    55          43          54          43          55          43          43
VALUE    -3089.8     -196.47     -227.32     -378.71      9.0101     -2085.6     -32567.

MAXIMUMS
ELEMENT    54          54          43          55          43          55          55
VALUE    -2918.2     -2.8709      3546.7      35.091      200.88      819.25      38678.

ESEL  FOR LABEL= ELEM  FROM    56 TO    62 BY    1

     7  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:z                    15.1261  AUG  1,1995 CP=      1.020

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     4  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        JFX            JFY            JFZ            JMX            JMY            JMZ
   56    -371.46923     2649.0375      98.140032     -7.1938390     -866.57568     -83.838965
   57     58.262350     220.48960     -42.892202     -5.6943126     -2826.6999      80.725786
   58    -106.28947     209.37425     -15.222581      2.0572991     -1287.0990      182.33757
   59    -382.71441     3559.8730      129.61446      9.0100683      2238.9631     -380.10798
   60     146.22059     221.30162     -69.277711     -5.6943126     -3566.9851      34.440481
   61    -22.331220     210.41698     -40.608090      2.0572991     -1895.2492      122.90209
   62     387.62979     1039.3718     -77.263569      9.0100683     -1039.6854     -294.11716

MINIMUMS
ELEMENT      59             58             62             56             60             59
VALUE    -382.71441     209.37425     -77.263569     -7.1938390     -3566.9851     -380.10798

MAXIMUMS
ELEMENT      62             59             59             62             59             58
VALUE     387.62979     3559.8730      129.61446      9.0100683      2238.9631      182.33757

ESEL  FOR LABEL= ELEM  FROM    64 TO    67 BY    3

     2  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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```
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[illegible] + .06g:x + .2g:z                                    15.1261  AUG  1,1995 CP=      1.030

      ***** FOS:1 ELEMENT STRESS LISTING *****

LOAD STEP     4  ITERATION=     1  SECTION=  1
TIME=    .00000E+00     LOAD CASE=  1

ELEM        JFX            JFY            JFZ            JMX            JMY            JMZ
   64     205.47665      178.28853      14.009831      9.3301240      1147.0750      162.97132
   67     57.149910      170.76671      9.4428188     -3.8517805      838.76652      2.9751492

MINIMUMS
ELEMENT      67             67             67             67             67             67
VALUE      57.149910      170.76671      9.4428188     -3.8517805      838.76652      2.9751492

MAXIMUMS
ELEMENT      64             64             64             64             64             64
VALUE      205.47665      178.28853      14.009831      9.3301240      1147.0750      162.97132

ESEL  FOR LABEL= ELEM  FROM    69 TO    69 BY    1

    1  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:z                    15.1261  AUG  1,1995 CP=      1.030

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     4  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        JFX            JFY            JFZ            JMX            JMY            JMZ
    69    71.483526      122.36143      14.188748      4.9224373      1000.1472      3.6562039

MINIMUMS
ELEMENT      69             69             69             69             69             69
VALUE     71.483526      122.36143      14.188748      4.9224373      1000.1472      3.6562039

MAXIMUMS
ELEMENT      69             69             69             69             69             69
VALUE     71.483526      122.36143      14.188748      4.9224373      1000.1472      3.6562039

ESEL  FOR LABEL= ELEM  FROM    47 TO    47 BY    1

     1  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:z                    15.1261  AUG  1,1995 CP=      1.040

        ***** POSTI ELEMENT STRESS LISTING *****

 LOAD STEP      1  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        IFX            IFY            IFZ            IMX            IMY            IMZ
    47    -389.60724     408.82099      154.09362      7.1938390     -4551.7695     32.828089

MINIMUMS
ELEMENT      47             47             47             47             47             47
VALUE     -389.60724     408.82099      154.09362      7.1938390     -4551.7695     32.828089

MAXIMUMS
ELEMENT      47             47             47             47             47             47
VALUE     -389.60724     408.82099      154.09362      7.1938390     -4551.7695     32.828089

ESEL  FOR LABEL= ELEM  FROM    63 TO    65 BY    2

     2  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:z                    15.1261  AUG  1,1995 CP=      1.040

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     4  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        IFX            IFY            IFZ            IMX            IMY            IMZ
    63    -134.51840     177.50269     -35.395340     -9.3301240     1669.0197     -207.76424
    65     15.486442     232.11174     -18.618559     -23.939212     1089.4235      10.220135

MINIMUMS
ELEMENT       63             63             63             65             65             63
VALUE    -134.51840     177.50269     -35.395340     -23.939212     1089.4235     -207.76424

MAXIMUMS
ELEMENT       65             65             65             63             63             65
VALUE     15.486442     232.11174     -18.618559     -9.3301240     1669.0197      10.220135

ESEL  FOR LABEL= ELEM  FROM    68 TO    68 BY    1

     1  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:z                    15.1261  AUG  1,1995 CP=      1.050

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     4  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        IFX            IFY            IFZ            IMX            IMY            IMZ
    68   -2.3965653     183.37668     -47.825720     19.359979      1398.4699     -3.3394858

MINIMUMS
ELEMENT      68             68             68             68             68             68
VALUE    -2.3965653     183.37668     -47.825720     19.359979      1398.4699     -3.3394858

MAXIMUMS
ELEMENT      68             68             68             68             68             68
VALUE    -2.3965653     183.37668     -47.825720     19.359979      1398.4699     -3.3394858

ESEL  FOR LABEL= TYPE  FROM     2 TO     2 BY    1

    16  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

SORT ON SAX   ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:z                    15.1261  AUG  1,1995 CP=      1.050

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     4  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        SAX
    30    -1250.6438
    31    -1120.2998
    32    -1056.1338

MINIMUMS
ELEMENT       30
VALUE     -1250.6438

MAXIMUMS
ELEMENT       32
VALUE     -1056.1338

ESEL  FOR LABEL= TYPE  FROM    3 TO     3 BY    1

    12  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT REACTION FORCES PER NODE
```

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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:z                    15.1261  AUG  1,1995 CP=      1.050

        ***** POST1 REACTION FORCE LISTING *****

 LOAD STEP     4  ITERATION=     1  SUBSTEP=  1
 TIME=    .00000E+00     LOAD CASE=  1

 THE FOLLOWING X,Y,Z FORCES ARE IN GLOBAL COORDINATES

   NODE       FX              FY              FZ              MX              MY              MZ
     1   -16.980901      -1495.0709      -548.58111      .00000000E+00   .00000000E+00   .00000000E+00
     2   -16.984918       6653.1139      -801.07203      .00000000E+00   .00000000E+00   .00000000E+00
     3   -218.68692      -749.43804      -414.08418      .00000000E+00   .00000000E+00   .00000000E+00
     4   -189.95227       5990.1799      -684.11642      .00000000E+00   .00000000E+00   .00000000E+00
     5   -243.52601       1640.5744      -134.80650      .00000000E+00   .00000000E+00   .00000000E+00
     6   -199.86146       2714.6570      -367.54302      .00000000E+00   .00000000E+00   .00000000E+00

TOTAL    -884.89248       14754.016      -2950.2032      .00000000E+00   .00000000E+00   .00000000E+00

SORT ON ISG1  ORDER= 0  KABS= 1  NMAX=   3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:z                    15.1261  AUG  1,1995 CP=      1.060

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     4  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG1        IFX         IFY         IFZ         IMX         IMY         IMZ
    12    2036.2      983.58     -180.99     -33.681     .00000E+00  1545.1     -24761.
    10    1406.8      4381.8     -170.29     -35.532    -.44409E-13  1789.4     -23348.
     7   -979.76      5751.2      15.611     -19.665     .00000E+00 -.22737E-12 -.14495E-11

MINIMUMS
ELEMENT      7          12          12          10          10          7          12
VALUE    -979.76      983.58     -180.99     -35.532    -.44409E-13 -.22737E-12 -24761.

MAXIMUMS
ELEMENT     12           7           7           7          12          10          7
VALUE     2036.2      5751.2      15.611     -19.665     .00000E+00  1789.4     -.14495E-11

SORT ON ISG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:z                    15.1261  AUG  1,1995 CP=      1.060

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     4  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG3        IFX         IFY         IFZ         IMX         IMY         IMZ
    10   -2899.8      4381.8     -170.29     -35.532     -.44409E-13  1789.4     -23348.
    12   -2371.3      983.58     -180.99     -33.681      .00000E+00  1545.1     -24761.
     4   -1285.9      901.25     -101.69     -19.899      .57732E-14 -274.13     -14294.

MINIMUMS
ELEMENT    10           4          12          10          10           4          12
VALUE    -2899.8      901.25     -180.99     -35.532     -.44409E-13 -274.13     -24761.

MAXIMUMS
ELEMENT     4          10           4           4           4          10           4
VALUE    -1285.9      4381.8     -101.69     -19.899      .57732E-14  1789.4     -14294.

SORT ON JSG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:z                    15.1261  AUG  1,1995 CP=      1.070

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     4  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM       JSG1        JFX         JFY         JFZ         JMX         JMY         JMZ
    3      2555.1      531.44     -204.43     -36.126     .00000E+00 -1889.8      27202.
    5      2448.0     -1542.8     -229.27     -36.342     .00000E+00 -1917.6      30407.
   11      1552.4     -2092.7     -185.60     -19.633     .00000E+00  237.83      24774.

MINIMUMS
ELEMENT     11          11           5           5           3           5          11
VALUE     1552.4     -2092.7     -229.27     -36.342     .00000E+00 -1917.6      24774.

MAXIMUMS
ELEMENT      3           3          11          11           3          11           5
VALUE     2555.1      531.44     -185.60     -19.633     .00000E+00  237.83      30407.

SORT ON JSG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST HOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:z                    15.1261  AUG  1,1995 CP=      1.070

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     4  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG3        JFX         JFY         JFZ         JMX         JMY         JMZ
    5   -2973.6     -1542.8     -229.27     -36.342     .00000E+00  -1917.6     30407.
    9   -2662.1     -5010.2     -174.59     -19.425     .00000E+00   264.66     23354.
    3   -2374.1      531.44     -204.43     -36.126     .00000E+00  -1889.8     27202.

MINIMUMS
ELEMENT     5           9           5           5           5           5           9
VALUE    -2973.6     -5010.2     -229.27     -36.342     .00000E+00  -1917.6     23354.

MAXIMUMS
ELEMENT     3           3           9           9           5           9           5
VALUE    -2374.1      531.44     -174.59     -19.425     .00000E+00   264.66     30407.

ESEL  FOR LABEL= ELEM  FROM     2 TO    12 BY    2

    6  ELEMENTS (OF   99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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FOR SUPPORT CALL Larry Gannon      PHONE 509-376-2604      TWX

DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:z                    15.1261  AUG  1,1995 CP=      1.080

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     4  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        JFX            JFY            JFZ            JMX            JMY            JMZ
    2     1.9527253      15.552654     -15.233746     -.44408921E-14  .34106051E-12  -.87538865E-11
    4    -681.49525      114.87751     -24.052584     -.57731597E-14  -.56843419E-12  -.54228622E-10
    6    -334.56010      91.229128     -26.056877      .00000000E+00  .34106051E-12   .85265128E-11
    8    -3827.1755      15.548637     -11.402824      .00000000E+00  .34106051E-12   .21600499E-11
   10    -4162.0522      183.47258     -8.4195154      .44408921E-13  -.34106051E-12  -.19667823E-10
   12    -763.82270      194.17506     -10.270805      .00000000E+00  .56843419E-13  -.51159077E-11

MINIMUMS
ELEMENT      10              8              6              4              4              4
VALUE    -4162.0522      15.548637     -26.056877     -.57731597E-14  -.56843419E-12  -.54228622E-10

MAXIMUMS
ELEMENT       2             12             10             10              2              6
VALUE     1.9527253      194.17506     -8.4195154      .44408921E-13  .34106051E-12   .85265128E-11

ESEL  FOR LABEL= TYPE  FROM     4 TO     4 BY    1

    24  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

SORT ON ISG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:z                    15.1261  AUG  1,1995 CP=      1.090

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     4  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG1        IFX         IFY         IFZ         IMX         IMY         IMZ
    97    25800.     -95.916     -1522.5     316.05      99.653     -6572.5     -47702.
    99    25664.      280.78     -1521.5     286.85      10.362     -6590.3     -47703.
    84    19181.     -490.60      1055.3     1.1823     -24.801     -127.99      39881.

MINIMUMS
ELEMENT    84          84          97          84          84          99          99
VALUE     19181.     -490.60     -1522.5     1.1823     -24.801     -6590.3     -47703.

MAXIMUMS
ELEMENT    97          99          84          97          97          84          84
VALUE     25800.      280.78      1055.3     316.05      99.653     -127.99      39881.

SORT ON ISG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:z                    15.1261  AUG  1,1995 CP=      1.090

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP      1  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG3        IFX         IFY         IFZ         IMX         IMY         IMZ
    99   -25880.     280.78     -1521.5     286.85      19.362     -6590.3     -47703.
    97   -25726.    -95.916     -1522.5     316.05      99.653     -6572.5     -47702.
    84   -18802.    -490.60      1055.3     1.1823     -24.801     -127.99      39881.

MINIMUMS
ELEMENT    99          84          97          84          84          99          99
VALUE    -25880.    -490.60     -1522.5     1.1823     -24.801     -6590.3     -47703.

MAXIMUMS
ELEMENT    84          99          84          97          97          84          84
VALUE    -18802.     280.78      1055.3     316.05      99.653     -127.99      39881.

SORT ON JSG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:z                    15.1261  AUG  1,1995 CP=      1.090

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     4  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG1        JFX         JFY         JFZ         JMX         JMY         JMZ
    96    25870.      275.92     -1477.5      283.95     -99.653      6572.5      47702.
    98    25733.     -100.78     -1478.5      313.15     -10.362      6590.3      47703.
    82    23653.      83.796     -112.87      355.67      .00000E+00  37784.      11977.

MINIMUMS
ELEMENT    82          98          98          96          96          96          82
VALUE     23653.     -100.78     -1478.5      283.95     -99.653      6572.5      11977.

MAXIMUMS
ELEMENT    96          96          82          82          82          82          98
VALUE     25870.      275.92     -112.87      355.67      .00000E+00  37784.      47703.

SORT ON JSG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:z                    15.1261  AUG  1,1995 CP=      1.100

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     4  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG3        JFX         JFY         JFZ         JMX         JMY         JMZ
    98   -25811.     -100.78     -1478.5      313.15     -10.362      6590.3      47703.
    96   -25657.      275.92     -1477.5      283.95     -99.653      6572.5      47702.
    82   -23588.      83.796     -112.87      355.67     .00000E+00   37784.      11977.

MINIMUMS
ELEMENT    98          98          98          96          96          96          82
VALUE    -25811.     -100.78     -1478.5      283.95     -99.653      6572.5      11977.

MAXIMUMS
ELEMENT    82          96          82          82          82          82          98
VALUE    -23588.      275.92     -112.87      355.67     .00000E+00   37784.      47703.

ESEL  FOR LABEL= ELEM  FROM    88 TO    99 BY    1

    12  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS DL + .06g:x + .2g:z 15.1261 AUG 1,1995 CP= 1.100

***** POST1 ELEMENT STRESS LISTING *****

LOAD STEP 4 ITERATION= 1 SECTION= 1
TIME= .00000E+00 LOAD CASE= 1

ELEM	IFX	IFY	IFZ	IMX	IMY	IMZ
88	765.18821	1958.3195	-203.02761	15296.630	1362.7651	32063.666
89	439.58741	388.03364	-296.07970	-42.855074	3011.8723	-14624.792
90	143.03997	-1181.9759	-12.389438	-15340.272	917.72563	-24085.718
91	792.12020	1905.3498	10.598040	-13535.480	677.82159	31342.817
92	498.62219	380.14161	289.37878	-44.179857	-4247.9989	-14273.675
93	175.77699	-1146.8121	191.50530	13487.948	-3372.0419	-23558.025
94	182.00376	-117.92620	-27.628112	83.412729	1136.5857	-224.82272
95	387.19570	-53.193106	-25.500532	-9.7881645	1021.1622	-6793.4375
96	-277.72314	1507.5785	-289.97208	99.653095	5192.8647	13491.300
97	-95.916410	-1522.5388	316.05139	99.653095	-6572.5095	-47702.013
98	98.975137	1508.5894	-319.17235	10.362100	6372.2832	13532.128
99	280.78187	-1521.5279	286.85112	10.362100	-6590.3020	-47702.634

MINIMUMS						
ELEMENT	96	97	98	90	99	99
VALUE	-277.72314	-1522.5388	-319.17235	-15340.272	-6590.3020	-47702.634

MAXIMUMS						
ELEMENT	91	88	97	88	98	88
VALUE	792.12020	1958.3195	316.05139	15296.630	6372.2832	32063.666

PRINT ELEMENT STRESS ITEMS PER ELEMENT

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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:z                    15.1261  AUG  1,1995 CP=      1.110

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     4  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        JFX            JFY            JFZ            JMX            JMY            JMZ
    88    -761.66227     -1940.6898     201.97002     -15296.630      3497.2064      14724.446
    89    -435.91456     -369.66940     294.97803      42.855074      4376.3494      24096.080
    90    -139.51404      1199.6055     11.331840      15340.272     -633.07029     -4493.2586
    91    -788.59427     -1887.7201    -11.655638      13535.480     -944.86573      14174.022
    92    -494.94934     -361.77737    -290.48044      44.179857     -3000.2413      23547.663
    93    -172.25105      1164.4417    -192.56290     -13487.948     -1236.7766     -4177.0210
    94    -178.39030      57.691492     15.581171     -83.412729      634.99490      -6975.5026
    95    -390.80916      113.42781     13.453591      9.7881645      575.95683      -38.020119
    96     275.91641     -1477.4612     283.94861     -99.653095      6572.5095      47702.013
    97     94.109681      1552.6562    -322.07486     -99.653095     -6509.0787     -15339.485
    98    -100.78187     -1478.4721     313.14888     -10.362100      6590.3020      47702.634
    99    -282.58860      1551.6453    -292.87459     -10.362100     -5294.0750     -15297.417

MINIMUMS
ELEMENT      91             88             97             88             97             97
VALUE    -788.59427     -1940.6898    -322.07486     -15296.630     -6509.0787     -15339.485

MAXIMUMS
ELEMENT      96             97             98             90             98             98
VALUE     275.91641      1552.6562      313.14888      15340.272      6590.3020      47702.634

ESEL  FOR LABEL= ELEM  FROM    76 TO    82 BY    2

     4  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:z                    15.1261  AUG  1,1995 CP=      1.120

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     4  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        IFX            IFY            IFZ            IMX            IMY            IMZ
    76     3542.2990      93.424947     -330.86438     .00000000E+00  -.22168933E-11  .43698378E-11
    78     717.15467      93.067573     -371.52158     .00000000E+00   .32400749E-11  .10736301E-10
    80     2770.4677      117.39576     -331.16943     .00000000E+00   .68780537E-11  .11645795E-10
    82    -7.4004948      117.45239     -370.94878     .00000000E+00   .86970431E-11  .16413537E-11

MINIMUMS
ELEMENT      82             78             78             76             76             82
VALUE    -7.4004948      93.067573     -371.52158     .00000000E+00  -.22168933E-11  .16413537E-11

MAXIMUMS
ELEMENT      76             82             76             76             82             80
VALUE     3542.2990      117.45239     -330.86438     .00000000E+00   .86970431E-11  .11645795E-10

ESEL  FOR LABEL= TYPE  FROM     5 TO     5 BY    1

    11  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

SORT ON ISG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:z                    15.1261  AUG  1,1995 CP=      1.120

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     4  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG1        IFX         IFY         IFZ         IMX         IMY         IMZ
    20    4163.2     -3.1214     -223.20     -47.753     .55572      871.66     -12901.
    19    2778.0     -35.484     -186.23      31.022     .37594     -785.30     -7315.6
    21    2059.0      20.389     -619.39      31.284     .55572     -802.02     -4176.6

MINIMUMS
ELEMENT     21          19          21          20          19          21          20
VALUE     2059.0     -35.484     -619.39     -47.753     .37594     -802.02     -12901.

MAXIMUMS
ELEMENT     20          21          19          21          21          20          21
VALUE     4163.2      20.389     -186.23      31.284     .55572      871.66     -4176.6

SORT ON ISG3  ORDER= 0  KABS= 1  NMAX=   3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:z                    15.1261  AUG  1,1995 CP=      1.130

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     4  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG3        IFX         IFY         IFZ         IMX         IMY         IMZ
    20   -4160.6     -3.1214     -223.20     -47.753     .55572      871.66     -12901.
    19   -2748.4     -35.484     -186.23      31.022     .37594     -785.30     -7315.6
    21   -2076.0      20.389     -619.39      31.284     .55572     -802.02     -4176.6

MINIMUMS
ELEMENT    20          19          21          20          19          21          20
VALUE    -4160.6     -35.484     -619.39     -47.753     .37594     -802.02     -12901.

MAXIMUMS
ELEMENT    21          21          19          21          21          20          21
VALUE    -2076.0      20.389     -186.23      31.284     .55572      871.66     -4176.6

SORT ON JSG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR    3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:z                    15.1261  AUG  1,1995 CP=      1.130

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     4  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG1        JFX         JFY         JFZ         JMX         JMY         JMZ
    21    5010.9     -21.900      644.58     -36.321     -.55572     -448.66     -19207.
    18    2787.1      57.484     -184.77      42.978     -.37594      785.30      7315.6
    20    2068.2      1.6105      248.39      42.716     -.55572      802.02      4176.6

MINIMUMS
ELEMENT    20          21          18          21          21          21          21
VALUE     2068.2     -21.900     -184.77     -36.321     -.55572     -448.66     -19207.

MAXIMUMS
ELEMENT    21          18          21          18          18          20          18
VALUE     5010.9      57.484      644.58      42.978     -.37594      802.02      7315.6

SORT ON JSG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:z                    15.1261  AUG  1,1995 CP=      1.140

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     4  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG3        JFX        JFY        JFZ        JMX        JMY        JMZ
    21   -5029.1    -21.900     644.58    -36.321    -.55572    -448.66    -19207.
    18   -2739.2     57.484    -184.77     42.978    -.37594     785.30     7315.6
    20   -2066.8     1.6105     248.39     42.716    -.55572     802.02     4176.6

MINIMUMS
ELEMENT    21         21         18         21         21         21         21
VALUE    -5029.1    -21.900    -184.77    -36.321    -.55572    -448.66    -19207.

MAXIMUMS
ELEMENT    20         18         21         18         18         20         18
VALUE    -2066.8     57.484     644.58     42.978    -.37594     802.02     7315.6

ESEL  FOR LABEL= ELEM  FROM    18 TO    22 BY    4

     2  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:z                          15.1261  AUG  1,1995 CP=      1.140

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     4  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        IFX            IFY            IFZ            IMX            IMY            IMZ
    18    -58.994635     209.96007     -48.015080     .37593785     898.07413     -12.998834
    22     8.2097687     116.08723     -15.678107     -.85455441     82.398459      27.790992

MINIMUMS
ELEMENT       18             22             18             22             22             18
VALUE     -58.994635     116.08723     -48.015080     -.85455441     82.398459     -12.998834

MAXIMUMS
ELEMENT       22             18             22             18             18             22
VALUE      8.2097687     209.96007     15.678107     .37593785     898.07413      27.790992

     FOR LABEL= ELEM  FROM    19 TO    23 BY    4

     [illegible]

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:z                    15.1261  AUG  1,1995 CP=      1.150

         ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     4  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        JFX             JFY             JFZ             JMX             JMY             JMZ
    19     33.972927       211.41042      -36.059018      -.37593785      -455.69983      -40.664175
    23    -22.251463       115.94688      -31.128716       .85455441      -468.66369      -24.282416

MINIMUMS
ELEMENT       23              23              19              19              23              19
VALUE     -22.251463       115.94688      -36.059018      -.37593785      -468.66369      -40.664175

MAXIMUMS
ELEMENT       19              19              23              23              19              23
VALUE      33.972927       211.41042      -31.128716       .85455441      -455.69983      -24.282416
USE LOAD STEP     5  ITERATION     0  SECTION   1  FOR LOAD CASE     1

DISPLACEMENT STORED FOR   72 NODES

***WARNING ***                          CP=      1.180   TIME=  15.12611
DATA FOR STRESS LABEL IFX  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 IFX  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=      1.180   TIME=  15.12611
DATA FOR STRESS LABEL IFY  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 IFY  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=      1.180   TIME=  15.12611
DATA FOR STRESS LABEL IFZ  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 IFZ  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=      1.180   TIME=  15.12611
DATA FOR STRESS LABEL IMX  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 IMX  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=      1.180   TIME=  15.12611
DATA FOR STRESS LABEL IMY  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 IMY  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=      1.180   TIME=  15.12611
DATA FOR STRESS LABEL IMZ  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 IMZ  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=      1.180   TIME=  15.12611
DATA FOR STRESS LABEL JFX  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JFX  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=      1.180   TIME=  15.12611
DATA FOR STRESS LABEL JFY  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JFY  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=      1.180   TIME=  15.12611
DATA FOR STRESS LABEL JFZ  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JFZ  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=      1.180   TIME=  15.12611
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```
DATA FOR STRESS LABEL JMX  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JMX  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=      1.180   TIME=  15.12611
DATA FOR STRESS LABEL JMY  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JMY  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=      1.180   TIME=  15.12611
DATA FOR STRESS LABEL JMZ  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JMZ  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=      1.180   TIME=  15.12611
DATA FOR STRESS LABEL ISAX HAS NOT BEEN STORED FOR ALL ELEMENTS.
 ISAX DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=      1.180   TIME=  15.12611
DATA FOR STRESS LABEL ISBY HAS NOT BEEN STORED FOR ALL ELEMENTS.
 ISBY DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=      1.180   TIME=  15.12611
DATA FOR STRESS LABEL ISBZ HAS NOT BEEN STORED FOR ALL ELEMENTS.
 ISBZ DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO
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***WARNING ***                                CP=      1.180   TIME=  15.12611
DATA FOR STRESS LABEL JSAX HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JSAX DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                                CP=      1.180   TIME=  15.12611
DATA FOR STRESS LABEL JSBY HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JSBY DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                                CP=      1.190   TIME=  15.12611
DATA FOR STRESS LABEL JSBZ HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JSBZ DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                                CP=      1.190   TIME=  15.12611
DATA FOR STRESS LABEL ISG1 HAS NOT BEEN STORED FOR ALL ELEMENTS.
 ISG1 DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                                CP=      1.190   TIME=  15.12611
DATA FOR STRESS LABEL ISG3 HAS NOT BEEN STORED FOR ALL ELEMENTS.
 ISG3 DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                                CP=      1.190   TIME=  15.12611
DATA FOR STRESS LABEL JSG1 HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JSG1 DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                                CP=      1.190   TIME=  15.12611
DATA FOR STRESS LABEL JSG3 HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JSG3 DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                                CP=      1.190   TIME=  15.12611
DATA FOR STRESS LABEL SAX  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 SAX  DATA FOR TYPE   1. STIF   4. ELEMENTS WILL BE SET TO ZERO
 SAX  DATA FOR TYPE   3. STIF   4. ELEMENTS WILL BE SET TO ZERO
 SAX  DATA FOR TYPE   4. STIF   4. ELEMENTS WILL BE SET TO ZERO
 SAX  DATA FOR TYPE   5. STIF   4. ELEMENTS WILL BE SET TO ZERO

STRESSES STORED FOR   23  SELECTED ITEMS

ITERATION SUMMARY INFORMATION STORED

NODAL FORCES STORED FOR   99 ELEMENTS

REACTIONS STORED FOR   18 REACTIONS

FOR LOAD STEP=     5  ITERATION=     1  SECTION=   1
 TIME=   .000000E+00   LOAD CASE=  1
 TITLE= DOUBLE SHELL TANK  MOCK-UP PLATFORM

NEW TITLE= DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:-z

USE MACRO FILE  mres

ESEL  FOR LABEL= TYPE  FROM     1 TO     1 BY    1

    36  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

SORT ON ISG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:-z                    15.1261  AUG  1,1995 CP=      1.200

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     5  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG1        IFX         IFY         IFZ         IMX         IMY         IMZ
    54    6247.0      21.623     -727.73      28.067      4.6185     -33.802     -83374.
    62    6190.8      351.30     -2775.3      120.26      4.6185      33.802     -83374.
    48    5340.8      26.264     -645.96     -37.483     -3.2997      1950.8     -65490.

MINIMUMS
ELEMENT     48          54          62          48          48          54          62
VALUE     5340.8      21.623     -2775.3     -37.483     -3.2997     -33.802     -83374.

MAXIMUMS
ELEMENT     54          62          48          62          54          48          48
VALUE     6247.0      351.30     -645.96      120.26      4.6185      1950.8     -65490.

SORT BY ISG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:-z                    15.1261  AUG  1,1995 CP=      1.200

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     5  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM       ISG3        IFX         IFY         IFZ         IMX         IMY         IMZ
    62    -6310.5     351.30     -2775.3     120.26      4.6185      33.802     -83374.
    54    -6254.3     21.623     -727.73     28.067      4.6185     -33.802     -83374.
    48    -5349.8     26.264     -645.96    -37.483     -3.2997      1950.8     -65490.

MINIMUMS
ELEMENT     62          54          62          48          48          54          62
VALUE     -6310.5     21.623     -2775.3    -37.483     -3.2997     -33.802     -83374.

MAXIMUMS
ELEMENT     48          62          48          62          54          48          48
VALUE     -5349.8     351.30     -645.96     120.26      4.6185      1950.8     -65490.

SORT ON JSG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:-z                    15.1261  AUG  1,1995 CP=      1.210

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     5  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG1        JFX         JFY         JFZ         JMX         JMY         JMZ
    47    5284.2     -358.62     -2163.8     -78.493      3.2997     -1950.8     65490.
    54    4879.7     -12.633      772.68     -25.371     -4.6185     -687.61     63119.
    48    3753.7     -17.274      690.91      40.180      3.2997     -902.33     47442.

MINIMUMS
ELEMENT    48          47          47          47          54          47          48
VALUE     3753.7     -358.62     -2163.8     -78.493     -4.6185     -1950.8     47442.

MAXIMUMS
ELEMENT    47          54          54          48          47          54          47
VALUE     5284.2     -12.633      772.68      40.180      3.2997     -687.61     65490.

SORT ON JSG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:-z                    15.1261  AUG  1,1995 CP=      1.220

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     5  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG3        JFX         JFY         JFZ         JMX         JMY         JMZ
   47   -5406.4     -358.62     -2163.8     -78.493      3.2997     -1950.8     65490.
   54   -4884.0     -12.633      772.68     -25.371     -4.6185     -687.61     63119.
   48   -3759.6     -17.274      690.91      40.180      3.2997     -902.33     47442.

MINIMUMS
ELEMENT    47          47          47          47          54          47          48
VALUE    -5406.4     -358.62     -2163.8     -78.493     -4.6185     -1950.8     47442.

MAXIMUMS
ELEMENT    48          54          54          48          47          54          47
VALUE    -3759.6     -12.633      772.68      40.180      3.2997     -687.61     65490.

ESEL  FOR LABEL= ELEM  FROM    56 TO    62 BY    1

     7  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:-z                    15.1261  AUG  1,1995 CP=      1.220

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     5  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        JFX            JFY            JFZ            JMX            JMY            JMZ
    56    394.83654      844.14225      170.66364      3.2997042      3198.8758     -116.37027
    57    145.02337      221.37404      39.979857      2.5687840      1889.2739      116.62201
    58   -31.516351      210.52678      12.023773     -1.2166836      276.99515      222.14051
    59    406.68702      1773.9928      83.706934     -4.6185236     -420.25704     -499.20032
    60    57.065125      220.41718      13.594348      2.5687840      1164.4559      171.16303
    61   -115.47460      209.26444     -13.361735     -1.2166836     -353.25897      294.09383
    62   -361.29299      2825.2520     -123.25194     -4.6185236     -3686.4176     -634.26769

MINIMUMS
ELEMENT      62             61             62             59             62             62
VALUE    -361.29299      209.26444     -123.25194     -4.6185236     -3686.4176     -634.26769

MAXIMUMS
ELEMENT      59             62             56             56             56             61
VALUE     406.68702      2825.2520      170.66364      3.2997042      3198.8758      294.09383

ESEL  FOR LABEL= ELEM  FROM    64 TO    67 BY    3

     2  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:-z                    15.1261  AUG  1,1995 CP=      1.230

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     5  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        JFX            JFY            JFZ            JMX            JMY            JMZ
    64    116.43659      177.27838     -54.020571     -5.2946022     -2720.8539     343.95387
    67   -37.537862      170.91818     -46.894850     -7.1473859     -2309.9540    -6.0103629

MINIMUMS
ELEMENT      67             67             64             67             64             67
VALUE    -37.537862      170.91818     -54.020571     -7.1473859     -2720.8539    -6.0103629

MAXIMUMS
ELEMENT      64             64             67             64             67             64
VALUE    116.43659      177.27838     -46.894850     -5.2946022     -2309.9540     343.95387

ESEL  FOR LABEL= ELEM  FROM    69 TO    69 BY    1

     1  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:-z                    15.1261  AUG  1,1995 CP=      1.230

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     5  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        JFX            JFY            JFZ            JMX            JMY            JMZ
    69    -20.451391     122.37567     -43.057492     6.8809043     -2056.1896     3.8510671

MINIMUMS
ELEMENT      69             69             69             69             69             69
VALUE    -20.451391     122.37567     -43.057492     6.8809043     -2056.1896     3.8510671

MAXIMUMS
ELEMENT      69             69             69             69             69             69
VALUE    -20.451391     122.37567     -43.057492     6.8809043     -2056.1896     3.8510671

ESEL  FOR LABEL= ELEM  FROM    47 TO    47 BY    1

     1  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:-z                    15.1261  AUG  1,1995 CP=      1.240

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     5  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        IFX            IFY            IFZ            IMX            IMY            IMZ
    47    368.60411      2213.7162      81.489169     -3.2997042     -448.94462     172.78374

MINIMUMS
ELEMENT      47             47             47             47             47             47
VALUE     368.60411      2213.7162      81.489169     -3.2997042     -448.94462     172.78374

MAXIMUMS
ELEMENT      47             47             47             47             47             47
VALUE     368.60411      2213.7162      81.489169     -3.2997042     -448.94462     172.78374

ESEL  FOR LABEL= ELEM  FROM    63 TO    65 BY    2

    2  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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DST MOCK-UP PLATFORM SEISMIC ANALYSIS DL + .06g:x + .2g:-z 15.1261 AUG 1,1995 CP= 1.240

***** POST1 ELEMENT STRESS LISTING *****

LOAD STEP 5 ITERATION= 1 SECTION= 1
TIME= .00000E+00 LOAD CASE= 1

ELEM	IFX	IFY	IFZ	IMX	IMY	IMZ
63	-187.39483	178.51284	32.635062	5.2946022	-2218.5171	-273.58982
65	-30.937946	231.88302	10.421262	-12.963549	-1507.1198	-.78176973E-01
MINIMUMS						
ELEMENT	63	63	65	65	63	63
VALUE	-187.39483	178.51284	10.421262	-12.963549	-2218.5171	-273.58982
MAXIMUMS						
ELEMENT	65	65	63	63	65	65
VALUE	-30.937946	231.88302	32.635062	5.2946022	-1507.1198	-.78176973E-01

ESEL FOR LABEL= ELEM FROM 68 TO 68 BY 1

1 ELEMENTS (OF 99 DEFINED) SELECTED BY ESEL COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT

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```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:-z                    15.1261  AUG  1,1995 CP=      1.250

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     5  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        IFX            IFY            IFZ            IMX            IMY            IMZ
    68    -52.796113     183.43970      36.718368      13.584320     -1767.9374     -3.1400634

MINIMUMS
ELEMENT      68             68             68             68             68             68
VALUE    -52.796113     183.43970      36.718368      13.584320     -1767.9374     -3.1400634

MAXIMUMS
ELEMENT      68             68             68             68             68             68
VALUE    -52.796113     183.43970      36.718368      13.584320     -1767.9374     -3.1400634

ESEL  FOR LABEL= TYPE  FROM     2 TO     2 BY    1

    16  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

SORT ON SAX   ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:-z                    15.1261  AUG  1,1995 CP=      1.250

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     5  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        SAX
    24   -1140.3213
    26    -1093.0702
    25    -1013.3504

MINIMUMS
ELEMENT      24
VALUE    -1140.3213

MAXIMUMS
ELEMENT      25
VALUE     -1013.3504

ESEL  FOR LABEL= TYPE  FROM     3 TO     3 BY    1

    12  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT REACTION FORCES PER NODE
```

