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Integrated Advanced Microwave Sounding Unit-A (AMSU-A)

GENCORP AEROJET

METOP Stress Analysis Report (Qual Level Random Vibration) A1 Module

[redacted]

Contract No. NAS 5-32314
CDRL: 113C

Submitted to:

National Aeronautics and Space Administration
Goddard Space Flight Center
Greenbelt, Maryland 20771

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TO: B. Kelly

DATE: 31 July 1996
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RJH:metopt96.doc

FROM: R. Heffner

SUBJECT: METOP Qualification Level 9.66 Grms Random Vibration PSD Spectrum Stress Analysis - METSAT/AMSU-A1 Mechanical/Structural Subsystem

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ENCLOSURE: (1) "Integrated Advanced Microwave Sounding Unit-A (AMSU-A) METOP Stress Analysis Report (Qual Level Random Vibration), A1 Module", Aerojet Report No. 10849, July 1996.

REFERENCE: (1) AESP CDRL 113, "Meteorological Satellites (METSAT) and Earth Observing System (EOS) Advanced Microwave Sounding Unit-A (AMSU-A1) Stress Analysis Report", A1 Module, Aerojet Report No. 10805, Revision A, July 1996.

(2) AESP Interoffice Memo "Action Item Responses to April 1996 Critical Design Review (CDR) Comments - METSAT/AMSU-A1 Mechanical/Structural Subsystem", R. Heffner to B. Kelly, RJH:metact96.doc, 23 July 1996.

PURPOSE

The purpose of this writing is to present the Enclosure 1 report written to fulfill the requirements of Task Assignment 1 of Contract NAS 5-32314. The report evaluates the Meteorological Operational (Satellites) (METOP) qualification level (9.66 Grms) random vibration PSD spectrum loads on the METSAT AMSU-A1 unit.

SUMMARY

The structural evaluation of the METOP random vibration 9.66 Grms spectrum on the METSAT AMSU-A1 module shows the unit possessing all positive margins of safety. The analysis is performed similarly to Ref 1, utilizing '3 Sigma' loads with additional 1.25 yield/1.4 ultimate factors of safety applied. The design changes highlighted in Ref 2 (upper aft panel flange thickness increases and the use of the actual measured lower flange thickness (.050) on the upper front panel) are also incorporated in this analysis.

Figure 1 identifies the qualification level random vibration PSD spectrums for METOP (9.66 Grms), METSAT (8.8 Grms), and EOS (10.0 Grms). When compared to METSAT, METOP is seen to posses more energy at the low frequencies (20-150 Hz) as well as the high end frequencies (700-2000 Hz). The middle frequencies (150-700 Hz) show METSAT to be the more severe. Overall PSD spectrum Grms is 10 % more for METOP.

The Enclosure 1 METOP report is written similarly to the METSAT Ref 1 report. A 'Q' of approximately 7 is employed in the NASTRAN random vibration solution. METOP random vibration stresses are reported first (Tables 1 through 4 and Appendix C), followed by METOP/METSAT response comparisons in Tables 5, 6, and 7. Card cage rattlespace calculations (Table 8), the modal effective weight summary (Table 9), natural frequencies (Figures 6 through 17), transmissibility's (Figures 18 through 44 and Appendix D), panel flange bending stresses (Tables 10 through 19), and panel mounting screw stresses due to flange bending loads (Table 20 through 29) are also discussed in the report.

A comparison of margins of safety from the Reference 1 METSAT report to the Enclosure 1 METOP report is as follows. Note the generally smaller margins associated with METOP loads. All margins of safety, however, remain positive, with factors of safety (1.25 yield/1.4 ultimate) employed in addition using 3 Sigma' loads.

Margins of Safety Summary Comparison

Subject	Ref 1 Report	METSAT	Encl 1 Report	METOP
Random Vibration	8.8 Grms Table 11	+0.62	9.66 Grms Table 1	+0.16
Rattlespace	Table 15	.037-.005=.032 clearance	Table 8	.037-.005=.032 clearance

Margins of Safety Summary Comparison (Continued)

Subject	Ref 1 Report	METSAT	Encl 1 Report	METOP
Panel Flange Bending				
Upper Front Panel	Table 27	+0.34	Table 10	+0.15
Upper Right Front Support Panel	Table 28	+0.76	Table 11	+0.90
Lower Right Panel	Table 29	+4.84	Table 12	+4.16
Lower Aft Panel	Table 30	+1.05	Table 13	+0.58
Upper Motor Mount Panel	Table 31	+1.75	Table 14	+1.34
Lower Motor Mount Panel	Table 32	+0.06	Table 15	+0.04
Lower Front Panel	Table 33	+0.33	Table 16	+0.29
Upper Aft Panel	Table 34	+0.36	Table 17	+0.19
Upper Right Panel	Table 35	+0.48	Table 18	+0.17
Lower Right Front Support Panel	Table 36	+0.94	Table 19	+0.91
Panel Mounting Screws				
Upper Front Panel	Table 37	+5.6	Table 20	+4.7
Upper Right Front Support Panel	Table 38	+6.1	Table 21	+6.7
Lower Right Panel	Table 39	+13	Table 22	+12
Lower Aft Panel	Table 40	+5.3	Table 23	+3.9
Upper Motor Mount Panel	Table 41	+11	Table 24	+11
Lower Motor Mount Panel	Table 42	+5.5	Table 25	+5.5
Lower Front Panel	Table 43	+6.0	Table 26	+5.1
Upper Aft Panel	Table 44	+0.32	Table 27	+0.15
Upper Right Panel	Table 45	+7.7	Table 28	+5.9
Lower Right Front Support Panel	Table 46	+22	Table 29	+21

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QUAL LEVEL RANDOM VIBRATIONS

GenCorp Aerojet

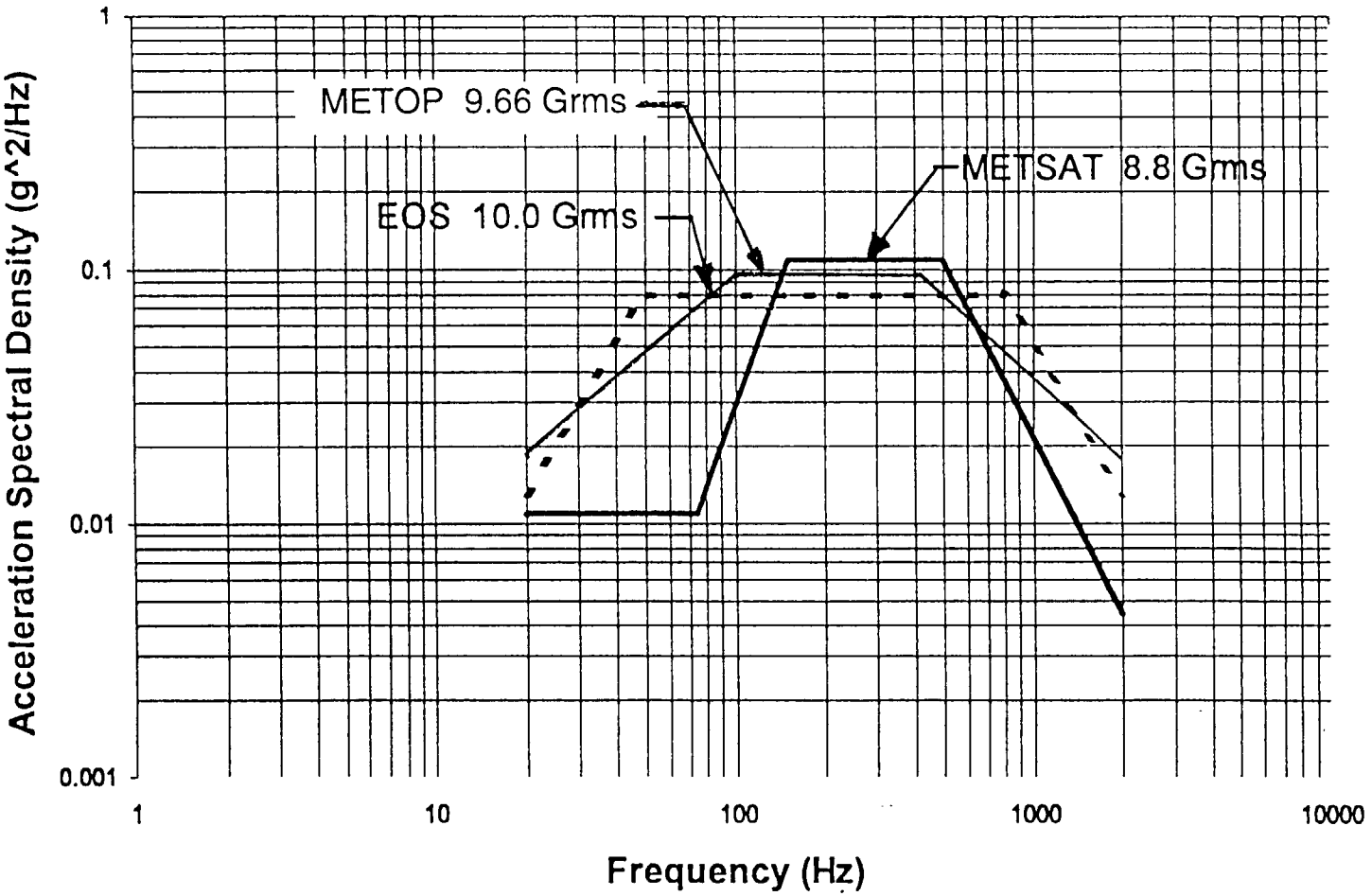

Figure 1 Qualification Level Random Vibration PSD Spectrums, METOP, METSAT, and EOS

Report 10849
July 1996

Integrated
Advanced Microwave Sounding Unit-A (AMSU-A)

METOP Stress Analysis Report (Qual Level Random Vibration)
A1 Module

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Section 1

INTRODUCTION

This Stress Analysis Report for the Meteorological Satellites Project (METSAT) Advanced Microwave Sounding Units-A (AMSU-A), A1 Module, reports the random vibration structural margins of safety and natural frequency predictions for the METSAT design subjected to the Meteorological Operational (Satellites) (METOP) Qualification Level 9.66 grms Random Vibration PSD Spectrum. The report has been prepared in accordance with GSFC S-480-79, Performance Assurance Requirements (PAR) for the Earth Observing System (EOS) & Meteorological Satellites Project (METSAT) Advanced Microwave Sounding Units-A.

1.1 Identification

This is the Stress Analysis Report for the METSAT Advanced Microwave Sounding Units-A (AMSU-A), Module A1 subjected to the METOP Random Vibration Power Spectral Densitry (PSD) Spectrum Loading. This report is submitted to fulfill the requirements of Task Assignment Number 1 of Contract NAS 5-32314. The analysis is of the METSAT AMSU-A1 unit using METOP launch loads (Qualification Level 9.66 grms Random Vibration PSD Spectrum).

1.2 Purpose and Objectives

The purpose of this analysis is to show that the METSAT AMSU-A1 Module exhibits positive structural margins of safety when subjected to the METOP Qualification Level 9.66 grms Random Vibration PSD Spectrum.

1.3 Document Status and Schedule

This is the July 1996 submittal of the METOP Qualification Level 9.66 grms Random Vibration PSD Spectrum Stress Analysis Report for the METSAT AMSU-A1 Module.

Section 2

SUMMARY OF RESULTS AND CONCLUSIONS

A stress analysis of the primary structure of the METSAT AMSU-A1 Module has been performed using METOP Qualification Level 9.66 grms Random Vibration PSD Spectrum loads given in Task Assignment Number 1 of Contract NAS 5-32314. The METOP qualification level random vibration PSD spectrum is shown in Figure 1, in comparison to the METSAT 8.8 grms spectrum and the EOS 10.0 grms spectrum. For METOP, rms stress levels are taken to the 3 Sigma (3σ) level (3.0 x stress at 9.66 grms load), multiplied by factors of safety (1.25 yield, 1.4 ultimate), and compared to material yield and ultimate strengths. The minimum margins of safety summary is given in Table I. All positive margins result from this task, with the highest loaded region being the power control/monitor standoffs with margin of safety (MS) +0.31. This compares to a minimum MS of +0.62, at the same location, when the METSAT Qualification Level 8.8 grms Random Vibration PSD Spectrum is used. Minimum margins of safety are given for METOP loads based on the three individual loading directions in Tables II through IV. An extensive random vibration stress spreadsheet is included in Appendix C of this report. Q levels resulting from application of the METOP qualification level random vibration spectrum (9.66 grms) with critical damping of 7 percent are tabulated for each component for each loading condition.

The transmissibility of various regions of the NASTRAN model are identified in the Transmissibility Summary Table of Appendix D. Q-levels resulting from application of the METOP qualification level random vibration spectrum (9.66 grms) with critical damping of 7 percent are tabulated for each component for each loading condition. Comparisons of response levels between METOP (9.66 grms input) and METSAT (8.8 grms input) are shown in Tables V (X-Load), VI (Y-Load), and VII (Z-Load). Large Q values (greater than 4) are found at the power control/monitor bracket (Z-load, Y-response, Q = 7.5; X-load, and Y-response, Q = 6.5), the upper right front support panel (Y-load, Y-response, Q = 6.7), the upper reflector (X-load, Z-response, Q = 6.8), the lower reflector (X-load, X-response, Q = 6.1), the left panel (Y-load, Y-response, Q = 4.6), and the radiator panel (X-load, X-response, Q = 4.0). This information agrees fairly well with the NOAA/AMSU-A1 test data used to predict the applicable damping. Based on NOAA testing, a maximum Q of 7 was measured at the reflectors. Note that the power control/monitor, with maximum Q of 7.5, is new to the AMSU design in METSAT/EOS, as is the METOP qualification level random vibration spectrum (9.66 grms). Plots of PSD input spectrum versus frequency and response versus frequency are included for the higher loaded locations (see Figures 18 through 30 for X-axis loading, Figures 31 through 39 for Y-axis loading, and Figures 40 through 44 for Z-axis loading).

The rattlespace of the circuit cards of the upper and lower card cages is investigated based on the qualification level random vibration spectrum (9.66 grms). As shown in Table VIII, the more severe condition occurs at the lower card cage where minimum card spacing is 0.037 inch and calculated maximum displacement is 0.005 inch at the 3σ level (3.0 x displacement at 9.66 grms load). At the upper card cage, minimum spacing is 0.137 inch, with maximum 3σ displacement of 0.002 inch. There will be no contact of adjacent circuit cards in either card cage. Appendix D contains rattlespace deflections in the summary sheets.

Natural frequency data are identical to those presented in Aerojet Report 10805, and are included here for completeness. The first natural frequency of the METSAT AMSU-A1 Module is predicted at 101.8 hertz (Hz). As shown in Figure 6, the top panel canopy over the sidemount flexes to produce the first mode. This mode shape is local to the top panel, with no mass participation elsewhere in the model, as demonstrated in Table IX, the modal effective weight and participation factor summary for the first 16 modes.

Figures 6 through 17 identify the first twelve non-rigid body modes. Modes 2 (109.0 Hz), 3 (109.0 Hz), 4 (109.5 Hz), and 5 (109.7 Hz) are all the result of the lower card cage cards flexing in the lower card cage (see Figures 7 through 10). Of these four modes, only mode 4 possesses any significant modal effective weight (X-axis 1.2 percent), with the card cage and power control/monitor moving along with the lower cards.

Mode 6 (120.4 Hz) shows significant power control/monitor circuit board movement, along with the upper aft, top, and radiator panels distortions. Both reflectors, the lower baseplate, and lower shelf are also agitated (Figure 11). The significant modal effective weight for mode 6 is along the X-axis, with 8.5 percent of the model reacting. Mode 6 is a rocking of the entire structure about the Aerojet METSAT y-z plane. Mode 7 (121.4 Hz) shows pronounced rotation along the X-axis by the reflectors, with more movement in the upper reflector (Figure 12). Mode 8 (121.9 Hz) is similar to mode 7, but with the predominant movement in lower reflector (Figure 13). Mode 9 (122.0 Hz) movement in also an X-axis rotation in the lower reflector (Figure 14).

The 10th and 11th modes at 130.9 Hz and 131.8 Hz, respectively, are the first extensive modal mass participation modes with 27.7 percent and 28.8 percent Z-axis participation (Figures 15 and 16). Both modes exhibit an overall rocking of the structure about the X-axis with overall Z-axis translation. The 12th mode (138.4 Hz) with 6.2 percent X-axis modal mass participation shows considerable Z-axis rotation at the lower reflector (Figure 17).

The analysis demonstrates a slight margin over the 100 Hz threshold first natural frequency.

The panel flange bending stresses, summarized in Tables X through XIX, show all positive margins of safety. Loading condition is the METOP 9.66 grms random vibration 3σ loading with factors of safety 1.25 yield/1.4 ultimate applied. The upper aft panel side flanges, when thickened locally at the stiffened panel DC/DC converter upper mount, show a minimum MS = +0.19 with minimum t = 0.145 local flanges. The upper front panel lower flange with minimum as-built lower flange thickness of t = 0.050 per random vibration loads, shows a minimum MS of +0.15. Minimum calculated MS, at the lower motor mount panel upper flange, is +0.04 per random vibration 3σ loading with factors of safety 1.25 yield/1.4 ultimate applied.

Stresses in the panel flanges' attachment screws are highlighted in Tables XX through XXIX, with lowest margin at the upper aft panel left (+Y) side flange at the locally stiffened region where the stiffened panel DC/DC converter upper mount intersects. Minimum MS = +0.15 for the NAS1352N06 screws.

Based on the positive margins of safety determined with factors of safety applied by random vibration loads application, the upper aft panel side flanges redesign, and the upper front panel lower flange inspected thicknesses, the METSAT AMSU-A1 module will maintain structural integrity in the METOP qualification level random vibration environment.

Section 3

REFERENCE DOCUMENTS

The following documents were used in the preparation of this Report:

SPECIFICATIONS

GSFS-S-480-79 October 10, 1994	Performance Assurance Requirements for the Earth Observing System (EOS) & Meteorological Satellites Project (METSAT) Advanced Microwave Sounding Units-A
GSFC 422-11-12-01A January 1994	General Interface Requirements Document (GIRD) for EOS Common Spacecraft/Instruments EOS PM Project

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Report 10805A July 1996	Meteorological Satellites (METSAT) and Earth Observing System (EOS) Advanced Microwave Sounding Unit-A (AMSU-A) Stress Analysis Report, A1 Module.
Report 10738A July 1996	METSAT Advanced Microwave Sounding Unit -A1 (AMSU-A1) Structural Mathematical Model
Report 10381 June 1995	Earth Observing System (EOS)/ Advanced Microwave Sounding Unit-A (AMSU-A) Stress Analysis Report, A1 Module
Report 10381A Addendum 1 July 1996	Earth Observing System (EOS)/ Advanced Microwave Sounding Unit-A (AMSU-A) Stress Analysis Report, A1 Module

Section 4

METHOD OF ANALYSIS

4.1 Finite Element Model

Figures 2 through 5 display the NASTRAN finite element model of the METSAT AMSU-A1 structure used to evaluate the METOP random vibration loads. The basic coordinate system used in the METSAT analysis is again used to evaluate the METOP loads. This coordinate system is identical to that used in the EOS analysis (Ref. Aerojet Report 10381). This orientation differs from (1) the METSAT PAR document which utilizes the spacecraft coordinate system identified on GE ATN Spacecraft Assembly Drawing 3278200, and (2) the METOP basic coordinate system. A comparison of systems follows. Figure 2 contains all three of the following systems.

Aerojet METSAT Coordinate Sys.	GSFC-S-79 PAR Coordinate Sys.	METOP Coordinate Sys.
+X Axis	–Y Axis	–Y Axis
+Y Axis	–Z Axis	–X Axis
+Z Axis	+X Axis	–Z Axis

The METSAT AMSU-A1 finite element model is a modification of the EOS AMSU-A1 finite element model. The METSAT AMSU-A1 Module is mounted to the spacecraft through a sidemount bracket. The EOS AMSU-A1 Module is mounted from the lower baseplate. The design of the primary structure is essentially the same for the two units except for the following:

a. **Lower Baseplate**. Different designs and drawings.
b. **Sidemount**. Only used on METSAT.
c. **Top Panel.** Different designs and drawings.
d. **Left Panel.** Different designs and drawings.
e. **Radiator Panel.** Only used on METSAT.
f. **Signal Processor.** METSAT has two cards in Upper Card Cage. EOS Upper Card Cage is empty. METSAT has four different cards in Lower Card Cage.
g. **Power Control/Monitor.** Different designed enclosure and connectors.
h. **Insulation and Mirror Tile representations.** Modified.

The NASTRAN finite element model prepared for EOS AMSU-A1 and shown in Aerojet Report 10381 is modified for the METSAT AMSU-A1 design. In the current METSAT effort, a more refined NASTRAN model has been developed to more accurately represent the METSAT structure. The model statistics are:

9307	Grids
1018	Bar/Beam Elements
8288	Rectangular Plate Elements
688	Triangular Plate Elements
385	Point Mass Elements

The total mass of the model is 119.4 pounds. Mass properties, presented in the METOP Coordinate System Axes (with origin at sidemount shear pin at GRID 10724, see Figure 45), at the center of gravity, are shown below.

Mass	119.4 lb
Center of Gravity	
x	–8.831 in
y	–13.083
z	0.274

Moment of Inertia (@ cg)

Ixx	12,587 lbf-in-sec^2
Ixy	32
Ixz	145
Iyx	32
Iyy	7,351
Iyz	1,803
Izx	145
Izy	1,803
Izz	9,114

Appendix A, in Figure A-1 through A-4, shows the model assembly. Figures A-1, A-2, and A-3 show different views of the assembled structure, while Figure A-4 is a section view of the model, showing the components modeled in the interior (i.e. shelves, card cages, warmload structures). A detailed description of the METSAT NASTRAN finite element model is found in Report 10738A, where elements and grids are highlighted in the piece part models.

4.2 Boundary Conditions

The model is constrained along the three orthogonal axes on the sidemount at each of the 16 spacecraft mounting bolt locations and along the two transverse axes (X and Z in Figure 45) at the 2 dowel pin locations. The constraints are imposed using NASTRAN single point constraint cards.

4.3 Load Application

The METOP random vibration load, shown in Figure 1 (Ref. Task Assignment Number 1 of Contract NAS 5-32314 for the METOP Qualification Level (9.66 grms) PSD Spectrum), is applied along each of the three orthogonal axes. Three load cases are run, each load case representing the random spectrum in one of the METSAT axes shown in Figure 2.

The random vibration analysis is performed using the NASTRAN code with a type G structural damping value of 0.14. The critical damping percentage is 1/2 of this value, or 7 percent. For large Q, the amplification or quality factor, Q, is approximated by

$$Q = 1/[2(c/cc)]$$

where c/cc = fraction of critical damping

With c/cc equal to 0.07, an amplification (Q), of 7.14 is determined. A Q = 7.14 corresponds to the largest Q found in test data of the NOAA AMSU-A1 unit. To the stresses derived from the NASTRAN random vibration stress output, a 3.0 factor is applied to produce 3σ values, plus an additional factor of safety (FS) of 1.25 on yield or 1.4 on ultimate is also used.

Section 5

RESULTS

For the random vibration loading, the output from each orthogonal axis load case is reviewed. The maximum principal stresses for plate elements and beam elements are used for margins of safety calculations. For plate elements, the normal and shear stresses are assumed in phase in calculating the principal stresses. Likewise, for bar elements, the axial and bending components are also considered to be in phase, and are thus algebraically added.

The stresses shown in Tables II through IV are statistical 3σ stress levels, and are the results of the METOP random vibration spectrum (qualification level, 9.66 grms) orthogonal loading cases, with 3.0 multiplication factors employed. These 3σ stresses are then multiplied by 1.25 to calculate the yield margins of safety and by 1.4 to calculate the ultimate margins of safety. Tables II through IV present the worst case stresses for the groups of elements representing the structural components of the primary structure. The tables give the results for each of the three load cases. Table I summarizes the minimum margins for the three cases. The worst axis of load application depends on the orientation of the structural item. Appendix C contains an extensive random vibration stress table, identifying the stress levels for the elements evaluated, for each orthogonal load direction.

The transmissibility (Q levels) shown in Appendix D are the result of the output level grms acceleration divided by the input level grms acceleration (9.66 grms for each METOP qualification level), for critical damping at 7 percent. Output shown in Appendix D consists of the rms response (rms in units of (in/sec^2), the grms response (grms in units of g's), and the transmissibility's Q (response grms divided by input grms). Plots of the input spectra are shown in Figures 18, 31, and 40 for the X, Y, and Z loadings, respectively, identifying 9.66 grms input levels. Plots response (in units of $(in/sec^2)^2$ /Hz) versus frequency are included for the higher loaded locations (see Figures 19 through 30 for X-axis loading, Figures 32 through 39 for Y-axis loading, and Figures 41 through 44 for Z-axis loading).

Comparisons of response levels between METOP (9.66 grms input) and METSAT (8.8 grms input) are shown in Tables V (X-Load), VI (Y-Load), and VII (Z-Load). From these tables it is seen that the large responses (Q greater than 4) are more benign for the METOP input spectrum (i.e. at the power control/monitor bracket Y-response with Z-load, METSAT Q=8.6, METOP Q=7.5).

The rattlespace calculations are tabulated in Appendix D for both upper and lower card cage circuit cards. Circuit card displacements based on 3σ random vibration loadings for each orthogonal axis are listed. The use of MPC elements between adjacent modeled circuit cards in the NASTRAN finite element model is made in determining the remaining gaps between cards.

The first 12 non-rigid body natural frequency mode shapes are depicted in Figures 6 through 17, from analysis using the large mass method in the finite element model. To demonstrate the mathematical soundness of the NASTRAN model, the model is subjected to a stiffness-equilibrium check similar to the EOS requirement of GSFC 422-11-12-01 Paragraph 11.1.4.i (Deliverable Model Validity Check). The METSAT model is shown to satisfy this check, with the normalized KFFRN matrix empty (see Appendix B).

The flange bending stresses, summarized in Tables X through XIX, show all positive margins of safety. The upper aft panel side flanges are thickened locally to a minimum t = 0.145 at the locations where the panel stiffened DC/DC converter t=0.250 upper mount region intersects. With this action, positive MS (+0.19) based on random vibration 3σ loading with factors of safety 1.25 yield, 1.4 ultimate applied are found. The upper front panel lower flange has a required minimum t = 0.045 per random vibration 3σ loading with factors of safety 1.25 yield, 1.4 ultimate applied. With lower flange specified drawing thickness

of 0.050 ± .010, the as-built hardware has been inspected and shows a minimum t = 0.050 lower flange thickness on all METSAT (and METOP) units to date. Thus a positive MS (+0.15) is determined. Minimum calculated MS, in the panel flanges is at the lower motor mount panel upper flange, with a MS = +0.04 per random vibration 3σ loading with factors of safety 1.25 yield, 1.4 ultimate applied.

Stresses in the panel flanges' attachment screws are highlighted in Tables XX through XXIX, with lowest margin at the upper aft panel left (+Y) side flange at the locally stiffened region where the stiffened panel DC/DC converter upper mount intersects. Minimum MS = +0.15 for the NAS1352N06 screws.