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:-z                    15.1261  AUG  1,1995 CP=      1.260

        ***** POST1 REACTION FORCE LISTING *****

 LOAD STEP     5  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 THE FOLLOWING X,Y,Z FORCES ARE IN GLOBAL COORDINATES

   NODE       FX              FY              FZ              MX              MY              MZ
     1   -16.983472       5841.5184       732.59524       .00000000E+00   .00000000E+00   .00000000E+00
     2   -16.982347      -683.50947       480.31522       .00000000E+00   .00000000E+00   .00000000E+00
     3   -240.00074       5292.0631       711.72092       .00000000E+00   .00000000E+00   .00000000E+00
     4   -170.45142      -51.241549       447.65646       .00000000E+00   .00000000E+00   .00000000E+00
     5   -265.09344       3376.9704       402.46455       .00000000E+00   .00000000E+00   .00000000E+00
     6   -175.38107       978.21537       175.45087       .00000000E+00   .00000000E+00   .00000000E+00

TOTAL    -884.89248       14754.016       2950.2032       .00000000E+00   .00000000E+00   .00000000E+00

SORT ON ISG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST HOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:-z                    15.1261  AUG  1,1995 CP=      1.260

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     5  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG1        IFX         IFY         IFZ         IMX         IMY         IMZ
    12    1486.0      777.17     -157.07      22.002     .00000E+00  -3.4327     -21603.
    10    1328.1      1729.4     -152.31      23.720    -.43521E-13  -230.17     -20975.
     6    1305.7      632.52     -88.788      37.731     .00000E+00  -2079.7     -12590.

MINIMUMS
ELEMENT      6           6          12          12          10           6          12
VALUE     1305.7      632.52     -157.07      22.002    -.43521E-13  -2079.7     -21603.

MAXIMUMS
ELEMENT     12          10           6           6          12          12           6
VALUE     1486.0      1729.4     -88.788      37.731     .00000E+00  -3.4327     -12590.

SORT ON ISG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS. DL + .06g:x + .2g:-z                    15.1264  AUG  1,1995 CP=      1.270

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     5  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG3        IFX         IFY         IFZ         IMX         IMY         IMZ
    4    -2281.5     3461.2     -112.20      39.304     .35527E-14  -2287.3     -15681.
   10    -1917.3     1729.4     -152.31      23.720    -.43521E-13  -230.17     -20975.
   12    -1750.8     777.17     -157.07      22.002     .00000E+00  -3.4327     -21603.

MINIMUMS
ELEMENT     4          12          12          12          10          4          12
VALUE    -2281.5     777.17     -157.07      22.002    -.43521E-13  -2287.3     -21603.

MAXIMUMS
ELEMENT    12           4           4           4           4          12           4
VALUE    -1750.8     3461.2     -112.20      39.304     .35527E-14  -3.4327     -15681.

SORT ON JSG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:-z                    15.1264  AUG  1,1995 CP=      1.270

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     5  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG1        JFX         JFY         JFZ         JMX         JMY         JMZ
    5     2198.7     -2720.2     -250.84      15.415     .00000E+00  -781.87     33189.
    9     1830.2     -199.53     -156.19      31.519     .00000E+00   1295.5     20980.
   11     1773.9     -921.71     -161.12      32.173     .00000E+00   1379.9     21616.

MINIMUMS
ELEMENT     11          5           5           5           5           5           9
VALUE     1773.9     -2720.2     -250.84      15.415     .00000E+00  -781.87     20980.

MAXIMUMS
ELEMENT      5          9           9          11           5          11           5
VALUE     2198.7     -199.53     -156.19      32.173     .00000E+00   1379.9     33189.

SORT ON JSG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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A-17N

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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:-z                    15.1264  AUG  1,1995 CP=      1.280

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     5  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG3        JFX         JFY         JFZ         JMX         JMY         JMZ
    3   -3168.9     -4286.1     -225.74      14.763     .00000E+00  -866.02     29952.
    5   -3125.5     -2720.2     -250.84      15.415     .00000E+00  -781.87     33189.
   11   -2087.9     -921.71     -161.12      32.173     .00000E+00   1379.9     21616.

MINIMUMS
ELEMENT     3           3           5           3           3           3          11
VALUE    -3168.9     -4286.1     -250.84      14.763     .00000E+00  -866.02     21616.

MAXIMUMS
ELEMENT    11          11          11          11           3          11           5
VALUE    -2087.9     -921.71     -161.12      32.173     .00000E+00   1379.9     33189.

ESEL  FOR LABEL= ELEM  FROM     2 TO    12 BY    2

     6  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:-z                    15.1264  AUG  1,1995 CP=      1.280

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     5  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        JFX            JFY            JFZ            JMX            JMY            JMZ
    2    -3247.5102     15.550083      11.965350   -.39968029E-14   .79580786E-12  -.14210855E-11
    4    -3241.4746     125.38776      4.6475311   -.35527137E-14  -.34106051E-12  -.32343905E-10
    6    -412.75882     101.97163      6.2203621    .00000000E+00  -.22737368E-12   .76738615E-11
    8    -572.46267     15.551207      15.770066    .00000000E+00  -.11368684E-12   .13130830E-10
   10    -1509.6843     165.49329      20.232101    .43520743E-13  -.45474735E-12  -.46895821E-10
   12    -557.41371     170.25445      21.949821    .00000000E+00  -.11368684E-12  -.14210855E-11

MINIMUMS
ELEMENT       2              2              4              2             10             10
VALUE    -3247.5102     15.550083      4.6475311   -.39968029E-14  -.45474735E-12  -.46895821E-10

MAXIMUMS
ELEMENT       6             12             12             10              2              8
VALUE    -412.75882     170.25445      21.949821    .43520743E-13   .79580786E-12   .13130830E-10

ESEL  FOR LABEL= TYPE  FROM     4 TO     4 BY    1

    24  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

SORT ON ISG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:-z                    15.1264  AUG  1,1995 CP=      1.290

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     5  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG1        IFX         IFY         IFZ         IMX         IMY         IMZ
    99    25800.     -95.919    -1521.0     -311.85      63.635      6572.5     -47702.
    97    25664.      280.78    -1523.1     -282.65      152.92      6590.3     -47703.
    87    19232.     -473.43     1059.8      5.7143     -32.683     -130.31      40000.

MINIMUMS
ELEMENT    87          87          97          99          87          87          97
VALUE     19232.     -473.43    -1523.1     -311.85     -32.683     -130.31     -47703.

MAXIMUMS
ELEMENT    99          97          87          87          97          97          87
VALUE     25800.      280.78     1059.8      5.7143      152.92      6590.3      40000.

SORT ON ISG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:-z                    15.1264  AUG  1,1995 CP=      1.290

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     5  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG3        IFX        IFY        IFZ        IMX        IMY        IMZ
    97   -25880.     280.78    -1523.1    -282.65     152.92     6590.3    -47703.
    99   -25726.    -95.919    -1521.0    -311.85     63.635     6572.5    -47702.
    87   -18867.    -473.43     1059.8     5.7143    -32.683    -130.31     40000.

MINIMUMS
ELEMENT    97         87         97         99         87         87         97
VALUE    -25880.    -473.43    -1523.1    -311.85    -32.683    -130.31    -47703.

MAXIMUMS
ELEMENT    87         97         87         87         97         97         87
VALUE    -18867.     280.78     1059.8     5.7143     152.92     6590.3     40000.

SORT ON JSG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:-z                          15.1264  AUG  1,1995 CP=      1.300

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     5  ITERATION=     1  SECTION=  1
 TIME=     .00000E+00     LOAD CASE=  1

 ELEM      JSG1        JFX        JFY        JFZ        JMX        JMY        JMZ
    98    25870.      275.92    -1479.0    -288.15    -63.635    -6572.5     47702.
                                 [illegible]   [illegible]   -152.92    -6590.3     47703.
    80    23793.      123.06    -114.21    -356.85    .00000E+00 -37907.     12116.

MINIMUMS
ELEMENT    80          96         98         80         96         [illegible]         80
VALUE     23793.     -100.78    -1479.0    -356.85    -152.92    -37907.     12116.

MAXIMUMS
ELEMENT    98          98         80         98         80         98         96
VALUE     25870.      275.92    -114.21    -288.15    .00000E+00 -6572.5     47703.

SORT ON JSG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:-z                    15.1264  AUG  1,1995 CP=      1.300

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     5  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG3        JFX         JFY         JFZ         JMX         JMY         JMZ
    96   -25811.     -100.78     -1476.9     -317.35     -152.92     -6590.3     47703.
    98   -25657.      275.92     -1479.0     -288.15     -63.635     -6572.5     47702.
    80   -23698.      123.06     -114.21     -356.85     .00000E+00  -37907.     12116.

MINIMUMS
ELEMENT    96          96          98          80          96          80          80
VALUE   -25811.     -100.78     -1479.0     -356.85     -152.92     -37907.     12116.

MAXIMUMS
ELEMENT    80          98          80          98          80          98          96
VALUE   -23698.      275.92     -114.21     -288.15     .00000E+00  -6572.5     47703.

ESEL  FOR LABEL= ELEM  FROM    88 TO    99 BY    1

    12  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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DST MOCK-UP PLATFORM SEISMIC ANALYSIS DL + .06g:x + .2g:-z 15.1264 AUG 1,1995 CP= 1.310

***** POST1 ELEMENT STRESS LISTING *****

LOAD STEP 5 ITERATION= 1 SECTION= 1
TIME= .00000E+00 LOAD CASE= 1

ELEM	IFX	IFY	IFZ	IMX	IMY	IMZ
88	143.72127	1213.0902	3.2394304	15276.295	756.03539	4802.7504
89	435.91698	-357.73872	286.88713	-84.733712	-4275.2052	-23946.933
90	757.45987	-1927.2052	193.87631	-15360.212	-3425.9334	-14710.277
91	168.04740	1150.9571	-200.65462	-13552.141	1359.7369	3867.5518
92	494.95050	-373.70806	-298.57366	-83.826197	3101.3987	-23696.787
93	792.80025	-1901.2047	-19.746055	13470.889	1016.0863	-14188.168
94	390.81512	-120.33196	-16.556232	116.78947	703.16545	-321.08727
95	178.23250	-50.787314	-12.478531	23.592143	507.79452	-6693.1804
96	98.976638	1507.0355	323.37717	152.92486	-6544.6815	13468.315
97	280.78337	-1523.0819	-282.64630	152.92486	6590.3014	-47702.734
98	-277.72594	1509.1324	294.17690	63.634902	-5365.2582	13554.715
99	-95.919209	-1520.9849	-311.84657	63.634902	6572.5135	-47702.309

MINIMUMS						
ELEMENT	98	90	99	90	96	97
VALUE	-277.72594	-1927.2052	-311.84657	-15360.212	-6544.6815	-47702.734

MAXIMUMS						
ELEMENT	93	98	96	88	97	98
VALUE	792.80025	1509.1324	323.37717	15276.295	6590.3014	13554.715

PRINT ELEMENT STRESS ITEMS PER ELEMENT

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DST MOCK-UP PLATFORM SEISMIC ANALYSIS DL + .06g:x + .2g:-z 15.1264 AUG 1,1995 CP= 1.310

***** POST1 ELEMENT STRESS LISTING *****

LOAD STEP 5 ITERATION= 1 SECTION= 1
TIME= .00000E+00 LOAD CASE= 1

ELEM	JFX	JFY	JFZ	JMX	JMY	JMZ
88	-147.24721	-1195.4605	-4.2970281	-15276.295	-846.47289	24099.858
89	-439.58983	376.10296	-287.98879	84.733712	-2910.7437	14773.912
90	-760.98580	1944.8349	-194.93391	15360.212	-1239.7892	-31754.204
91	-171.57333	-1133.3274	199.59702	13552.141	3443.2828	23543.862
92	-498.62335	392.07229	297.47199	83.826197	4349.1719	14124.533
93	-796.32618	1918.8344	18.688457	-13470.889	-554.87215	-31652.302
94	-387.20166	60.097257	28.603173	-116.78947	1148.3702	-7076.5108
95	-181.84596	111.02202	24.525472	-23.592143	1009.3696	58.997748
96	-100.78337	-1476.9181	-317.35370	-152.92486	-6590.3014	47702.734
97	-282.59010	1553.1992	288.66977	-152.92486	5121.6781	-15361.029
98	275.91921	-1479.0151	-288.15343	-63.634902	-6572.5135	47702.309
99	94.112480	1551.1023	317.87004	-63.634902	6336.6771	-15275.478
MINIMUMS						
ELEMENT	93	98	96	88	96	90
VALUE	-796.32618	-1479.0151	-317.35370	-15276.295	-6590.3014	-31754.204
MAXIMUMS						
ELEMENT	98	90	99	90	99	96
VALUE	275.91921	1944.8349	317.87004	15360.212	6336.6771	47702.734

ESEL FOR LABEL= ELEM FROM 76 TO 82 BY 2

4 ELEMENTS (OF 99 DEFINED) SELECTED BY ESEL COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT

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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:-z                    15.1264  AUG  1,1995 CP=      1.320

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     5  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        IFX            IFY            IFZ            IMX            IMY            IMZ
    76     756.41837      94.384796      370.34088      .00000000E+00  -.17791990E-10  .61817218E-11
    78     3503.0353      92.188570      329.68088      .00000000E+00  -.10516032E-10  .52722271E-11
    80    -46.664194      118.79083      372.13150      .00000000E+00  -.10516032E-10  .84554586E-11
    82     2999.7314      115.97647      332.35091      .00000000E+00  -.86970431E-11  .25437430E-11

MINIMUMS
ELEMENT      80             78             78             76             76             82
VALUE    -46.664194      92.188570      329.68088      .00000000E+00  -.17791990E-10  .25437430E-11

MAXIMUMS
ELEMENT      78             80             80             76             82             80
VALUE     3503.0353      118.79083      372.13150      .00000000E+00  -.86970431E-11  .84554586E-11

ESEL  FOR LABEL= TYPE  FROM    5 TO    5 BY    1

   11  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

SORT ON ISG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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WORK OF PLATFORM SEISMIC ANALYSIS DL + .06g:x + .2g:-z 15.1264 AUG 1,1995 CP= 1.330

***** POST1 ELEMENT STRESS LISTING *****

LOAD STEP 3 ITERATION= 1 SUBSTEP 1
TIME= .00000E+00 LOAD CASE= 1

ELEM	ISG1	IFX	IFY	IFZ	IMX	IMY	IMZ
20	4000.3	-169.55	-260.03	37.245	-.37873	-478.90	-14263.
19	2733.4	55.939	-186.23	-40.327	-.17747	780.61	-7315.6
21	2133.6	-146.04	-656.21	-41.792	-.37873	805.99	-4175.6

MINIMUMS							
ELEMENT	21	20	21	21	20	20	20
VALUE	2133.6	-169.55	-656.21	-41.792	-.37873	-478.90	-14263.
MAXIMUMS							
ELEMENT	20	19	19	20	19	21	21
VALUE	4000.3	55.939	-186.23	37.245	-.17747	805.99	-4175.6

SORT ON ISG3 ORDER= 0 KABS= 1 NMAX= 3

SORT COMPLETED FOR 3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT

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```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:-z                    15.1264  AUG  1,1995 CP=      1.330

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     5  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG3        IFX         IFY         IFZ         IMX         IMY         IMZ
    20   -3859.0     -169.55     -260.03      37.245     -.37873     -478.90     -14263.
    19   -2780.0      55.939     -186.23     -40.827     -.17747      780.61     -7315.6
    21   -2011.9     -146.04     -656.21     -41.792     -.37873      805.99     -4175.6

MINIMUMS
ELEMENT    20          20          21          21          20          20          20
VALUE    -3859.0     -169.55     -656.21     -41.792     -.37873     -478.90     -14263.

MAXIMUMS
ELEMENT    21          19          19          20          19          21          21
VALUE    -2011.9      55.939     -186.23      37.245     -.17747      805.99     -4175.6

SORT ON JSG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:-z                    15.1264  AUG  1,1995 CP=      1.340

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     5  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG1        JFX         JFY         JFZ         JMX         JMY         JMZ
    21    5925.6      144.53      681.40      46.829      .37873      833.49     -20570.
    18    2742.5     -33.939     -184.77     -33.173      .17747     -780.61      7315.6
    20    2142.8      168.04      285.21     -32.208      .37873     -805.99      4175.6

MINIMUMS
ELEMENT    20          18          18          18          18          20          21
VALUE     2142.8     -33.939     -184.77     -33.173      .17747     -805.99     -20570.

MAXIMUMS
ELEMENT    21          20          21          21          21          21          18
VALUE     5925.6      168.04      681.40      46.829      .37873      833.49      7315.6

SORT ON JSG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:-z                    15.1264  AUG  1,1995 CP=      1.340

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     5  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG3        JFX        JFY        JFZ        JMX        JMY        JMZ
    21   -5805.1     144.53     681.40     46.829     .37873     833.49    -20570.
    18   -2770.8    -33.939    -184.77    -33.173     .17747    -780.61     7315.6
    20   -2002.7     168.04     285.21    -32.208     .37873    -805.99     4175.6

MINIMUMS
ELEMENT    21         18         18         18         18         20         21
VALUE    -5805.1    -33.939    -184.77    -33.173     .17747    -805.99    -20570.

MAXIMUMS
ELEMENT    20         20         21         21         21         21         18
VALUE    -2002.7     168.04     681.40     46.829     .37873     833.49     7315.6

ESEL  FOR LABEL= ELEM  FROM   18 TO    22 BY    4

     2  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:-z                    15.1264  AUG  1,1995 CP=      1.340

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     5  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        IFX            IFY            IFZ            IMX            IMY            IMZ
    18     32.428292      209.95222      38.209583     -.17746853     -539.96137     -13.290002
    22    -19.088080      116.00997      11.517563     -.78544782      22.586949      20.110934

MINIMUMS
ELEMENT       22             22             22             22             18             18
VALUE     -19.088080      116.00997      11.517563     -.78544782     -539.96137     -13.290002

MAXIMUMS
ELEMENT       18             18             18             18             22             22
VALUE      32.428292      209.95222      38.209583     -.17746853      22.586949      20.110934

ESEL  FOR LABEL= ELEM  FROM    19 TO    23 BY    4

     2  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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 DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .06g:x + .2g:-z                    15.1264  AUG  1,1995 CP=      1.350

         ***** POST1 ELEMENT STRESS LISTING *****

  LOAD STEP     5  ITERATION=     1  SECTION=  1
  TIME=    .00000E+00     LOAD CASE=  1

  ELEM        JFX            JFY            JFZ            JMX            JMY            JMZ
     19    -57.450000     211.41827      45.864514     .17746853      823.19382     -40.953916
     23     5.0463852     116.02414      35.289259     .78544782      571.70546     -20.465224

 MINIMUMS
 ELEMENT       19             23             23             19             23             19
 VALUE     -57.450000     116.02414      35.289259     .17746853      571.70546     -40.953916

 MAXIMUMS
 ELEMENT       23             19             19             23             19             23
 VALUE      5.0463852     211.41827      45.864514     .78544782      823.19382     -20.465224
 USE LOAD STEP     6  ITERATION     0  SECTION   1  FOR LOAD CASE     1

 DISPLACEMENT STORED FOR   72 NODES

 ***WARNING ***                          CP=      1.380   TIME=  15.12639
 DATA FOR STRESS LABEL IFX  HAS NOT BEEN STORED FOR ALL ELEMENTS.
  IFX  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

 ***WARNING ***                          CP=      1.380   TIME=  15.12639
 DATA FOR STRESS LABEL IFY  HAS NOT BEEN STORED FOR ALL ELEMENTS.
  IFY  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

 ***WARNING ***                          CP=      1.380   TIME=  15.12639
 DATA FOR STRESS LABEL IFZ  HAS NOT BEEN STORED FOR ALL ELEMENTS.
  IFZ  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

 ***WARNING ***                          CP=      1.380   TIME=  15.12639
 DATA FOR STRESS LABEL IMX  HAS NOT BEEN STORED FOR ALL ELEMENTS.
  IMX  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

 ***WARNING ***                          CP=      1.380   TIME=  15.12639
 DATA FOR STRESS LABEL IMY  HAS NOT BEEN STORED FOR ALL ELEMENTS.
  IMY  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

 ***WARNING ***                          CP=      1.380   TIME=  15.12639
 DATA FOR STRESS LABEL IMZ  HAS NOT BEEN STORED FOR ALL ELEMENTS.
  IMZ  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

 ***WARNING ***                          CP=      1.380   TIME=  15.12639
 DATA FOR STRESS LABEL JFX  HAS NOT BEEN STORED FOR ALL ELEMENTS.
  JFX  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

 ***WARNING ***                          CP=      1.380   TIME=  15.12639
 DATA FOR STRESS LABEL JFY  HAS NOT BEEN STORED FOR ALL ELEMENTS.
  JFY  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

 ***WARNING ***                          CP=      1.380   TIME=  15.12639
 DATA FOR STRESS LABEL JFZ  HAS NOT BEEN STORED FOR ALL ELEMENTS.
  JFZ  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

 ***WARNING ***                          CP=      1.380   TIME=  15.12639
```

```
DATA FOR STRESS LABEL JMX  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JMX  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=      1.380   TIME=  15.12639
DATA FOR STRESS LABEL JMY  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JMY  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=      1.380   TIME=  15.12639
DATA FOR STRESS LABEL JMZ  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JMZ  DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=      1.390   TIME=  15.12639
DATA FOR STRESS LABEL ISAX HAS NOT BEEN STORED FOR ALL ELEMENTS.
 ISAX DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=      1.390   TIME=  15.12639
DATA FOR STRESS LABEL ISBY HAS NOT BEEN STORED FOR ALL ELEMENTS.
 ISBY DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=      1.390   TIME=  15.12639
DATA FOR STRESS LABEL ISBZ HAS NOT BEEN STORED FOR ALL ELEMENTS.
 ISBZ DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO
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Document #: SD-WM-ER-521

Title/Desc:
STRUCTRUAL ANALYSIS DESIGN & EVALUATION OF MOCKUP PLATFORM MONORAIL & TANK PLATE CUT OUT [SEC 3 OF 3]

Pages: 93

This document was too large to scan as a whole document, therefore it required breaking into smaller sections.

DOCUMENT NUMBER: SD-WM-ER-521

SECTION 3 **OF** 3

TITLE: Structural Analysis Design & Evaluation of mock-up platform monorail & Tank Plate Cut-out

DATE: 12-19-95

ORIGINATOR: T. S. Hundal

CO:

RECIPIENT:

CO:

REFERENCES:

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***WARNING ***                          CP=      1.390   TIME=  15.12639
DATA FOR STRESS LABEL JSAX HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JSAX DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=      1.390   TIME=  15.12639
DATA FOR STRESS LABEL JSBY HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JSBY DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=      1.390   TIME=  15.12639
DATA FOR STRESS LABEL JSBZ HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JSBZ DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=      1.390   TIME=  15.12639
DATA FOR STRESS LABEL ISG1 HAS NOT BEEN STORED FOR ALL ELEMENTS.
 ISG1 DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=      1.390   TIME=  15.12639
DATA FOR STRESS LABEL ISG3 HAS NOT BEEN STORED FOR ALL ELEMENTS.
 ISG3 DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=      1.390   TIME=  15.12639
DATA FOR STRESS LABEL JSG1 HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JSG1 DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=      1.390   TIME=  15.12639
DATA FOR STRESS LABEL JSG3 HAS NOT BEEN STORED FOR ALL ELEMENTS.
 JSG3 DATA FOR TYPE   2. STIF   8. ELEMENTS WILL BE SET TO ZERO

***WARNING ***                          CP=      1.390   TIME=  15.12639
DATA FOR STRESS LABEL SAX  HAS NOT BEEN STORED FOR ALL ELEMENTS.
 SAX  DATA FOR TYPE   1. STIF   4. ELEMENTS WILL BE SET TO ZERO
 SAX  DATA FOR TYPE   3. STIF   4. ELEMENTS WILL BE SET TO ZERO
 SAX  DATA FOR TYPE   4. STIF   4. ELEMENTS WILL BE SET TO ZERO
 SAX  DATA FOR TYPE   5. STIF   4. ELEMENTS WILL BE SET TO ZERO

STRESSES STORED FOR   23  SELECTED ITEMS

ITERATION SUMMARY INFORMATION STORED

NODAL FORCES STORED FOR   99 ELEMENTS

REACTIONS STORED FOR   18 REACTIONS

FOR LOAD STEP=     6  ITERATION=     1  SECTION=   1
 TIME=   .000000E+00   LOAD CASE=  1
 TITLE= DOUBLE SHELL TANK  MOCK-UP PLATFORM

NEW TITLE= DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .133g:y


USE MACRO FILE  mres

ESEL  FOR LABEL= TYPE  FROM     1 TO     1 BY    1

    36  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

SORT ON ISG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .133g:y                                  15.1264  AUG  1,1995 CP=      1.400

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     6  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG1        IFX         IFY         IFZ         IMX         IMY         IMZ
    62    4092.0     -23.932     -1794.5     -11.674     -1.8824      113.79     -54249.
    54    4088.1     -1.1883     -195.79      1.9805     -1.8824     -113.79     -54249.
    48    4069.6     -104.11     -220.63     -1.9717      1.5260      130.18     -53718.

MINIMUMS
ELEMENT    48          48          62          62          62          54          62
VALUE     4069.6     -104.11     -1794.5     -11.674     -1.8824     -113.79     -54249.

MAXIMUMS
ELEMENT    62          54          54          54          48          48          48
VALUE     4092.0     -1.1883     -195.79      1.9805      1.5260      130.18     -53718.

SORT ON ISG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .133g:y                          15.1264  AUG  1,1995 CP=      1.410

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     6  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG3        IFX         IFY         IFZ         IMX         IMY         IMZ
    54   -4087.7     -1.1883     -195.79      1.9805     -1.8824     -113.79     -54249.
    62   -4083.8     -23.932     -1794.5     -11.674     -1.8824      113.79     -54249.
    48   -4034.1     -104.11     -220.63     -1.9717      1.5260      130.18     -53718.

MINIMUMS
ELEMENT     54          48          62          62          62          54          62
VALUE    -4087.7     -104.11     -1794.5     -11.674     -1.8824     -113.79     -54249.

MAXIMUMS
ELEMENT     48          54          54          54          48          48          48
VALUE    -4034.1     -1.1883     -195.79      1.9805      1.5260      130.18     -53718.

SORT ON JSG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .133g:y                          15.1264  AUG  1,1995 CP=      1.410

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     6  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG1        JFX         JFY         JFZ         JMX         JMY         JMZ
    47    4073.5      126.94     -1767.3     -11.775     -1.5260     -130.18     53718.
    54    3628.7      1.1883      246.72     -1.9805      1.8824      60.319     48275.
    48    3560.0      104.11      271.56      1.9717     -1.5260     -76.942     47074.

MINIMUMS
ELEMENT    48          54          47          47          48          47          48
VALUE     3560.0      1.1883     -1767.3     -11.775     -1.5260     -130.18     47074.

MAXIMUMS
ELEMENT    47          47          48          48          54          54          47
VALUE     4073.5      126.94      271.56      1.9717      1.8824      60.319     53718.

SORT ON JSG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .133g:y                          15.1264  AUG  1,1995 CP=      1.420

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     6  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG3        JFX         JFY         JFZ         JMX         JMY         JMZ
    47   -4030.2     126.94     -1767.3     -11.775     -1.5260     -130.18     53718.
    54   -3628.3     1.1883      246.72     -1.9805      1.8824      60.319     48275.
    48   -3524.5     104.11      271.56      1.9717     -1.5260     -76.942     47074.

MINIMUMS
ELEMENT    47          54          47          47          48          47          48
VALUE    -4030.2     1.1883     -1767.3     -11.775     -1.5260     -130.18     47074.

MAXIMUMS
ELEMENT    48          47          48          48          54          54          47
VALUE    -3524.5     126.94      271.56      1.9717      1.8824      60.319     53718.

ESEL  FOR LABEL= ELEM  FROM    56 TO    62 BY    1

     7  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .133g:y                          15.1264  AUG  1,1995 CP=      1.420

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     6  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        JFX            JFY            JFZ            JMX            JMY            JMZ
    56     126.85410      2488.3528      15.651208     -1.5259924      185.91784     -145.69591
    57     13.267052      250.57241     -.23501245     -1.2096228     -.47823143      144.11405
    58    -2.7511181      238.07824     -.20272044      .42203513     -14.203082      187.97145
    59     24.013928      2512.2200     -15.752305      1.8823911     -204.06008     -409.82433
    60     13.267052      250.46046     -.23501245     -1.2096228     -26.313188      150.49569
    61    -2.7511181      237.95463     -.20272044      .42203513     -8.9070480      195.01714
    62     23.931812      1851.0694      11.674161      1.8823911      236.43231     -434.02819

MINIMUMS
ELEMENT       58             61             59             56             59             62
VALUE     -2.7511181      237.95463     -15.752305     -1.5259924     -204.06008     -434.02819

MAXIMUMS
ELEMENT       56             59             56             62             62             61
VALUE      126.85410      2512.2200      15.651208      1.8823911      236.43231      195.01714

ESEL  FOR LABEL= ELEM  FROM    64 TO    67 BY    3

     2  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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FOR SUPPORT CALL Larry Gannon      PHONE 509-376-2604      TWX

DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .133g:y                          15.1264  AUG  1,1995 CP=      1.430

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     6  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        JFX            JFY            JFZ            JMX            JMY            JMZ
    64     116.72473      201.40631      .64755355      1.5748589      44.948667      237.80790
    67     11.215114      193.56882      1.3777086     -5.3850114      70.643091     -2.3666234

MINIMUMS
ELEMENT      67             67             64             67             64             67
VALUE      11.215114      193.56882      .64755355     -5.3850114      44.948667     -2.3666234

MAXIMUMS
ELEMENT      64             64             67             64             67             64
VALUE      116.72473      201.40631      1.3777086      1.5748589      70.643091      237.80790

ESEL  FOR LABEL= ELEM  FROM    69 TO    69 BY    1

     1  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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FOR SUPPORT CALL Larry Gammon      PHONE 509-376-2604      TWX

DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .133g:y                                  15.1264  AUG  1,1995 CP=      1.430

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     6  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        JFX            JFY            JFZ            JMX            JMY            JMZ
    69    -2.2707525     138.61800      2.1272412      6.0817708      110.47891      4.1316994

MINIMUMS
ELEMENT      69             69             69             69             69             69
VALUE     -2.2707525     138.61800      2.1272412      6.0817708      110.47891      4.1316994

MAXIMUMS
ELEMENT      69             69             69             69             69             69
VALUE     -2.2707525     138.61800      2.1272412      6.0817708      110.47891      4.1316994

ESEL, FOR LABEL= ELEM  FROM    47 TO    47 BY    1

     1  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .133g:y                          15.1264  AUG  1,1995 CP=      1.440

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     6  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        IFX            IFY            IFZ            IMX            IMY            IMZ
    47    -126.93622      1823.9366      11.775258      1.5259924     -223.08158      151.05762

MINIMUMS
ELEMENT      47             47             47             47             47             47
VALUE     -126.93622      1823.9366      11.775258      1.5259924     -223.08158      151.05762

MAXIMUMS
ELEMENT      47             47             47             47             47             47
VALUE     -126.93622      1823.9366      11.775258      1.5259924     -223.08158      151.05762

ESEL  FOR LABEL= ELEM  FROM    63 TO    65 BY    2

     2  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .133g:y                          15.1264  AUG  1,1995 CP=      1.440

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     6  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        IFX            IFY            IFZ            IMX            IMY            IMZ
    63    -116.72473     201.62656     -.64755355     -1.5748589     28.872438     -225.25395
    65    -11.800218     262.73022     -3.4315405     -16.780375     127.15286      5.6115844

MINIMUMS
ELEMENT      63             63             65             65             63             63
VALUE    -116.72473     201.62656     -3.4315405     -16.780375     28.872438     -225.25395

MAXIMUMS
ELEMENT      65             65             63             63             65             65
VALUE    -11.800218     262.73022     -.64755355     -1.5748587     127.15286      5.6115844

[illegible] ELEM  FROM    68 TO    68 BY    1

     1  ELEMENTS [illegible] SELECTED [illegible]

PRINT ELEMENT [illegible] ITEMS PER ELEMENT
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[illegible] CALL Larry Gannon      PHONE 509-376-2601      TWX

DOT [illegible] PLATFORM [illegible]                                  [illegible] AUG  1,1995 CP=      1.450

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     6  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        IFX            IFY            IFZ            IMX            IMY            IMZ
    68     2.8558559      207.70924     -.73409347E-01  16.788589      62.034247     -3.7923703

MINIMUMS
ELEMENT       68             68             68             68             68             68
VALUE      2.8558559      207.70924     -.73409347E-01  16.788589      62.034247     -3.7923703

MAXIMUMS
ELEMENT       68             68             68             68             68             68
VALUE      2.8558559      207.70924     -.73409347E-01  16.788589      62.034247     -3.7923703

ESEL  FOR LABEL= TYPE  FROM     2 TO     2 BY    1

    16  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

SORT ON SAX   ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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A-199

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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .133g:y                                  15.1264  AUG  1,1995 CP=      1.450

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     6  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        SAX
    26    -321.23164
    32    -314.86551
    27    -263.34868

MINIMUMS
ELEMENT      26
VALUE    -321.23164

MAXIMUMS
ELEMENT      27
VALUE    -263.34868

ESEL  FOR LABEL= TYPE  FROM     3 TO     3 BY    1

    12  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT REACTION FORCES PER NODE
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A-200

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DST HOCK UP PLATFORM SEISMIC ANALYSIS DL 4 .133g:y 15.1264 AUG 1,1995 CP= 1.460

***** POST1 REACTION FORCE LISTING *****

LOAD STEP 6 ITERATION= 1 SECTION= 1
TIME= .00000E+00 LOAD CASE= 1

THE FOLLOWING X,Y,Z FORCES ARE IN GLOBAL COORDINATES

NODE	FX	FY	FZ	MX	MY	MZ
1	.62280521E-04	2950.4264	161.93357	.00000000E+00	.00000000E+00	.00000000E+00
2	-.62280521E-04	3674.1418	-163.52626	.00000000E+00	.00000000E+00	.00000000E+00
3	15.803209	3843.9026	211.57049	.00000000E+00	.00000000E+00	.00000000E+00
4	2.3188905	4227.6729	-202.59678	.00000000E+00	.00000000E+00	.00000000E+00
5	-12.395212	1083.5757	50.920817	.00000000E+00	.00000000E+00	.00000000E+00
6	-5.7268875	936.20647	-58.301839	.00000000E+00	.00000000E+00	.00000000E+00
TOTAL	-.10211743E-09	16715.926	-.15285906E-09	.00000000E+00	.00000000E+00	.00000000E+00

SORT ON ISG1 ORDER= 0 KABS= 1 NMAX= 3

SORT COMPLETED FOR 3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT

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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .133g:y                                  15.1264  AUG  1,1995 CP=      1.460

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     6  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG1        IFX         IFY         IFZ         IMX         IMY         IMZ
    9    -678.10     3980.4     -2.3189     -7.0207     .00000E+00  .00000E+00 -.11369E-12
    3    -611.95     3592.2     -15.803      12.040     .00000E+00  .22737E-12 -.11369E-12
    7    -590.43     3465.8      .62281E-04 -2.3412     .00000E+00 -.28422E-13  .00000E+00

MINIMUMS
ELEMENT     9           7           3           9           9           7           9
VALUE    -678.10     3465.8     -15.803     -7.0207     .00000E+00 -.28422E-13 -.11369E-12

MAXIMUMS
ELEMENT     7           9           7           3           9           3           7
VALUE    -590.43     3980.4      .62281E-04  12.040     .00000E+00  .22737E-12  .00000E+00

SORT ON ISG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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FOR SUPPORT CALL Larry Gannon      PHONE 509-376-2604      TWX

DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .133g:y                                  15.1264  AUG  1,1995 CP=      1.470

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     6  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG3        IFX         IFY         IFZ         IMX         IMY         IMZ
    4    -923.71      2689.2     -14.059      10.933     .83267E-16 -1443.2     -1855.8
   10    -837.50      3608.6      2.2333     -6.7173     .13878E-14  886.68      294.79
    9    -678.10      3980.4     -2.3189     -7.0207     .00000E+00  .00000E+00 -.11369E-12

MINIMUMS
ELEMENT      4           4           4           9           9           4           4
VALUE     -923.71      2689.2     -14.059     -7.0207     .00000E+00 -1443.2     -1855.8

MAXIMUMS
ELEMENT      9           9          10           4          10          10          10
VALUE     -678.10      3980.4      2.2333      10.933     .13878E-14  886.68      294.79

SORT ON JSG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .133g:y                          15.1264  AUG  1,1995 CP=      1.470

      ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     3  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG1        JFX         JFY         JFZ         JMX         JMY         JMZ
   10    -572.34     -3359.6     -2.2333      6.7173    -.13878E-14  .11369E-12  .20464E-11
    8    -493.06     -2871.4     -.62301E-04  2.3238     .00000E+00  -.56843E-13  .00000E+00
    7    -480.62     -3222.5     -.62281E-04  2.3412     .00000E+00   302.02      .80342E-02

MINIMUMS
ELEMENT     10          10          10           8          10           8           8
VALUE    -572.34     -3359.6     -2.2333      2.3238    -.13878E-14 -.56843E-13  .00000E+00

MAXIMUMS
ELEMENT      7           8           8          10           8           7           7
VALUE    -480.62     -2894.4     -.62281E-04  6.7173     .00000E+00   302.02      .80342E-02

SORT ON JSG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR    3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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```
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DSI MOCK-UP PLATFORM SEISMIC ANALYSIS  [illegible]                                  15.1264  AUG  1,1995 CP=      1.470

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     6  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG3        JFX         JFY         JFZ         JMX         JMY         JMZ
     3   -1074.7     -3348.8      15.803     -12.040     .00000E+00 -1553.2     -2038.6
     9   -864.01     -3737.1      2.3189      7.0207     .00000E+00  905.67     -299.14
     7   -617.33     -3222.5     -.62281E-04  2.3412     .00000E+00  302.02      .80342E-02

MINIMUMS
ELEMENT      3           9           7           3           3           3           3
VALUE    -1074.7     -3737.1     -.62281E-04 -12.040     .00000E+00 -1553.2     -2038.6

MAXIMUMS
ELEMENT      7           7           3           9           3           9           7
VALUE    -617.33     -3222.5      15.803      7.0207     .00000E+00  905.67      .80342E-02

ESEL  FOR LABEL= ELEM  FROM     2 TO    12 BY    2

     6  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .133g:y                                  15.1264  AUG  1,1995 CP=      1.480

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     6  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        JFX            JFY            JFZ            JMX            JMY            JMZ
    2    -2176.5043      .62280521E-04  -1.9952046     .24980018E-15  -.14210855E-13  -.45474735E-12
    4    -2440.1846      14.059336      -10.933418     -.83266727E-16  -.11368684E-12   .18189894E-11
    6     96.129645     -12.665600      -11.147680      .00000000E+00  -.11368684E-12  -.45474735E-12
    8    -2894.3904     -.62280521E-04   2.3238039      .00000000E+00  -.56843419E-13   .00000000E+00
   10    -3359.6107     -2.2332647       6.7172933     -.13877788E-14   .11368684E-12   .20463631E-11
   12    -202.50294      5.5657091       6.7302792      .00000000E+00   .00000000E+00  -.45474735E-12

MINIMUMS
ELEMENT      10              6              6              10              4              2
VALUE    -3359.6107     -12.665600     -11.147680     -.13877788E-14  -.11368684E-12  -.45474735E-12

MAXIMUMS
ELEMENT       6              4             12              2              10             10
VALUE     96.129645      14.059336      6.7302792      .24980018E-15   .11368684E-12   .20463631E-11

ESEL  FOR LABEL= TYPE  FROM     4 TO     4 BY    1

    24  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

SORT ON ISG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .133g:y                          15.1264  AUG  1,1995 CP=      1.490

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     6  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG1        IFX         IFY         IFZ         IMX         IMY         IMZ
    99    25659.      2.7560     -1699.5     -.11850     -4.6353     -10.080     -54047.
    97    25659.      2.7571     -1699.5     -.11850     -4.6295      10.081     -54047.
    90    10109.      529.54     -1744.4      2.9842     -16330.     -45.150     -21681.

MINIMUMS
ELEMENT    90          99          90          97          90          90          99
VALUE     10109.      2.7560     -1744.4     -.11850     -16330.     -45.150     -54047.

MAXIMUMS
ELEMENT    99          90          97          90          97          97          90
VALUE     25659.      529.54     -1699.5      2.9842     -4.6295      10.081     -21681.

SORT ON ISG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .133g:y                          15.1264  AUG  1,1995 CP=      1.490

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     6  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG3        IFX         IFY         IFZ         IMX         IMY         IMZ
    99   -25661.     2.7560     -1699.5     -.11850     -4.6353     -10.080     -54047.
    97   -25661.     2.7571     -1699.5     -.11850     -4.6295      10.081     -54047.
    90   -10517.     529.54     -1744.4      2.9842     -16330.     -45.150     -21681.

MINIMUMS
ELEMENT    99          99          90          97          90          90          99
VALUE    -25661.     2.7560     -1744.4     -.11850     -16330.     -45.150     -54047.

MAXIMUMS
ELEMENT    90          90          97          90          97          97          90
VALUE    -10517.     529.54     -1699.5      2.9842     -4.6295      10.081     -21681.

SORT ON JSG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .133g:y                          15.1264  AUG  1,1995 CP=      1.500

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     6  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG1        JFX         JFY         JFZ         JMX         JMY         JMZ
    98    25659.     -2.7560     -1699.5      .11850      4.6353      10.080      54047.
    96    25659.     -2.7571     -1699.5      .11850      4.6295     -10.081      54047.
    81    14939.     -1798.7      325.49      529.63      6.9090      20422.     -12513.

MINIMUMS
ELEMENT    81          81          96          98          96          96          81
VALUE     14939.     -1798.7     -1699.5      .11850      4.6295     -10.081     -12513.

MAXIMUMS
ELEMENT    98          98          81          81          81          81          98
VALUE     25659.     -2.7560      325.49      529.63      6.9090      20422.      54047.

SORT ON JSG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .133g:y                          15.1264  AUG  1,1995 CP=      1.500

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     6  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG3        JFX         JFY         JFZ         JMX         JMY         JMZ
   98   -25661.     -2.7560     -1699.5      .11850      4.6353      10.080      54047.
   96   -25661.     -2.7571     -1699.5      .11850      4.6295     -10.081      54047.
   81   -16328.     -1798.7      325.49      529.63      6.9090      20422.     -12513.

MINIMUMS
ELEMENT    98          81          96          98          96          96          81
VALUE   -25661.     -1798.7     -1699.5      .11850      4.6295     -10.081     -12513.

MAXIMUMS
ELEMENT    81          98          81          81          81          81          98
VALUE   -16328.     -2.7560      325.49      529.63      6.9090      20422.      54047.