Table I METOP AMSU-A1 Margins of Safety Summary, All Elements Random Vibration 9.66 grms

ITEM NO.*	DESCRIPTION	PART NUMBER	MATERIAL/ ALLOY	YIELD (psi)	ULTIMATE (psi)	3 SIGMA" STRESS (psi)	MARGINS OF SAFETY YIELD	MARGINS OF SAFETY ULTIMATE	DIRECTION EL TYPE
1	LOWER BASEPLATE ASSEMBLY	1331404-1	ALUM/6061-T651	35000	42000	10798	1.59	1.78	Z BEAM
2	LOWER MOTOR MOUNT PANEL	1331414-1	ALUM/7075-T651	66000	75000	15411	2.43	2.48	X BEAM
3	UPPER MOTOR MOUNT PANEL	1331389-1	ALUM/7075-T651	66000	75000	8077	5.54	5.63	X BEAM
4	LOWER FRONT PANEL	1331401-1	ALUM/6061-T651	35000	42000	5414	4.17	4.54	X BEAM
5	LOWER AFT PANEL	1331652-1	ALUM/2024-T851	58000	66000	2668	16.39	16.67	Z BEAM
6	UPPER BASEPLATE ASSEMBLY	1331356-3	ALUM/6061-T651	35000	42000	5377	4.21	4.58	X BEAM
7	UPPER FRONT PANEL	1331352-3	ALUM/7075-T651	66000	75000	15600	2.38	2.43	X BEAM
8	UPPER AFT PANEL	1331642-3	ALUM/2024-T851	58000	66000	22264	1.08	1.12	X SHELL
9	LOWER RF SHELF ASSEMBLY	1356429-1	BE/SR-200E	50000	70000	7964	4.02	5.28	Z SHELL
10	UPPER RF SHELF ASSEMBLY	1356409-1	BE/SR-200E	50000	70000	4799	7.34	9.42	Z SHELL
11	LOWER RIGHT FRONT SUPT PANEL	1331447-1	ALUM/6061-T651	35000	42000	3992	6.01	6.52	X BEAM
12	LOWER RIGHT PANEL	1331650-1	ALUM/6061-T6	35000	42000	4144	5.76	6.24	Y SHELL
13	UPPER RIGHT FRONT SUPT PANEL	1331390-1	ALUM/6061-T651	35000	42000	6647	3.21	3.51	X BEAM
14	UPPER RIGHT PANEL	1331651-1	ALUM/6061-T6	35000	42000	4390	5.38	5.83	X SHELL
15	TOP PANEL	1331648-1	ALUM/6061-T6	35000	42000	5507	4.08	4.45	X SHELL
16	LEFT PANEL	1331640-1	ALUM/6061-T6	35000	42000	2878	8.73	9.42	X SHELL
17	LOWER LEFT WARMLOAD SHIELD	1331445-1	ALUM/6061-T6	35000	42000	6276	3.46	3.78	X BEAM
18	LOWER RIGHT WARMLOAD SHIELD	1331405-1	ALUM/6061-T6	35000	42000	6494	3.31	3.62	X BEAM
19	UPPER LEFT WARMLOAD SHIELD	1331647-1	ALUM/6061-T6	35000	42000	8763	2.20	2.42	X BEAM
20	UPPER RIGHT WARMLOAD SHIELD	1331646-1	ALUM/6061-T6	35000	42000	10330	1.71	1.90	X BEAM
21	LOWER CARD CAGE ASSEMBLY	1331600-1	ALUM/6061-T6	35000	42000	8237	2.40	2.64	Z SHELL
22	LOWER CARD	1331600-1	REINF PLASTIC	24000	40000	1841	9.43	14.52	Y SHELL
23	UPPER CARD CAGE ASSEMBLY	1331162-1	ALUM/6061-T6	35000	42000	8133	2.44	2.69	Z BEAM
23a	UPPER CARD CAGE ASSEMBLY	1331162-1	ALUM/6061-T4	16000	30000	4161	2.08	4.15	Z BEAM
24	UPPER CARD	1331162-1	REINF PLASTIC	24000	40000	1742	10.02	15.40	X SHELL
25	LOWER CALIBRATION SOURCE ASSY	1331380-1	ALUM/6061-T6	35000	42000	5972	3.69	4.02	X SHELL
26	UPPER CALIBRATION SOURCE ASSY	1331380-2	ALUM/6061-T6	35000	42000	7284	2.84	3.12	Y SHELL
27	BEAM SUPPORT	1331406-1	ALUM/7075-T6	66000	75000	3989	12.24	12.43	Y BEAM
28	LOWER REFLECTOR	1355777-1	ALUM/6061-T6	35000	42000	8439	2.32	2.55	X SHELL
29	POWER CONTROL/MONITOR, BKT	1356790-1	ALUM/6061-T6	35000	42000	10065	1.78	1.98	X SHELL
30	POWER CNTL/MNTR ASSY, PWB	1356962-1	REINF PLASTIC	24000	40000	3744	4.13	6.63	X SHELL
31	PWR CNTL/MNTR ASSY, STANDOFFS	1356962-1	CRES 1/4 HARD	44000	122000	26926	0.31	2.24	X BEAM
32	RADIATOR PANEL	1331511-1	ALUM/6061-T6	35000	42000	6814	3.11	3.40	X SHELL
33	SIDEMOUNT ASSEMBLY	1331552-1	ALUM/6061-T6	35000	42000	12541	1.23	1.39	Z SHELL
34	UPPER REFLECTOR	1355777-1	ALUM/6061-T6	35000	42000	7219	2.88	3.16	X SHELL

*RANDOM VIBRATION LOAD CASES 8.8 GRMS INDEPENDENTLY IN X, Y, AND Z

"MAXIMUM PRINCIPAL STRESS BASED ON ASSUMED IN PHASE COMPONENT STRESSES

Table II METOP AMSU-A1 Margins of Safety Summary, All Elements
Random Vibration 9.66 grms, X Direction

ITEM NO.*	DESCRIPTION	PART NUMBER	MATERIAL/ ALLOY	YIELD (psi)	ULTIMATE (psi)	3 SIGMA" STRESS (psi)	MARGINS OF SAFETY YIELD	MARGINS OF SAFETY ULTIMATE	DIRECTION EL TYPE
1	LOWER BASEPLATE ASSEMBLY	1331404-1	ALUM/6061-T651	35000	42000	1934	13.48	14.51	X BEAM
2	LOWER MOTOR MOUNT PANEL	1331414-1	ALUM/7075-T651	66000	75000	15411	2.43	2.48	X BEAM
3	UPPER MOTOR MOUNT PANEL	1331389-1	ALUM/7075-T651	66000	75000	8077	5.54	5.63	X BEAM
4	LOWER FRONT PANEL	1331401-1	ALUM/6061-T651	35000	42000	5414	4.17	4.54	X BEAM
5	LOWER AFT PANEL	1331652-1	ALUM/2024-T851	58000	66000	2290	19.26	19.59	X BEAM
6	UPPER BASEPLATE ASSEMBLY	1331356-3	ALUM/6061-T651	35000	42000	5377	4.21	4.58	X BEAM
7	UPPER FRONT PANEL	1331352-3	ALUM/7075-T651	66000	75000	15600	2.38	2.43	X BEAM
8	UPPER AFT PANEL	1331642-3	ALUM/2024-T851	58000	66000	22264	1.08	1.12	X SHELL
9	LOWER RF SHELF ASSEMBLY	1356429-1	BE/SR-200E	50000	70000	5544	6.22	8.02	X SHELL
10	UPPER RF SHELF ASSEMBLY	1356409-1	BE/SR-200E	50000	70000	3455	10.58	13.47	X SHELL
11	LOWER RIGHT FRONT SUPT PANEL	1331447-1	ALUM/6061-T651	35000	42000	3992	6.01	6.52	X BEAM
12	LOWER RIGHT PANEL	1331650-1	ALUM/6061-T6	35000	42000	3950	6.09	6.59	X BEAM
13	UPPER RIGHT FRONT SUPT PANEL	1331390-1	ALUM/6061-T651	35000	42000	6647	3.21	3.51	X BEAM
14	UPPER RIGHT PANEL	1331651-1	ALUM/6061-T6	35000	42000	4390	5.38	5.83	X SHELL
15	TOP PANEL	1331648-1	ALUM/6061-T6	35000	42000	5507	4.08	4.45	X SHELL
16	LEFT PANEL	1331640-1	ALUM/6061-T6	35000	42000	2878	8.73	9.42	X SHELL
17	LOWER LEFT WARMLOAD SHIELD	1331445-1	ALUM/6061-T6	35000	42000	6276	3.46	3.78	X BEAM
18	LOWER RIGHT WARMLOAD SHIELD	1331405-1	ALUM/6061-T6	35000	42000	6494	3.31	3.62	X BEAM
19	UPPER LEFT WARMLOAD SHIELD	1331647-1	ALUM/6061-T6	35000	42000	8763	2.20	2.42	X BEAM
20	UPPER RIGHT WARMLOAD SHIELD	1331646-1	ALUM/6061-T6	35000	42000	10330	1.71	1.90	X BEAM
21	LOWER CARD CAGE ASSEMBLY	1331600-1	ALUM/6061-T6	35000	42000	3405	7.22	7.81	X SHELL
22	LOWER CARD	1331600-1	REINF PLASTIC	24000	40000	868	21.12	31.92	X SHELL
23	UPPER CARD CAGE ASSEMBLY	1331162-1	ALUM/6061-T6	35000	42000	5874	3.77	4.11	X BEAM
23a	UPPER CARD CAGE ASSEMBLY	1331162-1	ALUM/6061-T4	16000	30000	2426	4.28	7.83	X SHELL
24	UPPER CARD	1331162-1	REINF PLASTIC	24000	40000	1742	10.02	15.40	X SHELL
25	LOWER CALIBRATION SOURCE ASSY	1331380-1	ALUM/6061-T6	35000	42000	5972	3.69	4.02	X SHELL
26	UPPER CALIBRATION SOURCE ASSY	1331380-2	ALUM/6061-T6	35000	42000	2813	8.95	9.66	X SHELL
27	BEAM SUPPORT	1331406-1	ALUM/7075-T6	66000	75000	2707	18.50	18.79	X BEAM
28	LOWER REFLECTOR	1355777-1	ALUM/6061-T6	35000	42000	8439	2.32	2.55	X SHELL
29	POWER CONTROL/MONITOR, BKT	1356790-1	ALUM/6061-T6	35000	42000	10065	1.78	1.98	X SHELL
30	POWER CNTL/MNTR ASSY, PWB	1356962-1	REINF PLASTIC	24000	40000	3744	4.13	6.63	X SHELL
31	PWR CNTL/MNTR ASSY, STANDOFFS	1356962-1	CRES 1/4 HARD	44000	122000	26926	0.31	2.24	X BEAM
32	RADIATOR PANEL	1331511-1	ALUM/6061-T6	35000	42000	6814	3.11	3.40	X SHELL
33	SIDEMOUNT ASSEMBLY	1331552-1	ALUM/6061-T6	35000	42000	11041	1.54	1.72	X SHELL
34	UPPER REFLECTOR	1355777-1	ALUM/6061-T6	35000	42000	7219	2.88	3.16	X SHELL

"MAXIMUM PRINCIPAL STRESS BASED ON ASSUMED IN PHASE COMPONENT STRESSES

Table III METOP AMSU-A1 Margins of Safety Summary, All Elements
Random Vibration 9.66 grms, Y Direction

ITEM NO.*	DESCRIPTION	PART NUMBER	MATERIAL/ ALLOY	YIELD (psi)	ULTIMATE (psi)	3 SIGMA~ STRESS (psi)	MARGINS OF SAFETY YIELD	MARGINS OF SAFETY ULTIMATE	DIRECTION EL TYPE
1	LOWER BASEPLATE ASSEMBLY	1331404-1	ALUM/6061-T651	35000	42000	4394	5.37	5.83	Y BEAM
2	LOWER MOTOR MOUNT PANEL	1331414-1	ALUM/7075-T651	66000	75000	3687	13.32	13.53	Y SHELL
3	UPPER MOTOR MOUNT PANEL	1331389-1	ALUM/7075-T651	66000	75000	2402	20.98	21.30	Y SHELL
4	LOWER FRONT PANEL	1331401-1	ALUM/6061-T651	35000	42000	2884	8.71	9.40	Y BEAM
5	LOWER AFT PANEL	1331652-1	ALUM/2024-T851	58000	66000	1407	31.98	32.51	Y BEAM
6	UPPER BASEPLATE ASSEMBLY	1331356-3	ALUM/6061-T651	35000	42000	3294	7.50	8.11	Y BEAM
7	UPPER FRONT PANEL	1331352-3	ALUM/7075-T651	66000	75000	12969	3.07	3.13	Y BEAM
8	UPPER AFT PANEL	1331642-3	ALUM/2024-T851	58000	66000	5242	7.85	7.99	Y SHELL
9	LOWER RF SHELF ASSEMBLY	1356429-1	BE/SR-200E	50000	70000	6707	4.96	6.45	Y SHELL
10	UPPER RF SHELF ASSEMBLY	1356409-1	BE/SR-200E	50000	70000	3585	10.16	12.95	Y SHELL
11	LOWER RIGHT FRONT SUPT PANEL	1331447-1	ALUM/6061-T651	35000	42000	959	28.20	30.28	Y BEAM
12	LOWER RIGHT PANEL	1331650-1	ALUM/6061-T6	35000	42000	4144	5.76	6.24	Y SHELL
13	UPPER RIGHT FRONT SUPT PANEL	1331390-1	ALUM/6061-T651	35000	42000	4286	5.53	6.00	Y BEAM
14	UPPER RIGHT PANEL	1331651-1	ALUM/6061-T6	35000	42000	3013	8.29	8.96	Y SHELL
15	TOP PANEL	1331648-1	ALUM/6061-T6	35000	42000	1098	24.50	26.32	Y SHELL
16	LEFT PANEL	1331640-1	ALUM/6061-T6	35000	42000	2762	9.14	9.86	Y SHELL
17	LOWER LEFT WARMLOAD SHIELD	1331445-1	ALUM/6061-T6	35000	42000	2540	10.02	10.81	Y BEAM
18	LOWER RIGHT WARMLOAD SHIELD	1331405-1	ALUM/6061-T6	35000	42000	2410	10.62	11.45	Y BEAM
19	UPPER LEFT WARMLOAD SHIELD	1331647-1	ALUM/6061-T6	35000	42000	2606	9.74	10.51	Y BEAM
20	UPPER RIGHT WARMLOAD SHIELD	1331646-1	ALUM/6061-T6	35000	42000	2778	9.08	9.80	Y BEAM
21	LOWER CARD CAGE ASSEMBLY	1331600-1	ALUM/6061-T6	35000	42000	6331	3.42	3.74	Y SHELL
22	LOWER CARD	1331600-1	REINF PLASTIC	24000	40000	1841	9.43	14.52	Y SHELL
23	UPPER CARD CAGE ASSEMBLY	1331162-1	ALUM/6061-T6	35000	42000	6880	3.07	3.36	Y BEAM
23a	UPPER CARD CAGE ASSEMBLY	1331162-1	ALUM/6061-T4	16000	30000	3107	3.12	5.90	Y SHELL
24	UPPER CARD	1331162-1	REINF PLASTIC	24000	40000	306	61.75	92.37	Y SHELL
25	LOWER CALIBRATION SOURCE ASSY	1331380-1	ALUM/6061-T6	35000	42000	5862	3.78	4.12	Y SHELL
26	UPPER CALIBRATION SOURCE ASSY	1331380-2	ALUM/6061-T6	35000	42000	7284	2.84	3.12	Y SHELL
27	BEAM SUPPORT	1331406-1	ALUM/7075-T6	66000	75000	3989	12.24	12.43	Y BEAM
28	LOWER REFLECTOR	1355777-1	ALUM/7075-T6	66000	75000	9598	4.50	4.58	Y BEAM
29	POWER CONTROL/MONITOR, BKT	1356790-1	ALUM/6061-T6	35000	42000	1464	18.13	19.49	Y SHELL
30	POWER CNTL/MNTR ASSY, PWB	1356962-1	REINF PLASTIC	24000	40000	1550	11.39	17.43	Y SHELL
31	PWR CNTL/MNTR ASSY, STANDOFFS	1356962-1	CRES 1/4 HARD	44000	122000	6666	4.28	12.07	Y BEAM
32	RADIATOR PANEL	1331511-1	ALUM/6061-T6	35000	42000	1414	18.80	20.22	Y SHELL
33	SIDEMOUNT ASSEMBLY	1331552-1	ALUM/6061-T6	35000	42000	7565	2.70	2.97	Y BEAM
34	UPPER REFLECTOR	1355777-1	ALUM/6061-T6	35000	42000	3912	6.16	6.67	Y SHELL

~MAXIMUM PRINCIPAL STRESS BASED ON ASSUMED IN PHASE COMPONENT STRESSES

Table IV METOP AMSU-A1 Margins of Safety Summary, All Elements
Random Vibration 9.66 grms, Z Direction

ITEM NO.*	DESCRIPTION	PART NUMBER	MATERIAL/ ALLOY	YIELD (psi)	ULTIMATE (psi)	3 SIGMA~ STRESS (psi)	MARGINS OF SAFETY YIELD	MARGINS OF SAFETY ULTIMATE	DIRECTION EL TYPE
1	LOWER BASEPLATE ASSEMBLY	1331404-1	ALUM/6061-T651	35000	42000	10798	1.59	1.78	Z BEAM
2	LOWER MOTOR MOUNT PANEL	1331414-1	ALUM/7075-T651	66000	75000	3292	15.04	15.27	Z BEAM
3	UPPER MOTOR MOUNT PANEL	1331389-1	ALUM/7075-T651	66000	75000	1925	26.43	26.83	Z BEAM
4	LOWER FRONT PANEL	1331401-1	ALUM/6061-T651	35000	42000	3804	6.36	6.89	Z BEAM
5	LOWER AFT PANEL	1331652-1	ALUM/2024-T851	58000	66000	2668	16.39	16.67	Z BEAM
6	UPPER BASEPLATE ASSEMBLY	1331356-3	ALUM/6061-T651	35000	42000	2505	10.18	10.98	Z BEAM
7	UPPER FRONT PANEL	1331352-3	ALUM/7075-T651	66000	75000	6521	7.10	7.22	Z BEAM
8	UPPER AFT PANEL	1331642-3	ALUM/2024-T851	58000	66000	3483	12.32	12.54	Z SHELL
9	LOWER RF SHELF ASSEMBLY	1356429-1	BE/SR-200E	50000	70000	7964	4.02	5.28	Z SHELL
10	UPPER RF SHELF ASSEMBLY	1356409-1	BE/SR-200E	50000	70000	4799	7.34	9.42	Z SHELL
11	LOWER RIGHT FRONT SUPT PANEL	1331447-1	ALUM/6061-T651	35000	42000	1166	23.01	24.73	Z BEAM
12	LOWER RIGHT PANEL	1331650-1	ALUM/6061-T6	35000	42000	2524	10.09	10.88	Z SHELL
13	UPPER RIGHT FRONT SUPT PANEL	1331390-1	ALUM/6061-T651	35000	42000	2877	8.73	9.43	Z BEAM
14	UPPER RIGHT PANEL	1331651-1	ALUM/6061-T6	35000	42000	1887	13.84	14.90	Z SHELL
15	TOP PANEL	1331648-1	ALUM/6061-T6	35000	42000	2593	9.80	10.57	Z SHELL
16	LEFT PANEL	1331640-1	ALUM/6061-T6	35000	42000	2681	9.44	10.19	Z SHELL
17	LOWER LEFT WARMLOAD SHIELD	1331445-1	ALUM/6061-T6	35000	42000	4651	5.02	5.45	Z BEAM
18	LOWER RIGHT WARMLOAD SHIELD	1331405-1	ALUM/6061-T6	35000	42000	2864	8.78	9.47	Z BEAM
19	UPPER LEFT WARMLOAD SHIELD	1331647-1	ALUM/6061-T6	35000	42000	3729	6.51	7.05	Z BEAM
20	UPPER RIGHT WARMLOAD SHIELD	1331646-1	ALUM/6061-T6	35000	42000	2044	12.70	13.68	Z BEAM
21	LOWER CARD CAGE ASSEMBLY	1331600-1	ALUM/6061-T6	35000	42000	8237	2.40	2.64	Z SHELL
22	LOWER CARD	1331600-1	REINF PLASTIC	24000	40000	704	26.27	39.58	Z SHELL
23	UPPER CARD CAGE ASSEMBLY	1331162-1	ALUM/6061-T6	35000	42000	8133	2.44	2.69	Z BEAM
23a	UPPER CARD CAGE ASSEMBLY	1331162-1	ALUM/6061-T4	16000	30000	4161	2.08	4.15	Z BEAM
24	UPPER CARD	1331162-1	REINF PLASTIC	24000	40000	340	55.47	83.03	Z SHELL
25	LOWER CALIBRATION SOURCE ASSY	1331380-1	ALUM/6061-T6	35000	42000	4892	4.72	5.13	Z SHELL
26	UPPER CALIBRATION SOURCE ASSY	1331380-2	ALUM/6061-T6	35000	42000	4772	4.87	5.29	Z SHELL
27	BEAM SUPPORT	1331406-1	ALUM/7075-T6	66000	75000	3364	14.70	14.92	Z BEAM
28	LOWER REFLECTOR	1355777-1	ALUM/7075-T6	66000	75000	6630	6.96	7.08	Z BEAM
29	POWER CONTROL/MONITOR, BKT	1356790-1	ALUM/6061-T6	35000	42000	2170	11.90	12.82	Z SHELL
30	POWER CNTL/MNTR ASSY, PWB	1356962-1	REINF PLASTIC	24000	40000	1158	15.58	23.67	Z SHELL
31	PWR CNTL/MNTR ASSY, STANDOFFS	1356962-1	CRES 1/4 HARD	44000	122000	7097	3.96	11.28	Z BEAM
32	RADIATOR PANEL	1331511-1	ALUM/6061-T6	35000	42000	2097	12.35	13.31	Z SHELL
33	SIDEMOUNT ASSEMBLY	1331552-1	ALUM/6061-T6	35000	42000	12541	1.23	1.39	Z SHELL
34	UPPER REFLECTOR	1355777-1	ALUM/6061-T6	35000	42000	4282	5.54	6.01	Z SHELL

~MAXIMUM PRINCIPAL STRESS BASED ON ASSUMED IN PHASE COMPONENT STRESSES

Table V Response Comparison, METSAT/METOP X Load

COMPONENT	GRID	X-LOAD RESP	METSAT RMS	METSAT GRMS	METSAT Q	METOP RMS	METOP GRMS	METOP Q	RMS-METOP/ RMS-METSAT
LARGE MASS	11911	X/X	3414	8.84	1.00	3745	9.70	1.00	1.10
LOWER BASEPLATE	1172	X/Z	4189	10.85	1.23	3961	10.26	1.06	0.95
LOWER MOTOR MOUNT	2855	X/X	8937	23.15	2.62	9122	23.63	2.44	1.02
UPPER MOTOR MOUNT	2779	X/X	10854	28.11	3.18	10296	26.67	2.75	0.95
LOWER FRONT PANEL	1979	X/Z	11441	29.63	3.35	11535	29.88	3.08	1.01
LOWER AFT PANEL	1260	X/X	3933	10.19	1.15	4071	10.54	1.09	1.04
UPPER BASEPLATE	1458	X/Y	3856	9.99	1.13	3745	9.70	1.00	0.97
UPPER FRONT PANEL	2078	X/X	10729	27.79	3.14	10056	26.05	2.69	0.94
UPPER AFT PANEL	2224	X/X	6362	16.48	1.86	7581	19.64	2.02	1.19
LOWER SHELF	1827	X/X	4115	10.66	1.21	4244	10.99	1.13	1.03
UPPER SHELF	2420	X/Z	4644	12.03	1.36	4505	11.67	1.20	0.97
LOWER RIGHT FRONT SUP	2661	X/Y	10225	26.48	3.00	10922	28.29	2.92	1.07
LOWER RIGHT PANEL	1315	X/Y	3661	9.48	1.07	3554	9.21	0.95	0.97
UPPER RIGHT FRONT SUP	2679	X/Y	4827	12.50	1.41	4476	11.59	1.20	0.93
UPPER RIGHT PANEL	2130	X/Y	6378	16.52	1.87	5915	15.32	1.58	0.93
TOP PANEL	11170	X/X	13686	35.45	4.01	14771	38.26	3.94	1.08
LEFT PANEL	3243	X/Y	7622	19.74	2.23	7152	18.52	1.91	0.94
LOWER LEFT SHIELD	1840	X/X	3861	10.00	1.13	3972	10.29	1.06	1.03
LOWER RIGHT SHIELD	2663	X/Z	4182	10.83	1.22	3954	10.24	1.06	0.95
UPPER LEFT SHIELD	2119	X/X	3403	8.81	1.00	3490	9.04	0.93	1.03
UPPER RIGHT SHIELD	2918	X/X	4378	11.34	1.28	4248	11.00	1.13	0.97
LOWER CARD CAGE	3711	X/Y	7289	18.88	2.14	6722	17.41	1.79	0.92
LOWER CARD CAGE CARDS	4813	X/Z	10733	27.80	3.14	10147	26.28	2.71	0.95
UPPER CARD CAGE	3404	X/Z	5318	13.77	1.56	4982	12.90	1.33	0.94
UPPER CARD CAGE CARDS	11879	X/X	11250	29.14	3.30	11454	29.67	3.06	1.02
LOWER WARMLOAD	2812	X/X	9865	25.55	2.89	8806	22.81	2.35	0.89
UPPER WARMLOAD	2056	X/X	4812	12.46	1.41	4607	11.93	1.23	0.96
LOWER REFLECTOR	4096	X/X	23713	61.42	6.95	22681	58.75	6.06	0.96
POWER CNTRL/MON BKT	11803	X/Y	26606	68.91	7.79	24199	62.68	6.46	0.91
POWER CNTRL/MON PWB	6204	X/X	10018	25.95	2.93	11218	29.06	3.00	1.12
PWR CNTRL/MON STANDOFF	6015	X/X	7632	19.77	2.24	8983	23.27	2.40	1.18
RADIATOR PANEL	10963	X/X	13685	35.45	4.01	14770	38.26	3.94	1.08
SIDEMOUNT	9338	X/X	3591	9.30	1.05	3745	9.70	1.00	1.04
UPPER REFLECTOR	4410	X/Z	27398	70.96	8.03	25350	65.66	6.77	0.93

Table VI Response Comparison, METSAT/METOP Y Load

COMPONENT	GRID	Y-LOAD RESP	METSAT RMS	METSAT GRMS	METSAT Q	METOP RMS	METOP GRMS	METOP Q	RMS-METOP/ RMS-METSAT
LARGE MASS	11911	Y/Y	3414	8.84	1.00	3745	9.70	1.00	1.10
LOWER BASEPLATE	1172	Y/Y	5671	14.69	1.66	5315	13.77	1.42	0.94
LOWER MOTOR MOUNT	2855	Y/Y	7532	19.51	2.21	6971	18.06	1.86	0.93
UPPER MOTOR MOUNT	1569	Y/Y	4719	12.22	1.38	4480	11.60	1.20	0.95
LOWER FRONT PANEL	1963	Y/Y	5710	14.79	1.67	5337	13.82	1.43	0.93
LOWER AFT PANEL	1205	Y/Y	4377	11.34	1.28	4118	10.67	1.10	0.94
UPPER BASEPLATE	1455	Y/Y	4747	12.30	1.39	4480	11.60	1.20	0.94
UPPER FRONT PANEL	2078	Y/X	9674	25.06	2.83	8946	23.17	2.39	0.92
UPPER AFT PANEL	1458	Y/Y	3929	10.18	1.15	3759	9.74	1.00	0.96
LOWER SHELF	1703	Y/Z	6510	16.86	1.91	5921	15.34	1.58	0.91
UPPER SHELF	2420	Y/Y	4746	12.29	1.39	4488	11.62	1.20	0.95
LOWER RIGHT FRONT SUP	2661	Y/Y	10269	26.60	3.01	9715	25.16	2.59	0.95
LOWER RIGHT PANEL	1191	Y/Y	5419	14.04	1.59	5089	13.18	1.36	0.94
UPPER RIGHT FRONT SUP	2679	Y/Y	27282	70.66	7.99	25118	65.06	6.71	0.92
UPPER RIGHT PANEL	2130	Y/Y	10172	26.35	2.98	9453	24.48	2.52	0.93
TOP PANEL	2627	Y/Z	4555	11.80	1.33	4275	11.07	1.14	0.94
LEFT PANEL	3251	Y/Y	18379	47.60	5.38	16992	44.01	4.54	0.92
LOWER LEFT SHIELD	2831	Y/Y	6003	15.55	1.76	5585	14.47	1.49	0.93
LOWER RIGHT SHIELD	2663	Y/Y	6207	16.08	1.82	5752	14.90	1.54	0.93
UPPER LEFT SHIELD	2083	Y/Y	4199	10.88	1.23	4006	10.38	1.07	0.95
UPPER RIGHT SHIELD	1998	Y/Y	4187	10.84	1.23	3988	10.33	1.06	0.95
LOWER CARD CAGE	3753	Y/Y	13611	35.25	3.99	12585	32.60	3.36	0.92
LOWER CARD CAGE CARDS	4813	Y/Y	5137	13.31	1.50	4914	12.73	1.31	0.96
UPPER CARD CAGE	3404	Y/Z	7143	18.50	2.09	6404	16.59	1.71	0.90
UPPER CARD CAGE CARDS	11203	Y/Z	7655	19.83	2.24	6839	17.71	1.83	0.89
LOWER WARMLOAD	3036	Y/Y	14874	38.52	4.36	13202	34.19	3.53	0.89
UPPER WARMLOAD	2976	Y/Y	9454	24.49	2.77	8519	22.06	2.27	0.90
LOWER REFLECTOR	4096	Y/Y	12281	31.81	3.60	11454	29.67	3.06	0.93
POWER CNTRL/MON BKT	11803	Y/Y	14760	38.23	4.32	13260	34.34	3.54	0.90
POWER CNTRL/MON PWB	6204	Y/X	5990	15.51	1.75	5492	14.22	1.47	0.92
PWR CNTRL/MON STANDOFF	6015	Y/Y	4626	11.98	1.36	4393	11.38	1.17	0.95
RADIATOR PANEL	10917	Y/X	7476	19.36	2.19	7027	18.20	1.88	0.94
SIDEMOUNT	7508	Y/Y	4963	12.85	1.45	5469	14.17	1.46	1.10
UPPER REFLECTOR	4410	Y/Z	11901	30.82	3.49	11025	28.56	2.94	0.93