ESEL  FOR LABEL= ELEM  FROM    88 TO    99 BY    1

   12  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS DL + .133g:y 15.1264 AUG 1,1995 CP= 1.510

***** POST1 ELEMENT STRESS LISTING *****

LOAD STEP 6 ITERATION= 1 SECTION= 1
TIME= .00000E+00 LOAD CASE= 1

ELEM	IFX	IFY	IFZ	IMX	IMY	IMZ
88	529.29846	1763.6158	-2.5288918	16334.230	19.554779	20406.906
89	529.41696	10.063184	.22817777	3.6658415	-35.916251	-21684.811
90	529.53546	-1744.4107	2.9841989	-16330.499	-45.150328	-21680.943
91	529.54242	1764.3853	2.9846848	-16330.656	-26.474355	20424.645
92	529.42392	10.743442	.22761529	3.5641187	30.218689	-21676.279
93	529.30542	-1743.6416	-2.5284059	16334.088	41.130681	-21680.147
94	322.50239	-33.925334	.87601481E-01	-3.0083507	12.382037	3833.4574
95	322.46247	32.925184	-.87595368E-01	-3.0281372	-12.380290	-3833.6454
96	2.7570695	1733.6675	-.11850023	-4.6295201	14.939392	16334.220
97	2.7570695	-1699.4554	-.11850023	-4.6295201	10.080802	-54046.626
98	2.7560212	1733.5785	-.11849892	-4.6352591	-5.2216096	16330.524
99	2.7560212	-1699.5444	-.11849892	-4.6352591	-10.080065	-54046.674

MINIMUMS						
ELEMENT	93	90	88	91	90	99
VALUE	2.7560212	-1744.4107	-2.5288918	-16330.656	-45.150328	-54046.674
MAXIMUMS						
ELEMENT	91	91	91	88	93	91
VALUE	529.54242	1764.3853	2.9846848	16334.230	41.130681	20424.645

PRINT ELEMENT STRESS ITEMS PER ELEMENT

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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .133g:y                          15.1264  AUG  1,1995 CP=      1.510

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     6  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        JFX            JFY            JFZ            JMX            JMY            JMZ
    88    -529.29846     -1743.6415     2.5288918     -16334.230     41.138623      21680.182
    89    -529.41696      10.743442    -.22817777     -3.6658415     30.211806      21676.308
    90    -529.53546      1764.3851     -2.9841989      16330.499    -26.470447     -20424.606
    91    -529.54242     -1744.4109     -2.9846848      16330.656    -45.158081      21680.909
    92    -529.42392      10.063184    -.22761529     -3.5641187    -35.909071      21684.782
    93    -529.30542      1763.6160     2.5284059     -16334.088     19.551061     -20406.945
    94    -322.50239     -34.320401    -.87601481E-01   3.0083507    -19.565358     -3817.2596
    95    -322.46247      34.320551     .87595368E-01   3.0281372     19.563110      3817.4353
    96    -2.7570695     -1699.5446     .11850023       4.6295201    -10.080882      54046.626
    97    -2.7570695      1733.5783     .11850023       4.6295201    -5.2223729     -16330.564
    98    -2.7560212     -1699.4556     .11849892       4.6352591     10.080065      54046.674
    99    -2.7560212      1733.6673     .11849892       4.6352591     14.938521     -16334.165

MINIMUMS
ELEMENT      91             91             91             88             91             90
VALUE    -529.54242     -1744.4109     -2.9846848     -16334.230     -45.158081     -20424.606

MAXIMUMS
ELEMENT      98             90             88             91             88             98
VALUE    -2.7560212      1764.3851      2.5288918      16330.656      41.138623      54046.674

ESEL  FOR LABEL= ELEM  FROM    76 TO    82 BY    2

     4  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .133g:y                          15.1264  AUG  1,1995 CP=      1.520

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     6  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        IFX            IFY            IFZ            IMX            IMY            IMZ
    76     1987.9824     -13.771795      22.825627     .00000000E+00   .22737368E-12   .00000000E+00
    78     1990.2741     -13.654672     -22.743510     .00000000E+00   .00000000E+00  -.22737368E-12
    80     1990.2741      13.679554      22.747805     .00000000E+00  -.34106051E-12   .00000000E+00
    82     1987.9824      13.746912     -22.829922     .00000000E+00   .00000000E+00  -.11368684E-12

MINIMUMS
ELEMENT      82             76             82             76             80             78
VALUE     1987.9824     -13.771795     -22.829922     .00000000E+00  -.34106051E-12  -.22737368E-12

MAXIMUMS
ELEMENT      80             82             76             76             76             76
VALUE     1990.2741      13.746912      22.825627     .00000000E+00   .2273736 8E-12   .00000000E+00

ESEL  FOR LABEL= TYPE  FROM     5 TO     5 BY    1

    11  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

SORT ON ISG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .133g:y                                  15.1264  AUG  1,1995 CP=      1.530

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     6  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG1        IFX         IFY         IFZ         IMX         IMY         IMZ
    19    1900.3     -.78222     -209.99     -.20483     .43624E-01 -2.3912     -8282.2
    21    1115.8     -73.508     -201.58     -.11193     .37822E-01  1.9978     -4726.7
    20    928.30     -73.508      246.95     -.11193     .37822E-01  6.1392      3882.7

MINIMUMS
ELEMENT    20          20          19          19          20          19          19
VALUE     928.30     -73.508     -209.99     -.20483     .37822E-01 -2.3912     -8282.2

MAXIMUMS
ELEMENT    19          19          20          20          19          20          20
VALUE    1900.3     -.78222      246.95     -.11193     .43624E-01  6.1392      3882.7

SORT ON ISG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR    3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .133g:y                                  15.1264  AUG  1,1995 CP=      1.530

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     6  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      ISG3        IFX         IFY         IFZ         IMX         IMY         IMZ
    19   -1899.7     -.78222     -209.99     -.20483     .43624E-01 -2.3912     -8282.2
    21   -1054.6     -73.508     -201.58     -.11193     .37822E-01  1.9978     -4726.7
    20   -867.05     -73.508      246.95     -.11193     .37822E-01  6.1392      3882.7

MINIMUMS
ELEMENT    19          20          19          19          20          19          19
VALUE    -1899.7     -73.508     -209.99     -.20483     .37822E-01 -2.3912     -8282.2

MAXIMUMS
ELEMENT    20          19          20          20          19          20          20
VALUE    -867.05     -.78222      246.95     -.11193     .43624E-01  6.1392      3882.7

SORT ON JSG1  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

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BEST AVAILABLE COPY

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .133g:y                          15.1264  AUG  1,1995 CP=      1.540

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     6  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG1        JFX         JFY         JFZ         JMX         JMY         JMZ
    18    1900.3      .78222     -210.01      .20483     -.43624E-01  2.3912      8282.2
    20    1115.8      73.508     -218.42      .11193     -.37822E-01 -1.9978      4726.7
    14    870.69      355.61     -22.799      .85905E-01  4.3459      7.4738      3109.8

MINIMUMS
ELEMENT    14          18          20          14          18          20          14
VALUE     870.69      .78222     -218.42      .85905E-01 -.43624E-01 -1.9978      3109.8

MAXIMUMS
ELEMENT    18          14          14          18          14          14          18
VALUE     1900.3      355.61     -22.799      .20483      4.3459      7.4738      8282.2

SORT ON JSG3  ORDER= 0  KABS= 1  NMAX=    3

SORT COMPLETED FOR     3 VALUES.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .133g:y                                  15.1264  AUG  1,1995 CP=      1.540

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     6  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM      JSG3        JFX         JFY         JFZ         JMX         JMY         JMZ
    18   -1899.7      .78222     -210.01      .20483     -.43624E-01  2.3912      8282.2
    20   -1054.6      73.508     -218.42      .11193     -.37822E-01 -1.9978      4726.7
    16   -726.44      52.707     -22.930     -.29152     -4.0949     -25.362      3114.6

MINIMUMS
ELEMENT     18          18          20          16          16          16          16
VALUE    -1899.7      .78222     -218.42     -.29152     -4.0949     -25.362      3114.6

MAXIMUMS
ELEMENT     16          20          16          18          20          18          18
VALUE    -726.44      73.508     -22.930      .20483     -.37822E-01  2.3912      8282.2

ESEL  FOR LABEL= ELEM  FROM    18 TO    22 BY    4

    2  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
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FOR SUPPORT CALL Larry Gannon      PHONE 509-376-2604      TWX

DS1 MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .133g:y                                  15.1264  AUG  1,1995 CP=      1.550

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     6  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        IFX            IFY            IFZ            IMX            IMY            IMZ
    18    -.78221506     238.54611     -.20482545     .43624132E-01   5.1873526      16.082957
    22    -2.0538318     131.26617      .58510337     -.96979062     -14.716288      22.165386

MINIMUMS
ELEMENT      22             22             18             22             22             18
VALUE     -2.0538318     131.26617     -.20482545     -.96979062     -14.716288      16.082957

MAXIMUMS
ELEMENT      18             18             22             18             18             22
VALUE     -.78221506     238.54611      .58510337      .43624132E-01   5.1873526      22.165386

ESEL  FOR LABEL= ELEM  FROM    19 TO    23 BY    4

     2  ELEMENTS (OF     99  DEFINED) SELECTED BY  ESEL  COMMAND.

PRINT ELEMENT STRESS ITEMS PER ELEMENT
```

```
        ANSYS - ENGINEERING ANALYSIS SYSTEM  REVISION 4.4      A137   32207            MAY 1,1990
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FOR SUPPORT CALL Larry Gannon      PHONE 509-376-2604      TWX

DST MOCK-UP PLATFORM SEISMIC ANALYSIS  DL + .133g:y                                  15.1264  AUG  1,1995 CP=      1.550

        ***** POST1 ELEMENT STRESS LISTING *****

 LOAD STEP     6  ITERATION=     1  SECTION=  1
 TIME=    .00000E+00     LOAD CASE=  1

 ELEM        JFX          JFY          JFZ          JMX          JMY          JMZ
    19     .78221506    238.52350    .20482545   -.43624132E-01  9.9697303   -15.246403
    23     2.0538318    131.29437   -.58510337    .96979062     -14.538880   -22.870360

MINIMUMS
ELEMENT      19           23           23           19           23           23
VALUE      .78221506    131.29437   -.58510337   -.43624132E-01 -14.538880   -22.870360