Table VII Response Comparison, METSAT/METOP Z Load

COMPONENT	GRID	Z-LOAD RESP	METSAT RMS	METSAT GRMS	METSAT Q	METOP RMS	METOP GRMS	METOP Q	RMS-METOP/ RMS-METSAT
LARGE MASS	11911	Z/Z	3414	8.84	1.00	3745	9.70	1.00	1.10
LOWER BASEPLATE	1124	Z/Z	6781	17.56	1.99	7437	19.26	1.99	1.10
LOWER MOTOR MOUNT	2663	Z/Z	4456	11.54	1.31	4569	11.83	1.22	1.03
UPPER MOTOR MOUNT	2779	Z/Y	4515	11.69	1.32	4511	11.68	1.20	1.00
LOWER FRONT PANEL	1885	Z/Z	3873	10.03	1.13	4184	10.84	1.12	1.08
LOWER AFT PANEL	1019	Z/Z	3434	8.89	1.01	3543	9.18	0.95	1.03
UPPER BASEPLATE	1608	Z/Z	3840	9.95	1.12	4053	10.50	1.08	1.06
UPPER FRONT PANEL	2050	Z/Z	6397	16.57	1.87	5724	14.83	1.53	0.89
UPPER AFT PANEL	2240	Z/Y	4702	12.18	1.38	4842	12.54	1.29	1.03
LOWER SHELF	1732	Z/Z	7239	18.75	2.12	7919	20.51	2.11	1.09
UPPER SHELF	2420	Z/Z	6961	18.03	2.04	6886	17.84	1.84	0.99
LOWER RIGHT FRONT SUP	2661	Z/Y	5969	15.46	1.75	6255	16.20	1.67	1.05
LOWER RIGHT PANEL	1379	Z/Z	3281	8.50	0.96	3777	9.78	1.01	1.15
UPPER RIGHT FRONT SUP	2679	Z/Y	10332	26.76	3.03	9528	24.68	2.54	0.92
UPPER RIGHT PANEL	2130	Z/Y	6546	16.95	1.92	6100	15.80	1.63	0.93
TOP PANEL	11025	Z/Z	12735	32.98	3.73	12954	33.55	3.46	1.02
LEFT PANEL	3251	Z/Y	8080	20.93	2.37	7667	19.86	2.05	0.95
LOWER LEFT SHIELD	2913	Z/Z	5733	14.85	1.68	7050	18.26	1.88	1.23
LOWER RIGHT SHIELD	2901	Z/Z	4456	11.54	1.31	4954	12.83	1.32	1.11
UPPER LEFT SHIELD	2933	Z/Z	8697	22.53	2.55	9395	24.33	2.51	1.08
UPPER RIGHT SHIELD	1998	Z/Z	2987	7.74	0.87	3405	8.82	0.91	1.14
LOWER CARD CAGE	3730	Z/Z	6780	17.56	1.99	7374	19.10	1.97	1.09
LOWER CARD CAGE CARDS	4813	Z/Z	7651	19.82	2.24	8130	21.06	2.17	1.06
UPPER CARD CAGE	3404	Z/Z	7145	18.51	2.09	6545	16.95	1.75	0.92
UPPER CARD CAGE CARDS	11829	Z/Z	10908	28.25	3.20	10114	26.20	2.70	0.93
LOWER WARMLOAD	3036	Z/Y	6292	16.30	1.84	5587	14.47	1.49	0.89
UPPER WARMLOAD	2976	Z/Y	7101	18.39	2.08	6382	16.53	1.70	0.90
LOWER REFLECTOR	4096	Z/Y	7699	19.94	2.26	7618	19.73	2.03	0.99
POWER CNTRL/MON BKT	11803	Z/Y	29332	75.97	8.59	27986	72.49	7.47	0.95
POWER CNTRL/MON PWB	5878	Z/Y	6855	17.76	2.01	6989	18.10	1.87	1.02
PWR CNTRL/MON STANDOFF	5932	Z/Y	7616	19.73	2.23	7776	20.14	2.08	1.02
RADIATOR PANEL	10969	Z/X	4784	12.39	1.40	5478	14.19	1.46	1.15
SIDEMOUNT	9338	Z/Z	4061	10.52	1.19	3935	10.19	1.05	0.97
UPPER REFLECTOR	4410	Z/Y	6921	17.93	2.03	7118	18.44	1.90	1.03

Table VIII METOP AMSU-A1 Rattlespace Summary

SUMMARY - RATTLESPACE OF THE LOWER CARD CAGE CIRCUIT CARDS				
CASE	GRID	GRID	LOAD	3Σ ΔX
1	4803	4843	X	0.0009
2	4803	4843	Y	0.0049
3	4808	4848	Z	0.0017
MINIMUM GAP				0.037

SUMMARY - RATTLESPACE OF THE UPPER CARD CAGE CIRCUIT CARDS				
CASE	GRID	GRID	LOAD	3Σ ΔX
1	11308	11875	X	0.0022
2	11316	11883	Y	0.0005
3	11316	11883	Z	0.0010
MINIMUM GAP				0.137

Table IX METSAT AMSU-A1 Modal Effective Weight and Participation Factor Summary

MODE NO.	NATURAL FREQ. Hz.	X-AXIS %	Y-AXIS %	Z-AXIS %			
1	101.8	0.003	0.000	0.129			
2	109.0	0.000	0.000	0.000			
3	109.0	0.000	0.000	0.000			
4	109.5	1.195	0.001	0.017			
5	109.7	0.000	0.000	0.000			
6	120.4	8.452	0.127	0.028			
7	121.4	0.026	0.002	0.883			
8	121.9	0.017	0.256	0.043			
9	122.0	0.064	0.150	0.147			
10	130.9	1.876	0.567	27.73			
11	131.8	0.877	0.811	28.75			
12	138.5	6.239	0.028	0.733			
13	139.6	0.000	0.000	0.000			
14	140.8	0.050	0.004	0.004			
15	149.1	1.312	0.052	0.100			
16	154.2	0.217	0.019	0.053			

Table X METOP AMSU-A1 Panel Flange Bending Stress Summary
Random Vibration 9.66 grms, Upper Front Panel

UPPER FRONT PANEL																
LOWER FLANGE																
FEM ELEM NO.	LOAD CASE	FORCE Fx (lb/in)	MOM Mx (in-lb/in)	SHR Vx (lb/in)	h (in)	d (in)	d' (in)	t (in)	F1 (lb/in)	F2 (lb/in)	M1 (in-lb/in)	V1 (lb/in)	3σ St (psi)	Fty/Ftu (psi)	FS	MS
1434	Y	5.146	0.005	0.015	0.563	0.312	0.313	0.040	10.318	5.172	1.619	0.015	18215	66000	1.25	1.90
														75000	1.4	1.94
1470	Z	11.719	0.065	0.063	0.750	0.312	0.313	0.040	23.759	12.040	3.769	0.063	42401	66000	1.25	0.25
														75000	1.4	0.26
1538	Z	19.99	0.089	0.132	0.563	0.312	0.313	0.050	40.438	20.448	6.400	0.132	46089	66000	1.25	0.15
														75000	1.4	0.16
1550	Z	6.065	0.039	0.032	0.563	0.312	0.313	0.040	12.293	6.228	1.949	0.032	21932	66000	1.25	1.41
														75000	1.4	1.44
* MINIMUM MEASURED VALUE USED FOR t AT ELEMENT 1538																
RIGHT FLANGE																
FEM ELEM. NO.	LOAD CASE	FORCE Fy (lb/in)	MOM My (in-lb/in)	SHR Vy (lb/in)	h (in)	d (in)	d' (in)	t (in)	F1 (lb/in)	F2 (lb/in)	M1 (in-lb/in)	V1 (lb/in)	3σ St (psi)	Fty/Ftu (psi)	FS	MS
1438	X	2.913	0.168	1.339	0.469	0.312	0.313	0.040	8.358	5.445	1.704	1.339	19272	66000	1.25	1.74
														75000	1.4	1.78
1439	X	2.501	0.179	2.971	0.360	0.312	0.313	0.040	8.978	6.477	2.027	2.971	23031	66000	1.25	1.29
														75000	1.4	1.33
1439	Y	2.592	0.149	1.750	0.360	0.312	0.313	0.040	7.662	5.070	1.587	1.750	17983	66000	1.25	1.94
														75000	1.4	1.98
1441	Y	2.635	0.021	0.199	0.219	0.312	0.313	0.040	5.468	2.833	0.887	0.199	9989	66000	1.25	4.29
														75000	1.4	4.36
UPPER FLANGE																
FEM ELEM. NO.	LOAD CASE	FORCE Fx (lb/in)	MOM Mx (in-lb/in)	SHR Vx (lb/in)	h (in)	d (in)	d' (in)	t (in)	F1 (lb/in)	F2 (lb/in)	M1 (in-lb/in)	V1 (lb/in)	3σ St (psi)	Fty/Ftu (psi)	FS	MS
1491	Z	3.204	0.155	0.288	0.551	0.312	0.313	0.040	7.400	4.196	1.313	0.288	14797	66000	1.25	2.57
														75000	1.4	2.62

Table XI METOP AMSU-A1 Panel Flange Bending Stress Summary
Random Vibration 9.66 grms, Upper Right Front Support Panel

UPPER RIGHT FRONT SUPPORT PANEL																
AFT FLANGE																
FEM	LOAD	FORCE	MOM	SHR									3σ			
ELEM.	CASE	Fx	Mx	Vx	h	d	d'	t	F1	F2	M1	V1	St	Fty/Ftu	FS	MS
NO.		(lb/in)	(in-lb/in)	(lb/in)	(in)	(in)	(in)	(in)	(lb/in)	(lb/in)	(in-lb/in)	(lb/in)	(psi)	(psi)		
2241	X	10.883	0.046	0.031	0.435	0.312	0.313	0.065	21.921	11.038	3.455	0.031	14721	35000	1.25	0.90
														42000	1.4	1.04
LOWER FLANGE																
FEM	LOAD	FORCE	MOM	SHR									3σ			
ELEM.	CASE	Fy	My	Vy	h	d	d'	t	F1	F2	M1	V1	St	Fty/Ftu	FS	MS
NO.		(lb/in)	(in-lb/in)	(lb/in)	(in)	(in)	(in)	(in)	(lb/in)	(lb/in)	(in-lb/in)	(lb/in)	(psi)	(psi)		
2230	X	5.191	0.038	0.074	0.563	0.313	0.312	0.065	10.654	5.463	1.704	0.074	7265	35000	1.25	2.85
														42000	1.4	3.13

Table XII METOP AMSU-A1 Panel Flange Bending Stress Summary
Random Vibration 9.66 grms, Lower Right Panel

LOWER RIGHT PANEL																
LOWER FLANGE																
FEM ELEM. NO.	LOAD CASE	FORCE Fx (lb/in)	MOM Mx (in-lb/in)	SHR Vx (lb/in)	h (in)	d (in)	d' (in)	t (in)	F1 (lb/in)	F2 (lb/in)	M1 (in-lb/in)	V1 (lb/in)	3σ St (psi)	Fty/Ftu (psi)	FS	MS
595	Z	8.604	0.025	0.042	0.666	0.312	0.25	0.100	19.554	10.950	2.737	0.042	4929	35000	1.25	4.68
														42000	1.4	5.09
575	Z	9.246	0.072	0.090	0.649	0.312	0.25	0.100	21.307	12.061	3.015	0.090	5430	35000	1.25	4.16
														42000	1.4	4.52

Table XIII METOP AMSU-A1 Panel Flange Bending Stress Summary
Random Vibration 9.66 grms, Lower Aft Panel

LOWER AFT PANEL																
RIGHT FLANGE																
FEM ELEM. NO.	LOAD CASE	FORCE Fy (lb/in)	MOM My (in-lb/in)	SHR Vy (lb/in)	h (in)	d (in)	d' (in)	t (in)	F1 (lb/in)	F2 (lb/in)	M1 (in-lb/in)	V1 (lb/in)	3σ St (psi)	Fty/Ftu (psi)	FS	MS
429	X	6.328	0.039	0.101	0.219	0.312	0.313	0.070	12.831	6.503	2.035	0.101	7481	58000	1.25	5.20
														66000	1.4	5.30
LOWER FLANGE																
FEM ELEM. NO.	LOAD CASE	FORCE Fx (lb/in)	MOM Mx (in-lb/in)	SHR Vx (lb/in)	h (in)	d (in)	d' (in)	t (in)	F1 (lb/in)	F2 (lb/in)	M1 (in-lb/in)	V1 (lb/in)	3σ St (psi)	Fty/Ftu (psi)	FS	MS
340	X	7.198	0.102	0.139	0.597	0.312	0.313	0.125	14.964	7.766	2.431	0.139	2804	58000	1.25	15.55
														66000	1.4	15.82
340	Z	15.130	0.138	0.074	0.597	0.312	0.313	0.125	30.794	15.664	4.903	0.074	5650	58000	1.25	7.21
														66000	1.4	7.34
UPPER FLANGE																
FEM ELEM. NO.	LOAD CASE	FORCE Fx (lb/in)	MOM Mx (in-lb/in)	SHR Vx (lb/in)	h (in)	d (in)	d' (in)	t (in)	F1 (lb/in)	F2 (lb/in)	M1 (in-lb/in)	V1 (lb/in)	3σ St (psi)	Fty/Ftu (psi)	FS	MS
429	X	24.146	0.175	0.598	0.338	0.312	0.313	0.070	49.419	25.273	7.910	0.598	29084	58000	1.25	0.60
														66000	1.4	0.62
339	X	24.924	0.126	0.196	0.353	0.312	0.313	0.070	50.392	25.468	7.971	0.196	29291	58000	1.25	0.58
														66000	1.4	0.61

Table XIV METOP AMSU-A1 Panel Flange Bending Stress Summary
Random Vibration 9.66 grms, Upper Motor Mount Panel

UPPER MOTOR MOUNT PANEL																
LOWER FLANGE																
FEM ELEM. NO.	LOAD CASE	FORCE Fy (lb/in)	MOM My (in-lb/in)	SHR Vy (lb/in)	h (in)	d (in)	d' (in)	t (in)	F1 (lb/in)	F2 (lb/in)	M1 (in-lb/in)	V1 (lb/in)	3σ St (psi)	Fty/Ftu (psi)	FS	MS
2271	X	6.077	0.031	0.108	0.638	0.312	0.438	0.050	10.634	4.557	1.996	0.108	14377	66000	1.25	2.67
														75000	1.4	2.73
2272	X	7.247	0.031	0.055	0.584	0.312	0.438	0.050	12.553	5.306	2.324	0.055	16737	66000	1.25	2.15
														75000	1.4	2.20
2279	Z	9.680	0.039	0.135	0.563	0.312	0.438	0.050	16.838	7.158	3.135	0.135	22581	66000	1.25	1.34
														75000	1.4	1.37
RIGHT FLANGE																
FEM ELEM. NO.	LOAD CASE	FORCE Fx (lb/in)	MOM Mx (in-lb/in)	SHR Vx (lb/in)	h (in)	d (in)	d' (in)	t (in)	F1 (lb/in)	F2 (lb/in)	M1 (in-lb/in)	V1 (lb/in)	3σ St (psi)	Fty/Ftu (psi)	FS	MS
2271	X	8.190	0.035	0.085	0.424	0.312	0.438	0.050	14.186	5.996	2.626	0.085	18915	66000	1.25	1.79
														75000	1.4	1.83
2280	X	7.002	0.052	0.088	0.298	0.312	0.438	0.050	12.168	5.166	2.263	0.088	16297	66000	1.25	2.24
														75000	1.4	2.29
UPPER FLANGE																
FEM ELEM. NO.	LOAD CASE	FORCE Fy (lb/in)	MOM My (in-lb/in)	SHR Vy (lb/in)	h (in)	d (in)	d' (in)	t (in)	F1 (lb/in)	F2 (lb/in)	M1 (in-lb/in)	V1 (lb/in)	3σ St (psi)	Fty/Ftu (psi)	FS	MS
2364	X	5.480	0.082	0.142	0.380	0.312	0.438	0.050	9.694	4.214	1.846	0.142	13297	66000	1.25	2.97
														75000	1.4	3.03

Table XV METOP AMSU-A1 Panel Flange Bending Stress Summary
Random Vibration 9.66 grms, Lower Motor Mount Panel

TABLE 15 RANDOM VIBRATION METOP 9.66 GRMS FORCE DATA - MARGINS OF SAFETY SUMMARY																
LOWER MOTOR MOUNT PANEL																
LOWER FLANGE																
FEM ELEM. NO.	LOAD CASE	FORCE Fy (lb/in)	MOM My (in-lb/in)	SHR Vy (lb/in)	h (in)	d (in)	d' (in)	t (in)	F1 (lb/in)	F2 (lb/in)	M1 (in-lb/in)	V1 (lb/in)	3σ St (psi)	Fty/Ftu (psi)	FS	MS
2449	X	17.107	0.246	0.167	0.754	0.312	0.438	0.050	30.142	13.035	5.709	0.167	41117	66000	1.25	0.28
														75000	1.4	0.30
2450	X	12.321	0.143	0.108	0.503	0.312	0.438	0.050	21.548	9.227	4.041	0.108	29105	66000	1.25	0.81
														75000	1.4	0.84
UPPER FLANGE																
FEM ELEM. NO.	LOAD CASE	FORCE Fy (lb/in)	MOM My (in-lb/in)	SHR Vy (lb/in)	h (in)	d (in)	d' (in)	t (in)	F1 (lb/in)	F2 (lb/in)	M1 (in-lb/in)	V1 (lb/in)	3σ St (psi)	Fty/Ftu (psi)	FS	MS
2532	X	20.912	0.326	0.744	0.290	0.312	0.438	0.050	37.045	16.133	7.066	0.744	50922	66000	1.25	0.04
														75000	1.4	0.05

Table XVI METOP AMSU-A1 Panel Flange Bending Stress Summary
Random Vibration 9.66 grms, Lower Front Panel

TABLE 16 RANDOM VIBRATION METOP 9.66 GRMS FORCE DATA - MARGINS OF SAFETY SUMMARY																
LOWER FRONT PANEL																
LOWER FLANGE																
FEM ELEM. NO.	LOAD CASE	FORCE Fy (lb/in)	MOM My (in-lb/in)	SHR Vy (lb/in)	h (in)	d (in)	d' (in)	t (in)	F1 (lb/in)	F2 (lb/in)	M1 (in-lb/in)	V1 (lb/in)	3σ St (psi)	Fty/Ftu (psi)	FS	MS
1251	Z	17.786	0.199	0.143	0.497	0.313	0.312	0.090	36.495	18.709	5.837	0.143	12976	35000	1.25	1.16
														42000	1.4	1.31
1261	Y	13.035	0.124	0.118	0.754	0.313	0.312	0.090	26.794	13.759	4.293	0.118	9544	35000	1.25	1.93
														42000	1.4	2.14
1261	Z	21.101	0.256	0.137	0.754	0.313	0.312	0.090	43.421	22.320	6.964	0.137	15480	35000	1.25	0.81
														42000	1.4	0.94
1289	Z	18.486	0.154	0.108	0.754	0.313	0.312	0.090	37.786	19.300	6.022	0.108	13385	35000	1.25	1.09
														42000	1.4	1.24
1333	X	10.541	0.041	1.265	0.666	0.313	0.312	0.090	23.945	13.404	4.182	1.265	9336	35000	1.25	2.00
														42000	1.4	2.21
RIGHT FLANGE																
FEM ELEM. NO.	LOAD CASE	FORCE Fy (lb/in)	MOM My (in-lb/in)	SHR Vy (lb/in)	h (in)	d (in)	d' (in)	t (in)	F1 (lb/in)	F2 (lb/in)	M1 (in-lb/in)	V1 (lb/in)	3σ St (psi)	Fty/Ftu (psi)	FS	MS
1333	X	4.422	0.078	1.505	0.296	0.313	0.312	0.040	10.536	6.114	1.908	1.505	21573	35000	1.25	0.30
														42000	1.4	0.39
1338	X	4.313	0.144	0.551	0.312	0.313	0.312	0.040	9.652	5.339	1.666	0.551	18782	35000	1.25	0.49
														42000	1.4	0.60

Table XVI METOP AMSU-A1 Panel Flange Bending Stress Summary
Random Vibration 9.66 grms, Lower Front Panel (Continued)

TABLE 16 RANDOM VIBRATION METOP 9.66 GRMS FORCE DATA - MARGINS OF SAFETY SUMMARY (CONTINUED)																
LOWER FRONT PANEL																
UPPER FLANGE																
FEM ELEM. NO.	LOAD CASE	FORCE Fy (lb/in)	MOM My (in-lb/in)	SHR Vy (lb/in)	h (in)	d (in)	d' (in)	t (in)	F1 (lb/in)	F2 (lb/in)	M1 (in-lb/in)	V1 (lb/in)	3σ St (psi)	Fty/Ftu (psi)	FS	MS
1240	Y	10.928	0.012	0.021	0.368	0.313	0.312	0.060	21.954	11.026	3.440	0.021	17202	35000	1.25	0.63
														42000	1.4	0.74
1240	X	13.651	0.037	0.041	0.368	0.313	0.312	0.060	27.513	13.862	4.325	0.041	21626	35000	1.25	0.29
														42000	1.4	0.39

Table XVII METOP AMSU-A1 Panel Flange Bending Stress Summary
Random Vibration 9.66 grms, Upper Aft Panel

TABLE 17 RANDOM VIBRATION METOP 9.66 GRMS FORCE DATA - MARGINS OF SAFETY SUMMARY

UPPER AFT PANEL

LOWER FLANGE

FEM ELEM. NO.	LOAD CASE	FORCE Fy (lb/in)	MOM My (in-lb/in)	SHR Vy (lb/in)	h (in)	d (in)	d' (in)	t (in)	F1 (lb/in)	F2 (lb/in)	M1 (in-lb/in)	V1 (lb/in)	3σ St (psi)	Fty/Ftu (psi)	FS	MS
5778	X	19.014	11.707	6.175	0.306	0.562	0.188	0.110	148.18	129.16	24.282	6.175	36291	58000	1.25	0.28
														66000	1.4	0.30
5781	X	15.378	12.008	6.528	0.354	0.562	0.188	0.110	137.51	122.13	22.961	6.528	34335	58000	1.25	0.35
														66000	1.4	0.37
5785	X	19.107	12.195	6.572	0.306	0.562	0.188	0.110	151.79	132.68	24.944	6.572	37286	58000	1.25	0.24
														66000	1.4	0.26

UPPER FLANGE

FEM ELEM. NO.	LOAD CASE	FORCE Fy (lb/in)	MOM My (in-lb/in)	SHR Vy (lb/in)	h (in)	d (in)	d' (in)	t (in)	F1 (lb/in)	F2 (lb/in)	M1 (in-lb/in)	V1 (lb/in)	3σ St (psi)	Fty/Ftu (psi)	FS	MS
6980	X	7.580	0.320	0.240	0.245	0.562	0.188	0.060	32.254	24.674	4.639	0.240	23206	58000	1.25	1.00
														66000	1.4	1.03

RIGHT FLANGE

FEM ELEM. NO.	LOAD CASE	FORCE Fy (lb/in)	MOM My (in-lb/in)	SHR Vy (lb/in)	h (in)	d (in)	d' (in)	t (in)	F1 (lb/in)	F2 (lb/in)	M1 (in-lb/in)	V1 (lb/in)	3σ St (psi)	Fty/Ftu (psi)	FS	MS
6856 W/LOCAL THICKNESS	X	1.546	4.321	15.649	0.362	0.562	0.188	0.145	59.284	57.738	10.855	15.649	9617	58000	1.25	3.82
														66000	1.4	3.90
6963	X	8.824	0.629	0.101	0.655	0.562	0.188	0.060	38.900	30.076	5.654	0.101	28276	58000	1.25	0.64
														66000	1.4	0.67

Table XVII METOP AMSU-A1 Panel Flange Bending Stress Summary
Random Vibration 9.66 grms, Upper Aft Panel (Continued)

TABLE 17 RANDOM VIBRATION METOP 9.66 GRMS FORCE DATA - MARGINS OF SAFETY SUMMARY (CONTINUED)																
UPPER AFT PANEL																
LEFT FLANGE																
FEM ELEM. NO.	LOAD CASE	FORCE Fy (lb/in)	MOM My (in-lb/in)	SHR Vy (lb/in)	h (in)	d (in)	d' (in)	t (in)	F1 (lb/in)	F2 (lb/in)	M1 (in-lb/in)	V1 (lb/in)	3σ St (psi)	Fty/Ftu (psi)	FS	MS
6944	X	15.180	11.498	16.468	0.267	0.562	0.188	0.145	145.11	129.93	24.426	16.468	21252	58000	1.25	1.18
W/LOCAL THICKNESS														66000	1.4	1.22
6944	Z	18.398	3.460	1.803	0.267	0.562	0.188	0.145	94.361	75.963	14.281	1.803	12264	58000	1.25	2.78
W/LOCAL THICKNESS														66000	1.4	2.84
6945	X	29.887	8.428	6.144	0.468	0.562	0.188	0.145	179.35	149.47	28.100	6.144	24184	58000	1.25	0.92
W/LOCAL THICKNESS														66000	1.4	0.95
6946	X	60.365	10.907	2.241	0.312	0.562	0.188	0.145	302.55	242.19	45.531	2.241	39027	58000	1.25	0.19
W/LOCAL THICKNESS														66000	1.4	0.21
6925	X	19.428	0.799	0.195	0.382	0.562	0.188	0.075	82.15	62.72	11.792	0.195	37742	58000	1.25	0.23
														66000	1.4	0.25
6926	X	13.625	0.275	0.126	0.362	0.562	0.188	0.075	56.06	42.44	7.978	0.126	25534	58000	1.25	0.82
														66000	1.4	0.85

Table XVIII METOP AMSU-A1 Panel Flange Bending Stress Summary
Random Vibration 9.66 grms, Upper Right Panel

UPPER RIGHT PANEL																
LOWER FLANGE																
FEM ELEM. NO.	LOAD CASE	FORCE Fy (lb/in)	MOM My (in-lb/in)	SHR Vy (lb/in)	h (in)	d (in)	d' (in)	t (in)	F1 (lb/in)	F2 (lb/in)	M1 (in-lb/in)	V1 (lb/in)	3σ St (psi)	Fty/Ftu (psi)	FS	MS
1648	X	14.858	0.034	0.306	0.395	0.312	0.188	0.060	40.340	25.482	4.791	0.306	23968	35000	1.25	0.17
														42000	1.4	0.25

Table XIX METOP AMSU-A1 Panel Flange Bending Stress Summary
Random Vibration 9.66 grms, Lower Right Front Support Panel

LOWER RIGHT FRONT SUPPORT PANEL																
LOWER FLANGE																
FEM	LOAD	FORCE	MOM	SHR									3σ			
ELEM.	CASE	Fy	My	Vy	h	d	d'	t	F1	F2	M1	V1	St	Fty/Ftu	FS	MS
NO.		(lb/in)	(in-lb/in)	(lb/in)	(in)	(in)	(in)	(in)	(lb/in)	(lb/in)	(in-lb/in)	(lb/in)	(psi)	(psi)		
2201	X	3.424	0.036	0.070	0.566	0.312	0.313	0.045	7.079	3.655	1.144	0.070	10172	35000	1.25	1.75
														42000	1.4	1.95
AFT FLANGE																
FEM	LOAD	FORCE	MOM	SHR									3σ			
ELEM.	CASE	Fy	My	Vy	h	d	d'	t	F1	F2	M1	V1	St	Fty/Ftu	FS	MS
NO.		(lb/in)	(in-lb/in)	(lb/in)	(in)	(in)	(in)	(in)	(lb/in)	(lb/in)	(in-lb/in)	(lb/in)	(psi)	(psi)		
2204	X	5.007	0.060	0.033	0.870	0.312	0.313	0.045	10.281	5.274	1.651	0.033	14677	35000	1.25	0.91
														42000	1.4	1.04

Table XX METOP AMSU-A1 Panel Flange Attachment Screws Stress Summary
Random Vibration 9.66 grms, Upper Front Panel

UPPER FRONT PANEL														
LOWER FLANGE - BOLT STRESSES (NAS1352N06-6)														
FEM	LOAD	F1	V1	NO.	L	F_B	V_B	3σ	3σ	Ftu'	FS	Fsu'	FS	MS
ELEM.	CASE	(lb/in)	(lb/in)	BOLTS	(in)	(lb)	(lb)	F_B	V_B	(lb)		(lb)		
NO.														
1538	Z	40.438	0.132	7	10.575	61.090	0.199	183.27	0.598	1458	1.4	875	1.4	4.7
RIGHT FLANGE - BOLT STRESSES (NAS1352N06-6)														
FEM	LOAD	F1	V1	NO.	L	F_B	V_B	3σ	3σ	Ftu'	FS	Fsu'	FS	MS
ELEM.	CASE	(lb/in)	(lb/in)	BOLTS	(in)	(lb)	(lb)	F_B	V_B	(lb)		(lb)		
NO.														
1439	X	8.978	2.971	8	11.500	12.906	4.271	38.72	12.8124	1458	1.4	875	1.4	24
UPPER FLANGE - BOLT STRESSES (NAS1352N06-6)														
FEM	LOAD	F1	V1	NO.	L	F_B	V_B	3σ	3σ	Ftu'	FS	Fsu'	FS	MS
ELEM.	CASE	(lb/in)	(lb/in)	BOLTS	(in)	(lb)	(lb)	F_B	V_B	(lb)		(lb)		
NO.														
1491	Z	7.400	0.288	9	10.447	8.590	0.334	25.77	1.003	1458	1.4	875	1.4	39