MAXIMUMS
ELEMENT      23           19           19           23           19           19
VALUE      2.0538318    238.52350    .20482545    .96979062     9.9697303   -15.246403
```

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A.4 SUMMARY OF OUTPUT RESULTS

LOAD CASE NUMBERS: (1-6) Maximum Enveloped ForceValues
Ref. ANSYS Run (August 1, 1995)

MAXIMUM STRESS/FORCES (Element Coordinate System)

Elem.	Elem Type	sig1/sig3	fx lbs Sax *	fy lbs	fz lbs	mx lb-in	my lb-in	mz lb-in
W6x20 Bm	1	6311	864	3948	396	325	9174	83374
L2x2x1/4	2	-----	-2410*	-----	-----	-----	-----	-----
W6x20 Col	3	9083	6332	781	39	-	2711	103500
TS3x3x1/4	4	25880	2095	1745	595	5	10	54047
						16330	37907	12116
C6x8.2	5	14435	356	1756	65	51	871	60348

*-psi

MAXIMUM CONNECTION FORCES (Element Coordinate System)

Elem	Elem Type	fx lbs	fy lbs	fz lbs	mx lb-in	my lb-in	mz lb-in
W6x20 Bm	1	565	3984	409	50	9174	604
L2x2x1/4	2	-2261	-----	-----	-----	-----	-----
TS3x3x1/4	4	3503	1958	372	16334	6590	32063
C6x8.2	5	247	1756	170	51	898	59383

MAXIMUM REACTIONS @ COLUMN BASES: (Nodes 1-6) (GLOBAL COORD. SYSTEM)

Fx = 828 lbs Fy = +7177 lbs , -4476 lbs Fz = 801 lbs

MAXIMUM FORCES @ TOP OF COLUMNS: (Nodes 13-18) J nodes of Elem. 2, 4,6,8,10,12

fx = -5623 lbs, +1624 lbs fy = 600 lbs fz = 26 lbs

MAXIMUM FORCES @ CMA BASE: (Nodes 63-66) I nodes of Elem. 76,78,80,82

fx = 3503 lbs fy = 366 lbs fz = 372 lbs

LOAD CASE NUMBER: (1) Static [DL + LL]
Ref. ANSYS Run (August 1, 1995)

MAXIMUM STRESS/FORCES (Element Coordinate System)

Elem.	Elem Type	sig1/sig3	fx lbs Sax *	fy lbs	fz lbs	mx lb-in	my lb-in	mz lb-in
W6x20 Bm	1	5559	154	2129	11	-	95	74000
L2x2x1/4	2	-----	-524*	-----	-----	-----	-----	-----
W6x20 Col	3	1897	6221	30	21	--	2711	3903
TS3x3x1/4	4	22649	1592	1500	469	39	18068	47702
C6x8.2	5	3893	124	485	-	7	7	16973

*-psi

MAXIMUM CONNECTION FORCES (Element Coordinate System)

Elem	Elem Type	fx lbs	fy lbs	fz lbs	mx lb-in	my lb-in	mz lb-in
W6x20 Bm	1	207	2774	14	50	224	317
L2x2x1/4	2	-491	-----	-----	-----	-----	-----
TS3x3x1/4	4	468	1560	4	14430	55	19138
C6x8.2	5	124	485	-	7	12	7709

MAXIMUM REACTIONS @ COLUMN BASES: (Nodes 1-6)
(GLOBAL COORDINATE SYSTEM)

Fx = 30 lbs Fy = 6612 lbs Fz = 343 lbs

MAXIMUM FORCES @ TOP OF COLUMNS: (Nodes 13-18) J nodes of Elem.2,4,6,8,10,12

fx = -5623 lbs , +294 lbs fy = 29 lbs fz = 20 lbs

MAXIMUM FORCES @ CMA BASE: (Nodes 63-66) I nodes of Elem. 76,78,80,82

fx = 1765 lbs fy = 12 lbs fz = 20 lbs

LOAD CASE NUMBER: (2) Seismic [DL + .2g (x) + .06g (z)]
Ref. ANSYS Run (August 1, 1995)

MAXIMUM STRESS/FORCES (Element Coordinate System)

Elem.	Elem Type	sig1/sig3	fx lbs Sax *	fy lbs	fz lbs	mx lb-in	my lb-in	mz lb-in
W6x20 Bm	1	5769	864	3945	341	325	2426	69481
L2x2x1/4	2	-----	-2410*	-----	-----	-----	-----	-----
W6x20 Col	3	8920	5340	772	18	--	1546	102300
TS3x3x1/4	4	24201	2092	1576	594	476	23172	47703
C6x8.2	5	14234	128	1731	65	50	870	59383

*-psi

MAXIMUM CONNECTION FORCES (Element Coordinate System)

Elem	Elem Type	fx lbs	fy lbs	fz lbs	mx lb-in	my lb-in	mz lb-in
W6x20 Bm	1	338	3984	405	7	8500	604
L2x2x1/4	2	-2261	-----	-----	-----	-----	-----
TS3x3x1/4	4	603	1765	359	17533	4046	23507
C6x8.2	5	128	1731	65	50	803	59383

MAXIMUM REACTIONS @ COLUMN BASES: (Nodes 1-6)
(GLOBAL COORDINATE SYSTEM)

Fx = 819 lbs Fy = +5868 lbs, -1251lbs Fz = 389 lbs

MAXIMUM FORCES @ TOP OF COLUMNS: (Nodes 13-18) J nodes of Elem.2,4,6,8,10,12

fx = -2932 lbs fy = 600 lbs fz = 15 lbs

MAXIMUM FORCES @ CMA BASE: (Nodes 63-66) I nodes of Elem. 76,78,80,82

fx = 3488 lbs fy = 365 lbs fz = 128 lbs

LOAD CASE NUMBER: (3) Sesmic [DL + .2g (-x) + .06g (z)]
Ref. ANSYS Run (August 1, 1995)

MAXIMUM STRESS/FORCES (Element Coordinate System)

Elem.	Elem Type	sig1/sig3	fx lbs Sax *	fy lbs	fz lbs	mx lb-in	my lb-in	mz lb-in
W6x20 Bm	1	5967	562	3948	396	-	9174	69064
L2x2x1/4	2	-----	-2356*	-----	-----	-----	-----	-----
W6x20 Col	3	9083	6332	781	18	-	1504	103500
TS3x3x1/4	4	24235	2095	1576	595	475	1966	47702
C6x8.2	5	14435	249	1756	65	51	865	60348

*-psi

MAXIMUM CONNECTION FORCES (Element Coordinate System)

Elem	Elem Type	fx lbs	fy lbs	fz lbs	mx lb-in	my lb-in	mz lb-in
W6x20 Bm	1	565	3966	409	10	9174	219
L2x2x1/4	2	-2210	-----	-----	-----	-----	-----
TS3x3x1/4	4	603	1767	360	17543	3599	23554
C6x8.2	5	247	1756	65	51	828	54033

MAXIMUM REACTIONS @ COLUMN BASES: (Nodes 1-6)
(GLOBAL COORDINATE SYSTEM)

Fx = 828 lbs Fy = +7177 lbs, -4476 lbs Fz = 550 lbs

MAXIMUM FORCES @ TOP OF COLUMNS: (Nodes 13-18) J nodes of Elem.2,4,6,8,10,12

fx = -4225 lbs, +1624 lbs fy = 588 lbs fz = 14 lbs

MAXIMUM FORCES @ CMA BASE: (Nodes 63-66) I nodes of Elem. 76,78,80,82

fx = 3495 lbs fy = 366 lbs fz = 128 lbs

LOAD CASE NUMBER: (4) Seismic [DL + .06g (x) + .2g (z)]
Ref. ANSYS Run (August 1, 1995)

MAXIMUM STRESS/FORCES (Element Coordinate System)

Elem.	Elem Type	sig1/sig3	fx lbs Sax *	fy lbs	fz lbs	mx lb-in	my lb-in	mz lb-in
W6x20 Bm	1	3146	379	3547	379	201	4304	38678
L2x2x1/4	2	-----	-1251*	-----	-----	-----	-----	-----
W6x20 Col	3	2974	5751	229	36	-	1918	30407
TS3x3x1/4	4	25870	491	1523	356	100	37784	47703
C6x8.2	5	5029	57	645	48	-	871	19207

*-psi

MAXIMUM CONNECTION FORCES (Element Coordinate System)

Elem	Elem Type	fx lbs	fy lbs	fz lbs	mx lb-in	my lb-in	mz lb-in
W6x20 Bm	1	390	3560	154	9	4552	380
L2x2x1/4	2	-1173	-----	-----	-----	-----	-----
TS3x3x1/4	4	792	1958	322	15340	6590	32063
C6x8.2	5	59	645	48	--	898	19207

MAXIMUM REACTIONS @ COLUMN BASES: (Nodes 1-6)
(GLOBAL COORDINATE SYSTEM)

Fx = 243 lbs Fy = +6653 lbs, -1495 lbs Fz = 801 lbs

MAXIMUM FORCES @ TOP OF COLUMNS: (Nodes 13-18) J nodes of Elem.2,4,6,8,10,12

fx = -4162 lbs fy = 194 lbs fz = 26 lbs

MAXIMUM FORCES @ CMA BASE: (Nodes 63-66) I nodes of Elem. 76,78,80,82

fx = 3488 lbs fy = 365 lbs fz = 128 lbs

LOAD CASE NUMBER: (5) Seismic [DL + .06g (x) + .2g (-z)]
Ref. ANSYS Run (August 1, 1995)

MAXIMUM STRESS/FORCES (Element Coordinate System)

Elem.	Elem Type	sig1/sig3	fx lbs Sax *	fy lbs	fz lbs	mx lb-in	my lb-in	mz lb-in
W6x20 Bm	1	6311	358	2164	170	7	1951	83374
L2x2x1/4	2	-----	-1140*	-----	-----	-----	-----	-----
W6x20 Col	3	3169	4286	251	39	-	2287	33189
TS3x3x1/4	4	25880	473	1523	357	153	37907	47703
C6x8.2	5	5926	170	681	47	-	833	20570

*-psi

MAXIMUM CONNECTION FORCES (Element Coordinate System)

Elem	Elem Type	fx lbs	fy lbs	fz lbs	mx lb-in	my lb-in	mz lb-in
W6x20 Bm	1	407	2825	171	7	3686	344
L2x2x1/4	2	-1069	-----	-----	-----	-----	-----
TS3x3x1/4	4	3503	1945	372	13471	6545	31754
C6x8.2	5	57	211	170	-	823	20570

MAXIMUM REACTIONS @ COLUMN BASES: (Nodes 1-6)
(GLOBAL COORDINATE SYSTEM)

Fx = 265 lbs Fy = +5292 lbs, -684 lbs Fz = 732 lbs

MAXIMUM FORCES @ TOP OF COLUMNS: (Nodes 13-18) J nodes of Elem.2,4,6,8,10,12

fx = -3248 lbs fy = 170 lbs fz = 22 lbs

MAXIMUM FORCES @ CMA BASE: (Nodes 63-66) I nodes of Elem. 76,78,80,82

fx = 3503 lbs fy = 119 lbs fz = 372 lbs

LOAD CASE NUMBER: (6) Seismic [DL + .133g (y)]
Ref. ANSYS Run (August 1, 1995)

MAXIMUM STRESS/FORCES (Element Coordinate System)

Elem.	Elem Type	sig1/sig3	fx lbs Sax *	fy lbs	fz lbs	mx lb-in	my lb-in	mz lb-in
W6x20 Bm	1	4092	127	1795	12	2	130	53718
L2x2x1/4	2	-----	-321*	-----	-----	-----	-----	-----
W6x20 Col	3	1075	3980	16	12	-	1553	2039
TS3x3x1/4	4	25661	1799	1745	530	16330	20422	54047
C6x8.2	5	1900	356	247	-	4	25	8282

*-psi

MAXIMUM CONNECTION FORCES (Element Coordinate System)

Elem	Elem Type	fx lbs	fy lbs	fz lbs	mx lb-in	my lb-in	mz lb-in
W6x20 Bm	1	127	2512	16	6	236	434
L2x2x1/4	2	-301	-----	-----	-----	-----	-----
TS3x3x1/4	4	530	1764	3	16334	45	20424
C6x8.2	5	74	247	-	-	15	3883

MAXIMUM REACTIONS @ COLUMN BASES: (Nodes 1-6)
(GLOBAL COORDINATE SYSTEM)

Fx = 16 lbs Fy = 4227 lbs Fz = 203 lbs

MAXIMUM FORCES @ TOP OF COLUMNS: (Nodes 13-18) J nodes of Elem.2,4,6,8,10,12

fx = -3360 lbs fy = 14 lbs fz = 11lbs

MAXIMUM FORCES @ CMA BASE: (Nodes 63-66) I nodes of Elem. 76,78,80,82

fx = 1990 lbs fy = 14 lbs fz = 23 lbs

APPENDIX B

DESIGN EVALUATION OF MEMBERS AND JOINTS

ANALYTICAL CALCULATIONS

Page _____ of _____

Subject DST MOCK-UP PLATFORM

Originator [signature] Date 8-10-95

Checker F.R. VOLLERT Date 12-7-95

SUMMARY

LOAD CASE NUMBER: (1-6) Maximum Enveloped ForceValues
Ref. ANSYS Run (August 1, 1995)

MAXIMUM STRESS/FORCES (Element Coordinate System)

Elem.	Elem Type	sig1/sig3	fx lbs Sax *	fy lbs	fz lbs	mx lb-in	my lb-in	mz lb-in
W6x20 Bm	1	6311	864	3948	396	325	9174	83374
L2x2x1/4	2	-----	-2410*	-----	-----	-----	-----	-----
W6x20 Col	3	9083	6332	781	39	-	2711	103500
TS3x3x1/4	4	25880	2095	1745	595	5	10	54047
						16330	37907	12116
C6x8.2	5	14435	356	1756	65	51	871	60348

*-psi

MAXIMUM CONNECTION FORCES (Element Coordinate System)

Elem	Elem Type	fx lbs	fy lbs	fz lbs	mx lb-in	my lb-in	mz lb-in
W6x20 Bm	1	565	3984	409	50	9174	604
L2x2x1/4	2	-2261	-----	-----	-----	-----	-----
TS3x3x1/4	4	3503	1958	372	16334	6590	32063
C6x8.2	5	247	1756	170	51	898	59383

MAXIMUM REACTIONS @ COLUMN BASES: (Nodes 1-6) (GLOBAL COORD. SYSTEM)

Fx = 828 lbs Fy = +7177 lbs , -4476 lbs Fz = 801 lbs

MAXIMUM FORCES @ TOP OF COLUMNS: (Nodes 13-18) J nodes of Elem.2,4,6,8,10,12

fx = -5623 lbs, +1624 lbs fy = 600 lbs fz = 26 lbs

MAXIMUM FORCES @ CMA BASE: (Nodes 63-66) I nodes of Elem. 76,78,80,82

fx = 3503 lbs fy = 366 lbs fz = 372 lbs

ANALYTICAL CALCULATIONS

Page _____ of _____

Subject DST MOCK-UP PLATFORM
Originator T Stanndal Date 8-10-95
Checker E.R. Voigt Date 12-5-95

LOAD CASE NUMBER: (1) Static [DL + LL]
Ref. ANSYS Run (August 1, 1995)

MAXIMUM STRESS/FORCES (Element Coordinate System)

Elem.	Elem Type	sig1/sig3	fx lbs Sax *	fy lbs	fz lbs	mx lb-in	my lb-in	mz lb-in
W6x20 Bm	1	5559	154	2129	11	-	95	74000
L2x2x1/4	2	-----	-524*	-----	-----	-----	-----	-----
W6x20 Col	3	1897	6221	30	21	--	2711	3903
TS3x3x1/4	4	22649	1592	1500	469	39	18068	47702
C6x8.2	5	3893	124	485	-	7	7	16973

*-psi

MAXIMUM CONNECTION FORCES (Element Coordinate System)

Elem	Elem Type	fx lbs	fy lbs	fz lbs	mx lb-in	my lb-in	mz lb-in
W6x20 Bm	1	207	2774	14	50	224	317
L2x2x1/4	2	-491	-----	-----	-----	-----	-----
TS3x3x1/4	4	468	1560	4	14430	55	19138
C6x8.2	5	124	485	-	7	12	7709

MAXIMUM REACTIONS @ COLUMN BASES: (Nodes 1-6)
(GLOBAL COORDINATE SYSTEM)

Fx = 30 lbs Fy = 6612 lbs Fz = 343 lbs

MAXIMUM FORCES @ TOP OF COLUMNS: (Nodes 13-18) J nodes of Elem.2,4,6,8,10,12

fx = -5623 lbs , +294 lbs fy = 29 lbs fz = 20 lbs

MAXIMUM FORCES @ CMA BASE: (Nodes 63-66) I nodes of Elem. 76,78,80,82

fx = 1765 lbs fy = 12 lbs fz = 20 lbs

ANALYTICAL CALCULATIONS

Page _____ of _____

Subject DST MOCK-UP PLATFORM

Originator [signature] Date 8-10-95

Checker F.R. VOLLERT Date 12-5-95

LOAD CASE NUMBER: (2) Seismic [DL + .2g (x) + .06g (z)]
Ref. ANSYS Run (August 1, 1995)

MAXIMUM STRESS/FORCES (Element Coordinate System)

Elem.	Elem Type	sig1/sig3	fx lbs Sax *	fy lbs	fz lbs	mx lb-in	my lb-in	mz lb-in
W6x20 Bm	1	5769	864	3945	341	325	2426	69481
L2x2x1/4	2	-----	-2410*	-----	-----	-----	-----	-----
W6x20 Col	3	8920	5340	772	18	--	1546	102300
TS3x3x1/4	4	24201	2092	1576	594	476	23172	47703
C6x8.2	5	14234	128	1731	65	50	870	59383

*-psi

MAXIMUM CONNECTION FORCES (Element Coordinate System)

Elem	Elem Type	fx lbs	fy lbs	fz lbs	mx lb-in	my lb-in	mz lb-in
W6x20 Bm	1	338	3984	405	7	8500	604
L2x2x1/4	2	-2261	-----	-----	-----	-----	-----
TS3x3x1/4	4	603	1765	359	17533	4046	23507
C6x8.2	5	128	1731	65	50	803	59383

MAXIMUM REACTIONS @ COLUMN BASES: (Nodes 1-6)
(GLOBAL COORDINATE SYSTEM)

Fx = 819 lbs Fy = +5868 lbs, -1251 lbs Fz = 389 lbs

MAXIMUM FORCES @ TOP OF COLUMNS: (Nodes 13-18) J nodes of Elem.2,4,6,8,10,12

fx = -2932 lbs fy = 600 lbs fz = 15 lbs

MAXIMUM FORCES @ CMA BASE: (Nodes 63-66) I nodes of Elem. 76,78,80,82

fx = 3488 lbs fy = 365 lbs fz = 128 lbs

ANALYTICAL CALCULATIONS

Page _____ of _____

Subject DST MOCK-UP PLATFORM

Originator [illegible] Date 8-10-95

Checker E.R. VOLLERT Date 12-7-95

LOAD CASE NUMBER: (3) Sesmic [DL + .2g (-x) + .06g (z)]
Ref. ANSYS Run (August 1, 1995)

MAXIMUM STRESS/FORCES (Element Coordinate System)

Elem.	Elem Type	sig1/sig3	fx lbs Sax *	fy lbs	fz lbs	mx lb-in	my lb-in	mz lb-in
W6x20 Bm	1	5967	562	3948	396	-	9174	69064
L2x2x1/4	2	-----	-2356*	-----	-----	-----	-----	-----
W6x20 Col	3	9083	6332	781	18	-	1504	103500
TS3x3x1/4	4	24235	2095	1576	595	475	1966	47702
C6x8.2	5	14435	249	1756	65	51	865	60348

*-psi

MAXIMUM CONNECTION FORCES (Element Coordinate System)

Elem	Elem Type	fx lbs	fy lbs	fz lbs	mx lb-in	my lb-in	mz lb-in
W6x20 Bm	1	565	3966	409	10	9174	219
L2x2x1/4	2	-2210	-----	-----	-----	-----	-----
TS3x3x1/4	4	603	1767	360	17543	3599	23554
C6x8.2	5	247	1756	65	51	828	54033

MAXIMUM REACTIONS @ COLUMN BASES: (Nodes 1-6)
(GLOBAL COORDINATE SYSTEM)

Fx = 828 lbs Fy = +7177 lbs, -4476 lbs Fz = 550 lbs

MAXIMUM FORCES @ TOP OF COLUMNS: (Nodes 13-18) J nodes of Elem.2,4,6,8,10,12

fx = -4225 lbs, +1624 lbs fy = 588 lbs fz = 14 lbs

MAXIMUM FORCES @ CMA BASE: (Nodes 63-66) I nodes of Elem. 76,78,80,82

fx = 3495 lbs fy = 366 lbs fz = 128 lbs

ANALYTICAL CALCULATIONS

Page _____ of _____

Subject DST MOCK-UP PLATFORM
Originator TSthundal Date 8-10-95
Checker FRV Date 12-7-95

LOAD CASE NUMBER: (4) Seismic [DL + .06g (x) + .2g (z)]
Ref. ANSYS Run (August 1, 1995)

MAXIMUM STRESS/FORCES (Element Coordinate System)

Elem.	Elem Type	sig1/sig3	fx lbs Sax *	fy lbs	fz lbs	mx lb-in	my lb-in	mz lb-in
W6x20 Bm	1	3146	379	3547	379	201	4304	38678
L2x2x1/4	2	-----	-1251*	-----	-----	-----	-----	-----
W6x20 Col	3	2974	5751	229	36	-	1918	30407
TS3x3x1/4	4	25870	491	1523	356	100	37784	47703
C6x8.2	5	5029	57	645	48	-	871	19207

*-psi

MAXIMUM CONNECTION FORCES (Element Coordinate System)

Elem	Elem Type	fx lbs	fy lbs	fz lbs	mx lb-in	my lb-in	mz lb-in
W6x20 Bm	1	390	3560	154	9	4552	380
L2x2x1/4	2	-1173	-----	-----	-----	-----	-----
TS3x3x1/4	4	792	1958	322	15340	6590	32063
C6x8.2	5	59	645	48	--	898	19207

MAXIMUM REACTIONS @ COLUMN BASES: (Nodes 1-6)
(GLOBAL COORDINATE SYSTEM)

Fx = 243 lbs Fy = +6653 lbs, -1495 lbs Fz = 801 lbs

MAXIMUM FORCES @ TOP OF COLUMNS: (Nodes 13-18) J nodes of Elem.2,4,6,8,10,12

fx = -4162 lbs fy = 194 lbs fz = 26 lbs

MAXIMUM FORCES @ CMA BASE: (Nodes 63-66) I nodes of Elem. 76,78,80,82

fx = 3488 lbs fy = 365 lbs fz = 128 lbs

ANALYTICAL CALCULATIONS

Page ____ of ____

Subject DST MOCK-UP PLATFORM