Table XXI METOP AMSU-A1 Panel Flange Attachment Screws Stress Summary
Random Vibration 9.66 grms, Upper Right Front Support Panel

UPPER RIGHT FRONT SUPPORT PANEL														
AFT FLANGE - BOLT STRESSES (NAS1352N06-6)														
FEM	LOAD	F1	V1	NO.	L	F_B	V_B	3σ	3σ	Ftu'	FS	Fsu'	FS	MS
ELEM.	CASE	(lb/in)	(lb/in)	BOLTS	(in)	(lb)	(lb)	F_B	V_B	(lb)		(lb)		
NO.														
2241	X	21.921	0.031	3	6.200	45.304	0.064	135.91	0.192	1458	1.4	875	1.4	6.7
LOWER FLANGE - BOLT STRESSES (NAS1352N06-6)														
FEM	LOAD	F1	V1	NO.	L	F_B	V_B	3σ	3σ	Ftu'	FS	Fsu'	FS	MS
ELEM.	CASE	(lb/in)	(lb/in)	BOLTS	(in)	(lb)	(lb)	F_B	V_B	(lb)		(lb)		
NO.														
2230	X	10.654	0.074	3	6.500	23.083	0.160	69.25	0.481	1458	1.4	875	1.4	14

Table XXII METOP AMSU-A1 Panel Flange Attachment Screws Stress Summary
Random Vibration 9.66 grms, Lower Right Panel

LOWER RIGHT PANEL														
LOWER FLANGE - BOLT STRESSES (NAS1352N06-6)														
FEM ELEM. NO.	LOAD CASE	F1 (lb/in)	V1 (lb/in)	NO. BOLTS	L (in)	F_B (lb)	V_B (lb)	3σ F_B	3σ V_B	Ftu' (lb)	FS	Fsu' (lb)	FS	MS
575	Z	21.307	0.090	15	19.290	27.400	0.116	82.20	0.347	1458	1.4	875	1.4	12

Table XXIII METOP AMSU-A1 Panel Flange Attachment Screws Stress Summary
Random Vibration 9.66 grms, Lower Aft Panel

LOWER AFT PANEL														
RIGHT FLANGE - BOLT STRESSES (NAS1352N06-6)														
FEM	LOAD	F1	V1	NO.	L	F_B	V_B	3σ	3σ	Ftu'	FS	Fsu'	FS	MS
ELEM. NO.	CASE	(lb/in)	(lb/in)	BOLTS	(in)	(lb)	(lb)	F_B	V_B	(lb)		(lb)		
429	X	12.831	0.101	7	8.770	16.075	0.127	48.23	0.380	1458	1.4	875	1.4	21
LOWER FLANGE - BOLT STRESSES (NAS1352N06-6)														
FEM	LOAD	F1	V1	NO.	L	F_B	V_B	3σ	3σ	Ftu'	FS	Fsu'	FS	MS
ELEM. NO.	CASE	(lb/in)	(lb/in)	BOLTS	(in)	(lb)	(lb)	F_B	V_B	(lb)		(lb)		
340	Z	30.794	0.074	8	10.563	40.659	0.098	121.98	0.293	1458	1.4	875	1.4	7.5
UPPER FLANGE - BOLT STRESSES (NAS1352N06-6)														
FEM	LOAD	F1	V1	NO.	L	F_B	V_B	3σ	3σ	Ftu'	FS	Fsu'	FS	MS
ELEM. NO.	CASE	(lb/in)	(lb/in)	BOLTS	(in)	(lb)	(lb)	F_B	V_B	(lb)		(lb)		
429	X	49.419	0.598	6	8.498	69.993	0.847	209.98	2.541	1458	1.4	875	1.4	4.0
339	X	50.392	0.196	6	8.498	71.372	0.278	214.12	0.833	1458	1.4	875	1.4	3.9

Table XXIV METOP AMSU-A1 Panel Flange Attachment Screws Stress Summary
Random Vibration 9.66 grms, Upper Motor Mount Panel

UPPER MOTOR MOUNT PANEL														
LOWER FLANGE - BOLT STRESSES (NAS1352N06-6)														
FEM ELEM. NO.	LOAD CASE	F1 (lb/in)	V1 (lb/in)	NO. BOLTS	L (in)	F_B (lb)	V_B (lb)	3σ F_B	3σ V_B	Ftu' (lb)	FS	Fsu' (lb)	FS	MS
2272	X	12.553	0.055	6	10.563	22.100	0.097	66.30	0.290	1458	1.4	875	1.4	15
2279	Z	16.838	0.135	6	10.563	29.643	0.238	88.93	0.713	1458	1.4	875	1.4	11
RIGHT FLANGE - BOLT STRESSES (NAS1352N06-6)														
FEM ELEM. NO.	LOAD CASE	F1 (lb/in)	V1 (lb/in)	NO. BOLTS	L (in)	F_B (lb)	V_B (lb)	3σ F_B	3σ V_B	Ftu' (lb)	FS	Fsu' (lb)	FS	MS
2271	X	14.186	0.085	3	6.245	29.531	0.177	88.59	0.531	1458	1.4	875	1.4	11

Table XXV METOP AMSU-A1 Panel Flange Attachment Screws Stress Summary
Random Vibration 9.66 grms, Lower Motor Mount Panel

LOWER MOTOR MOUNT PANEL														
LOWER FLANGE - BOLT STRESSES (NAS1352N06-6)														
FEM ELEM. NO.	LOAD CASE	F1 (lb/in)	V1 (lb/in)	NO. BOLTS	L (in)	F_B (lb)	V_B (lb)	3σ F_B	3σ V_B	Ftu' (lb)	FS	Fsu' (lb)	FS	MS
2449	X	30.142	0.167	6	10.562	53.060	0.294	159.18	0.882	1458	1.4	875	1.4	5.5

Table XXVI METOP AMSU-A1 Panel Flange Attachment Screws Stress Summary
Random Vibration 9.66 grms - Lower Front Panel

LOWER FRONT PANEL														
LOWER FLANGE - BOLT STRESSES (NAS1352N06-6)														
FEM ELEM. NO.	LOAD CASE	F1 (lb/in)	V1 (lb/in)	NO. BOLTS	L (in)	F_B (lb)	V_B (lb)	3σ F_B	3σ V_B	Ftu' (lb)	FS	Fsu' (lb)	FS	MS
1261	Z	43.421	0.137	8	10.563	57.332	0.181	172.00	0.543	1458	1.4	875	1.4	5.1
RIGHT FLANGE - BOLT STRESSES (NAS1352N06-6)														
FEM ELEM. NO.	LOAD CASE	F1 (lb/in)	V1 (lb/in)	NO. BOLTS	L (in)	F_B (lb)	V_B (lb)	3σ F_B	3σ V_B	Ftu' (lb)	FS	Fsu' (lb)	FS	MS
1333	Z	10.536	1.505	8	9.440	12.432	1.776	37.30	5.328	1458	1.4	875	1.4	27
UPPER FLANGE - BOLT STRESSES (NAS1352N06-6)														
FEM ELEM. NO.	LOAD CASE	F1 (lb/in)	V1 (lb/in)	NO. BOLTS	L (in)	F_B (lb)	V_B (lb)	3σ F_B	3σ V_B	Ftu' (lb)	FS	Fsu' (lb)	FS	MS
1240	X	27.513	0.041	7	10.288	40.436	0.060	121.31	0.181	1458	1.4	875	1.4	7.6

Table XXVII METOP AMSU-A1 Panel Flange Attachment Screws Stress Summary
Random Vibration 9.66 grms, Upper Aft Panel

UPPER AFT PANEL														
LOWER FLANGE - BOLT STRESSES (NAS1352N06-6)														
FEM ELEM. NO.	LOAD CASE	F1 (lb/in)	V1 (lb/in)	NO. BOLTS	L (in)	F_B (lb)	V_B (lb)	3σ F_B	3σ V_B	Ftu' (lb)	FS	Fsu' (lb)	FS	MS
5778	X	148.176	6.175	9	11.700	192.629	8.028	577.89	24.083	1458	1.4	875	1.4	0.80
5781	X	137.513	6.528	9	11.700	178.767	8.486	536.30	25.459	1458	1.4	875	1.4	0.94
5785	X	151.789	6.572	9	11.700	197.325	8.544	591.98	25.631	1458	1.4	875	1.4	0.76
UPPER FLANGE - BOLT STRESSES (NAS1352N06-6)														
FEM ELEM. NO.	LOAD CASE	F1 (lb/in)	V1 (lb/in)	NO. BOLTS	L (in)	F_B (lb)	V_B (lb)	3σ F_B	3σ V_B	Ftu' (lb)	FS	Fsu' (lb)	FS	MS
6980	X	32.254	0.240	7	9.800	45.156	0.336	135.47	1.008	1458	1.4	875	1.4	6.7
RIGHT FLANGE - BOLT STRESSES (NAS1352N06-6)														
FEM ELEM. NO.	LOAD CASE	F1 (lb/in)	V1 (lb/in)	NO. BOLTS	L (in)	F_B (lb)	V_B (lb)	3σ F_B	3σ V_B	Ftu' (lb)	FS	Fsu' (lb)	FS	MS
6856	X	59.284	15.649	8	11.600	85.962	22.691	257.89	68.073	1458	1.4	875	1.4	2.9
LEFT FLANGE - BOLT STRESSES (NAS1352N06-6)														
FEM ELEM. NO.	LOAD CASE	F1 (lb/in)	V1 (lb/in)	NO. BOLTS	L (in)	F_B (lb)	V_B (lb)	AVG 3σ F_B	AVG 3σ V_B	Ftu' (lb)	FS	Fsu' (lb)	FS	MS
6944	X	145.106	16.468	8	11.600	210.404	23.879							
6945	X	179.354	6.144	8	11.600	260.064	8.909	909.17	36.037	1458	1.4	875	1.4	0.15
6946	X	302.553	2.241	8	11.600	438.702	3.249							

Table XXVIII METOP AMSU-A1 Panel Flange Attachment Screws Stress Summary
Random Vibration 9.66 grms, Upper Right Panel

UPPER RIGHT PANEL														
LOWER FLANGE - BOLT STRESSES (NAS1352N06-6)														
FEM ELEM. NO.	LOAD CASE	F1 (lb/in)	V1 (lb/in)	NO. BOLTS	L (in)	F_B (lb)	V_B (lb)	3σ F_B	3σ V_B	Ftu' (lb)	FS	Fsu' (lb)	FS	MS
1648	X	40.340	0.306	7	8.783	50.615	0.384	151.84	1.152	1458	1.4	875	5.85801	5.9

Table XXIX METOP AMSU-A1 Panel Flange Attachment Screws Stress Summary
Random Vibration 9.66 grms, Lower Right Front Support Panel

LOWER RIGHT FRONT SUPPORT PANEL														
LOWER FLANGE - BOLT STRESSES (NAS1352N06-6)														
FEM	LOAD	F1	V1	NO.	L	F_B	V_B	3σ	3σ	Ftu'	FS	Fsu'	FS	MS
ELEM.	CASE	(lb/in)	(lb/in)	BOLTS	(in)	(lb)	(lb)	F_B	V_B	(lb)		(lb)		
NO.														
2201	X	7.079	0.070	3	6.500	15.337	0.152	46.01	0.455	1458	1.4	875	21.456	21
AFT FLANGE - BOLT STRESSES (NAS1352N06-6)														
FEM	LOAD	F1	V1	NO.	L	F_B	V_B	3σ	3σ	Ftu'	FS	Fsu'	FS	MS
ELEM.	CASE	(lb/in)	(lb/in)	BOLTS	(in)	(lb)	(lb)	F_B	V_B	(lb)		(lb)		
NO.														
2204	X	10.281	0.033	3	3.450	11.824	0.038	35.47	0.114	1458	1.4	875	28.3414	28

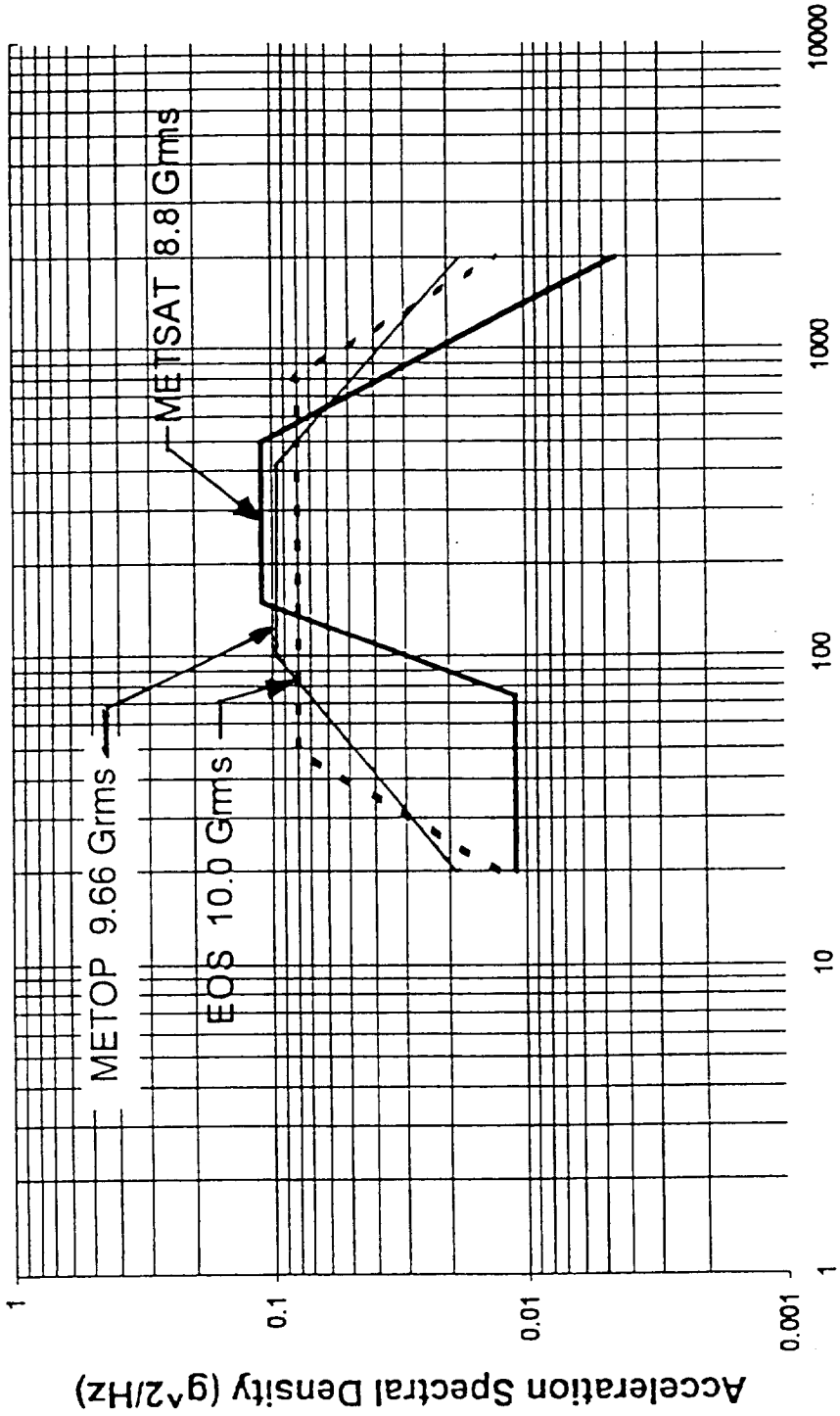


Figure 1 METOP, METSAT, and EOS Random Vibration Qualification Level PSD Spectrums