Originator [signature] Date 8-10-95
Checker FRY Date 12-7-95

LOAD CASE NUMBER: (5) Seismic [DL + .06g (x) + .2g (-z)]
Ref. ANSYS Run (August 1, 1995)

MAXIMUM STRESS/FORCES (Element Coordinate System)

Elem.	Elem Type	sig1/sig3	fx lbs Sax *	fy lbs	fz lbs	mx lb-in	my lb-in	mz lb-in
W6x20 Bm	1	6311	358	2164	170	7	1951	83374
L2x2x1/4	2	-----	-1140*	-----	-----	-----	-----	-----
W6x20 Col	3	3169	4286	251	39	-	2287	33189
TS3x3x1/4	4	25880	473	1523	357	153	37907	47703
C6x8.2	5	5926	170	681	47	-	833	20570

*-psi

MAXIMUM CONNECTION FORCES (Element Coordinate System)

Elem	Elem Type	fx lbs	fy lbs	fz lbs	mx lb-in	my lb-in	mz lb-in
W6x20 Bm	1	407	2825	171	7	3686	344
L2x2x1/4	2	-1069	-----	-----	-----	-----	-----
TS3x3x1/4	4	3503	1945	372	13471	6545	31754
C6x8.2	5	57	211	170	-	823	20570

MAXIMUM REACTIONS @ COLUMN BASES: (Nodes 1-6)
(GLOBAL COORDINATE SYSTEM)

Fx = 265 lbs Fy = +5292 lbs, -684 lbs Fz = 732 lbs

MAXIMUM FORCES @ TOP OF COLUMNS: (Nodes 13-18) J nodes of Elem.2,4,6,8,10,12

fx = -3248 lbs fy = 170 lbs fz = 22 lbs

MAXIMUM FORCES @ CMA BASE: (Nodes 63-66) I nodes of Elem. 76,78,80,82

fx = 3503 lbs fy = 119 lbs fz = 372 lbs

ANALYTICAL CALCULATIONS

Page ____ of ____

Subject DST MOCK-UP PLATFORM
Originator TSHundal Date 8-10-95
Checker ERV Date 12-7-95

LOAD CASE NUMBER: (6) Seismic [DL + .133g (y)]
Ref. ANSYS Run (August 1, 1995)

MAXIMUM STRESS/FORCES (Element Coordinate System)

Elem.	Elem Type	sig1/sig3	fx lbs Sax *	fy lbs	fz lbs	mx lb-in	my lb-in	mz lb-in
W6x20 Bm	1	4092	127	1795	12	2	130	53718
L2x2x1/4	2	-----	-321*	-----	-----	-----	-----	-----
W6x20 Col	3	1075	3980	16	12	-	1553	2039
TS3x3x1/4	4	25661	1799	1745	530	16330	20422	54047
C6x8.2	5	1900	356	247	-	4	25	8282

*-psi

MAXIMUM CONNECTION FORCES (Element Coordinate System)

Elem	Elem Type	fx lbs	fy lbs	fz lbs	mx lb-in	my lb-in	mz lb-in
W6x20 Bm	1	127	2512	16	6	236	434
L2x2x1/4	2	-301	-----	-----	-----	-----	-----
TS3x3x1/4	4	530	1764	3	16334	45	20424
C6x8.2	5	74	247	-	-	15	3883

MAXIMUM REACTIONS @ COLUMN BASES: (Nodes 1-6)
(GLOBAL COORDINATE SYSTEM)

Fx = 16 lbs Fy = 4227 lbs Fz = 203 lbs

MAXIMUM FORCES @ TOP OF COLUMNS: (Nodes 13-18) J nodes of Elem.2,4,6,8,10,12

fx = -3360 lbs fy = 14 lbs fz = 11lbs

MAXIMUM FORCES @ CMA BASE: (Nodes 63-66) I nodes of Elem. 76,78,80,82

fx = 1990 lbs fy = 14 lbs fz = 23 lbs

ANALYTICAL CALCULATIONS

Subject DST MOCK-UP PLATFORM
Originator T Hundal Date 8-10-95
Checker FRV Date 12-7-95

NOTE: MEMBERS & SOME CONNECTIONS WERE ALSO CHECKED BY ALTERNATE CALCULATIONS. SEE PAGES B-21 THRU B-38

CHECK MEMBERS

W6X20 BEAM

MAX. COMBINED STRESS = 6311 psi << 21600 psi
∴ ok

W6X20 COLUMN

MAX. COMBINED STRESS = 9083 psi << 21600 psi ∴ ok

$f_a = \frac{6332}{5.87} = 1079$ psi $kl/r = 264/2.66 = 99 \Rightarrow F_a = 13.10$ ksi

$f_b = \frac{10350.0}{13.4} = 7{,}724$ psi

L2X2X¼

MAX. STRESS, $f_a = 2410$ psi

MAX. UNBRACED LENGTH $= \sqrt{(114/2)^2 + (132/2)^2} = 87.2''$

$kl/r = 87.2/.391 = 223 > C_c = 126.1$

$\therefore \quad F_a = \frac{12\pi^2 E}{23(kl/r)^2} = \frac{12\pi^2(29\times10^6)}{23(223)^2} = 3000$ psi
$= 1.33(3000)$ for Seismic
$= 3990$ psi $> f_a$
∴ ok

C6X8.2

MAX. COMBINED STRESS = 14435 psi < 21600 psi
∴ ok

$f_a = .356/2.4 = .148$ ksi

$f_{b_z} = 60/4.38 = 13.70$ ksi , $f_{b_y} = .9/.492 = 1.8$ ksi ok

ANALYTICAL CALCULATIONS

Subject: DST MOCK-UP PLATFORM
Originator: TSthurndal Date: 8-10-95
Checker: FRV Date: 12-7-95

TS 3x3x1/4 (A-1020) $F_y = 38^{ksi}$

MAX. LENGTH = 104" MAX. COMB. STRESS = 25.9 ksi

$f_x = 2095^{\#}$, $m_y = 10^{\#\text{-in}}$, $m_z = 54047^{\#\text{-in}}$, $m_x = 5^{\#\text{-in}}$

$f_a = 2/5.87 = .34$ ksi $Kl/r = 104/1.1 = 95$, $C_c = \sqrt{\frac{2\pi^2 E}{F_y}} = \sqrt{\frac{2\pi^2(29\times10^6)}{38000}} = 122.74$

$Kl/r / C_c = 95/122.74 = .77 \Rightarrow C_a = .371$

$\therefore F_a = C_a F_y = .371 \times 38 = 14^{ksi}$

$f_a/F_a = .34/14 = .024 < .15$ $F_{bz} = F_{by} = .6 \times 38 = 22.8^{ksi} = 1.33(22.8) = 30.3$ ksi

$\therefore$ Check

$$f_a/F_a + f_{bz}/F_{bz} + f_{by}/F_{by} \leq 1.0$$

$f_{bz} = 54/2.1 = 25.7$, $f_{by} = .01/2.1 = .005$

$\therefore .024 + 25.7/30.3 + .005/30.3 = .87 < 1.0$ $\therefore$ ok

ANALYTICAL CALCULATIONS

Subject: DST MOCK-UP PLATFORM
Originator: T Schlundal Date: 8-10-95
Checker: FRV Date: 12-7-95

CHECK CONNECTIONS

ANCHOR BOLTS (HILTI KWIK BOLT II)

$4 - \frac{3}{4}''\phi \times 3\frac{1}{4}''$ MIN. EMB. CONC. $f_c' = 3000$ psi

ALLOW. LOADS: TEN. $T_A = 2.17^k$

$S_A = 3.41^k$

DL + SEISMIC

MAX. REACTION @ BASE $\Rightarrow$ TENSION $F_y = 4476$ lbs; SHEAR: $F_x = 828$ lbs & $F_z = 801$ lbs

TEN. PER BOLT $T = 4476/4 = 1.12^k$

SHEAR PER BOLT, $S = \sqrt{(.828)^2 + (.801)^2}/4 = .3^k$

CHECK UNITY FORMULA

$$T/T_A + S/S_A \leq 1.0$$

$$\frac{1.12}{2.17} + \frac{.3}{3.41} = .60 < 1.0 \therefore \text{ok}$$

BASE R

MAX. COMP. LOAD = 7177 lbs (SEISMIC + DL)

ALLOW. CONC. BEARING PRESSURE, $F_p = .7 f_c' = 2100$ psi (AISC MAN. p. 5-79)

REQ'D AREA = $7177/2100 = 4 \text{ in}^2$

USE $18'' \times 18'' \times \frac{1}{2}$ R

$M = 1.12^k \times 9 \times 2 = 20.16^{k\text{-}in}$

$t = \sqrt{\frac{2M}{9b}} = \sqrt{\frac{2 \times 20.16}{9 \times 18}} = .499'' \simeq \frac{1}{2}'' \therefore \text{ok}$

$\frac{3}{16}''$ WELD - ALL AROUND ABOUT 30" @ 2.7k/in IS MUCH MORE THAN REQ'D. $\therefore$ ok

ANALYTICAL CALCULATIONS

Subject: DST MOCK-UP PLATFORM
Originator: T S Hundal Date: 8-10-95
Checker: ERV Date: 12-7-95

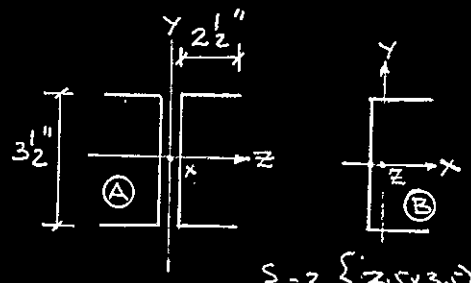
BEAM/BEAM CONNECTION

$f_x = 565$, $f_y = 3984$, $f_z = 409$, $m_x = 50$, $m_y = 9174$, $m_z = 604$

$A_w = 2(3\tfrac{1}{2} + 2 \times 2\tfrac{1}{2}) = 17$ in

$S_z = 2(2.5)3.5 + 3.5^2/3 = 21.58$ in^2

$S_y = 5.5^2/3 = 10$ in^2



WELD (A)

$$p_x = f_x/A_w + \frac{m_z}{S_z} + \frac{m_y}{S_y}$$

$$= \frac{.565}{17} + \frac{.604}{21.58} + \frac{9.174}{10} = .98^k/\text{in}$$

$$p_y = 3.984/17 = .23^k/\text{in}$$

$$p_z = .409/17 = .024^k/\text{in}$$

$$p_r = \sqrt{(.98)^2 + (.23)^2 + (.024)^2} = 1^k/\text{in}$$

$$w_{req'd} = \frac{1}{14.4} = .069'' < 3/16'' = 2.7^k/\text{in}$$

$\therefore$ ok

$S_x = 2\left\{(2.5 \times 3.5) + 3.5^2/6\right\}$
$= 21.58$ in^2

$S_y = 2\left\{\frac{2 \times 2\tfrac{1}{2} \times 3\tfrac{1}{2}}{3} + 2.5^2/3\right\}$
$= 15.8$ in^2 TOP

$= 2\left\{\frac{2.5^2(2 \times 3.5 + 2.5)}{3(2.5 + 3.5)}\right\}$
$= 6.6$ in^2 BOT

$$J = 2\left\{\frac{[3.5 + 2(2.5)]^3}{12} - \frac{(2.5)^2[3.5 + (2.5)]^2}{3.5 + 2(2.5)}\right\}$$

51.17

26.47

$= 49.4$ in^2

WELD (B)

$$p_z = .409/17 + 9.174/6.6 + .050/21.58 = 1.42^k/\text{in}$$

$$p_x = .565/17 + \frac{m_z(c_x)}{J} = .565/17 + \frac{9.174 \times 1.75}{49.4} = .36^k/\text{in}$$

$$p_y = 3.984/17 + \frac{m_z(c_y)}{J} = .23 + \frac{9.174 \times 1.76}{49.4} = .56^k/\text{in}$$

$$p_r = \sqrt{(1.42)^2 + (.36)^2 + (.56)^2} = 1.57^k/\text{in} < 2.7^k/\text{in}$$

$\therefore$ 3/16" WELD is ok

$c_x = 1.75''$

$c_y = 2.5 - \frac{2.5^2}{2(2.5) + 3.5}$
$= 2.5 - .74''$
$= 1.76''$

ANALYTICAL CALCULATIONS

Subject: DST MOCK-UP PLATFORM
Originator: [signature] Date: 8-10-95
Checker: FRV Date: 12-7-95

PLATFORM TO TOP OF COLUMN BOLTED CONNECTION

BEAM / COLUMN CONNECTION (4 - $5\frac{1}{8}$" ϕ A 325 BOLTS)

(NODES 13-18)

MAX. FORCES @ TOP of COLUMNS (TENSION & SHEAR FORCES)

$f_x = -5623^{\#}$ (COMP.), $1624^{\#}$ (TENSION) $\ll 13.2^{k}$/BOLT

$f_y = 600^{\#}$
$f_z = -26^{\#}$ $\Big\}$ $\ll 4.5^{k}$/BOLT

∴ ok

½" PL WELDED @ COL. TOP

WITH MIN. of 12" - $\frac{3}{16}$" WELD ok BY INSPECTION

∠2x2x¼ TO GUSSET PL (WELD SIZE $\frac{3}{16}$")

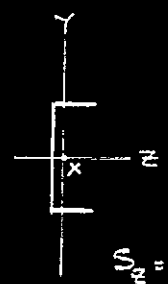
MAX. FORCE = $2261^{\#}$

MIN. WELD LENGTH = 2 ($2\frac{5}{8}$") = 5.25" TO ANGLE

∴ ALLOW. WELD LOAD = 5.25"(2.7 k/in) = $14.2^{k} \gg 2.26^{k}$

GUSSET PL TO COL. WELD LENGTH = 14" MIN., ok ∴ ok

C6x8.2 TO COLUMNS (WELD CONN.)



MAX. FORCES:

$f_x = 247^{\#}$, $f_y = 1756^{\#}$, $f_z = 170^{\#}$ $A_w = 2(6 + 2\times 2") = 20$ in

$m_x = 51^{\#\text{-in}}$, $m_y = 898^{\#\text{-in}}$, $m_z = 59383^{\#\text{-in}}$

$p_x = .247/20 + .898/4.66 + 59.4/36 = 1.86$ k/in

$p_y = 1.76/20 = .09^{k/in}$, $p_z = .17/20 = .01^{k/in}$

$p_r = \sqrt{(1.86)^2 + (.09)^2 + (.01)^2} = 1.86^{k/in} < 2.7^{k/in}$

$S_z = 2\{6\times 2 + 6^2/6\} = 36\ in^2$

$S_y = \frac{2^2(2\times 6 + 2)}{3(2+6)} \times 2 = 4.66\ in^2$

∴ $\frac{3}{16}$" WELD IS ok

ANALYTICAL CALCULATIONS

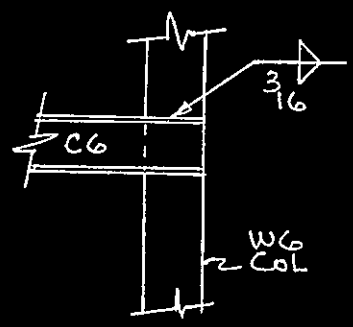
Subject: DST MOCK-UP PLATFORM
Originator: [signature] Date: 8-10-95
Checker: FRV Date: 12-7-95

C6x8.2 TO COL. FLANGE (WELD CONN.)

LOAD CASE 2
ELEM 15
MAX. FORCES @ J NODE

$f_x = 128,\ f_y = 205,\ f_z = 65$

$m_x = 50,\ m_y = 847,\ m_z = 2540$



$p_x = .128/12 + \frac{2.54 \times 3}{144} = .06^k/in$

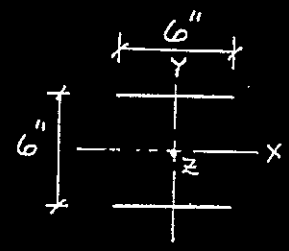
$p_y = .205/12 + \frac{2.54 \times 3}{144} = .07$

$p_z = .065/12 + .05/36 + .847/12 = .08^k/in$

$p_r = \sqrt{(.06)^2 + (.07)^2 + (.08)^2} = .12^k/in$

$<< 2.7^k/in$

$\therefore$ ok



$S_x = 6 \times 6 = 36$

$S_y = 6^2/3 = 12$

$J = \frac{6(3 \times 6^2 + 6^2)}{6} = 144$

$A = 2 \times 6 = 12$

ANALYTICAL CALCULATIONS

Subject: DST MOCK-UP PLATFORM
Originator: T Hundal Date: 10-10-95
Checker: FRV Date: 12-7-95

CMA BASE JACKS ATTACHMENT TO PLATFORM

MAX. FORCES @ BASE (NODES 63-66)

$f_x = 3503^{\#}$, $f_y = 366^{\#}$, $f_z = 128^{\#}$ $\Rightarrow f_r = 388^{\#}$

or $f_y = 119^{\#}$, $f_z = 372^{\#}$ $\Rightarrow f_r = 391^{\#}$

- COMPRESSION
- NO TENSION @ BASE

ALLOW. JACK LOADS

MAX. ALLOW. VERTICAL LOAD $= 5000^{\#} > 3503^{\#}$ ∴ ok

MAX. SIDE LOAD IN RAISED POSITION $= 400^{\#} > 391^{\#}$ ∴ ok

FOOT PAD NEEDS TO BE ANCHORED TO W6 BEAMS

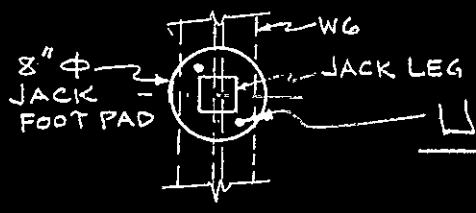
PAD PL IS 8" ϕ x 7 GAGE SHEET METAL (t = .174")

COMMERCIAL QUALITY (LOW CARBON) SHEET METAL, $F_u = 50{,}000$ psi, $F_y = 27{,}500$ psi
(ASTM, A569) (RYERSON)

TRY 2-½" ϕ A307 BOLTS / EACH PAD

ALLOW. SHEAR LOAD / BOLT $= 10 \times .2 = 2^k > f_r = 391^{\#}$ ∴ ok
(NO TENSION ON BOLT, ONLY COMPRESSIVE LOAD @ BASE)

ALLOW. BEARING LOAD ON FOOT PAD $= 1.5 \times 50 \times .5 \times .174 = 6.38^k$/BOLT
∴ ok



A-307 BOLTS ARE OK, BUT FOR STRUCT. CONN. IT IS RECOMMENDED TO USE GRADE 8 BOLTS

USE 2-½" ϕ SAE GRADE 8 BOLTS/PAD
ϕ @ 180° APART

ANALYTICAL CALCULATIONS

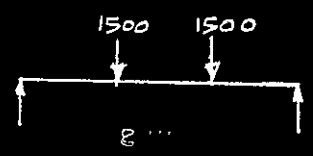
Subject: DST MOCK-UP PLATFORM
Originator: T Schmidt Date: 10-10-95
Checker: FRV Date: 12-7-95

TOP TWO BEAMS SUPPORTING CMA(REEL) END SUPPORTS

RED ZONE DWG. 9213-CMA-ASSY-001 SHOWS THAT THESE BEAMS ARE RESTING ON SIDE BEAMS, BUT ACTUALLY THE BEAMS ARE SEATED IN THREE SIDED CLAMPS AT BOTH ENDS, W/ 3/8" ϕ REMOVEABLE PIN.

SO RE-EVALUATE THESE BEAMS & END SUPPORTS.
(i.e. SIMPLY SUPPORTED)

BEAM ELEM. 96 THRU 99



$m_z = 1500(1.133)81(.333) = 45{,}841$ lb-in

$m_y = 1500(.2)(81)(.333) = 8092$ lb-in

$f_{bz} = \frac{45{,}841}{2.1} = 21{,}829$ psi

$f_{by} = \frac{8092}{2.1} = 3{,}853$ psi

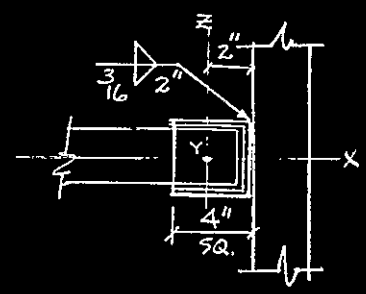
$F_b = .66(38) = 25$ ksi

FOR SEISMIC, $F_b = 1.33 \times 25 = 33.25$ ksi

$21.83/33.25 + 3.85/33.25 = .77 < 1.0$ ∴ ok

CHECK SUPPORT SEAT (1/4" R)

REACTION, $R_y = 1500(1.133) = 1700$ lbs
$R_z = 1500(.2) = 300$ lbs



PLAN

WELD

$S_y = 2 \times 4 = 8$ in², $S_z = 2^2/3 = 1.33$ in², $A = 4$ in

$f_y = 1700/4 = 425$ #/in

$f_x = 1700 \times 2/1.33 = 2556$ #/in

$F_w = 1.33 \times 2.78 = 3.7$ Kip/in

$f_z = 300 \times 2/8 = 75$ #/in

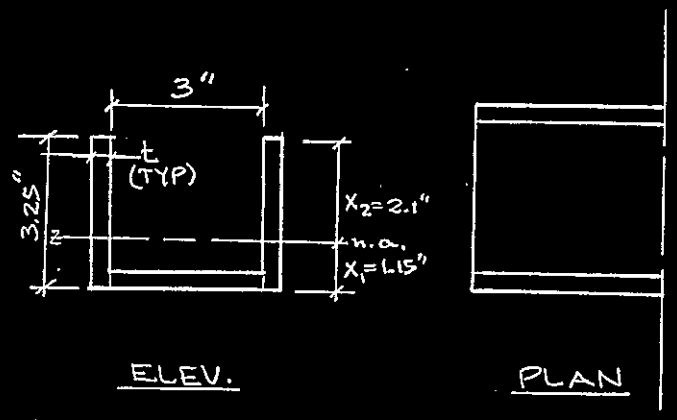
$f_r = \sqrt{(.425)^2 + (2.556)^2 + (.075)^2} = 2.59$ k/in < 3.7 k/in ∴ ok

ANALYTICAL CALCULATIONS

Subject: DST MOCK-UP PLATFORM
Originator: T S Hundal Date: 10-10-95
Checker: FRV Date: 12-7-95

CHECK SEAT PL

$t = .25''$



$$X_1 = \frac{\overset{2.74}{2(3\tfrac{1}{4}\times\tfrac{1}{4})\times 1.63 + 3\times.25\times.125}}{\underset{2.38}{2(3\tfrac{1}{4})(.25) + 3\times.25}}$$

$= 1.15''$

$X_2 = 3.25 - 1.15 = 2.1''$

$$I = 2\left\{\left(3.25^3/12\right) + \overset{6}{3.25\times.25\times.47^2}\right\} + 3\times.25(1.03)^2 = 6.88\ in^4$$

$$S_{min} = 6.88/2.1 = 3.28\ in^3$$

$$f_{bz} = \frac{1700\times 2}{3.28} = 1036\ psi \quad << 27\ ksi \quad \therefore \text{ok}$$

f_{by} ok by INSPECTION

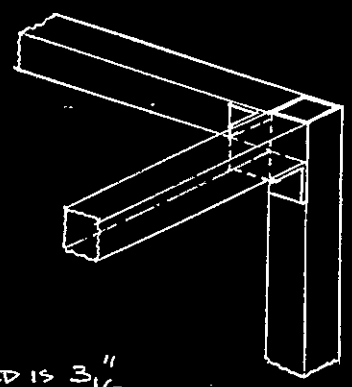
$\therefore$ BRACKET IS OK

ANALYTICAL CALCULATIONS

Subject: DST MOCK-UP PLATFORM
Originator: T S Hundal Date: 10-10-95
Checker: FRV Date: 12-7-95

CMA TOP BEAM TO COLUMN CONN.

BECAUSE OF CMA REEL BEAMS ARE SIMPLY SUPPORTED ON BACKETS. COMPUTER OUTPUT RESULTS WON'T BE USED.



NEW END FORCES

$$m_z = M_B = \frac{1.133(1.5^k)(66)^2 7}{(73)^2} + \frac{1.133(1.5)(30)^2 43}{(73)^2}$$

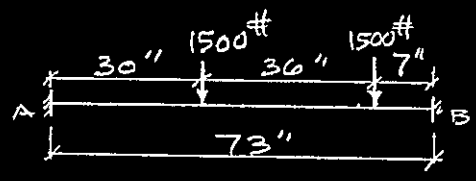
$m_z = 22$ k-in

$m_y = (1.5 \times .2)\, 2'' \times 2 = 1.2^{k\text{-}in}$

$m_x = 1.2^{k\text{-}in}$

$f_x = .3^k$, $f_y = 1.97^k$, $f_z = .4^k$

WELD IS $3/16''$
ALLOW. CAP. = $2.78^k/in$



WELD

WELD AREA, $A_1 = A_2 = 3 \times 3 = 9$ in

ASSUME m_z ARE TAKEN BY WELD ①
ALSO f_x & f_y

$$\therefore f_x = \frac{m_z(1.5)}{J_{w_1}} + f_x/A_1 = \frac{22(1.5)}{24.75} + .3/9 = 1.37^k/in$$

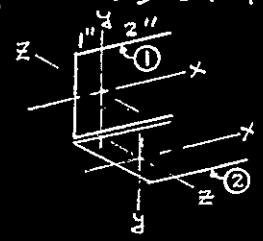
$$f_y = f_y/A_1 = 1.97/9 = .22^k/in$$

$$f_x + f_y = 1.37 + .22 = 1.59^k/in < 2.78^k/in$$

$\therefore$ ok

$$R_A = \frac{1.50(7+43)}{73} = 1.03^k$$

$$R_B = 3 - 1.03 = 1.97^k$$



WELD ② for m_x, m_y, & f_z

$$\therefore f_y = m_x/S_{x_2} = 1.2/10.5 = .11^k/in$$

$$f_x = m_y/J_w(1.5) = 1.2(1.5)/24.75 = .07$$

$$f_z = m_y/J_w(1) + f_z/A_2 = \frac{1.2(1)}{24.75} + .4/9 = .09$$

$$f_x + f_y + f_z = .07 + .11 + .09 = .27^k/in < 2.78^k/in$$

$\therefore$ ok

$$J_{w_1} = \frac{(3+2\times3)^3}{12} - \frac{3^2(3+3)^2}{(3+2\times3)} = 24.75 \text{ in}^3$$

$$S_{z_2} = \frac{3^2(2\times3+3)}{3(3+3)} = 4.5 \text{ (RIGHT)}$$

$$S_{z_2} = \frac{2\times3\times3+3^2}{3} = 9 \text{ (LEFT)}$$

$$c_y = \frac{3^2}{3+2\times3} = 1''$$

$$S_{x_2} = 3\times3 + 3^2/6 = 10.5 \text{ in}^2$$

$\therefore$ $\boxed{\text{CONN. IS OK}}$

ANALYTICAL CALCULATIONS

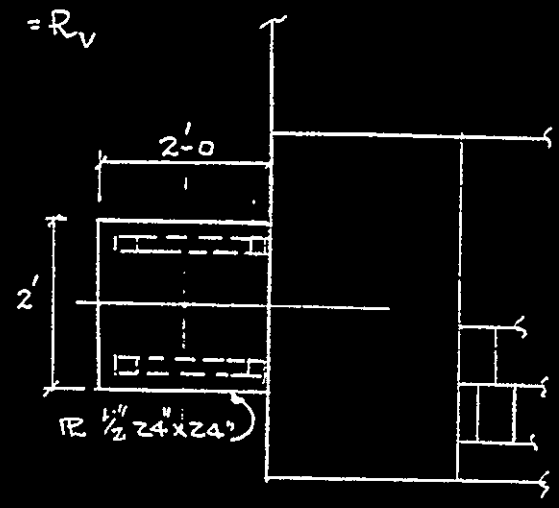
Subject: DST MOCK-UP PLATFORM
Originator: F.R. VOLLERT Date: 11-22-95
Checker: [signature] Date: 11-22-95

CAMERA PLATFORM ATTACHMENT

TOTAL WT. = 750 lbs

SEISMIC: VERT. 1.133 x 750 = 850 lbs = R_V

HORIZ. = .2(750) = 150 lbs



HORIZONTAL REACTION (H_B)

$\Sigma M_A = 0$

FOR DL ONLY

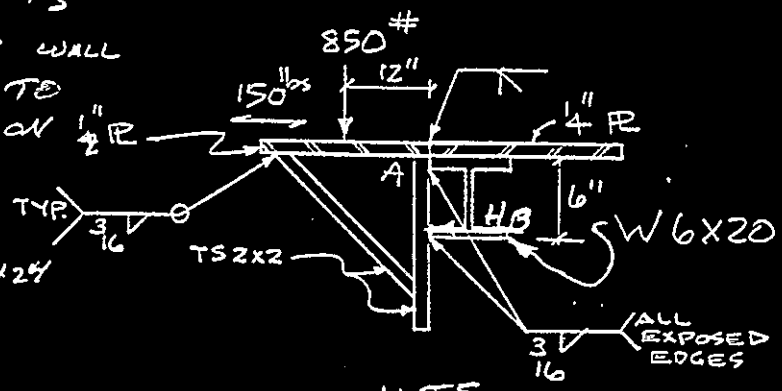