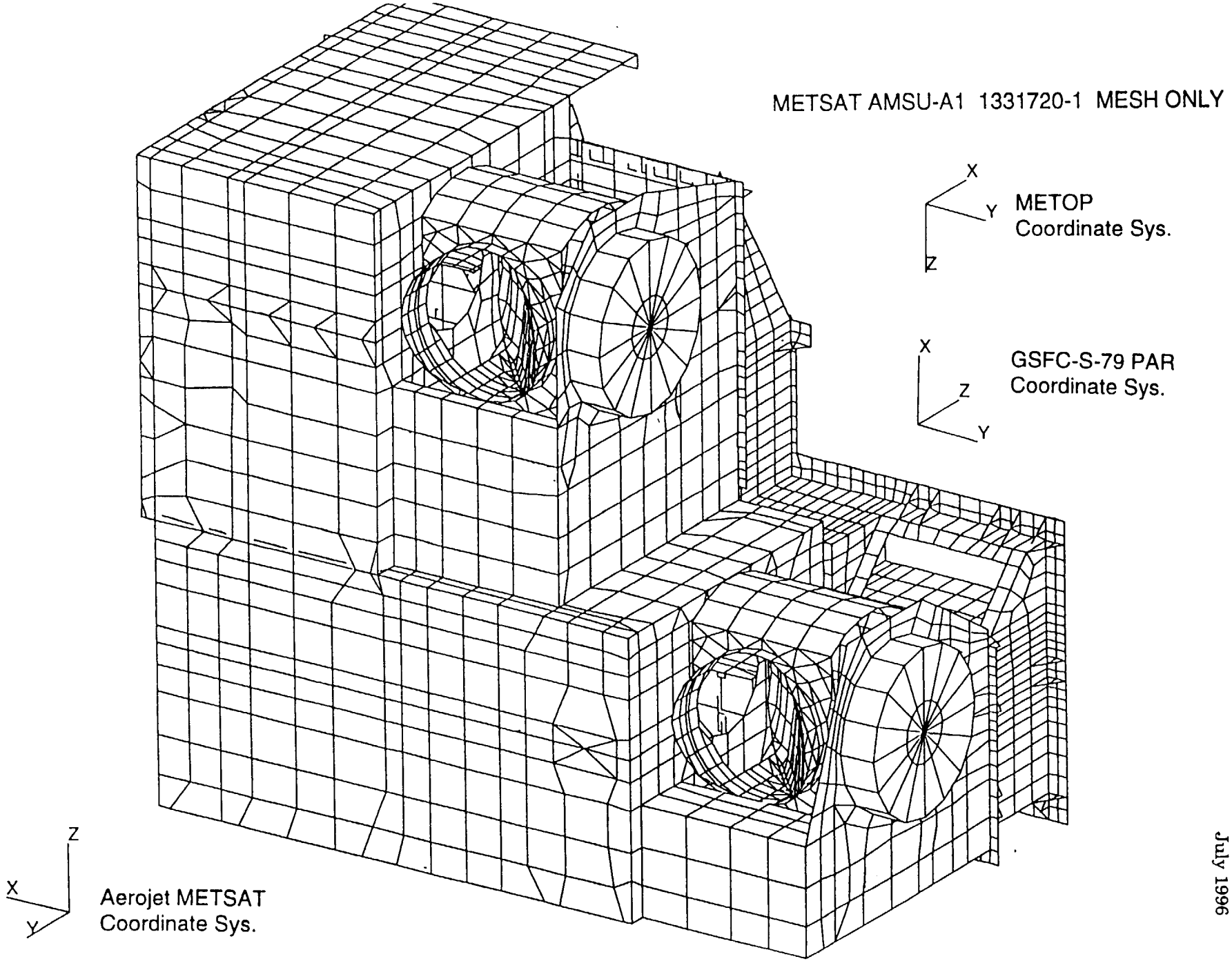


Figure 2 METSAT AMSU-A1 1331720-1 Finite Element Model, View 1

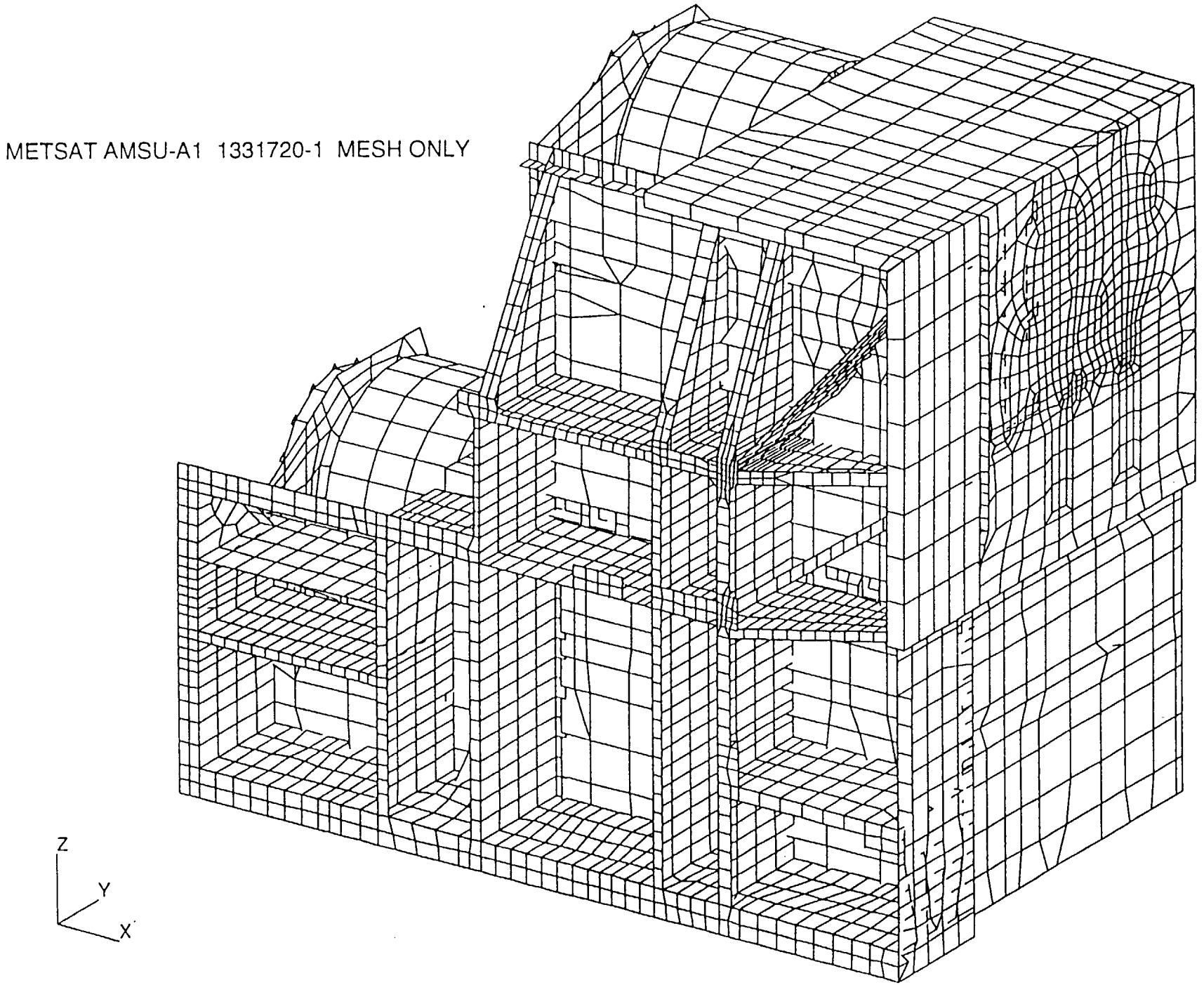


Figure 3 METSAT AMSU-A1 1331720-1 Finite Element Model, View 2

Figure 4 METSAT AMSU-A1 1331720-1 Finite Element Model, View 3

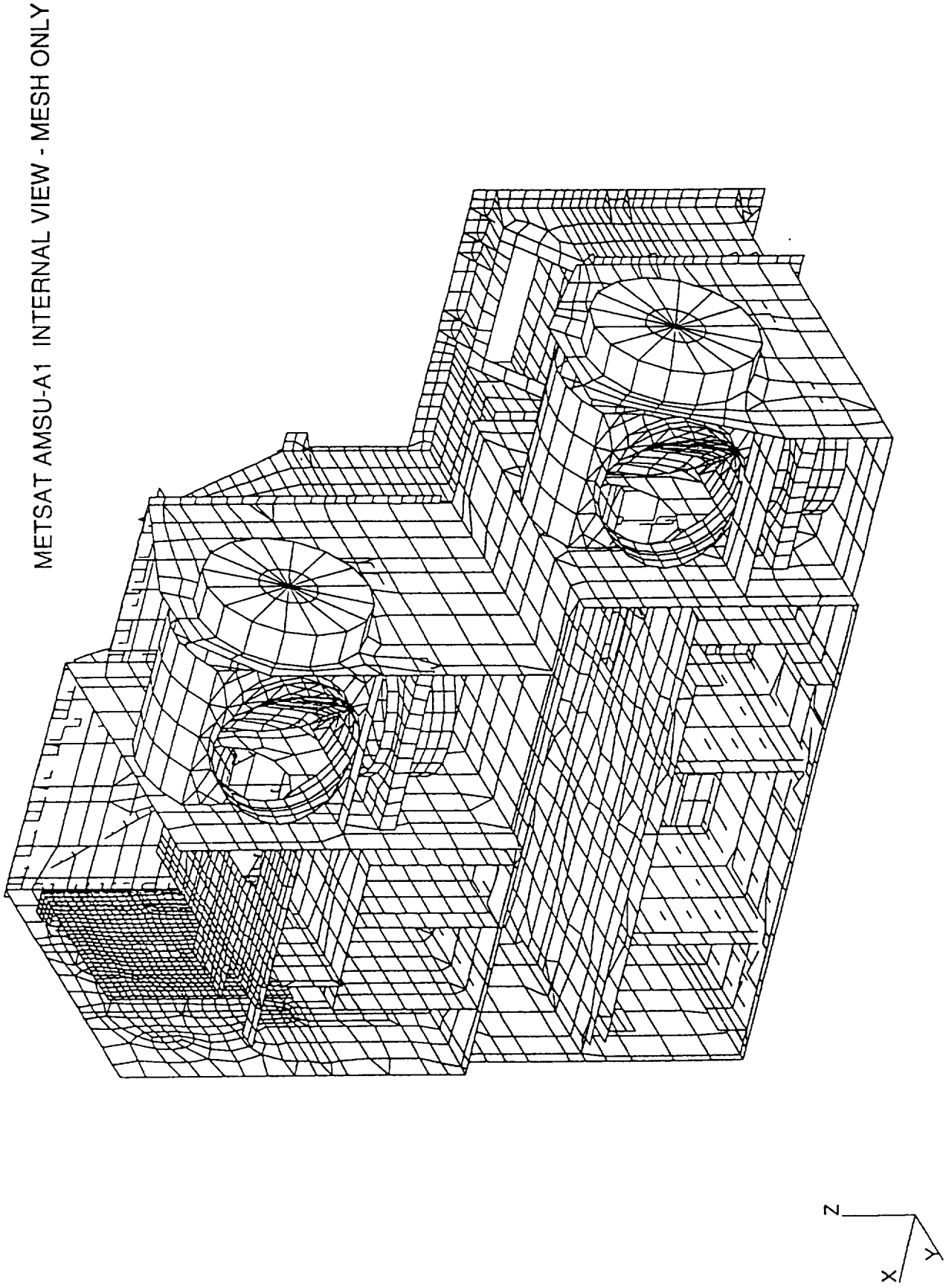


Figure 5 METSAT AMSU-A1 1331720-1 Finite Element Model, View 4

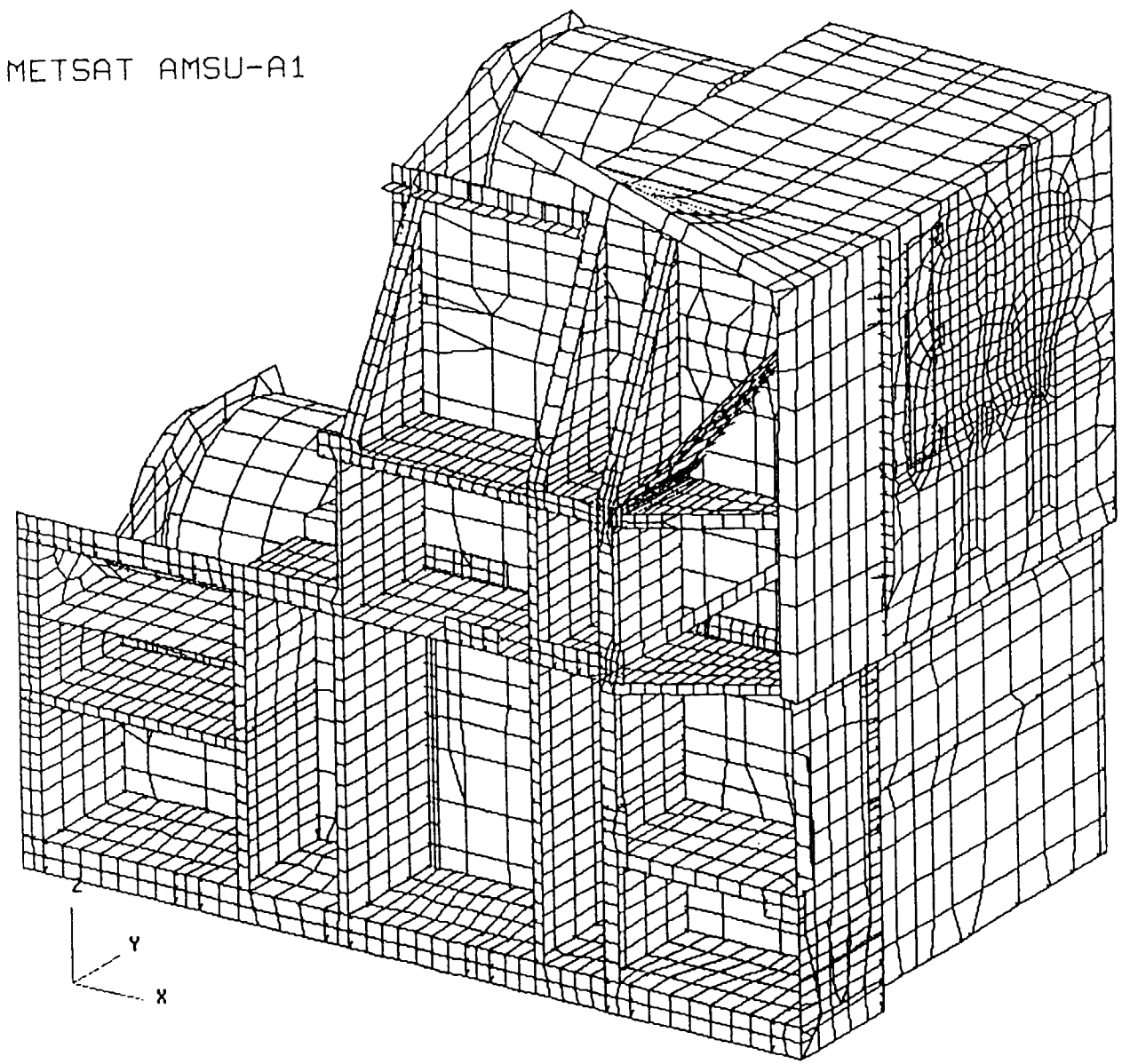


Figure 6 METSAT AMSU-A1 Modal Shape 1, 101.1 Hz

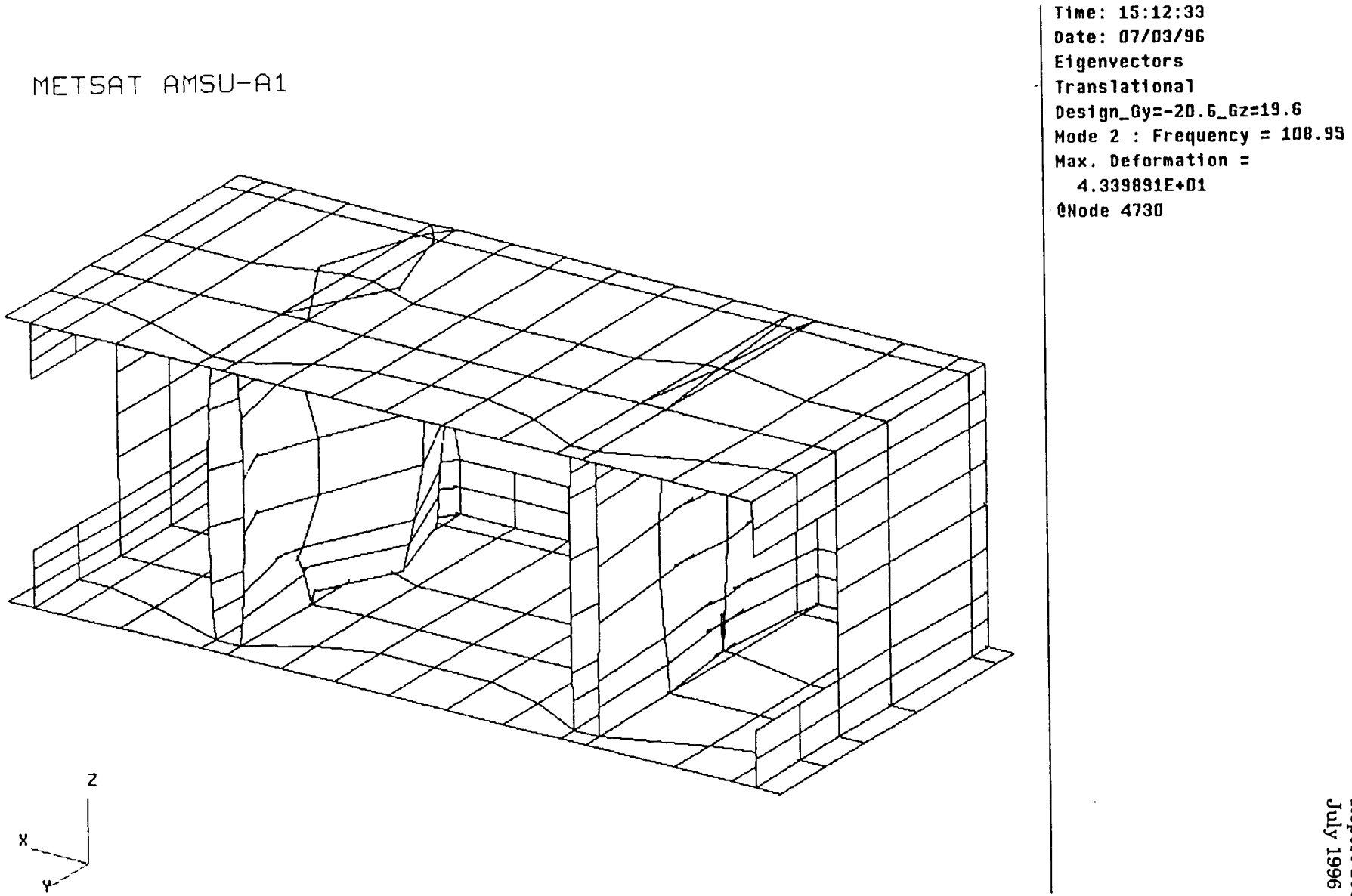


Figure 7 METSAT AMSU-A1 Modal Shape 2, 109.0 Hz

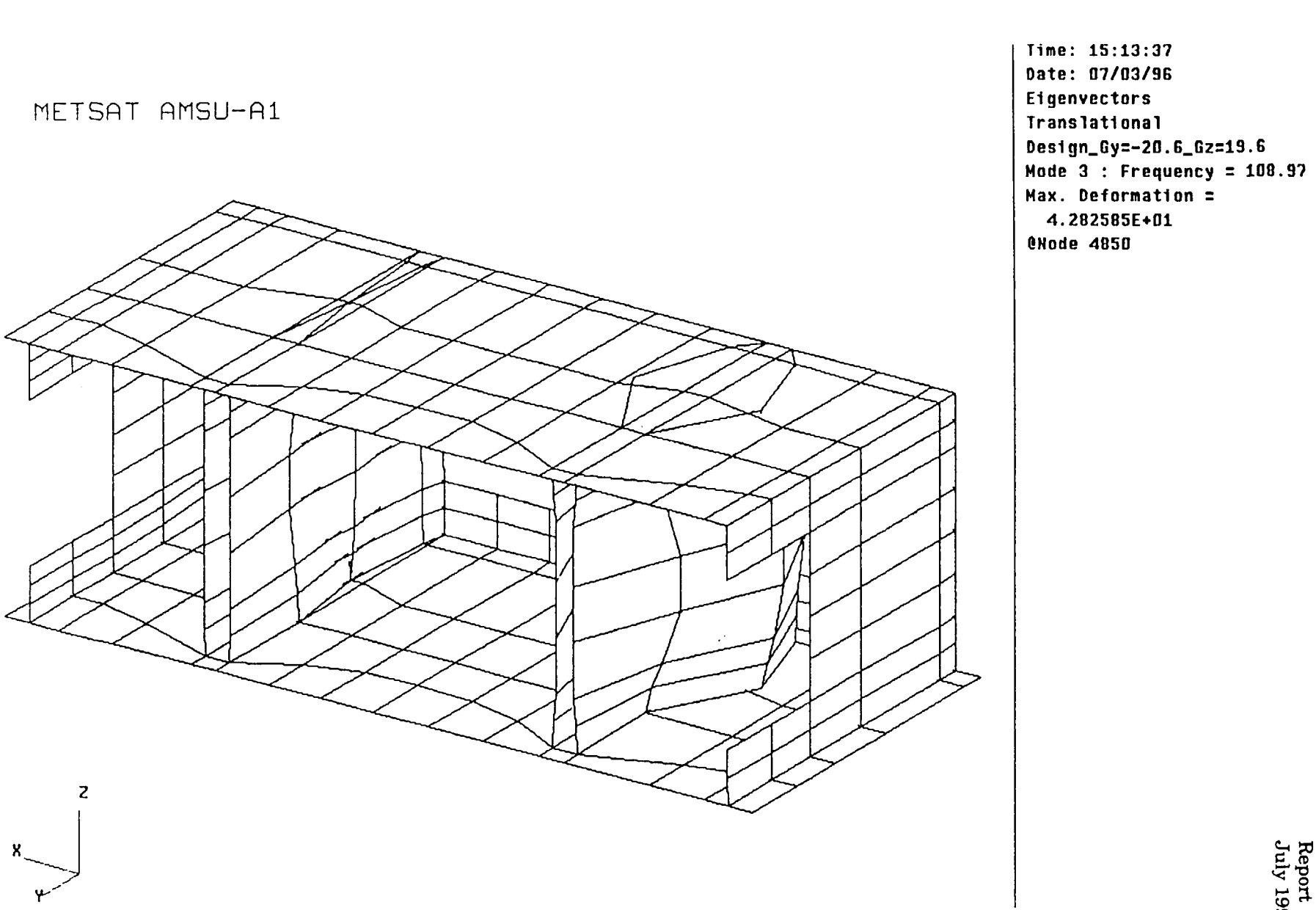


Figure 8 METSAT AMSU-A1 Modal Shape 3, 109.0 Hz

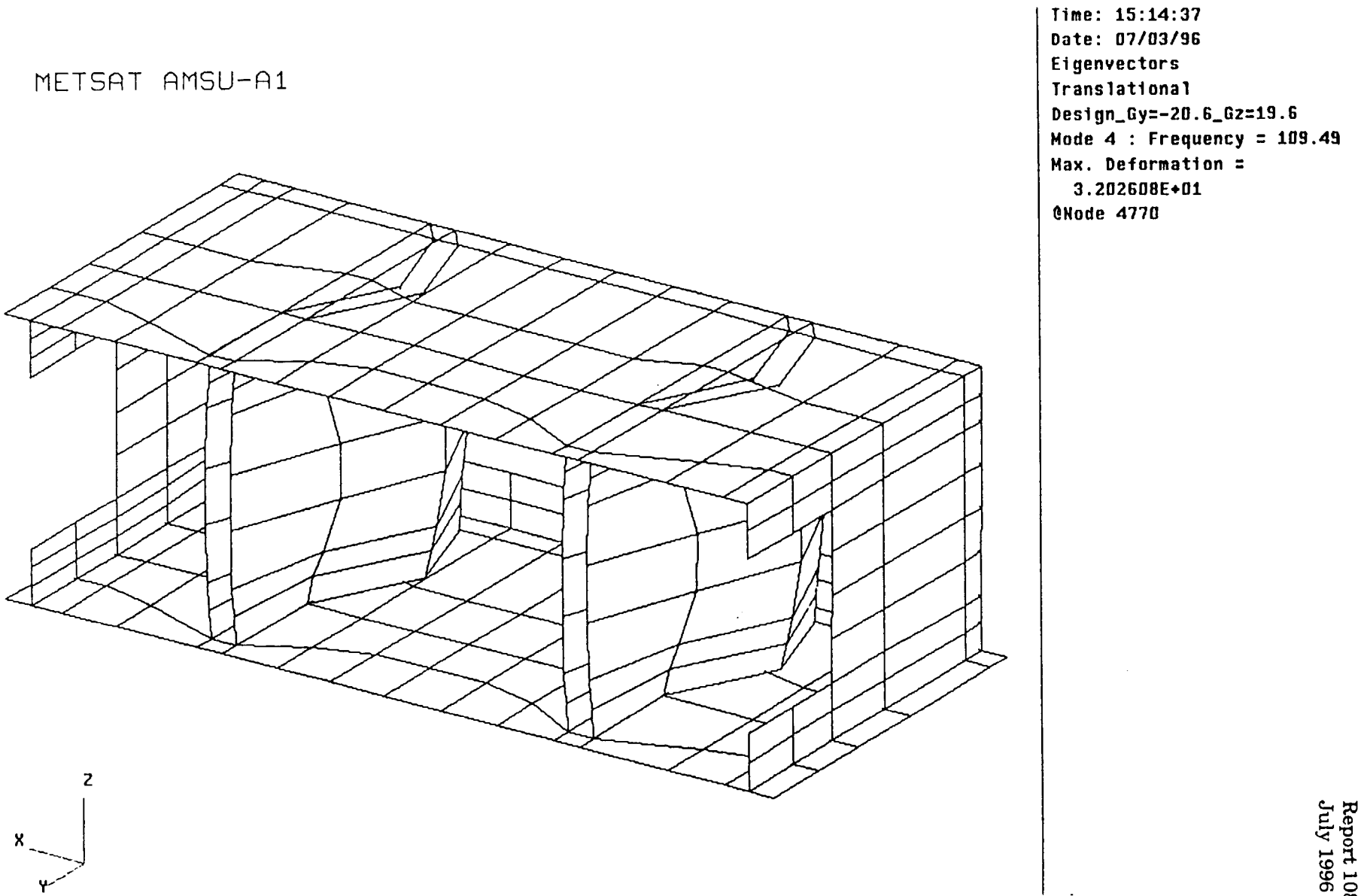


Figure 9 METSAT AMSU-A1 Modal Shape 4, 109.5 Hz

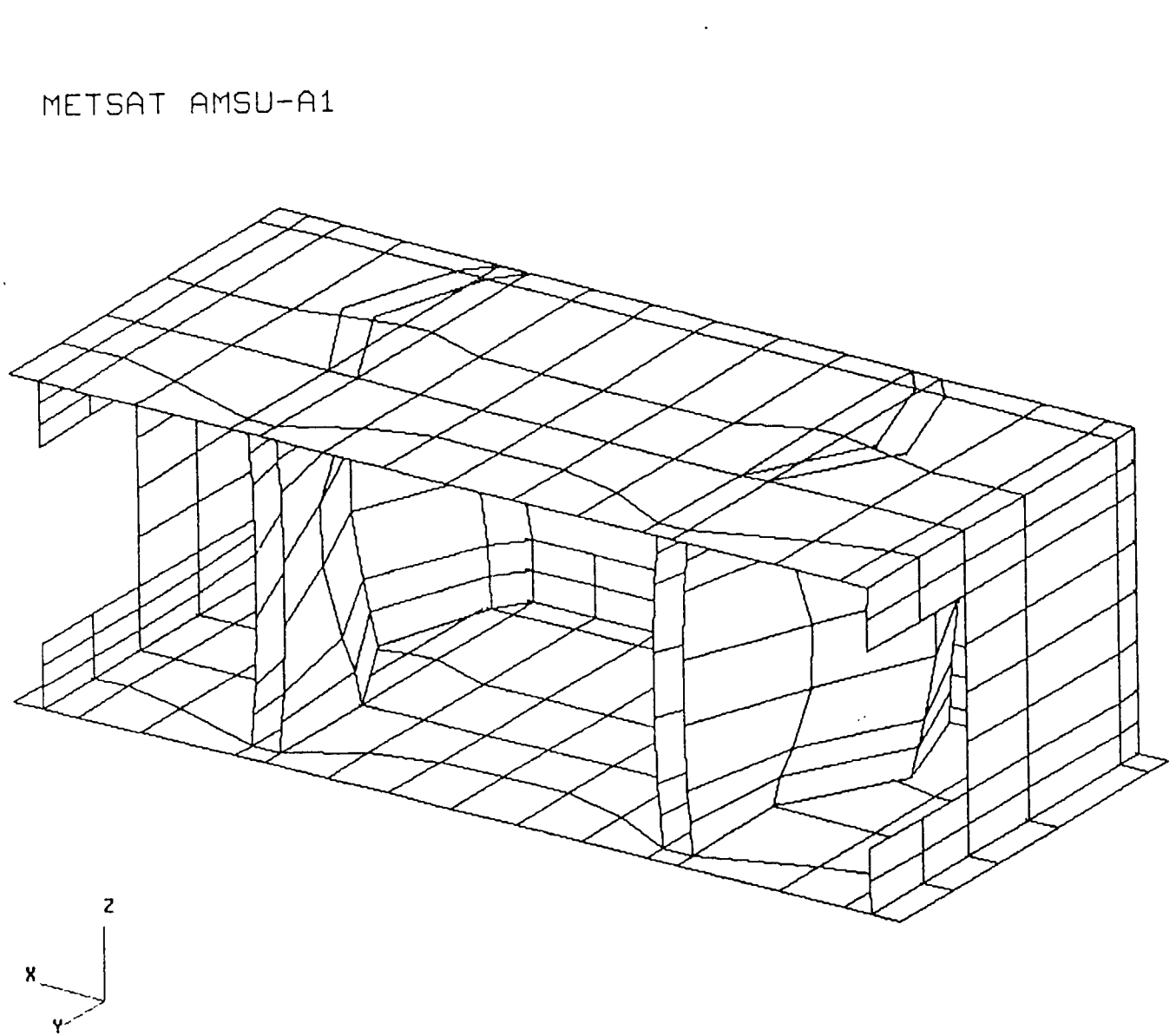


Figure 10 METSAT AMSU-A1 Modal Shape 5, 109.7 Hz

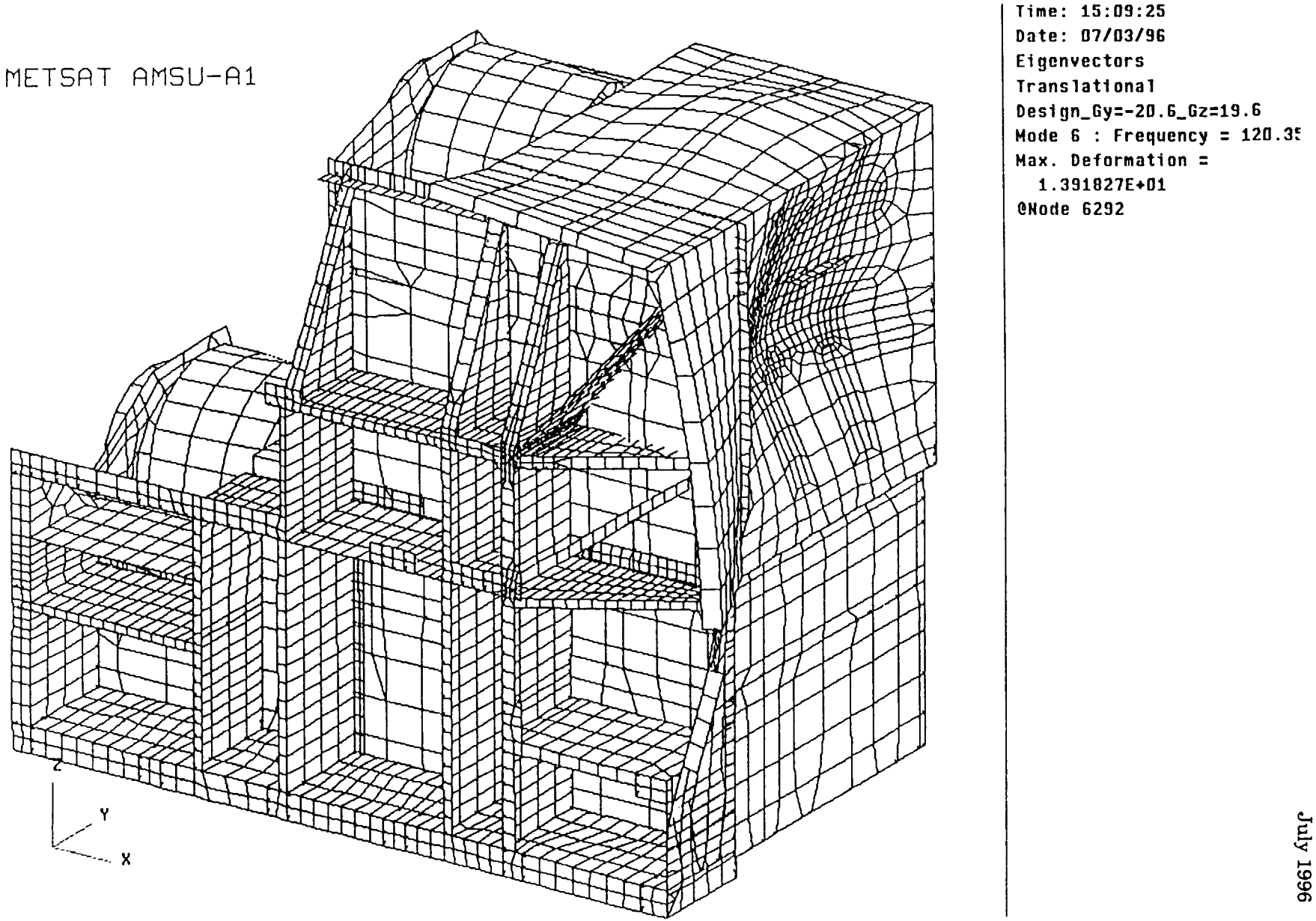


Figure 11 METSAT AMSU-A1 Modal Shape 6, 120.4 Hz

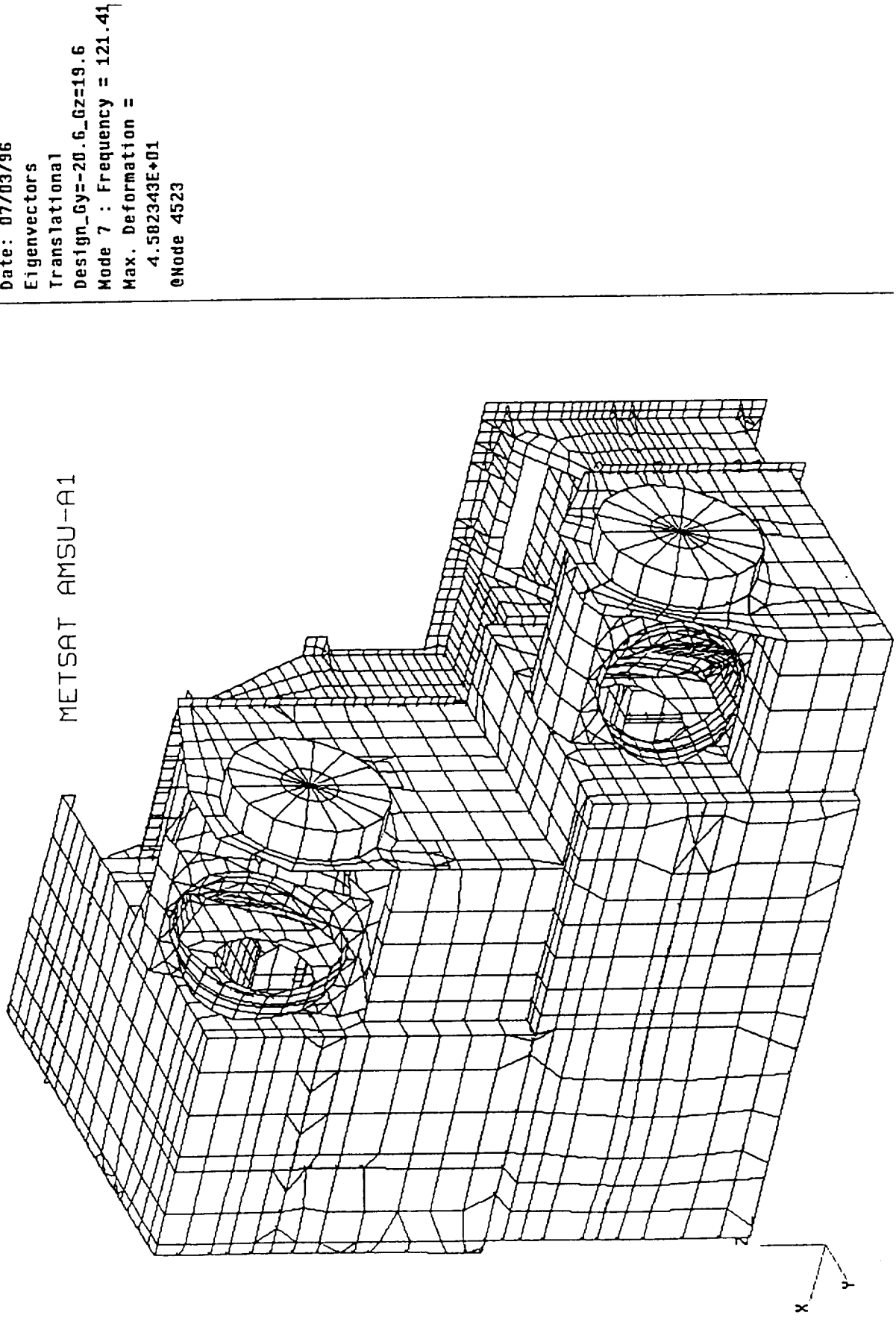


Figure 12 METSAT AMSU-A1 Modal Shape 7, 121.4 Hz

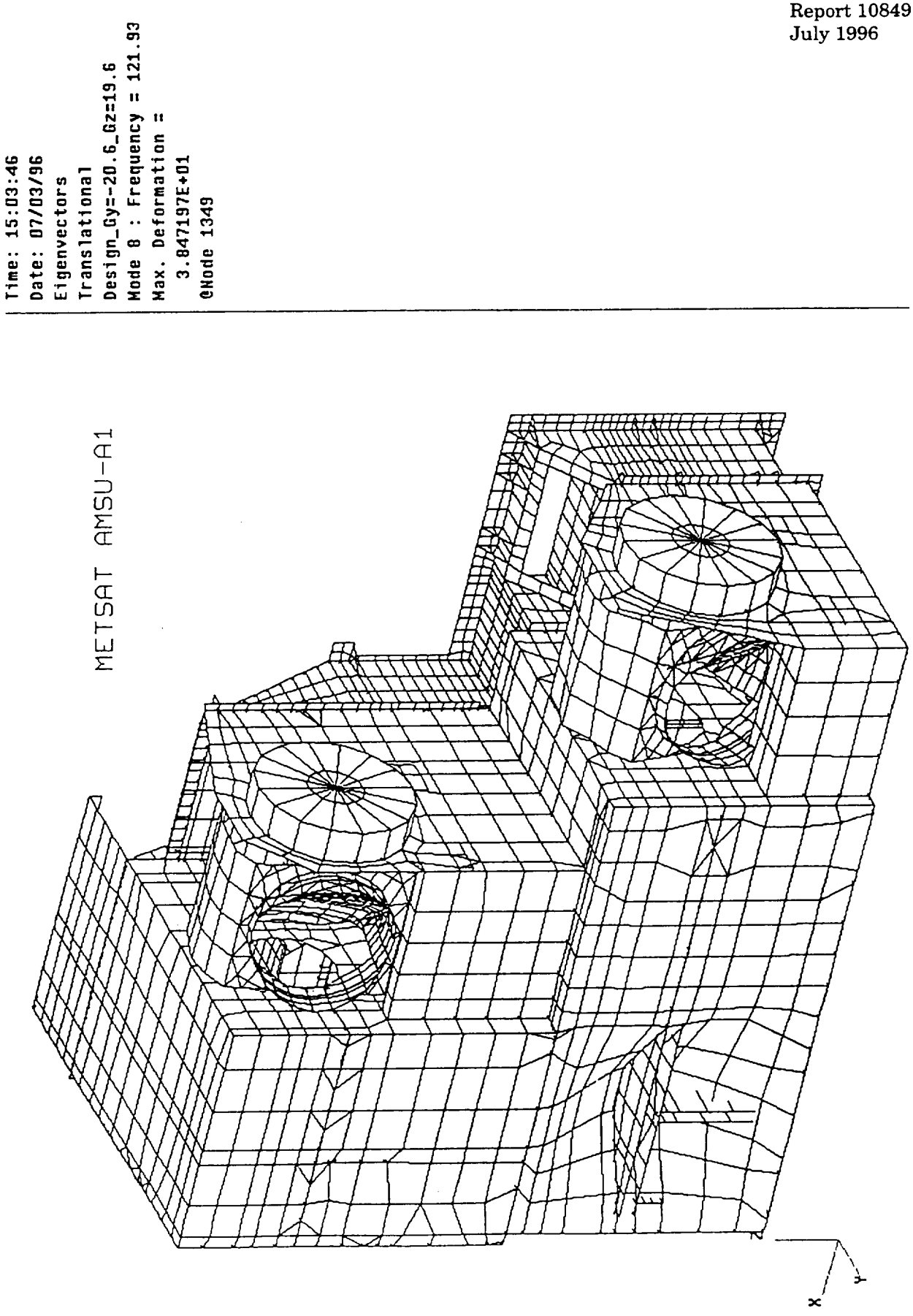


Figure 13 METSAT AMSU-A1 Modal Shape 8, 121.9 Hz

Figure 14 METSAT AMSU-A1 Modal Shape 9, 122.0 Hz

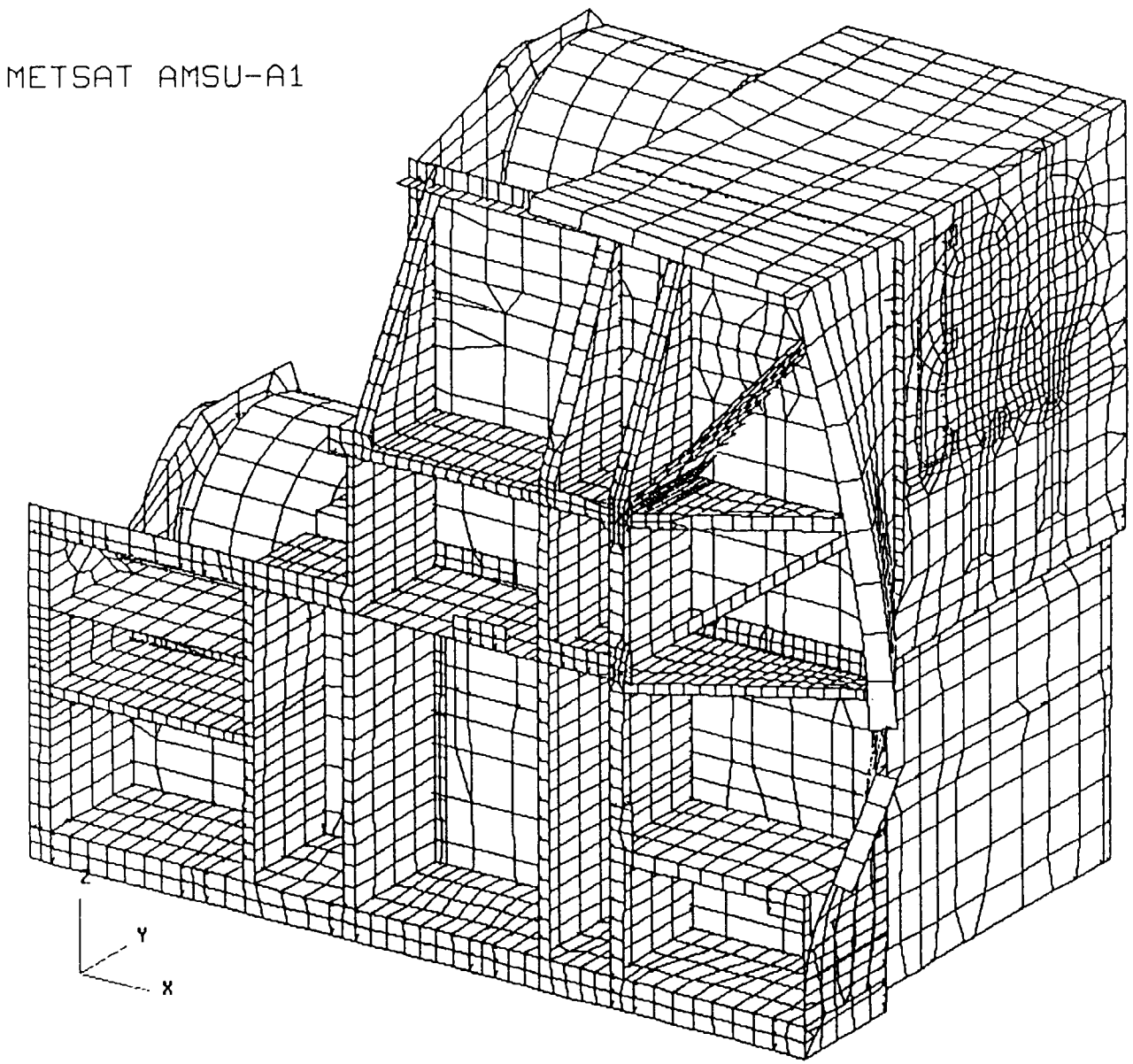


Figure 15 METSAT AMSU-A1 Modal Shape 10, 130.8 Hz

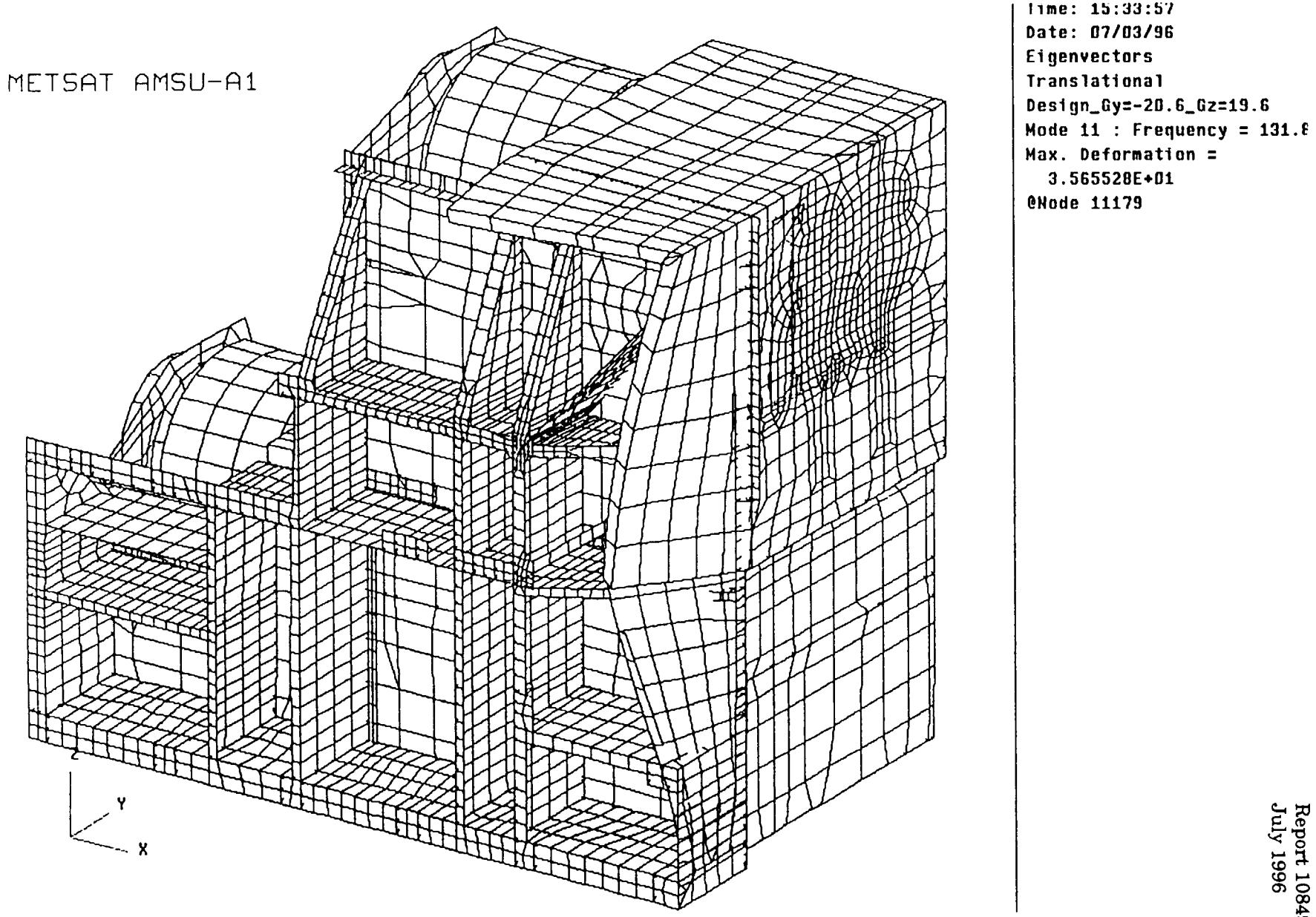


Figure 16 METSAT AMSU-A1 Modal Shape 11, 131.8 Hz

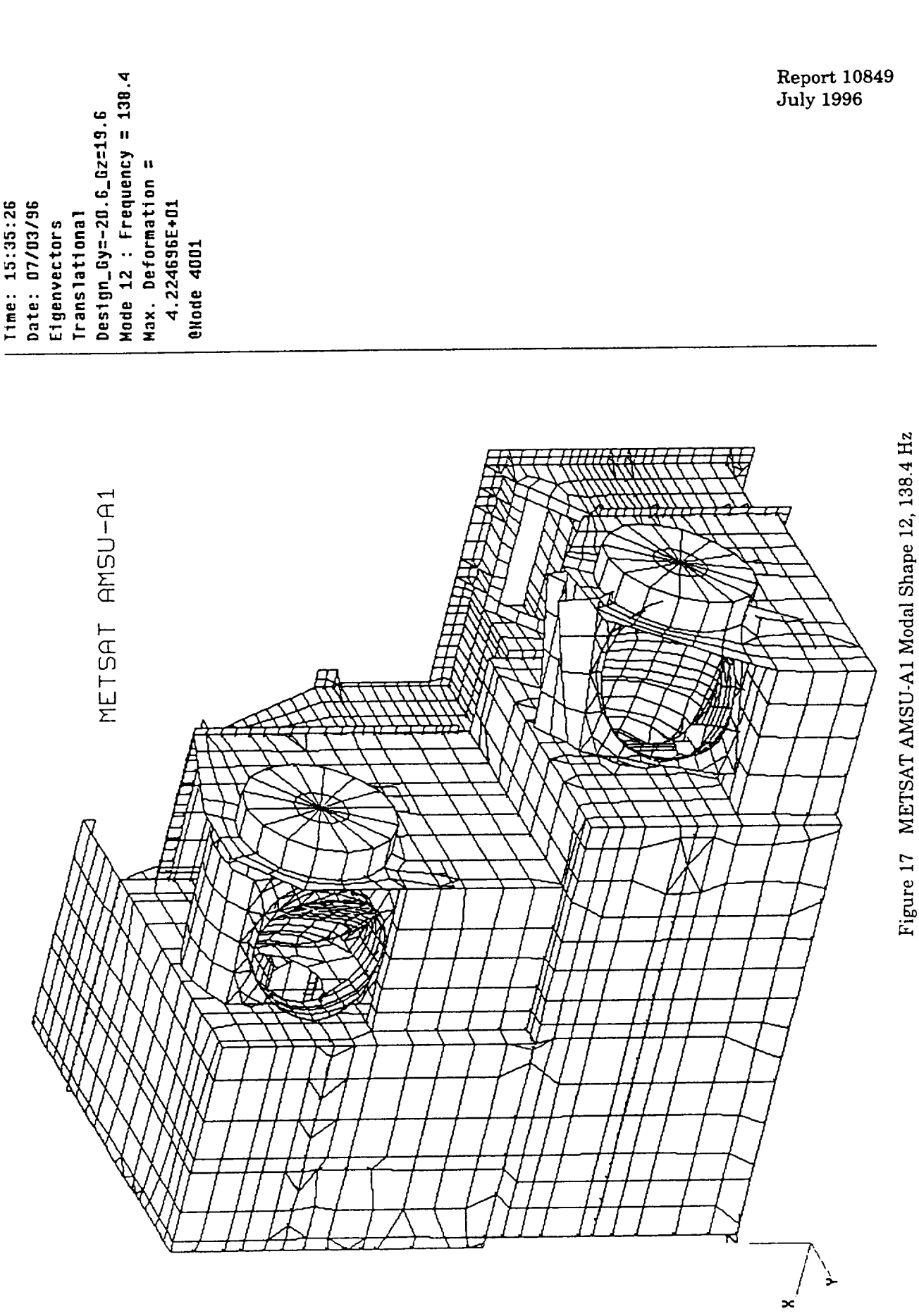


Figure 17 METSAT AMSU-A1 Modal Shape 12, 138.4 Hz

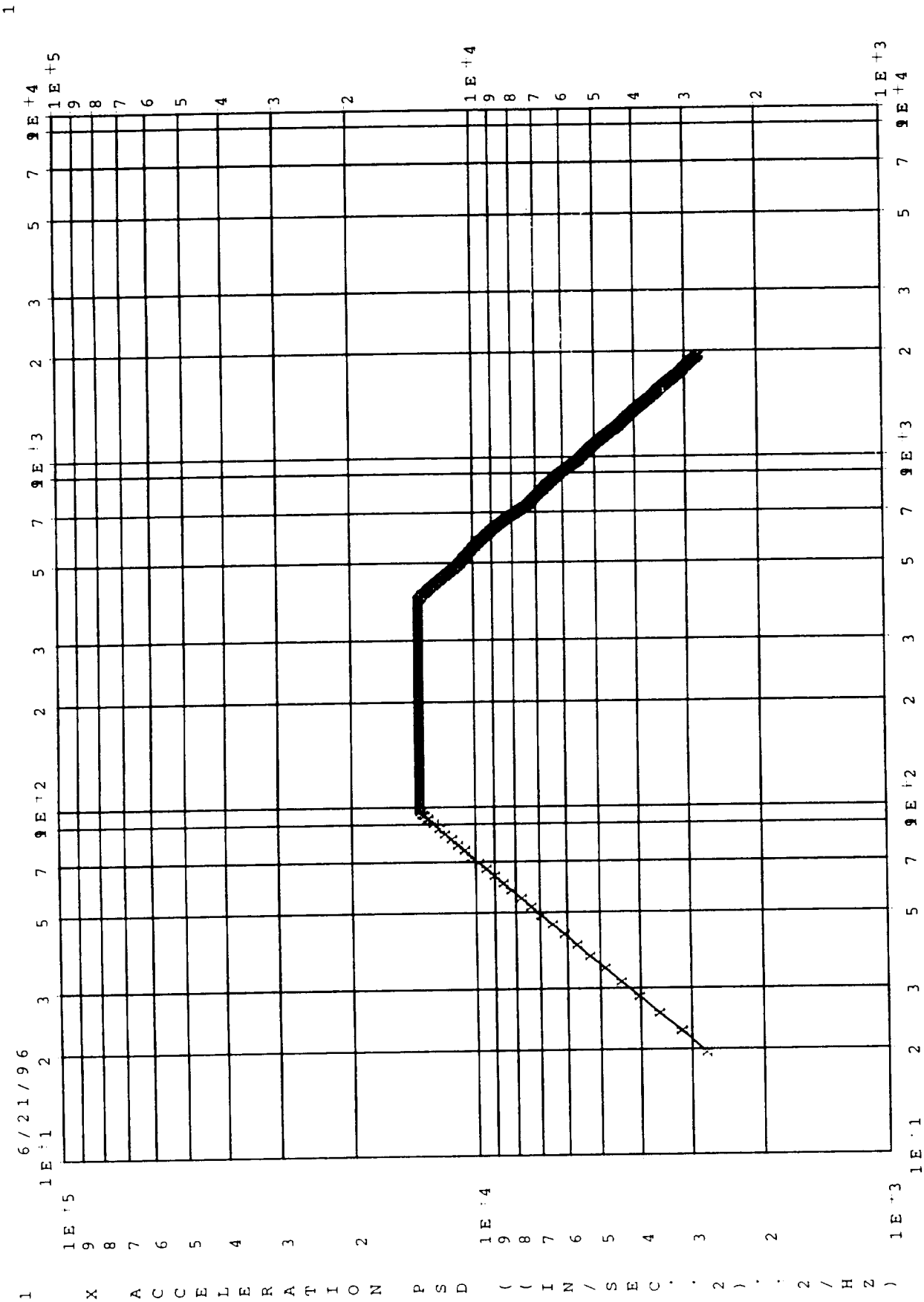


Figure 18 METOP AMSU-A1 Input Random Vibration PSD Curve 9.66 grms, X Direction

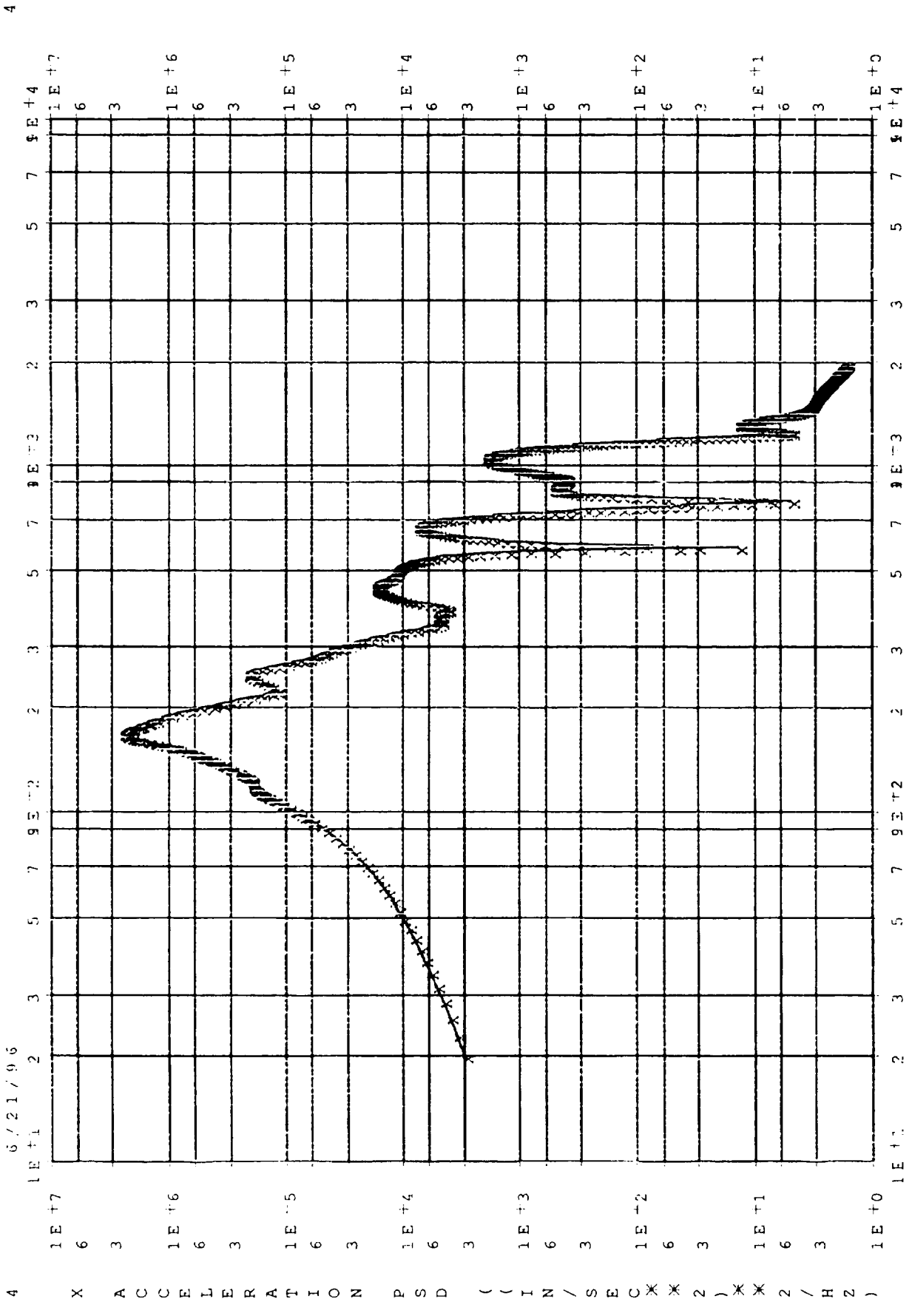


Figure 19 METOP AMSU-A1 Random Vibration PSD Curve Response
Upper Motor Mount Panel X-Load X-Response, 26.67 grms

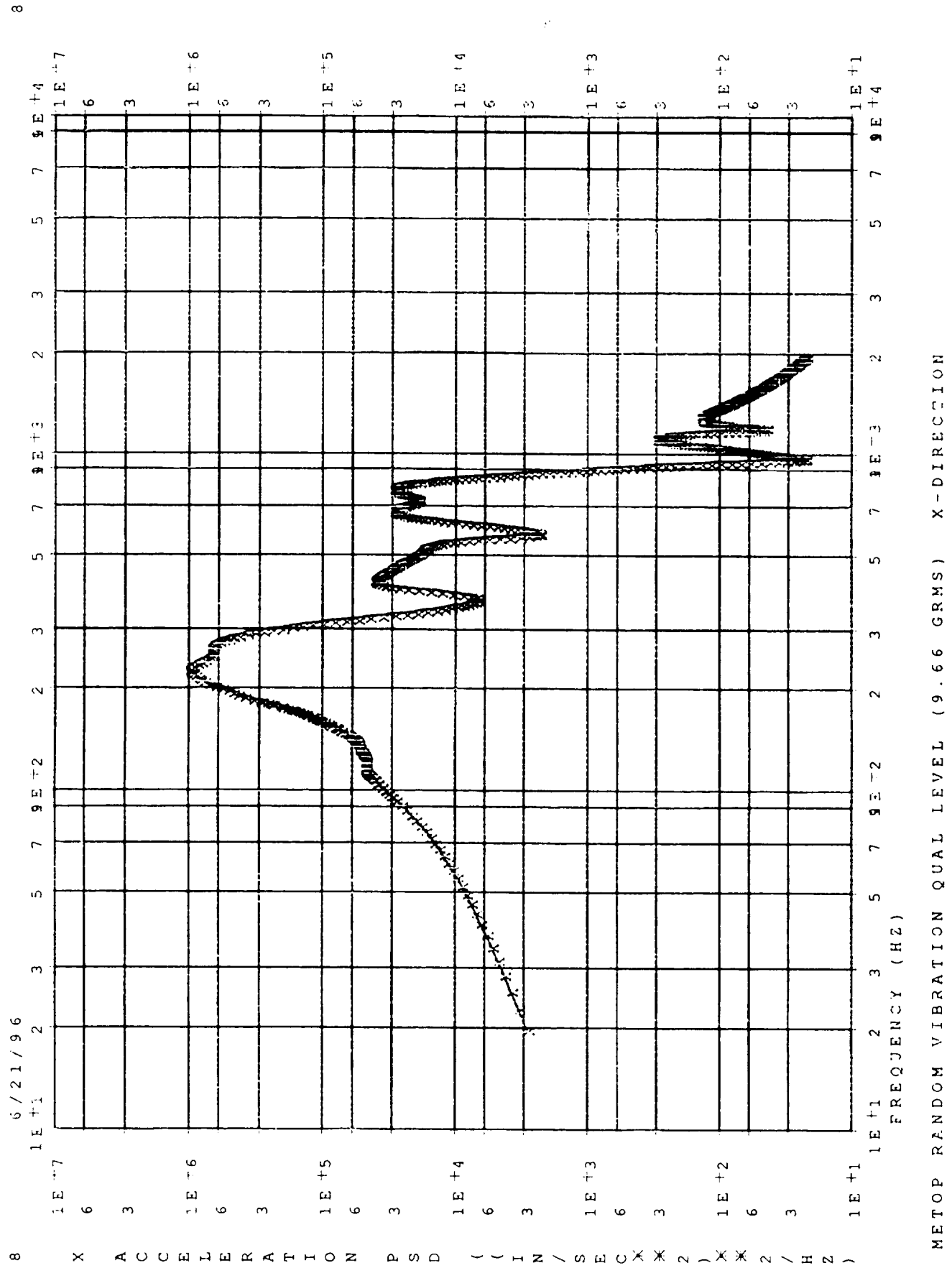


Figure 20 METOP AMSU-A1 Random Vibration PSD Curve Response
Upper Front Panel X-Load X-Response, 26.05 grms

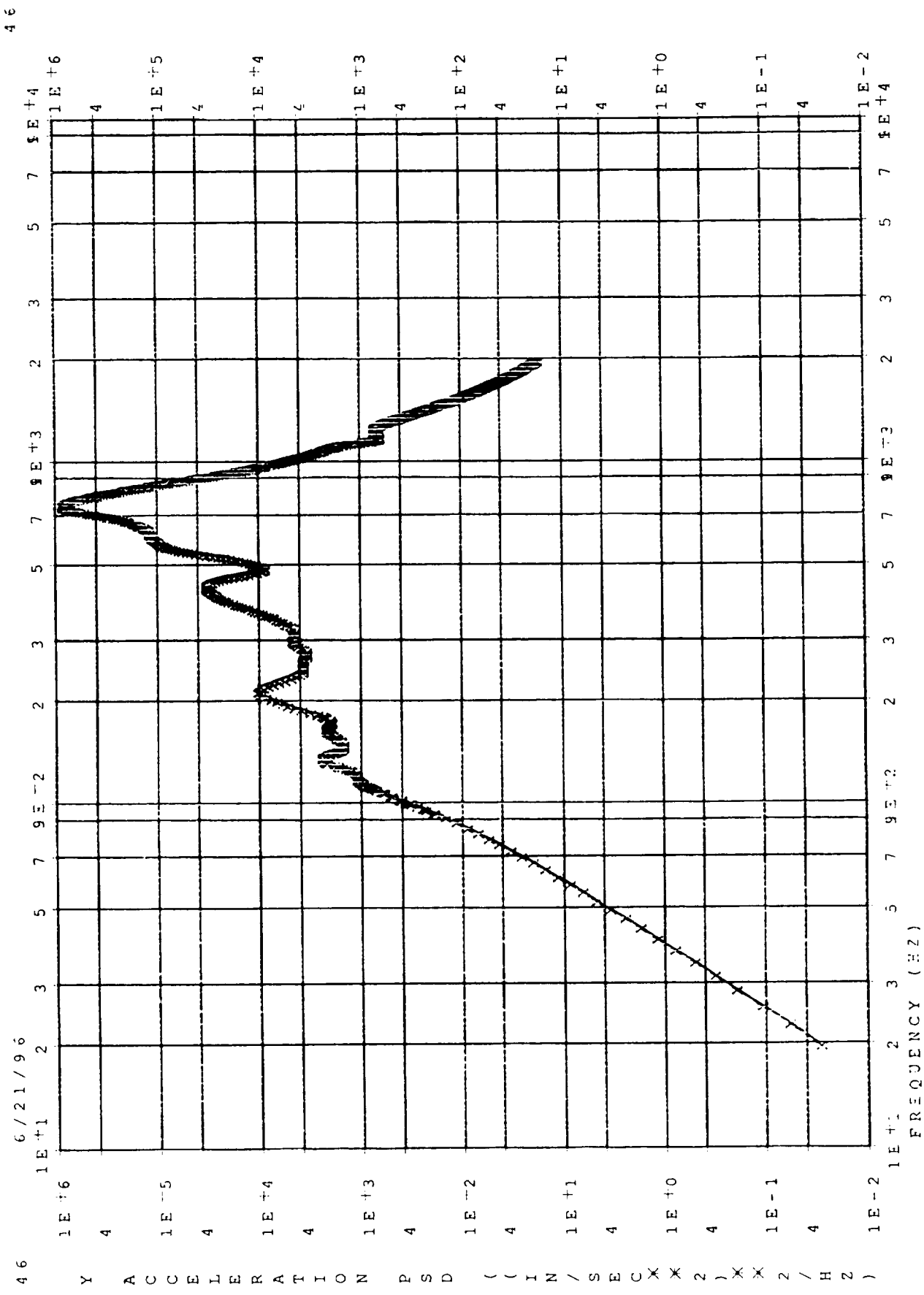


Figure 21 METOP AMSU-A1 Random Vibration PSD Curve Response
Lower Right Front Support X-Load Y-Response, 28.29 grms