$6 H_B = 12 \times \frac{750}{2}$

$H_B = 750$ LB / EACH TS

FOR SEISMIC + DL

$H_B = 850$ LB / EACH TS

LOCAL STRESSES ON TS WALL W 6 FLANGE, ETC DUE TO H_B OK BY INSPECTION



NTS

CALCULATE BENDING STRESSES IN 1/2 IN PL 24x24 WITH CAMERA LOAD
REF TIMOSHENKO, PLATES AND SHELLS PG 147
PRESUME SIMPLY SUPPORTED RECTANGULAR PL CENTER LOADED

$a = 24$ IN, $\xi = \frac{a}{2}$, POISSONS RATIO $\nu = 0.3$

$$M = \frac{1}{2}\left[(1+\nu)\frac{P}{2\pi}\log\frac{2a\sin\frac{\pi\xi}{a}}{\pi r} + \frac{(1-\nu)Py^2}{2\pi r^2}\right]$$

$y = \frac{a}{2}$, $r = \sqrt{(x-\xi)^2 + y^2}$, $x = a/2$

$r = y = \frac{a}{2}$

ANALYTICAL CALCULATIONS

Subject: DCT MOCK-UP PLATFORM
Originator: F.R. VOLLERT Date: 11-22-95
Checker: T S Hundal Date: 11-22-95

CAMERA PLATFORM CONTINUED

$$M = \frac{1}{2}\left[(1+\nu)\frac{P}{2\pi}\,\text{Log}\,\frac{2a\sin\frac{\pi}{2}}{\pi\frac{a}{2}} + (1-\nu)\frac{P\,a^2/4}{2\pi\,a^2/4}\right]$$

$$M = \frac{1}{2}\left[1.3\times\frac{850}{2\pi}\,\text{Log}\,\frac{48}{12\pi} + \frac{0.7\times 850}{2\pi}\right]$$

$M = 56.6$ IN-LB/IN

BENDING STRESS $(f_b) = M/S$

FOR 1/2" ℞ UNIT LENGTH $S = \frac{0.5^2}{6} = 0.04\ IN^3$

$f_b = \frac{56.6\ IN\,LB}{0.04\ IN^3} = 1415$ PSI $<$ 23760 PSI ALLOWED

OK

CALCULATE TORSION STRESS IN W 6X20

FOR CAMERA WEIGHT ONLY

$T = 750\times 12 = 9000$ IN LB

FOR SEISMIC PLUS CAMERA WEIGHT

$T = 850\times 12 = 10200$ IN LB

TORSION SHEAR STRESS $(\tau) = \frac{3T}{\Sigma bt^2}$

FOR W6X20 $\Sigma bt^2 = 2\times 6.02\times 0.365^2 + 5.49\times 0.26^2 = 1.97$

FOR DL ONLY

$\tau = \frac{3\times 9000}{1.97} = 13706$ PSI $<$ 14400 PSI ALLOWED

FOR SEISMIC

$\tau = \frac{3\times 10200}{1.97} = 15533$ PSI $<$ 1.33 × 14400 PSI ALLOWED

TORSION IN W6X20 OK

ANALYTICAL CALCULATIONS

ALTERNATE CALCS.

Subject DST MOCKUP PLATFORM ANALYSIS REVIEW

Originator E.R. VOLLERT Date 10/12/95

Checker Date

COLUMN STRESSES

W 6x20 COLUMNS ARE CROSS BRACED IN THE GLOBAL Z DIRECTION OR THE WEAK (r_y) DIRECTION THE UNBRACED LENGTH OF THE COLUMNS IN THE r_y DIRECTION IS 11 FT OR 132 IN, K=1.0 EFFECTIVE LN FOR THE BRACED r_y DIRECTION $\frac{Kl}{r_y} = \frac{1.0 \times 132}{1.50} = 88$ IN

TWO OF THE W6 x 20 COLUMNS ARE UNBRACED IN THE GLOBAL X DIRECTION OR THE STRONGER r_x DIRECTION THE LENGTH OF THESE COLUMNS IS 21 FT 5 IN = 257 IN TO DETERMINE THE EFFECTIVE LENGTH FACTOR K THE TOP CONNECTION TO THE PLATFORM WILL PROVIDE VERY LITTLE ROTATION RESTRAINT OR ACTS AS A PINNED CONNECTION. THE COLUMN BASE PLATE IS 12x12x½ ANCHORED TO THE CONCRETE FLOOR WITH 4 - 3/4 IN HILTI KWIK BOLT II. THE COLUMN IS FILLET WELDED ALL AROUND TO THE BASE PLATE. THE BASE WILL ACT AS FIXED. THUS:

K = 2.10 (AISC 1989)

$\frac{Kl}{r_x} = \frac{2.10 \times 257}{2.66} = 203$ EXCEEDS 200 BY 1½ %

USE $\frac{Kl}{r_x} = 200$

$F_a = 6.22$ KSI (ALLOWABLE, AISC 1989)

$F_b = \frac{170 \times 10^3}{(l/r_T)^2}$ (AISC 1989) BECAUSE $\frac{l}{r_T} = \frac{257}{1.64} = 156.7$

AND $156.7 > \sqrt{\frac{510 \times 10^3}{F_y}} = 119$

$F_b = \frac{170 \times 10^3}{(156.7)^2} = 6.92$ KSI

ANALYTICAL CALCULATIONS

Subject: DST MOCKUP PLATFORM ANALYSIS REVIEW
Originator: E.R. VOLLERT Date: 10/17/95
Checker: _____ Date: _____

COLUMN STRESSES, CONTINUED

NOTE: THE UNBRACED GLOBAL X DIRECTION COLUMNS ARE ELEMENT NUMBERS 1, 2, 7, 8 IN THE MODEL. ANALYSIS RESULTS AVAILABLE ARE INCOMPLETE FOR THESE ELEMENTS. IT IS NECESSARY TO USE THE MEMBER FORCES FOR COLUMN ELEMENT 3 SORTED AS MAXIMUMS AND THEREFORE EXCEED THE OTHERS TO CALCULATE COLUMN STRESSES

FOR DL + LL, COLUMN ELEMENT 3

$F_X = 5819$ LB, $M_Z = 3903$ IN LB

$$f_a = \frac{F_X}{5.87 IN^2} = \frac{5819}{5.87} = 991 \text{ PSI}$$

$$f_b = \frac{M_Z}{S_Z} = \frac{3903}{13.4} = 291 \text{ PSI}$$

$$\frac{f_a}{F_a} + \frac{f_b}{F_b} = \frac{991}{6220} + \frac{291}{6920} = 0.16 + 0.04 = 0.20 < 1$$

OK FOR DL + LL; COL W6X20

FOR DL + 0.29 SEISMIC, COLUMN ELEMENT 3

$F_X = 5826$ LB, $M_Z = 103500$

$$f_a = \frac{5826}{5.87} = 992 \text{ PSI}$$

$$f_b = \frac{103500}{13.4} = 7724 \text{ PSI}$$

FOR SEISMIC THE ALLOWABLE STRESSES F_a AND F_b MAY BE INCREASED BY 1/3. THUS:

$F_a = 1.3 \times 6220 = 8086$ PSI, $F_b = 1.3 \times 6920 = 8996$ PSI

$$\frac{f_a}{F_a} + \frac{f_b}{F_b} = \frac{992}{8086} + \frac{7724}{8996} = 0.12 + 0.86 = 0.98 < 1.0$$

COL W6X20 OK FOR DL + SEISMIC

ANALYTICAL CALCULATIONS

Subject: DST MOCKUP PLATFORM ANALYSIS REVIEW
Originator: F.R. VOLLERT Date: 10-19-95
Checker: _____ Date: _____

C 6X8.2 BEAM

BENDING STRESS GOVERNS

UNBRACED LENGTH MAXIMUM = 9 FT = 108 IN = l_u

AISC 1.5.1.4.1 REQUIREMENT

$$l_u \le \frac{76 b_f}{\sqrt{F_y}} = \frac{76 \times 1.92}{6} = 24 \text{ IN} < l_u$$

SO AISC 1.5.1.4.5, EQN 1.5-7 APPLIES

$$F_b = \frac{12 \times 10^3 C_b}{l d / A_f}$$

C_b = UNITY

$d = 6.0$, $A_f = 0.343 \times 1.92 = 0.659$

$$F_b = \frac{12 \times 10^3}{108 \times 6 / 0.659} = 12.2 \text{ KSI}$$

FOR SEISMIC, $F_b = 1.3 \times 12.2 = 15.9$ KSI

FOR DL+LL $f_b = \frac{16.973}{4.38} = 3.9$ KSI < 12.2 KSI OK

FOR DL + SEISMIC $f_b = \frac{60.348}{4.38} = 13.8$ KSI < 15.9 KSI OK

ANALYTICAL CALCULATIONS

Subject: DST MOCK-UP PLATFORM ANALYSIS REVIEW
Originator: F.R. VOLLERT Date: 10/19/95
Checker: _____ Date: _____

CROSS BRACING, ANGLE 2x2x1/4

COMPRESSIVE STRESS GOVERNS (MAXIMUM LENGTH)

MAX HORIZONTAL DISTANCE $l_h = 114 - 2(6) = 102$ IN

MAX VERTICAL DISTANCE $l_v = 138 - 18 - 9 = 111$ IN

$l_u = \sqrt{\left(\frac{102}{2}\right)^2 + \left(\frac{111}{2}\right)^2} = 75.4$ IN $r_{zz} = r_{min} = 0.391$ IN

$\frac{K l_u}{r_{min}} = 1.0 \times 75.4 / 0.391 = 192.8 < 200$ MAX ALLOWED

$\frac{b}{t} = \frac{2}{0.25} = 8 < \frac{76}{\sqrt{F_y}} = 12.67$ (AISC 1.9.1.2)

$C_c = \sqrt{\frac{2\pi^2 E}{F_y}} = 126$

$\frac{K l_u}{r_{min}} > C_c$ AND > 120 SO:

$F_{as} = \frac{F_a}{1.6 - \frac{l}{200r}}$ $F_a = \frac{12\pi^2 E}{23(Kl/r)^2}$ [AISC 1.5-2, 1.5-3]

$F_a = 4017$ PSI

$F_{as} = \frac{4017}{1.6 - \frac{192.8}{200}} = 6316$ PSI

FOR SEISMIC $F_{as} = 1.3 \times 6316 = 8211$ PSI

DL+LL $f_a = 524$ PSI < 6316 PSI OK

DL + SEISMIC $f_a = 2410$ PSI < 8211 PSI OK

ANALYTICAL CALCULATIONS

Subject: DST MOCK-UP PLATFORM ANALYSIS REVIEW
Originator: E.R. VOLLERT Date: 10/20/95
Checker: _____ Date: _____

TS 3 x 3 x 1/4 (ASTM A 1020, F_y = 38 KSI)

BEAM MEMBERS, DETERMINE BENDING STRESS ALLOWED

l_u = 82 IN (MAXIMUM ACTUAL)

USE AISC 1.5.1.4.1

$$\frac{b}{t} = \frac{3}{0.25} = 12 < \frac{190}{\sqrt{F_y}} = \frac{190}{\sqrt{38}} = 30.8$$

$$\frac{d}{t} = \frac{3}{0.25} = 12 < \frac{257}{\sqrt{F_y}} = 41.7$$

$$1200\left(\frac{b}{F_y}\right) = \frac{1200 \times 3}{38} = 94.7 > l_u = 82$$

BEAM MEMBERS QUALIFY AS COMPACT

$F_b = 0.66 F_y = 25$ KSI

FOR SEISMIC $F_b = 1.3 \times 25 = 32.5$ KSI

FOR DC + LL MAX MOMENT = 47702 IN LB

$$f_b = \frac{M}{S} = \frac{47702}{2.1} = 22715 \text{ PSI} < 25000 \text{ PSI OK}$$

FOR SEISMIC + DL MAX MOMENT = 54047 IN LB

$$f_b = \frac{54047}{2.1} = 25737 \text{ PSI} < 32500 \text{ PSI OK}$$

COLUMN MEMBERS, DETERMINE AXIAL AND BENDING STRESS ALLOWABLES

l = 104 IN, $\frac{Kl}{r} = \frac{2 \times 104}{1.1} = 189.1 < 200$ (AISC 1.5.1.3)

$$C_c = \sqrt{\frac{2\pi^2 E}{F_y}} = \sqrt{\frac{2\pi^2 \times 29 \times 10^3}{38}} = 122.7 < Kl/r$$

$$F_a = \frac{12\pi^2 E}{23(Kl/r)^2} = \frac{12\pi^2 \times 29 \times 10^3}{23(189.1)^2} = 4.176 \text{ KSI}$$

(AXIAL)

ANALYTICAL CALCULATIONS

Subject: DST MOCK-UP PLATFORM ANALYSIS REVIEW
Originator: F. R. VILLERT Date: 10/20/95
Checker: Date:

TS 3X3X1/4 CONTINUED

(COLUMNS, CONTINUED)

(AISC 1.5.1.4)

$$1200 \frac{b}{F_y} = \frac{1200 \times 3}{38} = 94.7 < l_u = 104 \text{ IN}$$

$$\text{So } F_b = \frac{12 \times 10^3 C_b}{l d / A_f} \quad \text{NOT TO EXCEED } 0.6 F_y$$

$C_b = 1$

$$F_b = \frac{12 \times 10^3}{104 \times 3 / 0.75} = 28.8 \text{ KSI}, \quad 0.6 \times F_y = 0.6 \times 28 = 22.8 \text{ KSI}$$

$F_b = 22.8$ KSI

FOR DC + LL

$$f_a = \frac{1765}{2.59} = 681 \text{ PSI} < F_a = 4176 \quad \text{AND}$$

$$\frac{f_a}{F_a} = 0.16 > 0.15 \quad \text{BUT AISC COMBINE STRESS}$$

EQN 1.6-2 $\frac{f_a}{F_a} + \frac{f_{by}}{F_b} + \frac{f_{bz}}{F_b} < 1.0$ STILL OK TO USE

$$f_{by} = \frac{M_y}{S} = \frac{18068}{2.1} = 8604 \text{ PSI}$$

$$f_{bz} = \frac{M_z}{S} = \frac{11092}{2.1} = 5282 \text{ PSI}$$

$$\frac{615}{4176} + \frac{8604}{22800} + \frac{5282}{22800} = 0.15 + 0.38 + 0.23 = 0.76$$

TS 3X3X1/4 COLUMNS OK FOR DC + LL

ANALYTICAL CALCULATIONS

Subject DST MOCK-UP PLATFORM ANALYSIS REVIEW
Originator F.R. VOLLERT Date 10/20/95
Checker Date

TS 3x3x1/4 CONTINUED
COLUMNS, CONTINUED
FOR DL + SEISMIC (USING AVAILABLE MAX RESULTS)

F_X 3503 LB, M_y = 37907 IN LB
M_z = 12116 IN LB

$f_a = \frac{3503}{2.59} = 1353$ PSI $\quad \frac{1353}{1.3 F_a} = \frac{1353}{5429} = 0.25 > 0.15$

AISC COMBINED STRESS EQUATION BECOMES

$$\frac{f_a}{F_a} + \frac{0.85 f_{by}}{0.75 F_b} + \frac{0.85 f_{bz}}{0.75 F_b} < 1.0 \quad \text{EQN } 1.6.1a$$

$f_{by} = \frac{37907}{2.1} = 18051$ PSI

$f_{bz} = \frac{12116}{2.1} = 5770$ PSI

$$\frac{1353}{5429} + \frac{0.85 \times 18051}{0.75 \times 1.3 \times 22800} + \frac{0.85 \times 5770}{0.75 \times 1.3 \times 22800} = 0.25 + 0.71 + 0.22$$

$= 1.18 > 1.0$

COLUMN TS 3x3x1/4 COULD BE OVER STRESSED ~18% BY 0.2g SEISMIC RESPONSE

DESIGN CHANGE NOT RECOMMENDED BASED ON THE CRITERIA USED, BASICALLY THIS IS A VERY NON CONSERVATIVE SEISMIC ANALYSIS FOR THE UPPER STRUCTURE BECAUSE IT IS A PENTHOUSE TYPE STRUCTURE THAT WOULD BE SUBJECT TO AMPLIFIED SEISMIC MOTIONS OF THE PLATFORM IT STANDS ON.

ANALYTICAL CALCULATIONS

Subject DST MOCKUP PLATFORM ANALYSIS REVIEW
Originator F.R. VOLERT Date 10/23/95
Checker Date

337 BUILDING FLOOR LOADING FROM COLUMN BASE PLATES

FOR (DL + LL) THE SUM OF ALL (6) COLUMN LOADS IS 23,834 LBS
ASSUMING THIS TOTAL LOAD IS DISTRIBUTED OVER THE AREA THE PLATFORM OCCUPIES; THE FLOOR LOAD IS; (DL+LL) / AREA

AREA = 15.0' x 9.5' = 142.5 FT²

$$FL = \frac{23834}{142.5} = 167 \text{ PSF}$$

250 PSF IS THE POSTED LIMIT

THE UNIFORM FLOOR LOAD DUE TO THE 20 FT HIGH PORTION OF THE MOCKUP IS 183 PSF

FOR THE MOCKUP BASE PLATE AREA THAT COINCIDES WITH THE PLATFORM THE SUM OF THESE FLOOR LOADS IS 350 PSF. FOR THIS ABOUT 5' x 9.5' AREA THIS ESTIMATED FLOOR LOAD EXCEEDS THE 250 PSF POSTED LIMIT. THE FLOOR DESIGN ALSO ALLOWS A 100000 LB LOAD OVER A 14' x 14' AREA (H-3-37183) OR 510 PSF, THUS 350 PSF OVER THIS LOCAL AREA IS ACCEPTABLE.

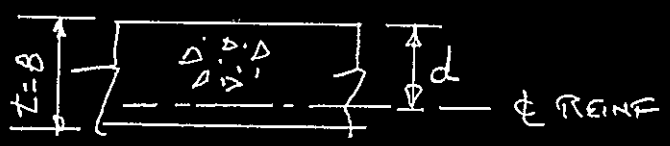
THE MAXIMUM SINGLE COLUMN LOAD (DUE TO DL + SEISMIC) IS 7177 LB, 1/2" BASE PL IS 18" x 18"

CONCRETE BEARING STRESS $f_{br} = \frac{7177 \text{ LB}}{18 \times 18} = 22$ PSI

ALLOWABLE = $0.7 f_c'$, $f_c' = 3000$ PSI MIN CONCRETE COMPRESSIVE STRENGTH
ALLOWABLE = 2100 PSI > 22 PSI

VERTICAL SHEAR STRESS IN THE FLOOR SLAB

FLOOR SLAB IS 8 IN THICK, ASSUME d = 7 IN (H-3-30494)



ANALYTICAL CALCULATIONS

Subject: DST MOCK-UP PLATFORM ANALYSIS REVIEW
Originator: F.R. VOLLERT Date: 10/24/95
Checker: _____ Date: _____

FLOOR SLAB SHEAR CONTINUED

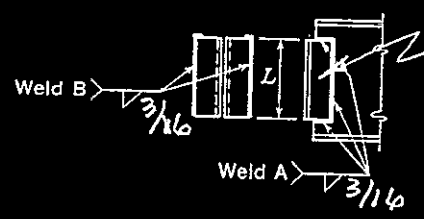
PUNCHING SHEAR AT PERIMETER OF COLUMN BASE PL
ALLOWABLE $V_c = 2\sqrt{f_c'}\, b_o d$

b_o = PERIMETER, BASE PL = 4×18 = 72 IN

$V_c = 2\sqrt{3000} \times 72 \times 7 = 55210$ LB > 7177 LB OK

BEAM CONNECTIONS, WELDED

W 6 X 20 PLATFORM BEAMS HAVE FRAMED BEAM (SIMPLE) CONNECTIONS. THESE TYPE CONNECTIONS ARE SHEAR RESISTING, AND DO NOT DEVELOP FULL END MOMENTS. THUS, THESE MUST BE ABLE TO CARRY THE AXIAL FORCES (x, y, z) CALCULATED FOR THE CORRESPONDING END NODES. THE CONNECTION IS SKETCHED AND EVALUATED BELOW



A 2½ × 2½ × ¼ F_y = 36 KSI
L = 3½ IN
WEB THICKNESS T_w = 0.25 IN
W 6×20

EVALUATE WELD CAPACITY FROM AISC 1989 PART 4, TABLE IV.

WELD B CAPACITY F_{wB} = 10.4 K IF L = 4, T_w = 0.38 IN, AND WELD THROAT t_w = 3/4 IN, SO:

AS IS $F_{wB} = 10.4 \times \frac{3.5}{4} \times \frac{0.25}{0.38} \times \frac{3}{16} \times \frac{4}{1} = 4.5^K$ BUT TABLE IV VALUE IS FOR A 3×3 SO:

$F_{w,B} = \frac{2.5}{3.0} \times 4.5 = 3.75$ K

WELD A CAPACITY F_{wA} = 26.4 K, L = 4, t_w = 3/16, T_w = 0.38, SO:

AS IS $F_{wA} = 26.4 \times \frac{3.5}{4} \times \frac{0.25}{0.38} = 15.2^K$, $\frac{2.5}{3.0} \times 15.2 = 12.67 = F_{wA}$

MAX DL + SEISMIC F_x = 565 LB, F_y = 3984 LB, F_z = 409 LB

$F_w = \sqrt{565^2 + 3984^2 + 409^2} = 4.0^K < 1.3 F_{wB} = 4.88$ K
/1000

CONNECTION OK

ANALYTICAL CALCULATIONS

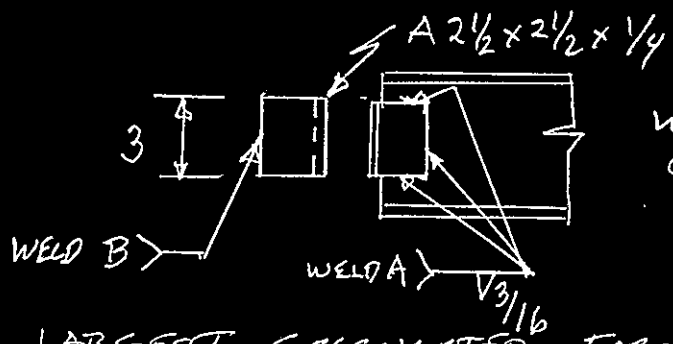
Subject: DST MOCK-UP PLATFORM ANALYSIS REVIEW

Originator: F.R. VOLKERT Date: 10/25/95

Checker: _____ Date: _____

WELDED BEAM CONNECTIONS, CONTINUED

THE C 6x8.2 PLATFORM BEAM THAT SUPPORTS THE TOP OF THE STAIRWAY HAS SINGLE CLIP ANGLE SIMPLE CONNECTIONS SEE SKETCH AND EVALUATION BELOW



$F_y = 36$ KSI

WEB THICKNESS = 0.19 IN = T_w

C 6 x 8.2

LARGEST CALCULATED FORCE ON CONNECTION IS 292 LBS DUE TO DL + LL

FROM AISC 1989, PART 4, TABLE IV

$F_{wB} = \frac{10.4^K}{2} = 5.2^K$ IF $L = 4$, $T_w = 0.38$, $t_w = 1/4$ AND

FOR 3x3 CLIP ANGLE; SO;

$$F_{wB} = 5.2 \times \frac{3}{4} \times \frac{3}{16} \times \frac{4}{1} \times \frac{0.19}{0.38} \times \frac{2.5}{3.0} = 1.22\ K > 0.292\ K$$

$$F_{wA} = \frac{26.4}{2} \times \frac{3}{4} \times \frac{0.19}{0.38} \times \frac{2.5}{3.0} = 4.13\ K$$

CONNECTION OK

ANALYTICAL CALCULATIONS

Subject: DST MOCKUP PLATFORM ANALYSIS REVIEW

Originator: F. R. VOLLERT Date: 9/29/95

Checker: _____ Date: _____

THE ANSYS FINITE ELEMENT MODEL FOR THIS STRUCTURE HAS FIXED CONNECTIONS OR JOINTS BETWEEN MEMBERS EXCEPT FOR: PINNED COLUMN BASES, PINNED JOINTS FOR THE PLATFORM TO THE TOP OF THE COLUMNS, AND PINNED BASES FOR THE JACK LEGS. HOWEVER, MOST OF THE ACTUAL JOINTS IN THE STRUCTURE ARE SIMPLE CONNECTIONS. SIMPLE CONNECTIONS WILL DEVELOP AN INDETERMINATE AMOUNT OF END MOMENT, BUT GENERALLY THE MID SPAN MOMENT WILL EXCEED THAT FOR ACTUAL FIXED END BEAMS. THUS, TO ASSESS HOW REALISTIC AND ADEQUATE THE ANSYS RESULTS ARE WITH THE FIXED JOINT MODEL, SOME SELECTED DETERMINATE ANALYSES OF STRUCTURAL MEMBERS (BEAMS) WILL BE CONDUCTED. THE RESULTS, SHEAR AND MOMENT DIAGRAMS, WILL BE COMPARED TO ANSYS RESULTS.

ANALYTICAL CALCULATIONS

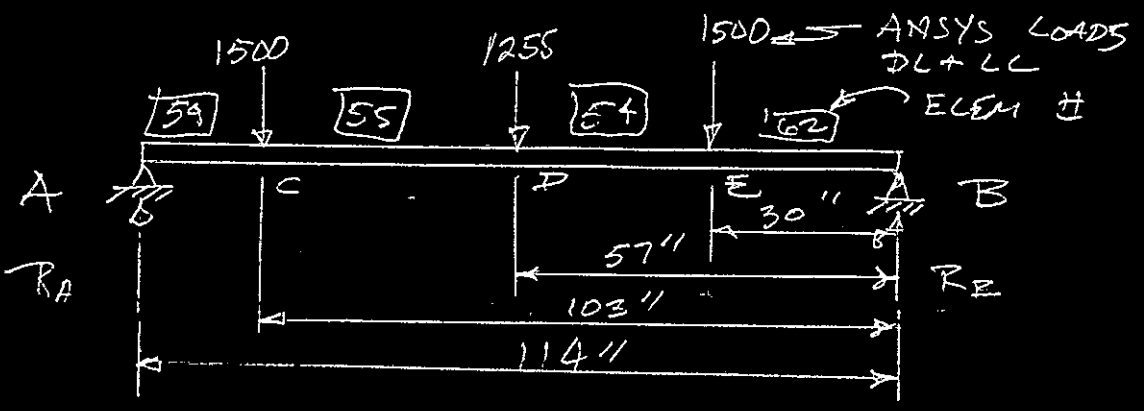
Subject: DST MOCKUP PLATFORM ANALYSIS REVIEW

Originator: F.R. VOLLERT Date: 9/19/95

Checker: _____ Date: _____