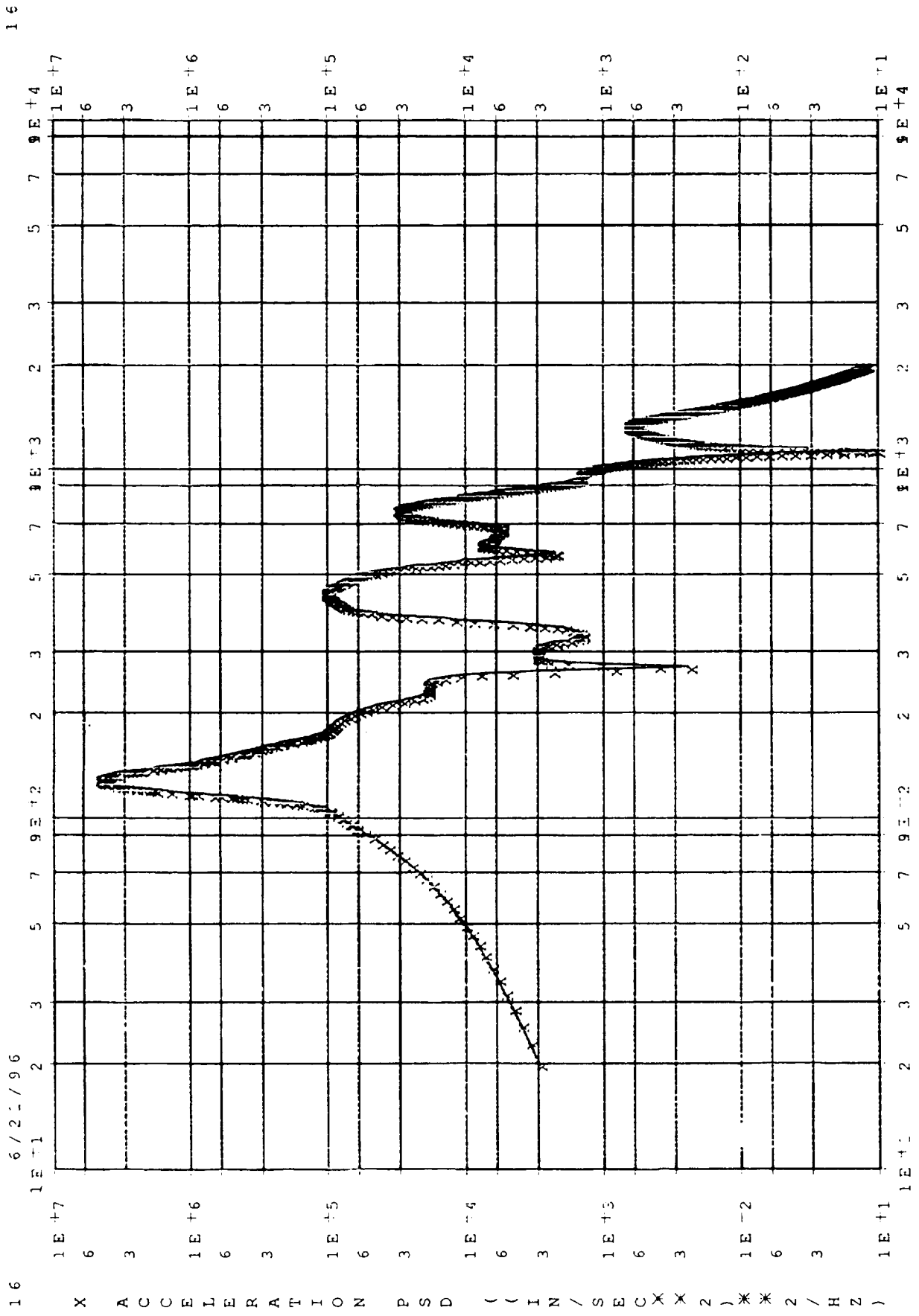


Figure 22 METOP AMSU-A1 Random Vibration PSD Curve Response
Top Panel X-Load X-Response, 27.72 grms

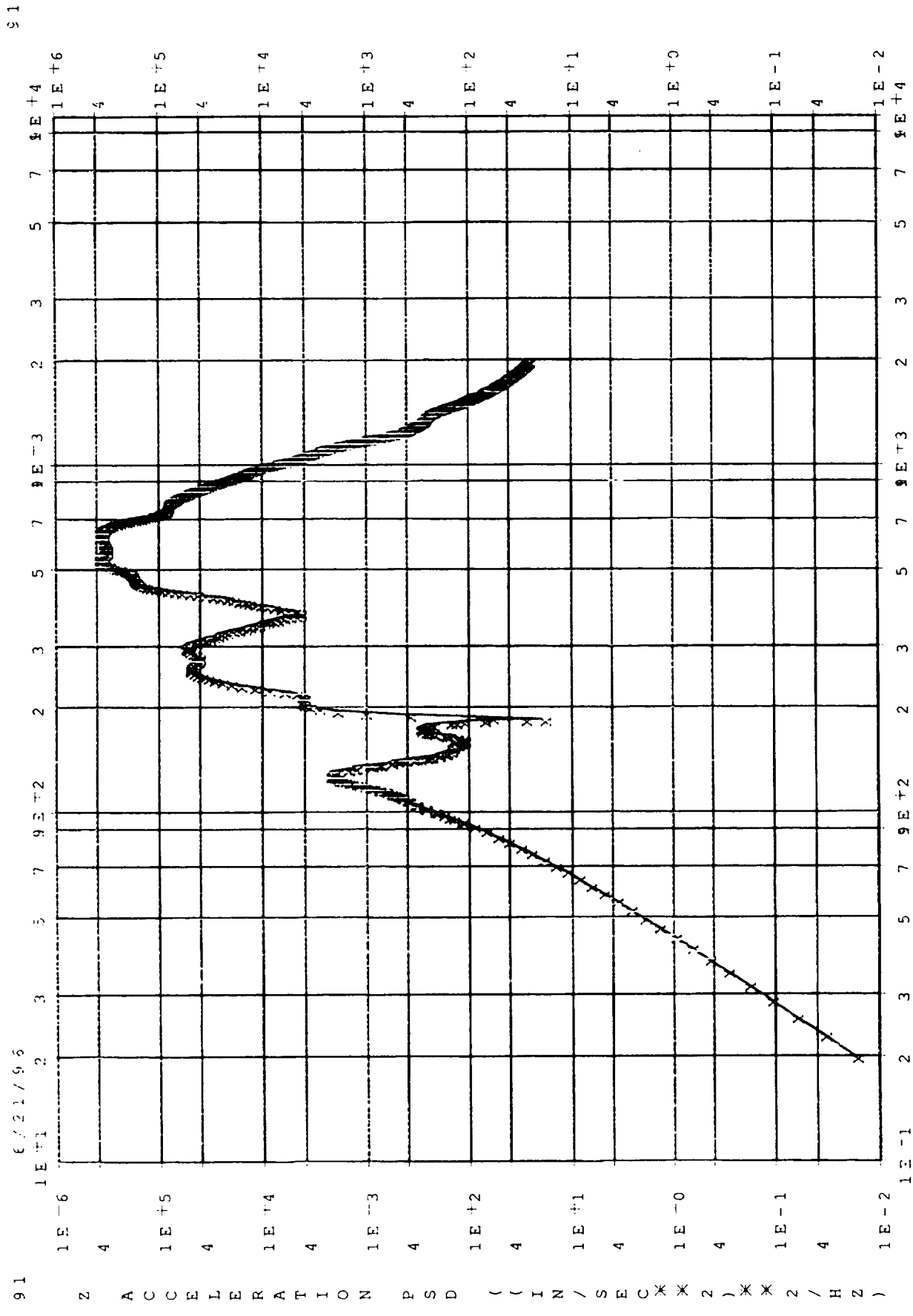


Figure 23 METOP AMSU-A1 Random Vibration PSD Curve Response
Lower Card Cage Card X-Load Z-Response, 26.28 grms

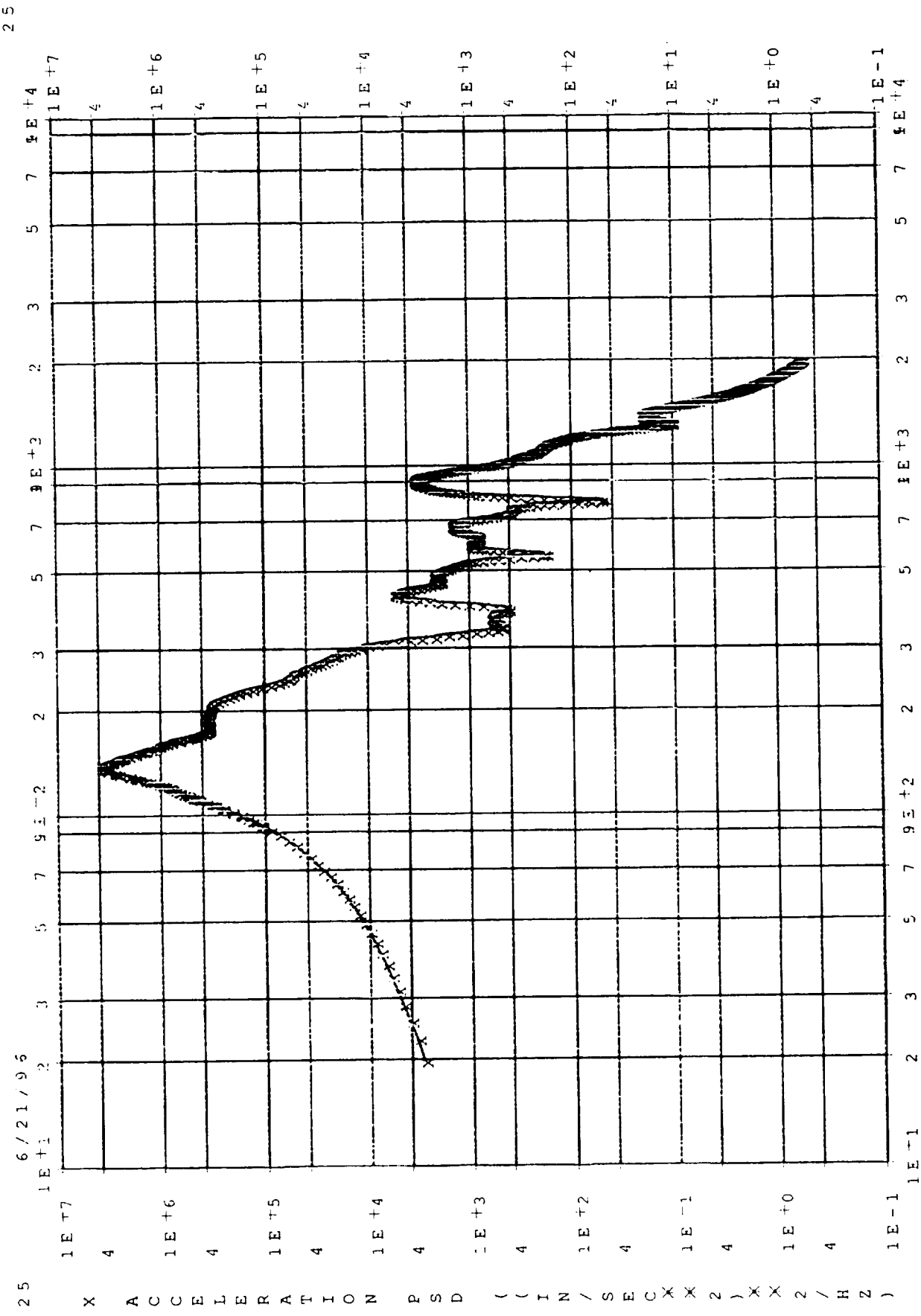


Figure 24 METOP AMSU-A1 Random Vibration PSD Curve Response
Upper Card Cage Card X-Load X-Response, 29.67 grms

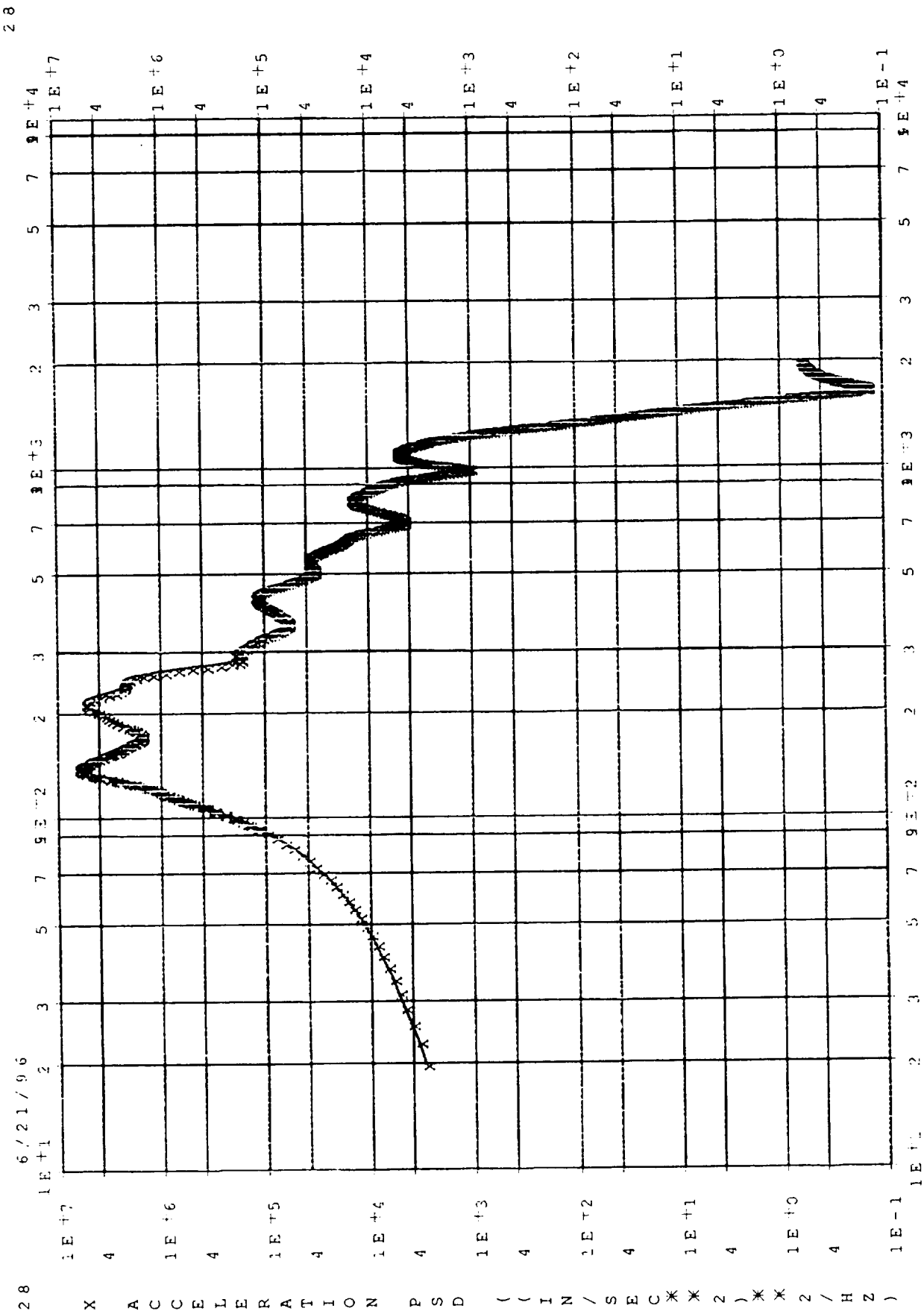


Figure 25 METOP AMSU-A1 Random Vibration PSD Curve Response
Lower Reflector X-Load X-Response, 58.75 grms

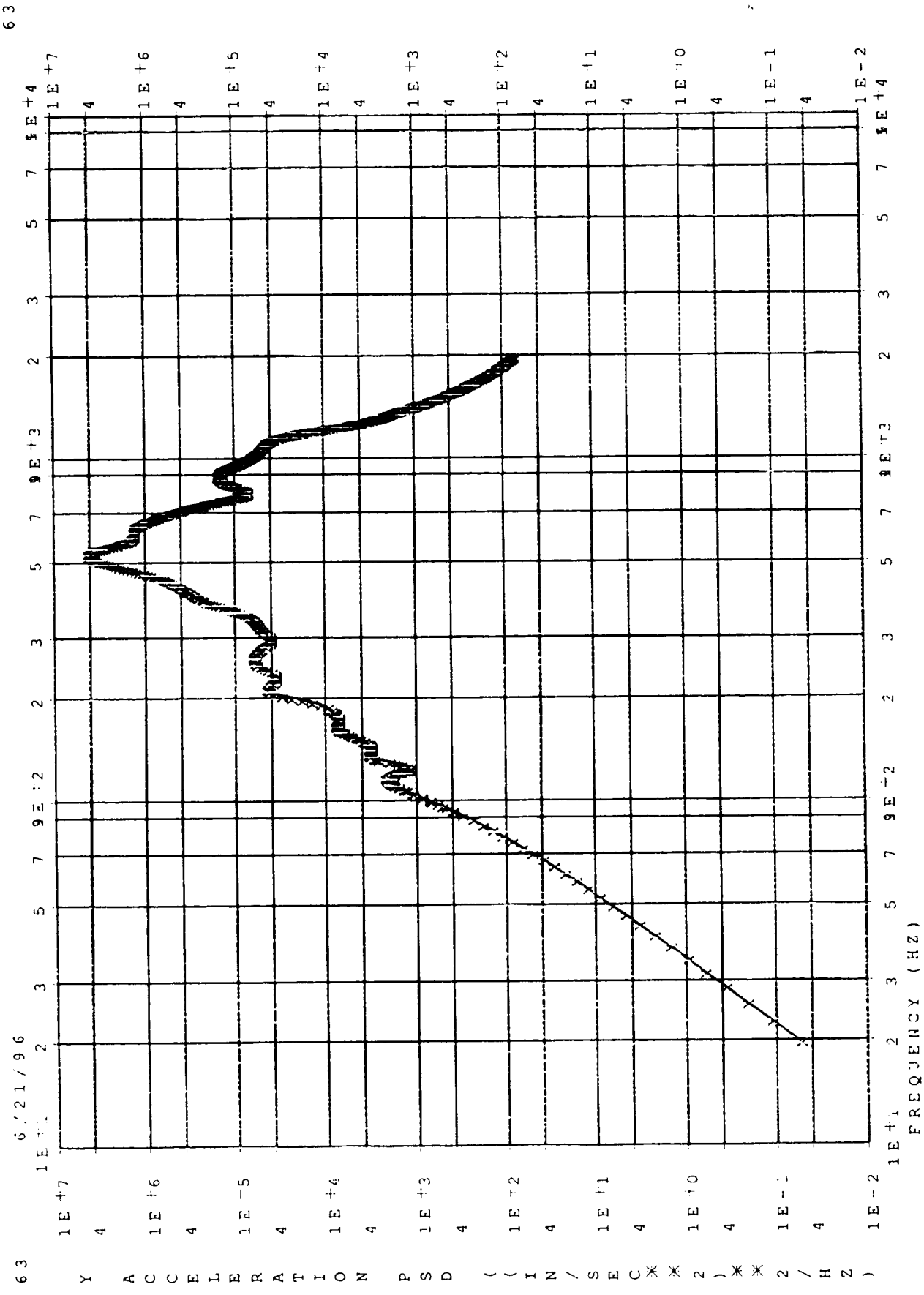


Figure 26 METOP AMSU-A1 Random Vibration PSD Curve Response
Power Control/Monitor Bracket X-Load Y-Response, 62.68 grms

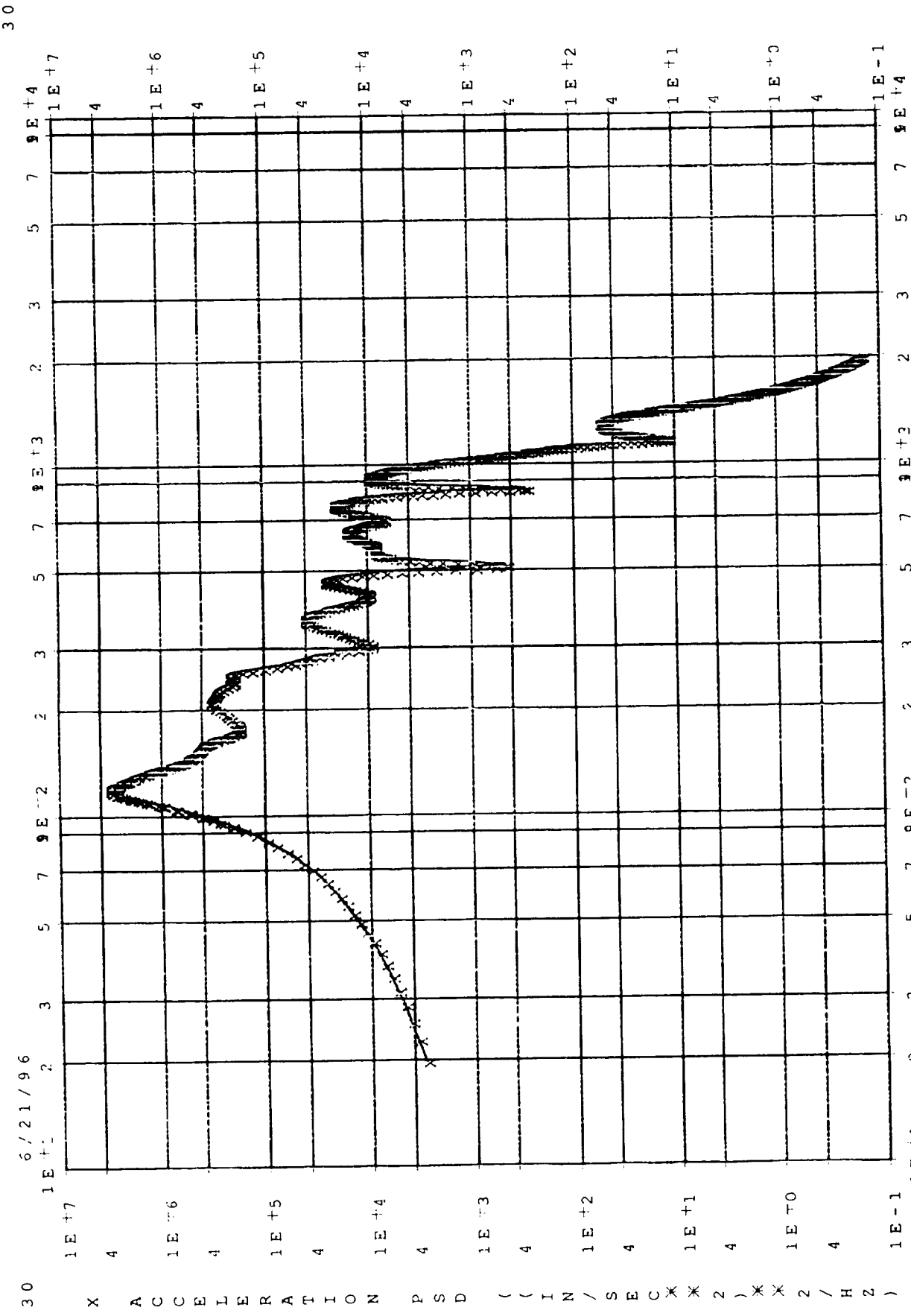


Figure 27 METOP AMSU-A1 Random Vibration PSD Curve Response
Power Control/Monitor PWB X-Load X-Response, 29.06 grms

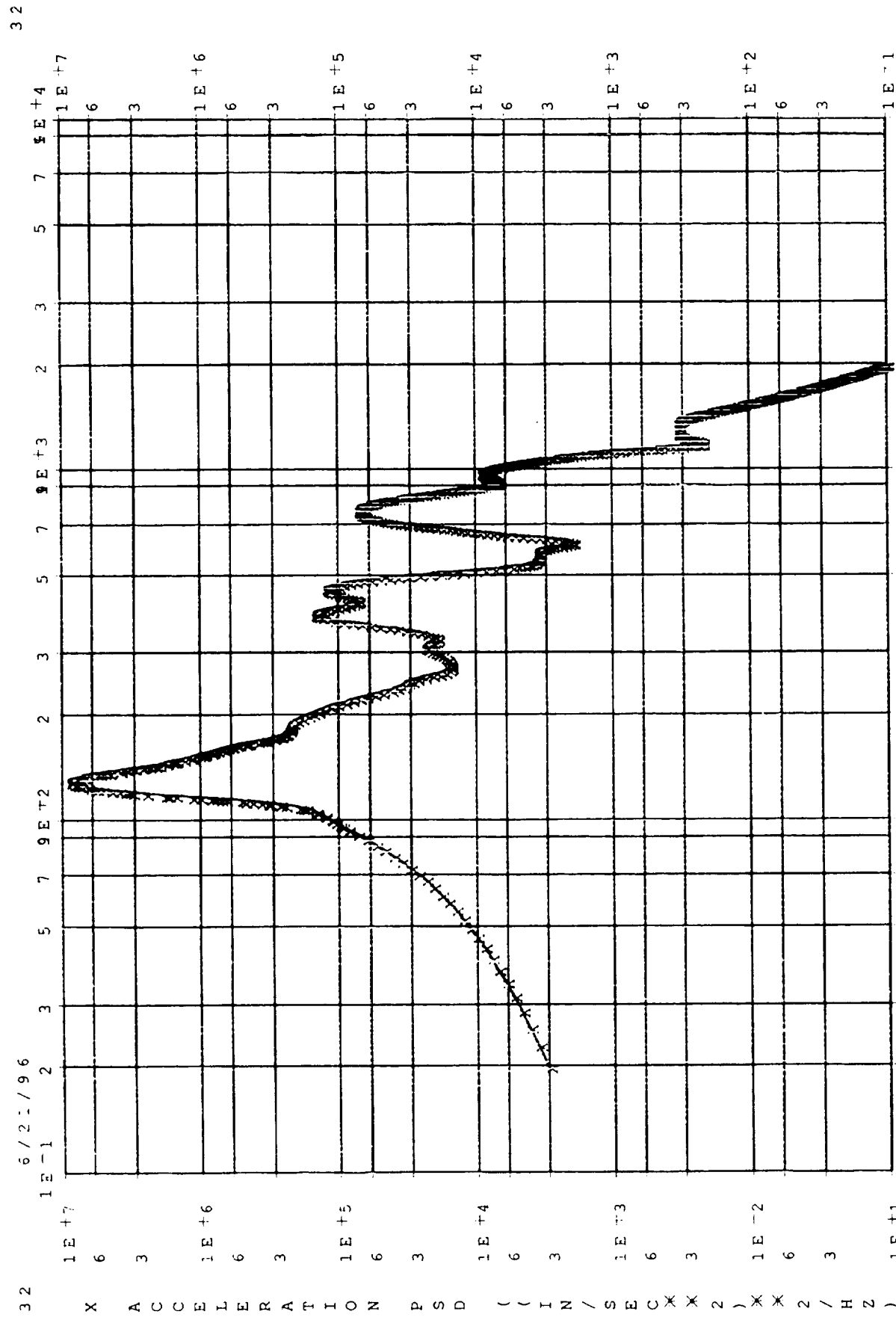


Figure 28 METOP AMSU-A1 Random Vibration PSD Curve Response
Radiator Panel X-Load X-Response, 38.26 grms

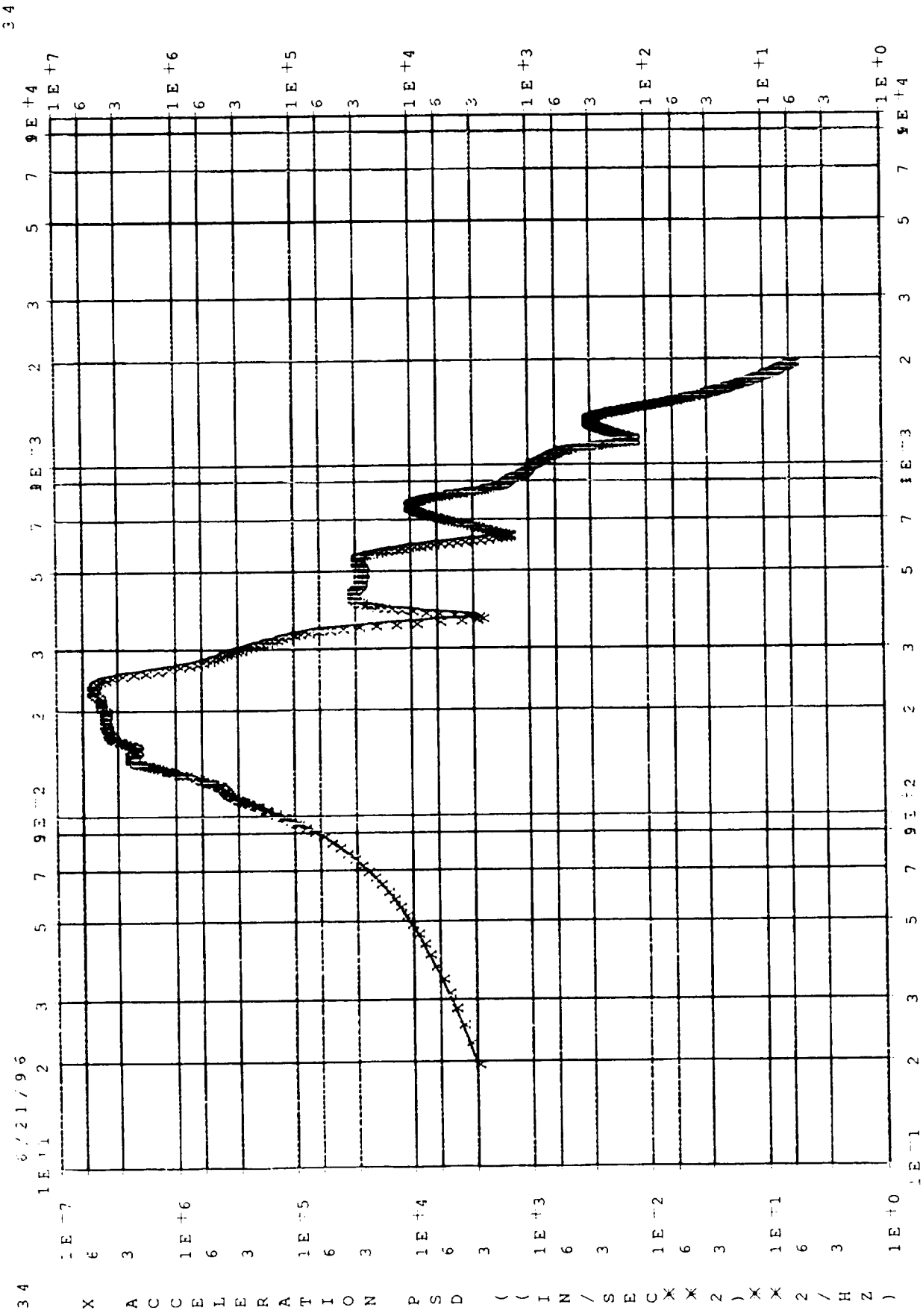


Figure 29 METOP AMSU-A1 Random Vibration PSD Curve Response
Upper Reflector X-Load X-Response, 59.42 grms