DO SELECTED DETERMINATE ANALYSES FOR STRUCTURAL MEMBERS, COMPARE FORCES AND MOMENTS CALCULATED WITH ANSYS 4.4 RESULTS.

PLATFORM BEAM THAT IS ELEMENTS 59, 55, 54, 62 IN ANSYS MODEL, A W 6x20 SECTION



THIS MEMBER IS INSTALLED WITH SIMPLE CONNECTIONS ANSYS MODEL USES FIXED CONNECTION OR SUPPORT

SOLVE FOR REACTIONS

$\Sigma M_B = 0$

$114 R_A = 1500 \times 103 + 1255 \times 57 + 1500 \times 30 + \frac{20}{12} \times \frac{114^2}{2}$

$R_A = 2472.5$ LB, $R_B = 1972.5$ LB

$M_{MAX} = M_D = 57 R_A - 1500 \times 46 - \frac{20}{12} \times \frac{57^2}{2} = 69225$ IN LB

$M_C = 11 R_A - \frac{20 \times 11^2}{12 \times 2} = 27097$ IN LB

$M_E = 30 R_B - \frac{20 \times 30^2}{12 \times 2} = 58425$ IN LB

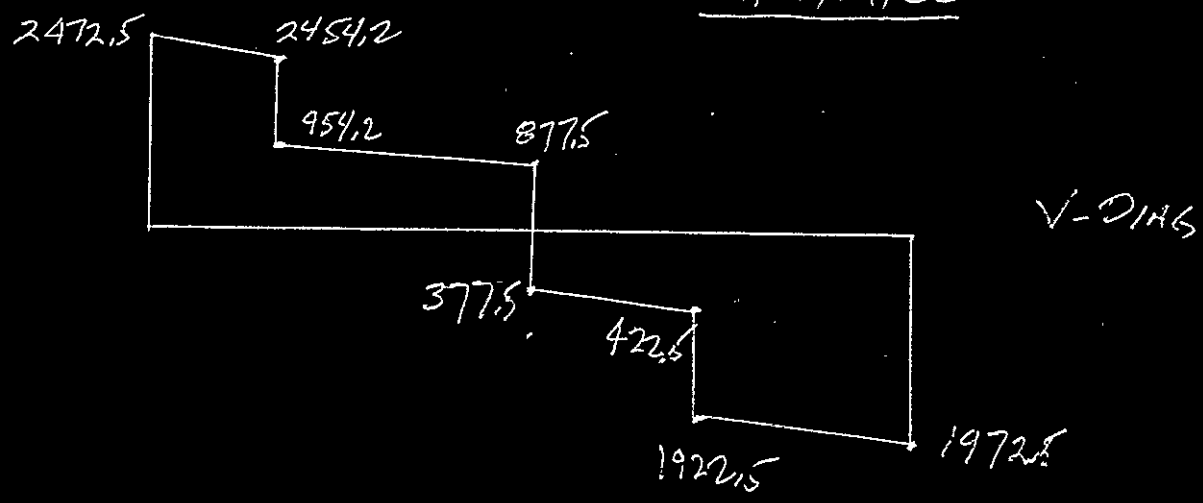
ANALYTICAL CALCULATIONS

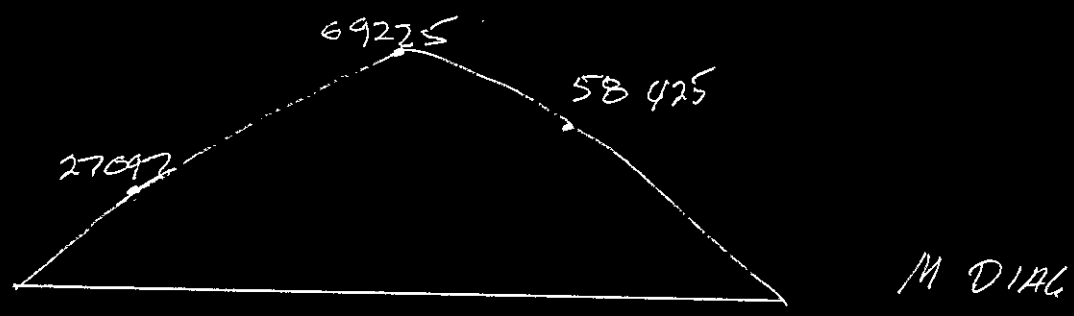
Subject DST MOCK-UP PLATFORM ANALYSIS REVIEW

Originator F.R. VOLLERT Date 9/19/95

Checker Date

CALCULATED SHEAR & MOMENT DIAGRAMS
59, 55, 54, 62





ANALYTICAL CALCULATIONS

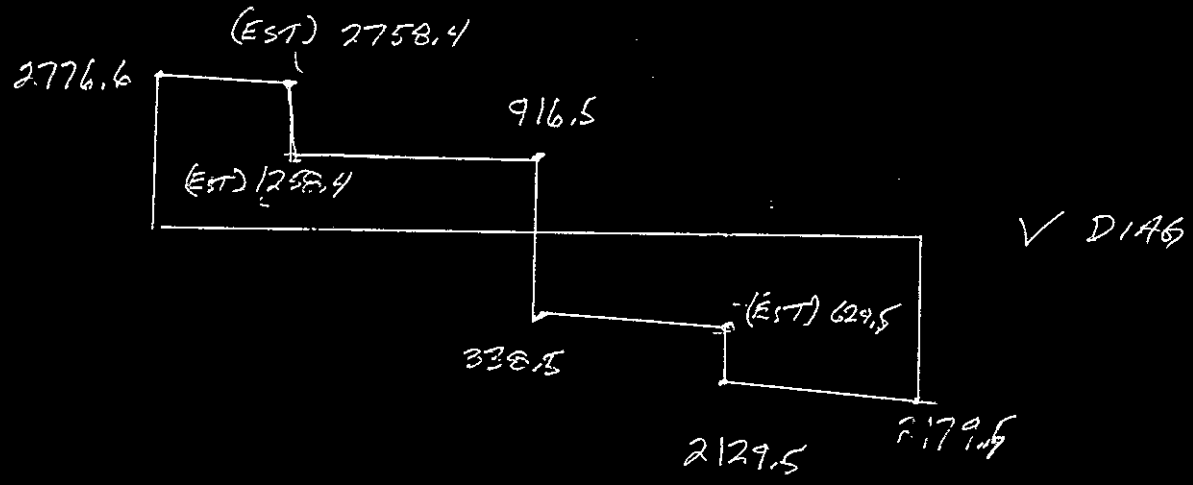
Subject: DST MOCK-UP PLATFORM ANALYSIS REVIEW
Originator: F.R. VOLLERT Date: 9/19/95
Checker: _____ Date: _____

ANSYS SHEAR AND MOMENT DIAGRAMS

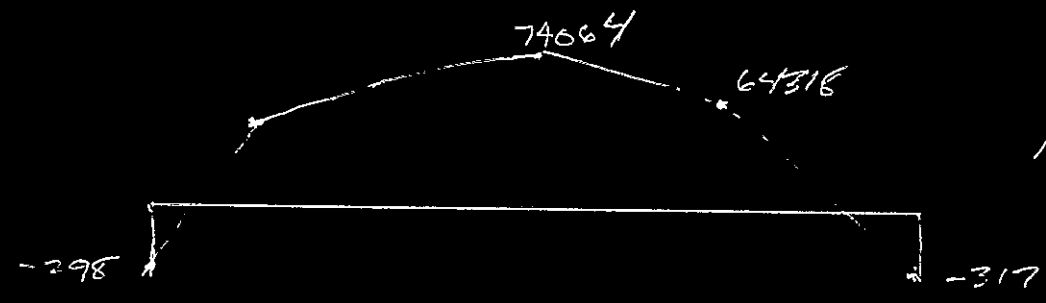
DC+LL

EL #	IFY	JFY	IMZ	JMZ
59	*	2776.6	*	-298
55	-916.5	*	-74064	*
54	338.5	-338.5	-64318	74064
62	-2179.5	2179.5	-64318	-317

* UNAVAILABLE RESULT



V DIAG



M DIAG

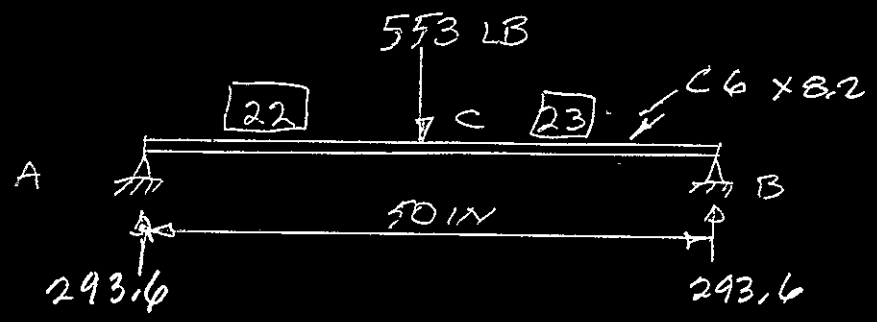
ANALYTICAL CALCULATIONS

Subject: DST MOCK-UP PLATFORM ANALYSIS REVIEW

Originator: F.R. VOLLERT Date: 9/19/95

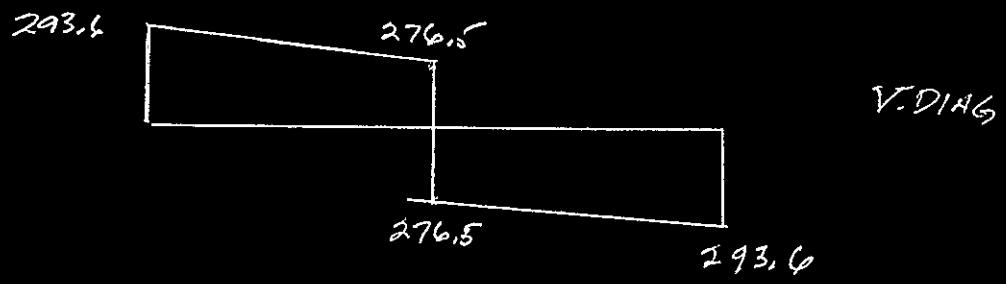
Checker: _____ Date: _____

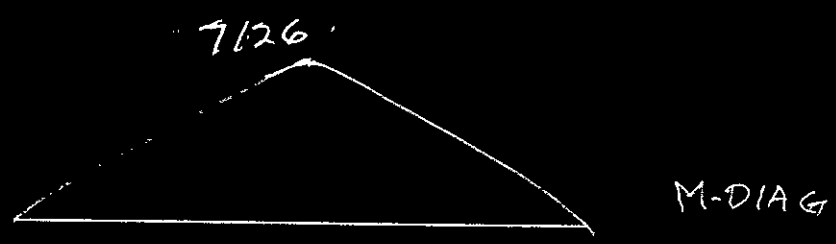
PLATFORM BEAM THAT SUPPORTS THE TOP OF THE STAIRWAY, ELEMENTS 22 AND 23.



$$M_{MAX} = M_C = 293.6 \times 25 - \frac{8.2}{12} \times \frac{25^2}{2} \doteq 7126 \text{ IN LB}$$

CALCULATED SHEAR AND MOMENT DIAGRAMS





ANALYTICAL CALCULATIONS

Subject DST MOCK-UP PLATFORM ANALYSIS REVIEW

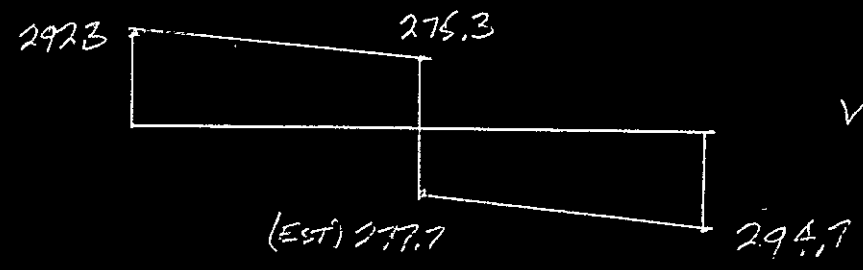
Originator F.R. VOLLERT Date 9/19/95

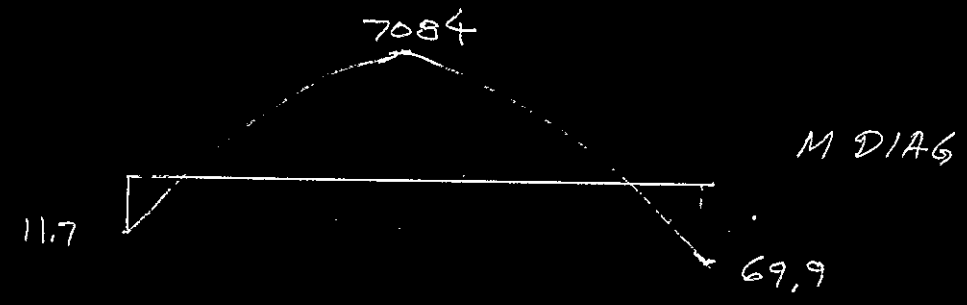
Checker Date

ANSYS SHEAR AND MOMENT DIAGRAMS

EL #	IFY	JFY	IMZ	JMZ
22	292.3	275.3	11.7	7084
23	*	294.7	*	-69.9

* UNAVAILABLE





VERY GOOD COMPARISON

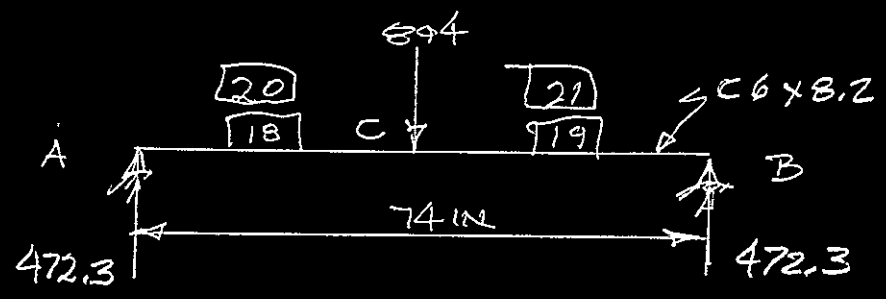
ANALYTICAL CALCULATIONS

Subject: DST MOCK-UP PLATFORM ANALYSIS REVIEW

Originator: F.R. VOLLERT Date: 9/19/95

Checker: _____ Date: _____

STAIR LANDING BEAMS, ELEMENTS 20, 21 AND 18, 19



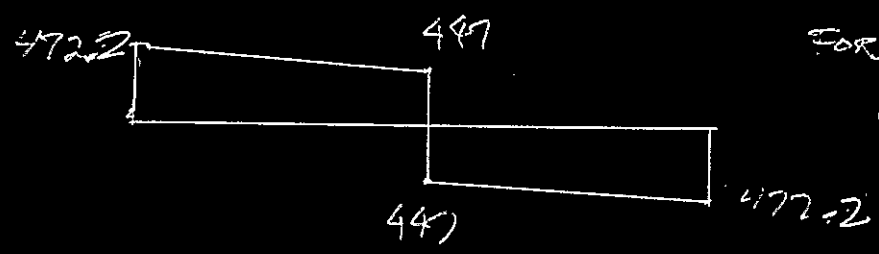
$$M_{MAX} = M_C = 472.3 \times 37 - \frac{8.2}{12} \times \frac{37^2}{2} = 17{,}007 \text{ IN-LB}$$

CALCULATED V AND M DIAGRAMS OBVIOUS;

ANSYS SHEAR AND MOMENT DIAGRAMS

EL #	IFY	JFY	IMZ	JMZ
18	472.2	447.0	32.4	16973
19	447.0	472.2	16973	-31
20	485.1	459.9	7709	9773
21	434.1	*	9773	*

* UNAVAILABLE.



FOR 18-19

V DIAG

M-DIAG

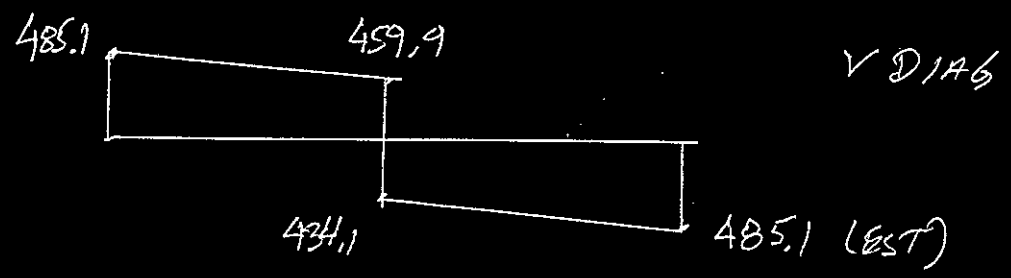
VERY GOOD COMPARISON

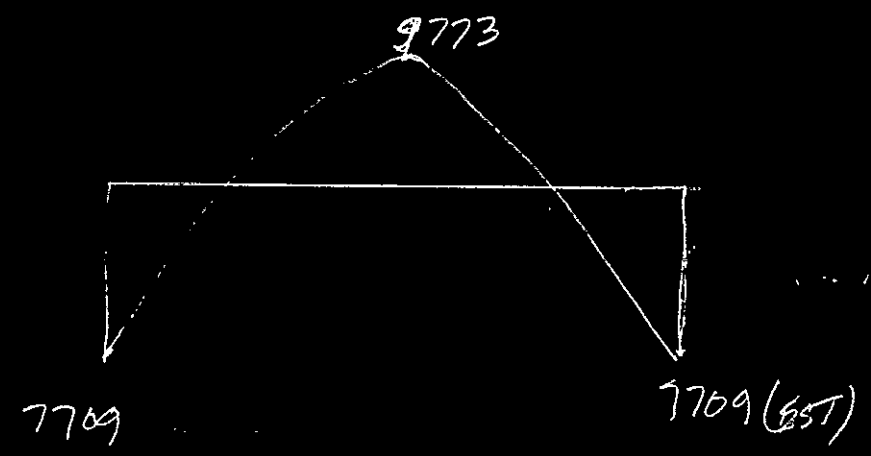
B-37

ANALYTICAL CALCULATIONS

Subject DST MOCK-UP PLATFORM ANALYSIS REVIEW
Originator F.R. VOLLERT Date 9/19/95
Checker Date

ANSYS ; 20 - 21





POOR FOR M DIAG COMPARISON; ANSYS RESULTS FOR 20, 21 MORE CLOSELY COMPARE TO FIXED FIXED BEAM RESULTS WHICH ARE:

END MOMENTS $M_E = \frac{Pl}{8} + \frac{wl^2}{12} = \frac{894 \times 74}{8} + \frac{8.2}{12} \times \frac{74^2}{12}$

$M_E = 8581$ IN-LB

CENTER MOMENT $M_C = \frac{Pl}{8} + \frac{wl^2}{24} = \frac{894 \times 74}{8} + \frac{8.2}{12} \times \frac{74^2}{24}$

$M_C = 8425$ IN LB

APPENDIX C

MONORAIL DESIGN AND DETAILS

Subject DST Mock-Up Tank (Monorail)
Originator T. S. Hundal Date 10-25-95
Checker Hasan H. Zaidi Date 11-2-95

INTRODUCTION:

The DST mock-up section for Robot inspection needs to have a monorail/hoist system to catch the Robot in case it detaches from the DST walls. If the Robot is allowed to fall to the floor it may be extensively damaged and will hinder the actual testing in the field. To avoid this a trolley will be mounted on a monorail and a hoist arangement will be hung below it to catch the falling Robot. Allow one foot free fall of Robot.

MATERIALS:

Steel members: Materials used for Monorail and its support system will be A36

Welding: Electrodes to be E70XX.

Trolley and Hoist: Prepurchased from s vendor

ALLOWABLES:

Steel: As per ASIC Manual of Steel Construction, ninth edition.

Welds: As per AWS Structural Welding Steel Code D1.1.

Trolley and Hoist: As per manufacturer's recommendations.

REFERENCES:

AISC, 1989 American Institute of Steel Construction, Manual of Steel Construction, 9th Edition.

AWS, 1994 American Welding Society, Structural Welding Steel Code, AWS D1.1.

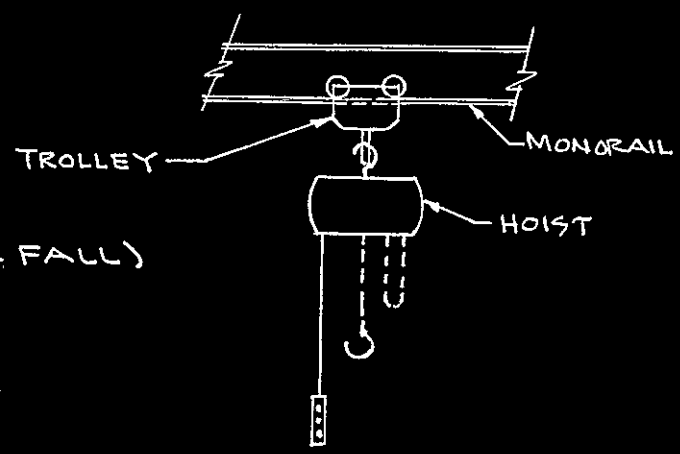
Kleinlogel, I.A., Rigid Frame Formulas, 12th Edition.

ANALYTICAL CALCULATIONS

Subject: DST MOCK-UP TANK (MONORAIL)
Originator: T S Hundal Date: 10-25-95
Checker: Hassan H. Zaidi Date: 11-2-95

MONORAIL/HOIST DESIGN

- THE PURPOSE OF THIS HOIST IS TO CATCH THE FALLING ROBOT OFF OF THE TANK WALL.
- HOIST WILL BE HOOKED UNDER TROLLEY ON THE MONORAIL



LOADS

WT. OF ROBOT = 600 # = W

ASSUME IT FALLS 1 FT. (FREE FALL)

$\therefore v = \sqrt{2gh}$

$= \sqrt{2 \times 32.2 \times 1} = 8.03$ fps

ASSUME IT TAKES *0.1 SECOND TO STOP IT COMPLETELY AFTER IMPACT i.e. INSTANT STOP. (DEACCELRATION)

* ENGINEERING JUDGEMENT

$\therefore a = v/t = 8.03/.1 = 80.3$ Ft/sec²

∴ TOTAL FORCE EXERTED ON THE HOISTING MECHANISM

$F = W + (W/g)\,a$

$= 600 + \left(\frac{600}{32.2}\right) 80.3$

$= 600 + 1496$

$= 2096 \quad \approx 2100$ #

USE 3000 #

∴ $\boxed{\text{USE } 1\tfrac{1}{2} \text{ TON CAPACITY TROLLEY \& HOIST MECHANISM}}$

C-3

ANALYTICAL CALCULATIONS

Subject: DST MOCK-UP TANK (MONORAIL)
Originator: [signature] Date: 10-25-95
Checker: Hassan H. Zeida Date: 11-2-95

ANALYSIS

THE MONORAIL CONFIGURATION & DETAILS ARE SHOWN IN FIGURES 1 THRU 3.

MONORAIL

TRY W6X16 w/10'-0 MAX. SPAN, $L_u = 12' \Rightarrow F_b = 21.6^{ksi}$

$b_f = 4''$ $t_f = 3/8''$ $S = 10.2\ in^3$ $M_R = 20^{k\text{-}ft.}$

$d = 6\frac{1}{4}''$ $t_w = \frac{1}{4}''$ (Ref. AISC, 1989)

$F = 1\frac{1}{2}T = 3000\ \#$

$M = \frac{3 \times 10}{4} = 7.5^{k\text{-}ft} < M_R \therefore ok$

TRY W4X13 TO SUPPORT THE MONORAIL @10' C/C

$M = \frac{3 \times 2.5}{4} = 1.9^{k\text{-}'} < M_R = 11^{k\text{-}'} \therefore ok$

(ASSUME SIMPLY SUPPORTED)

W4X13
WELD TO DST WALLS (FIG. 3)

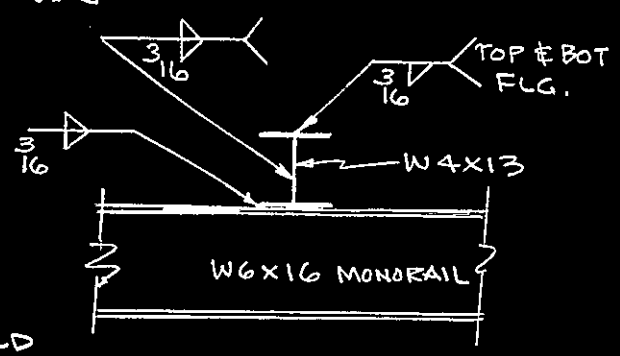
$S = 4 \times 4 + (4)^2/3 = 21.3\ in^2$, $A = 4 \times 4 = 16\ in$

$f_a = .75/16 = .05\ k/in$

$f_b = \frac{1.9 \times 12}{2 \times 21.3} = .54^{k}/in$

$f = .05 + .54 = .59^{k}/in << 2.78^{k}/in$ for 3/16" WELD

$\therefore ok$



MONORAIL TO W4X13

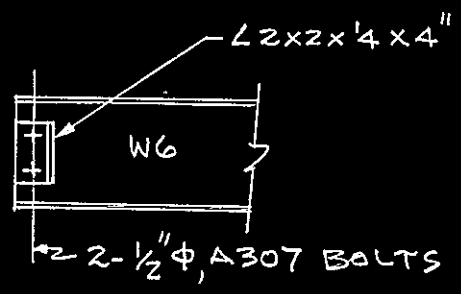
$F_A = .3 \times 70 \times .707 \times 3/16 = 2.78^{k}/in$

USE 3/16" WELD AS SHOWN (REF. AWS, 1994)

CAPACITY $= 2 \times 2.78 \times 4'' = 22.2^{k} >> 3^{k} \therefore ok$

MONORAIL STOP

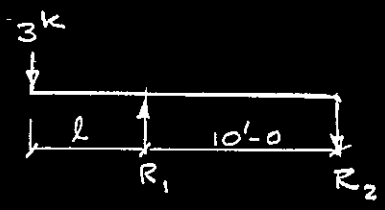
USE ∠2X2X1/4 @ EA. END (BOTH SIDES OF WEB) OF MONORAIL



ANALYTICAL CALCULATIONS

Subject: DST MOCK-UP TANK (MONORAIL)
Originator: [signature] Date: 10-25-95
Checker: Hassan H. Ziada Date: 11-2-95

MONORAIL CANTILEVER



$M = Pl$

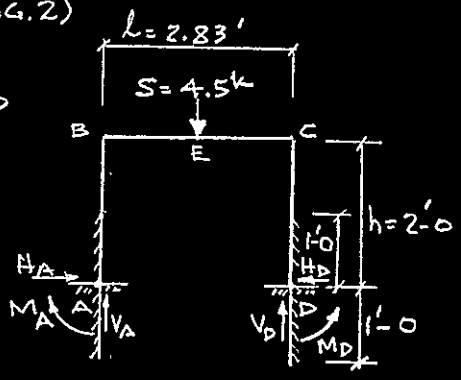
$M_R = 20^{k\text{-}ft}$ (AISC 1989)

$3l = 20^{k\text{-}'}$

$l = 6.67'$ USE $l = 5'\text{-}0$

$\therefore R_1 \times 10 = 3(15) \Rightarrow R_1 = 4.5^k \uparrow \quad R_2 = 1.5^k \downarrow$

BENT SUPT. DESIGN @ 9'-0 HIGH SECTION (SEE FIG. 2)



REF. KLEINLOGEL (12th Ed.)

CASE 41/3

ASSUME FIXITY @ A & D

$k = h/l = 2/2.83 = .71$

$\mathcal{L} = \frac{3Sl}{8}$ $\quad N_1 = k + 2 = .71 + 2 = 2.71$

$M_A = M_D = \frac{\mathcal{L}}{3N_1} = \frac{3 \times 4.5 \times 2.83}{8(3 \times 2.71)} = .6^{k\text{-}ft} = 7.2^{k\text{-}in}$

$M_B = M_C = -2M_A = -14.4^{k\text{-}in}$

$M_{MAX.}$ @ E, $M_E = \frac{4.5 \times 2.83 \times 12}{4} - 14.4 = 23.8^{k\text{-}in} << M_R = 11$ K-ft

$H_A = H_D = 3M_A/h = 3 \times .6/2 = .9^k$

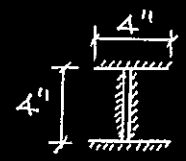
$V_A = V_D = S/2 = 4.5/2 = 2.25^k$

ANALYTICAL CALCULATIONS

Subject: DST MOCK-UP TANK (MONORAIL)
Originator: T S Hundal Date: 10-25-95
Checker: Hassan H. Ziada Date: 11-2-95

WELDS

HORIZ. MEMB. TO VERT.



($3/16$" WELDS)

$S = 4\times4 + (4)^2/3 = 21.3\ in^2$ $A = 4\times4 = 16\ in^2$

$f_a = 2.25/16 = .14\ k/in$

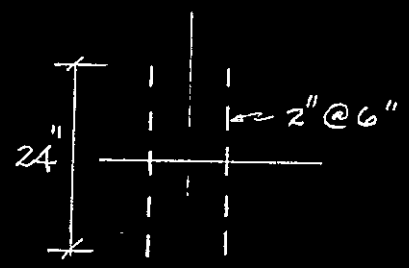
$f = 14.4/21.3 = .68\ k/in$

$f_r = .14 + .68 = .82\ k/in$ $< 2.78\ k/in$ for $3/16$" WELD

VERT. MEMB. TO PLs (TRY 2" WELD @ 6" SPACING)

$A = 5(2)2 = 20\ in$ $M = 7.2\ k\text{-}in$

$I = 10(2)^3/12 + 4\{2''(11)^2 + 2''(6)^2\} = 1263\ in^3$



$f_a + f_b = 2.25/20 + 7.2(12''/1263) = .18\ k/in$

$<< 2.78\ k/in$ for $3/16$" WELD

$\therefore$ ok

ALTERNATE METHOD

WELD EFFICIENCY $= 2/6 = .33 \Rightarrow$ ALLOW. $f_v = 2.78\times.33 = .927\ k/in$

$S = (24)^2/3 = 192\ in^2$,

$f_a + f_b = 2.25/20 + 7.2/192 = .15\ k/in$ $< .18\ k/in$

$\therefore$ USE $3/16$ 2-6

C-6

Subject DST MOCK-UP TANK (MONORAIL)
Originator T S Hundal Date 10-25-95
Checker Hassan H. Ziada Date 11-2-95

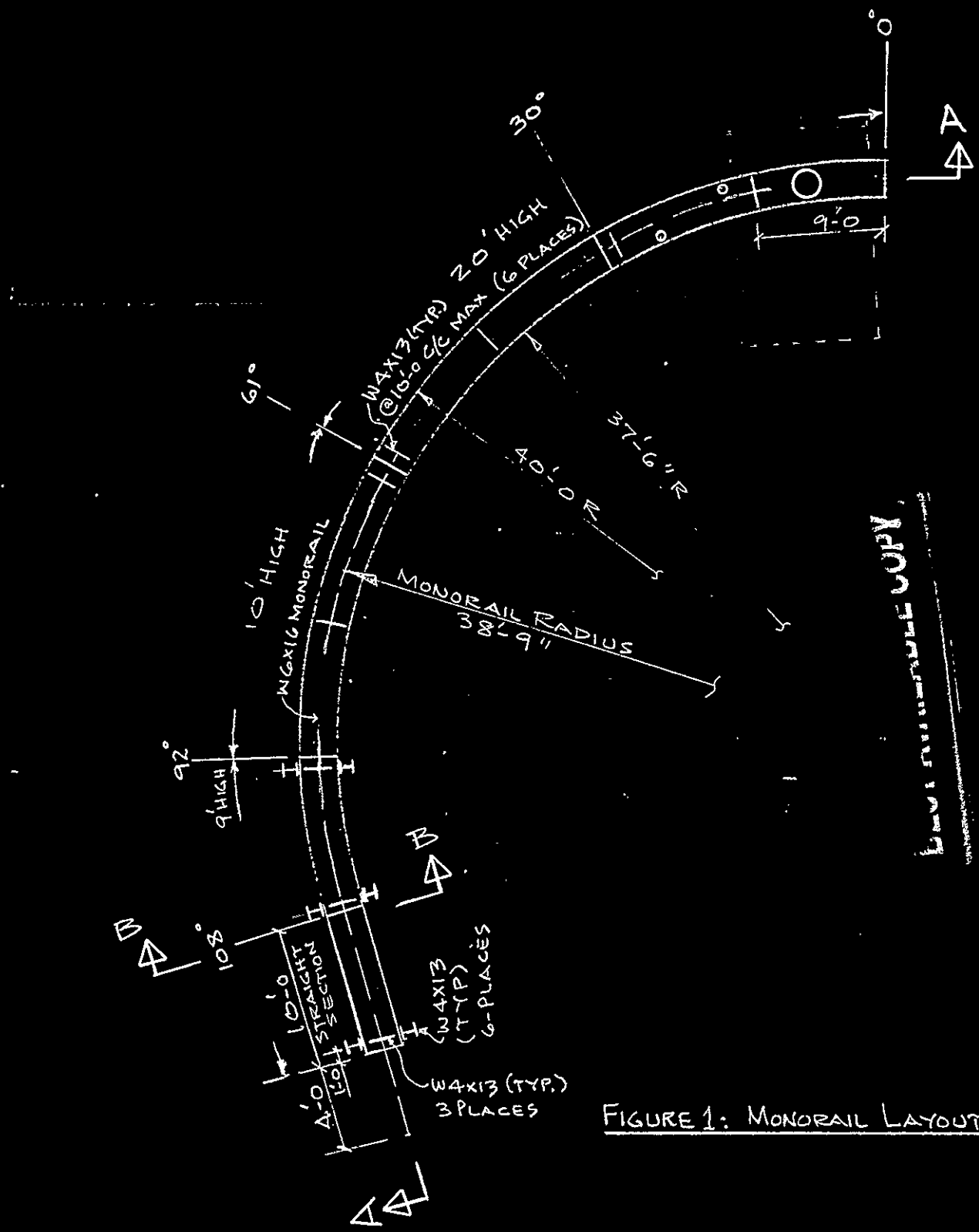


FIGURE 1: MONORAIL LAYOUT

BEST AVAILABLE COPY

ANALYTICAL CALCULATIONS

Subject: DST MOCK-UP TANK (MONORAIL)

Originator: [illegible] Date: 10-25-95

Checker: Hassan H. Ziada Date: 11-2-95

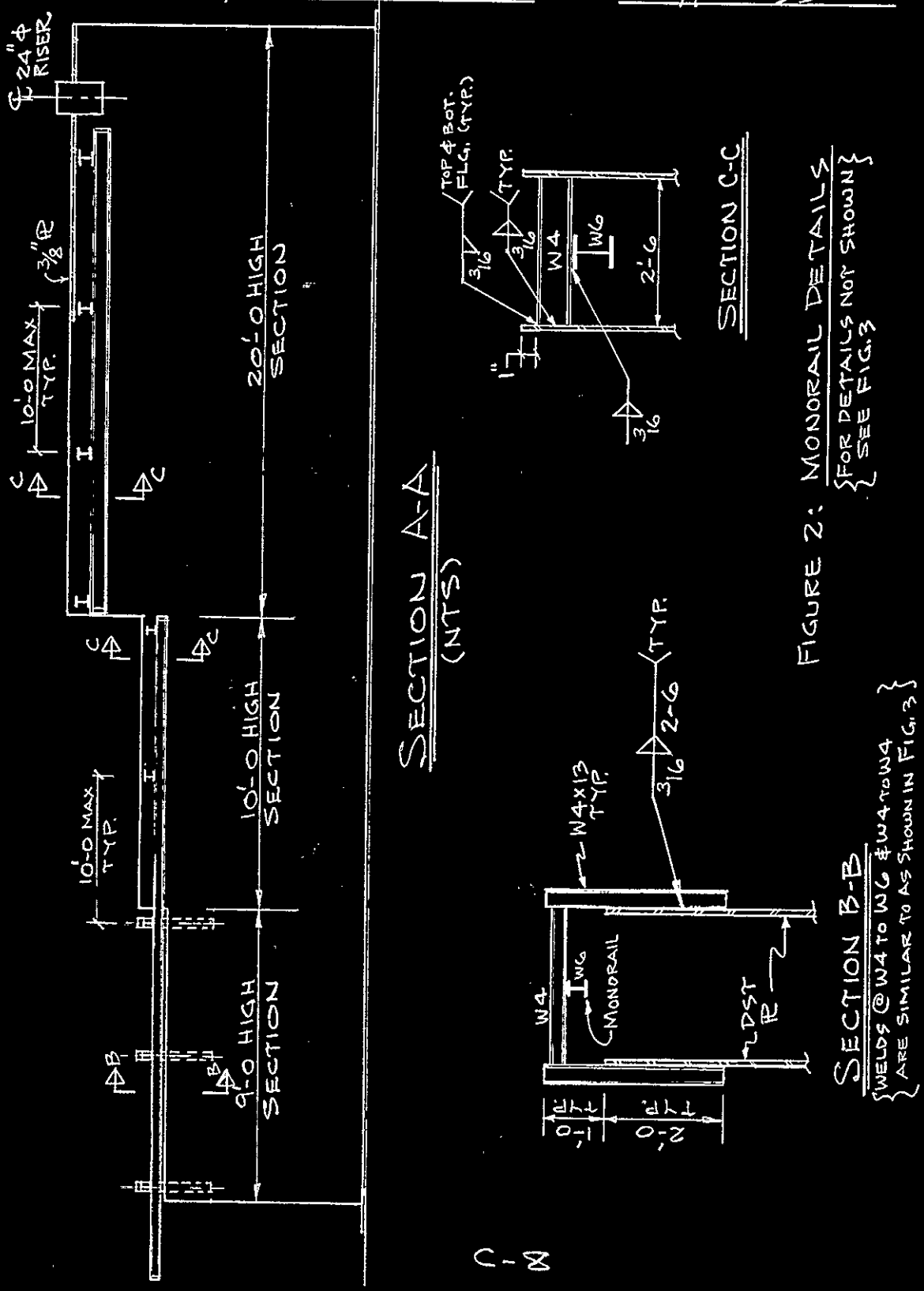


FIGURE 2: MONORAIL DETAILS
FOR DETAILS NOT SHOWN SEE FIG. 3

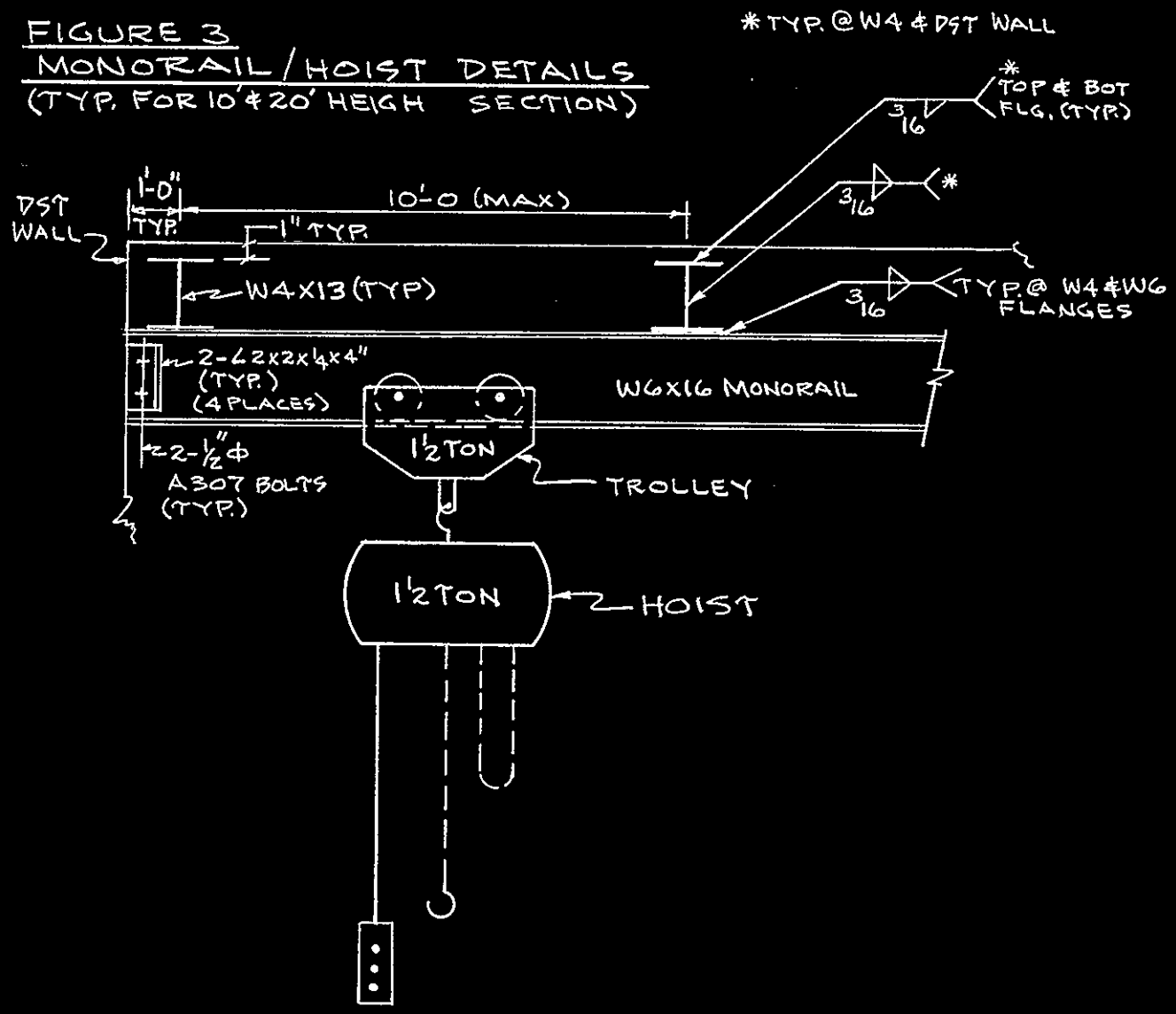
ANALYTICAL CALCULATIONS

Subject: DST MOCK-UP TANK (MONORAIL)

Originator: [signature] Date: 10-25-95

Checker: Hassan H. Ziah Date: 11-2-95

FIGURE 3
MONORAIL/HOIST DETAILS
(TYP. FOR 10' & 20' HEIGH SECTION)



APPENDIX D

PRIMARY TANK PLATE CUT-OUT DESIGN AND DETAILS

ANALYTICAL CALCULATIONS

Subject DST Mock-up Tank (Primary Tank Plate Cut-out for Data Comparison)
Originator T. S. Hundal T S Hundal Date 10-30-95
Checker Hassan H. Zaida Date 11-2-95

INTRODUCTION:

It is required to demonstrate the accuracy of Robot inspection data report by comparing it to the known characteristics of exiting sample plates data. These sample plates are of various sizes (see data below) and with known defect/flaw characteristics such as stress corrosion cracks, pitting corrosion and wall thinning (uniform corrosion).

To accomplish this, a cut-out in the primary tank wall will be made and the opening will be detailed in such a way that the sample plates are mounted and held in place to be in flush with the primary tank wall on the annulus side.

A sample plate when mounted in the cut-out will be subject to an operational pressure exerted by the Robot foot during normal inspection of the annulus area. And this out of plane force on the sample plate is equal to 550 lbs.

The analysis and evaluation will be in accordance with AISC 1989.

EXISTING SAMPLE PLATES DATA

Length	Width	Thickness
20.153"	12.225"	.875"
21.631	12.005	.500
21.619	14.511	.875
21.613	14.507	.875
21.596	14.500	.875
21.610	14.500	.880
21.604	14.495	.499
21.6	14.5	.880
21.610	14.505	.505
21.610	14.530	.887
12.0	12.0	.875

Minimum Plate Dimensions	Maximum Plate Dimensions
12" x 12"	21.631" x 14.530"

The cut-out needs to be made at about 5 ft. up from the floor, for ease of mounting sample plates. The arrangement should be made in such a way that it is easy to mount/dismount the sample plates at the cut-out and be able to accommodate all plate sizes.

Reference: AISC 1989, Manual of Steel Construction, 9th Edition.

ANALYTICAL CALCULATIONS

Subject: DST MOCK-UP TANK (PL CUT-OUT)
Originator: [signature] Date: 10-30-95
Checker: Hasse H. Zinda Date: 11-2-95

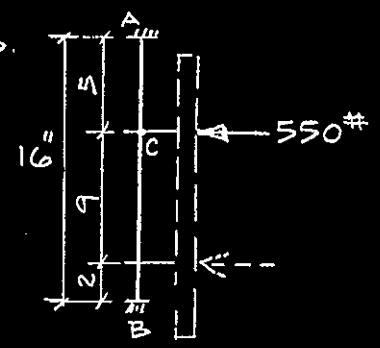
CUT-OUT ARRANGEMENT DETAILS
(SEE FIGURE 1)

MAX. OUTWARD FORCE FROM ROBOT FOOT = 550 lbs

*NOTE: THE HOLDING BOLTS RESTING AGAINST THE SPECIMEN PLATE ARE HAND TIGHT & WILL NOT IMPOSE APPRECIABLE LOAD ON HOLDING PL'S ON ANNULUS SIDE.

CHECK PL t"x3"x16¼" W/HOLDING BOLTS*

ASSUME FOOT LOAD @ TOP BOLT & ONLY ONE PL CARRY THE LOAD.



$$M_A = \frac{.55(11)^2(5)}{16^2} = 1.3^{k\text{-}in}$$

$$M_B = \frac{.55(5)^2(11)}{16^2} = .591^{k\text{-}in}$$

$$M_C = \frac{2(.55)(5)^2(11)^2}{16^3} = .81^{k\text{-}in}$$

$$s = bt^2/6$$

$$t_{req'd} = \sqrt{\frac{6M}{F_b b}} = \sqrt{\frac{6M}{27(b)}} = \sqrt{\frac{2M}{9b}}$$

ALLOW. BENDING STRESS $\rightarrow F_b = .75 F_y$ (RECT. PL @ WEEK AXIS) $= .75(36) = 27^{ksi}$

$$t_A = \sqrt{\frac{2(1.3)}{9(3)}} = .31''$$

$$t_B = \sqrt{\frac{2 \times (.591)}{9(3)}} = .21''$$

NOW ASSUME FOOT @ BOTTOM BOLT

$$M_A = \frac{.55(2)^2(14)}{16^2} = .12^{k\text{-}in}$$

$$M_B = \frac{.55(14)^2(2)}{16^2} = .842^{k\text{-}in}$$

$$M_C = \frac{.55(14)^2(2)^2}{16^3} = .11^{k\text{-}in}$$

$$t_B = \sqrt{\frac{2(.842)}{9(3)}} = .25''$$

$\boxed{\text{USE PL } 3/8'' \times 3''}$

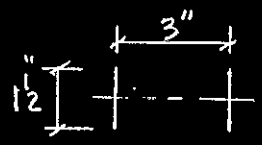
ANALYTICAL CALCULATIONS

Subject DST MOCK-UP (PL CUT-OUT)
Originator [signature] Date 10-30-95
Checker Hasan H. Zinda Date 11-2-95

WELD $\frac{3}{8}$"x3" PL TO $\angle 1\frac{1}{2}\times1\frac{1}{2}$ (FILLET WELD ON SIDES)
ALLOW. STRESS = .3x70x.707 = 14.85 ksi
ALLOW. STRESS for $\frac{3}{16}$" WELD = 14.85x$\frac{3}{16}$ = 2.78 k/in

MAX. M = .842 k-in

DIRECT TENSION = 550 #



$S = (1.5)^2/3 = .75\ in^2$ A = 2(1.5) = 3 in

$f = .550/3 + .842/.75 = 1.31^k/in$

< 2.78 k/in for $\frac{3}{16}$" WELD

∴ $\boxed{\text{USE } \frac{3}{16}\text{" WELD SIZE}}$

WELD $\angle 1\frac{1}{2}\times1\frac{1}{2}$ TO TANK PL @ PL $\frac{3}{8}$"x3" LOCATION — USE CP WELD
@ OTHER LOCATION — USE $\frac{3}{16}$"→2@6"

WELD PL $\frac{3}{8}$"x3"x16¼" TO PL $\frac{3}{8}$"x1½"x3" — USE CP
" PL $\frac{3}{8}$"x1½"x3" TO TANK WALL — " "

CHECK NUT TO $\frac{3}{8}$" PL (SIDE = $\frac{7}{16}$")
USE MAX. FORCE = 550 lbs

WELD 3 ALTERNATE SIDES WITH $\frac{3}{16}$" WELD

WELD CAP. = 2.7 x($\frac{7}{16}$x3) = 3.54 k >> 550 #
∴ ok

2 HOLDING PLs (NO LOADS)
USE PL ¼"x2"x5½" @ BOTTOM &
PL ¼"x2"x8½" @ TOP
2-½"Φx2" A307 BOLTS @ EA. PL

ANALYTICAL CALCULATIONS

Subject: DST MOCK-UP TANK (PRIMARY TANK PL CUT-OUT FOR COMPARISON)

Originator: T Schmidt — Date: 10-30-95 — REV. 1 11/15/95

Checker: Hassan H. Zirk — Date: 11-2-95

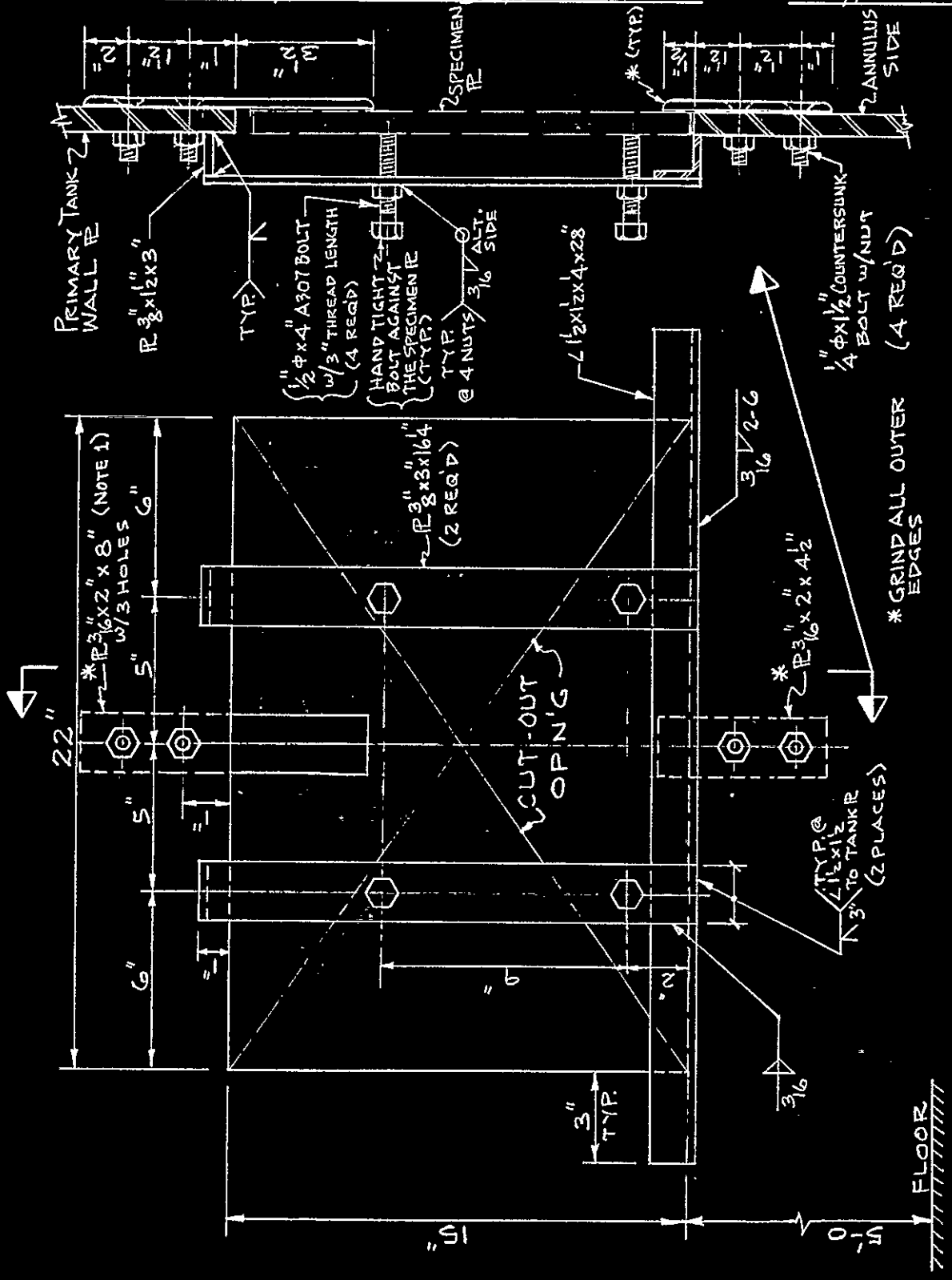


FIGURE 1: PRIMARY TANK PL CUT-OUT ELEV. & DETAILS (VIEW LKG. FROM INSIDE OF TANK) (NTS)

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