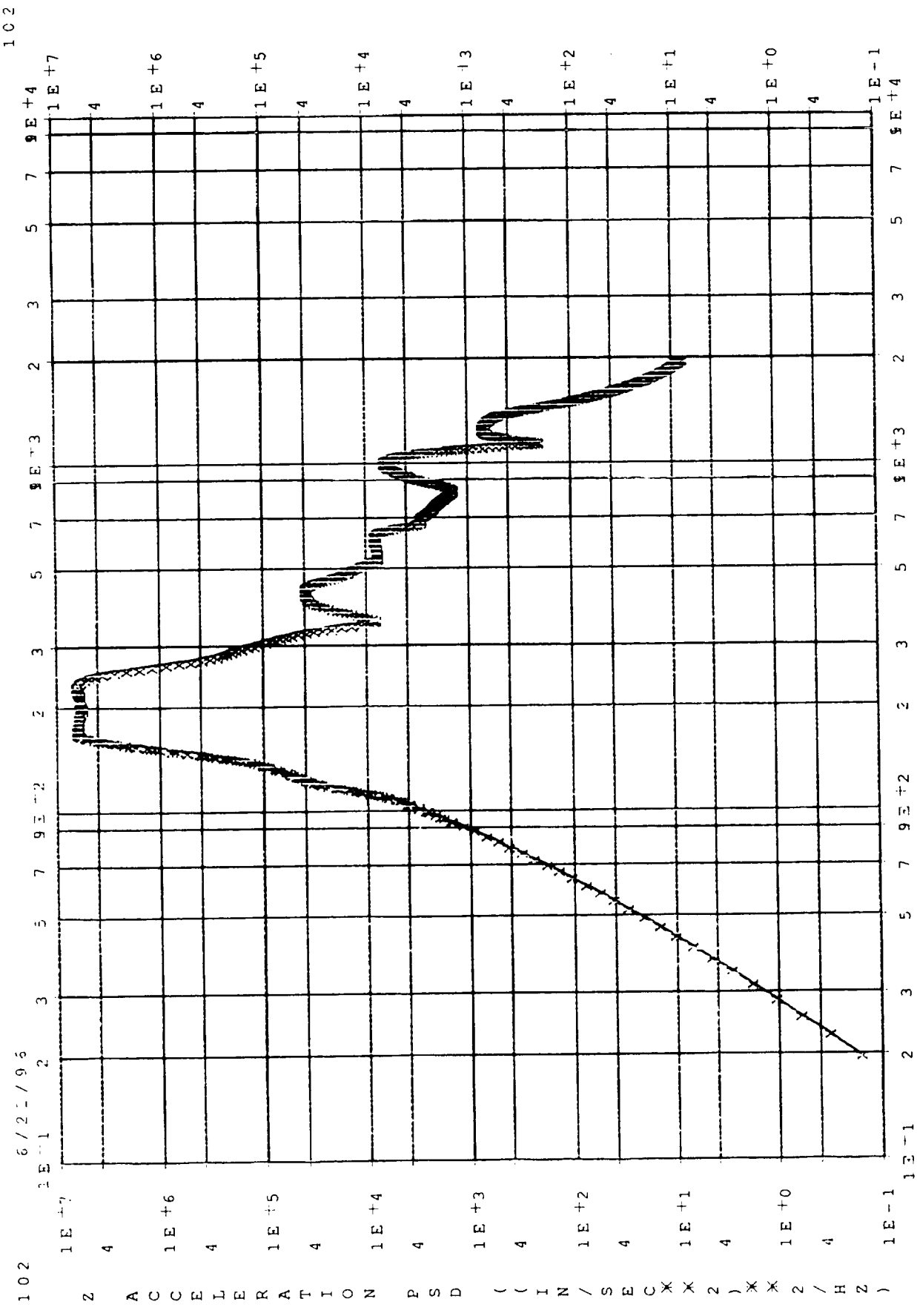


Figure 30 METOP AMSU-A1 Random Vibration PSD Curve Response
Upper Reflector X-Load Z-Response, 65.66 grms

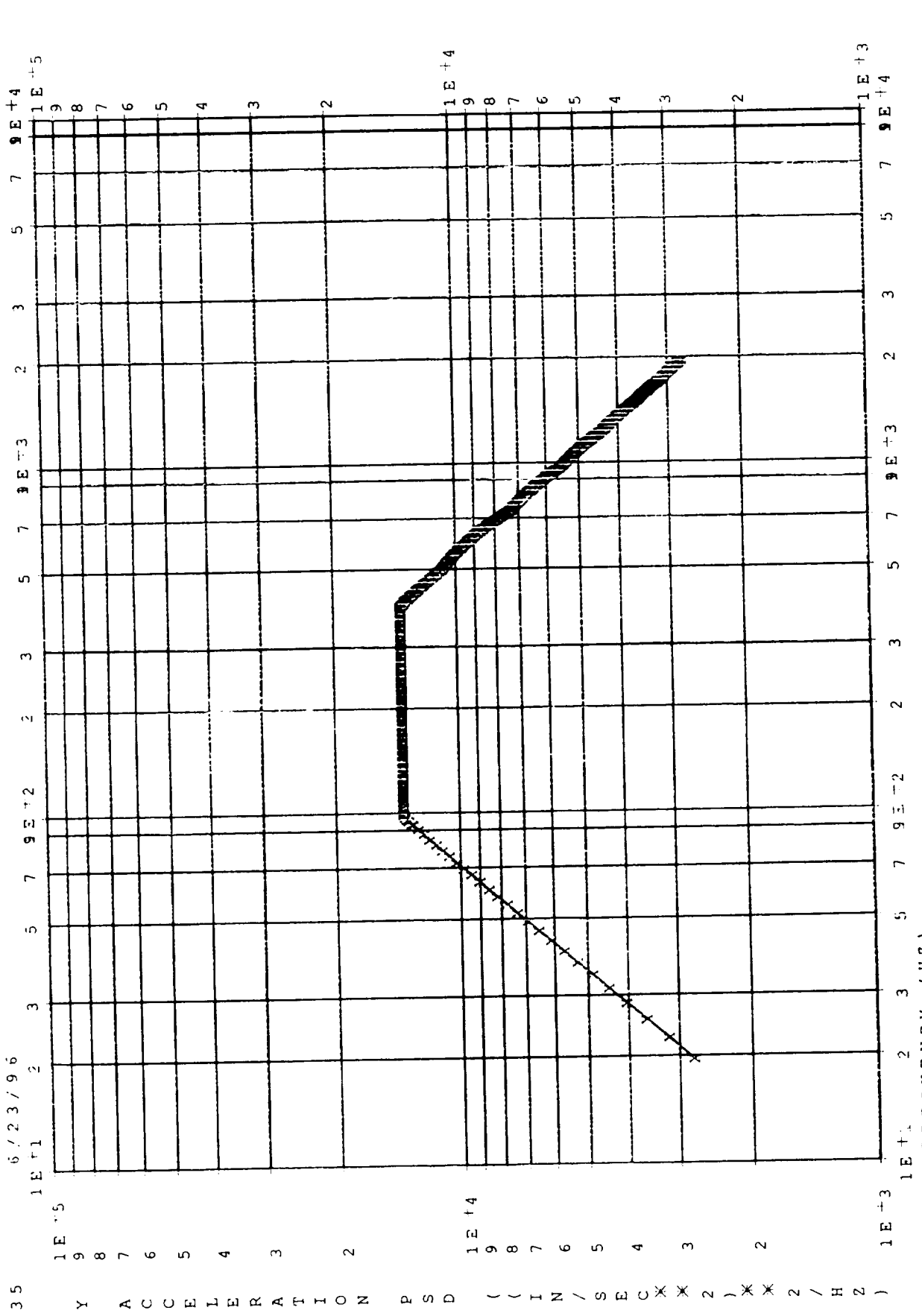


Figure 31 METOP AMSU-A1 Input Random Vibration PSD Curve 9.66 grms, Y Direction

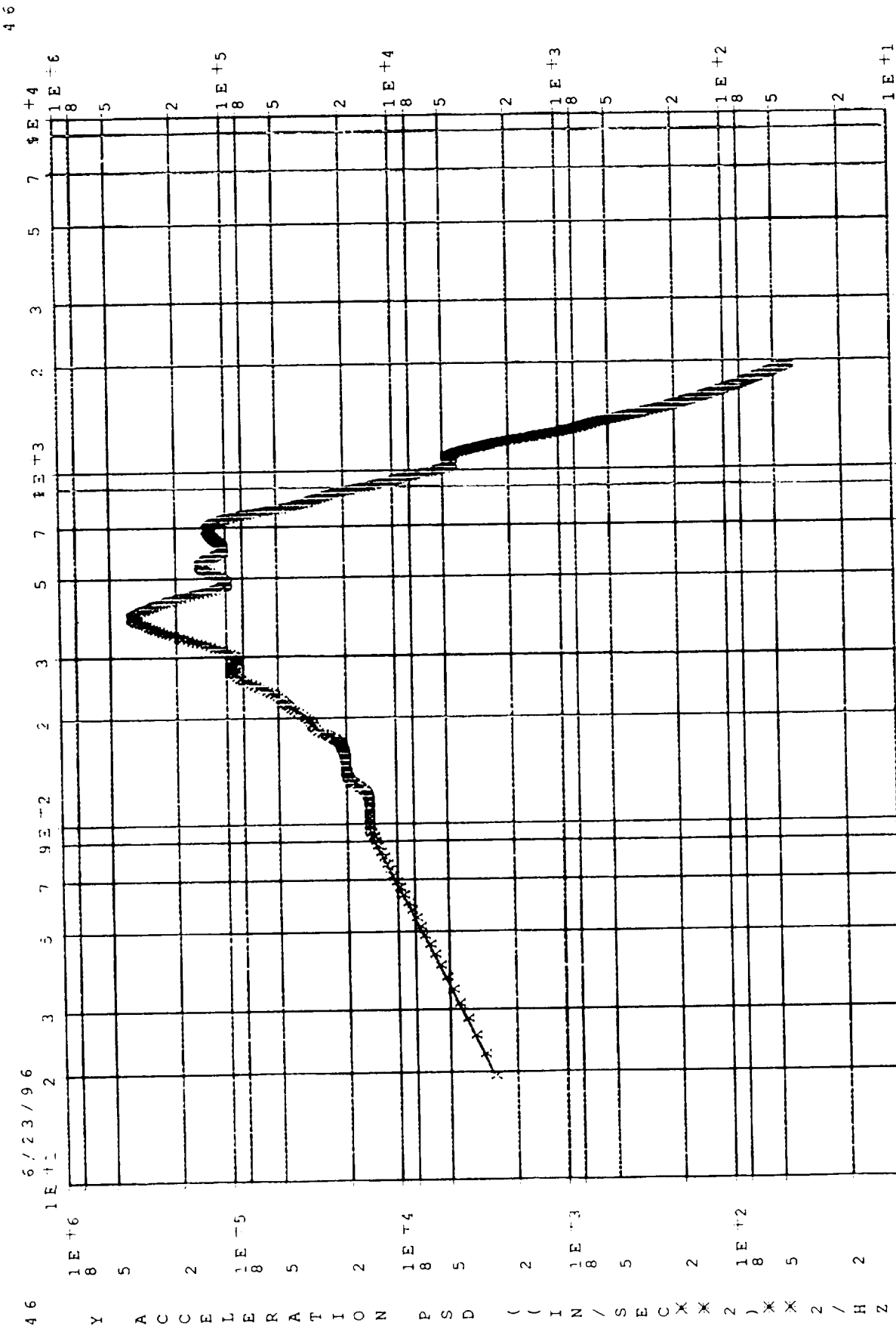


Figure 32 METOP AMSU-A1 Random Vibration PSD Curve Response
Lower Right Front Support Y-Load Y-Response, 25.16 grms

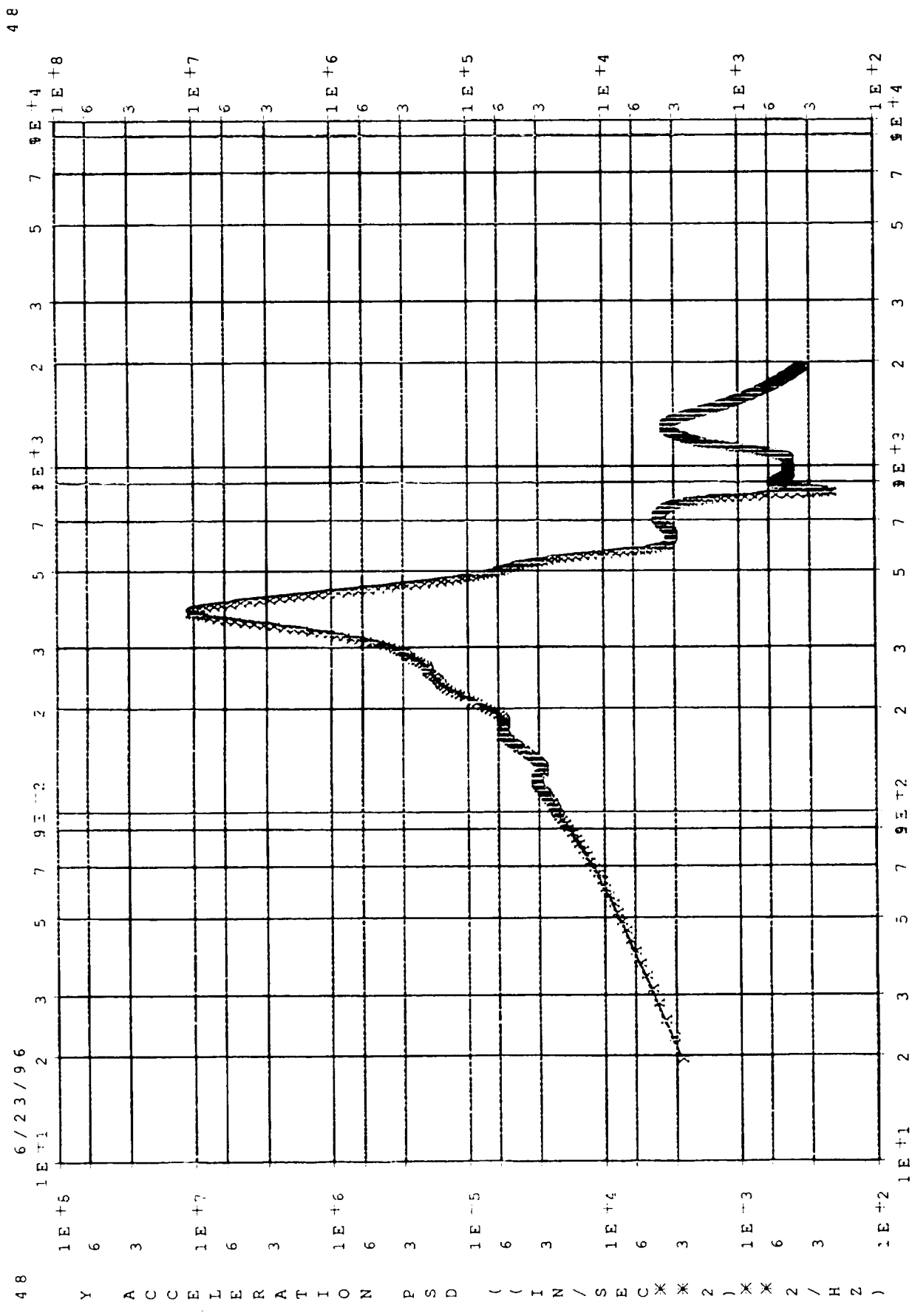


Figure 33 METOP AMSU-A1 Random Vibration PSD Curve Response
Upper Right Front Support Y-Load Y-Response, 65.06 grms

Figure 34 METOP AMSU-A1 Random Vibration PSD Curve Response
Left Panel Y-Load Y-Response - 44.01 grms

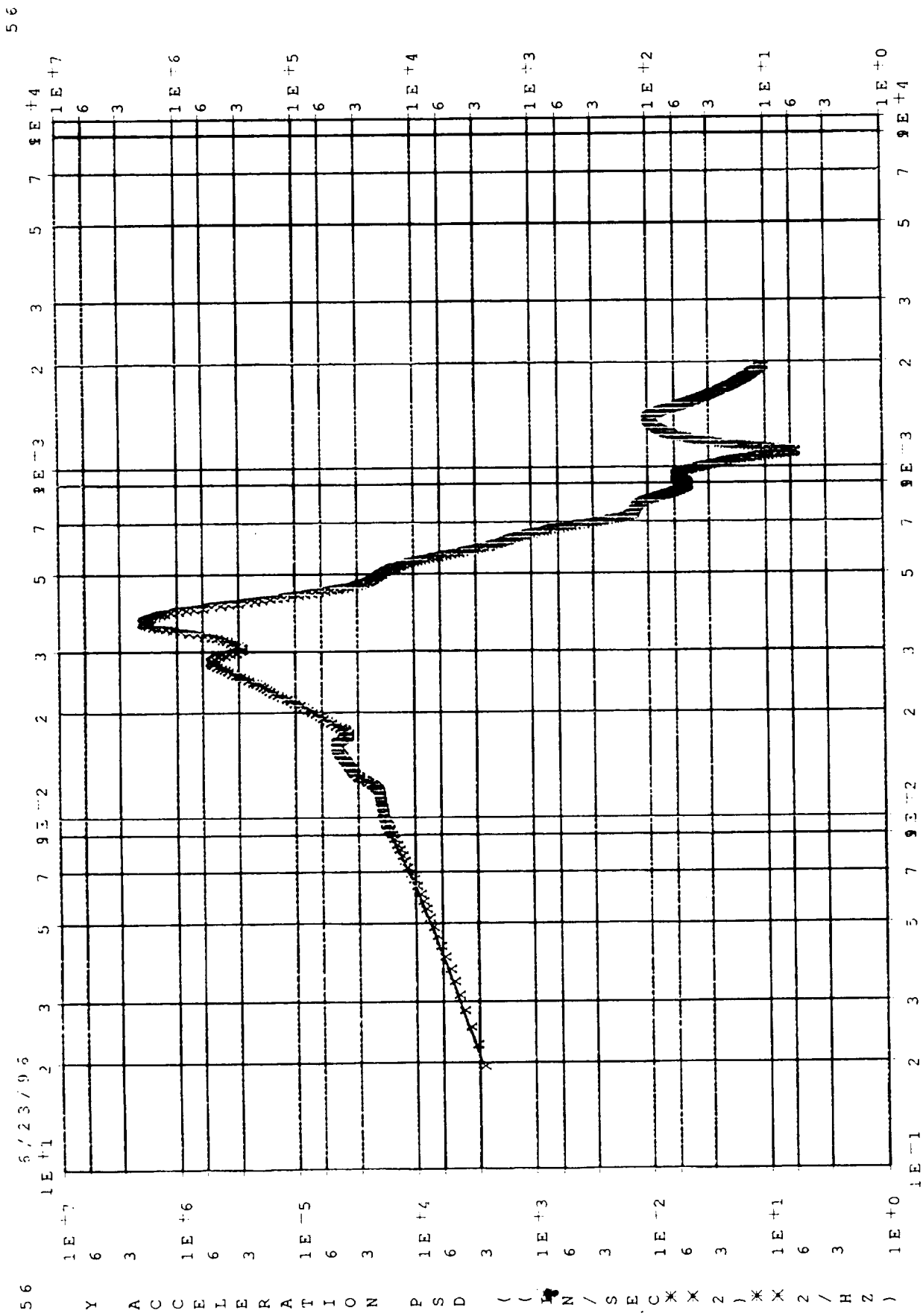


Figure 35 METOP AMSU-A1 Random Vibration PSD Curve Response
Lower Card Cage Y-Load Y-Response, 32.60 grms

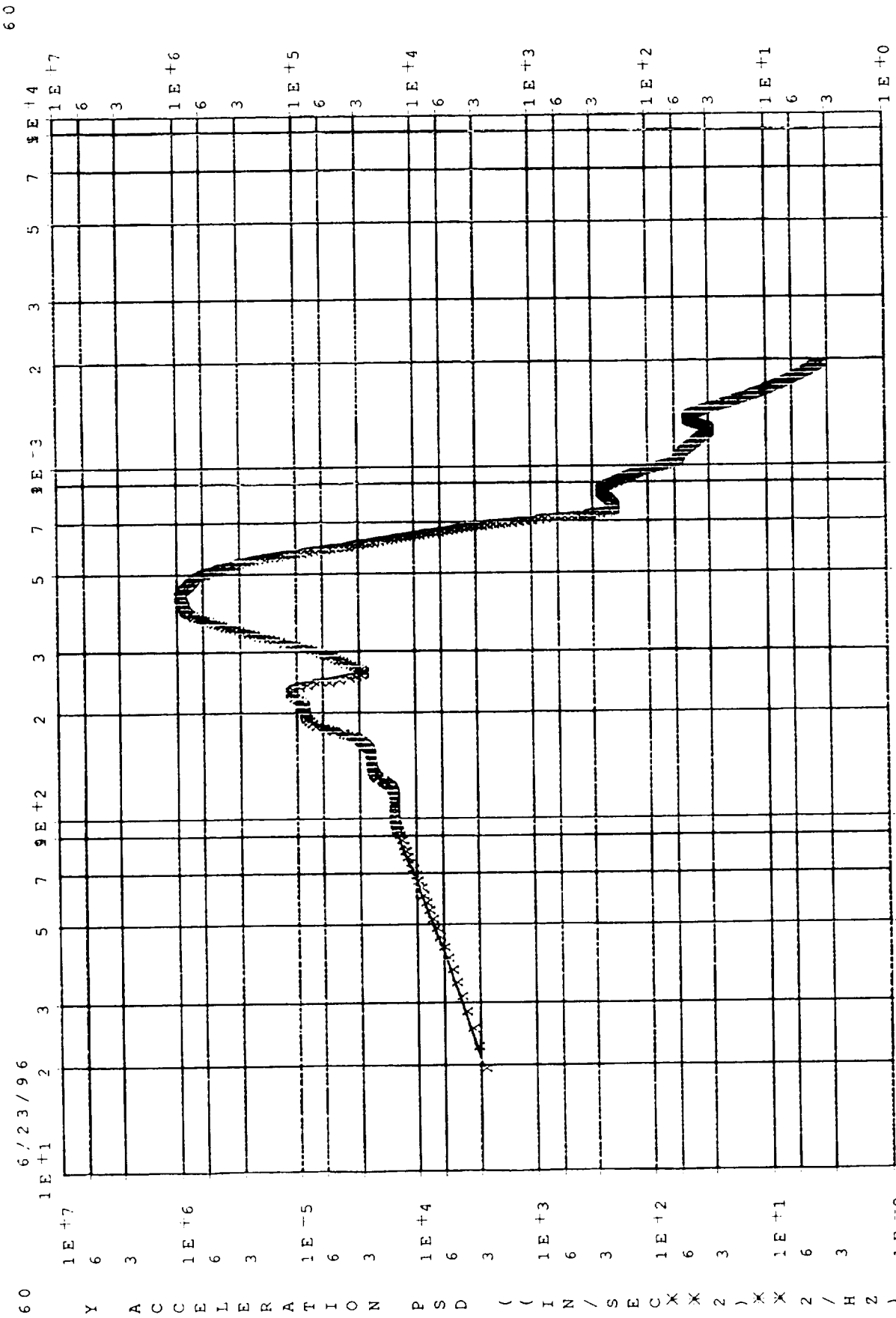


Figure 36 METOP AMSU-A1 Random Vibration PSD Curve Response
Lower Warmload Y-Load Y-Response, 34.19 grms

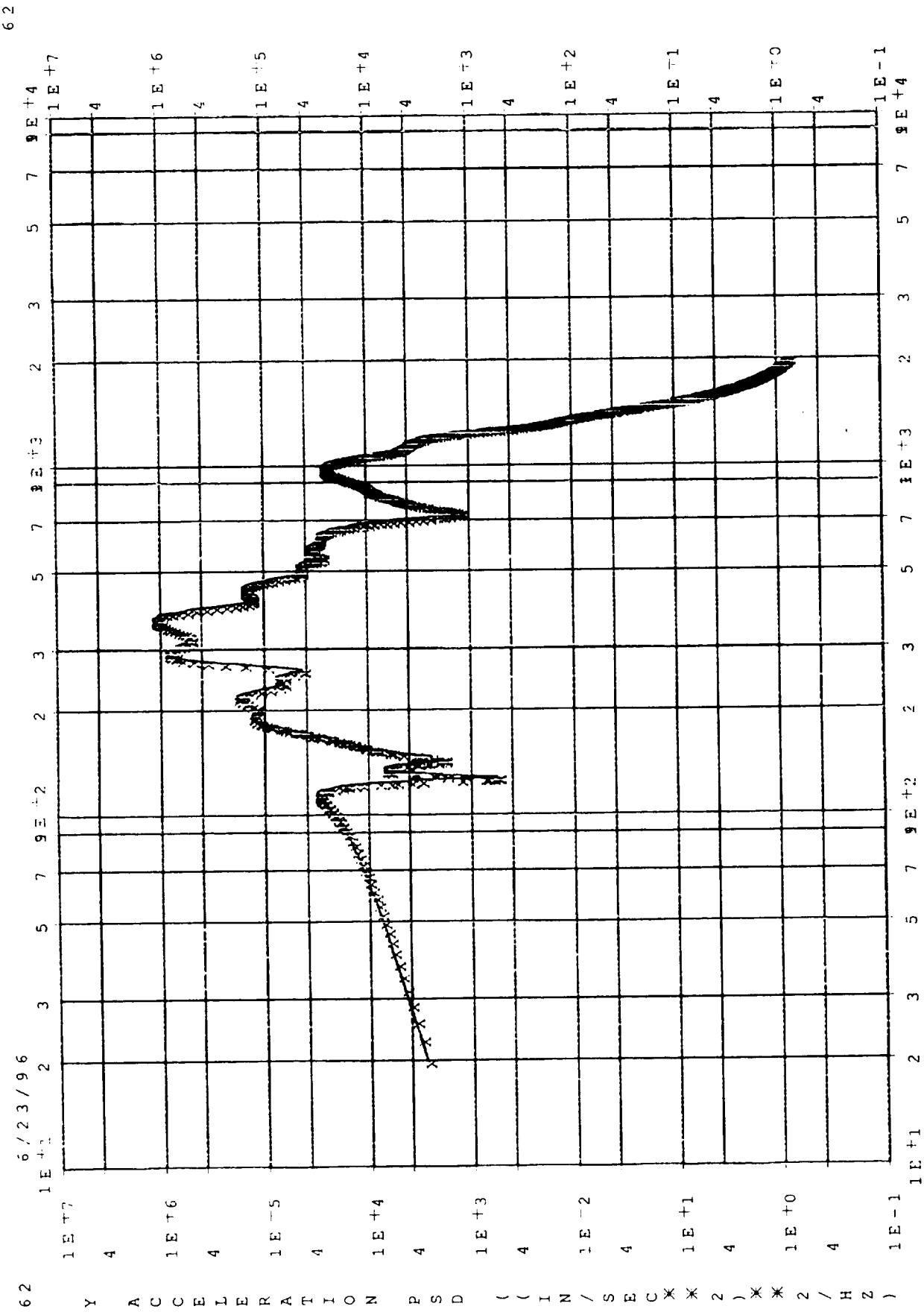


Figure 37 METOP AMSU-A1 Random Vibration PSD Curve Response
Lower Reflector Y-Load Y-Response, 29.67 grms

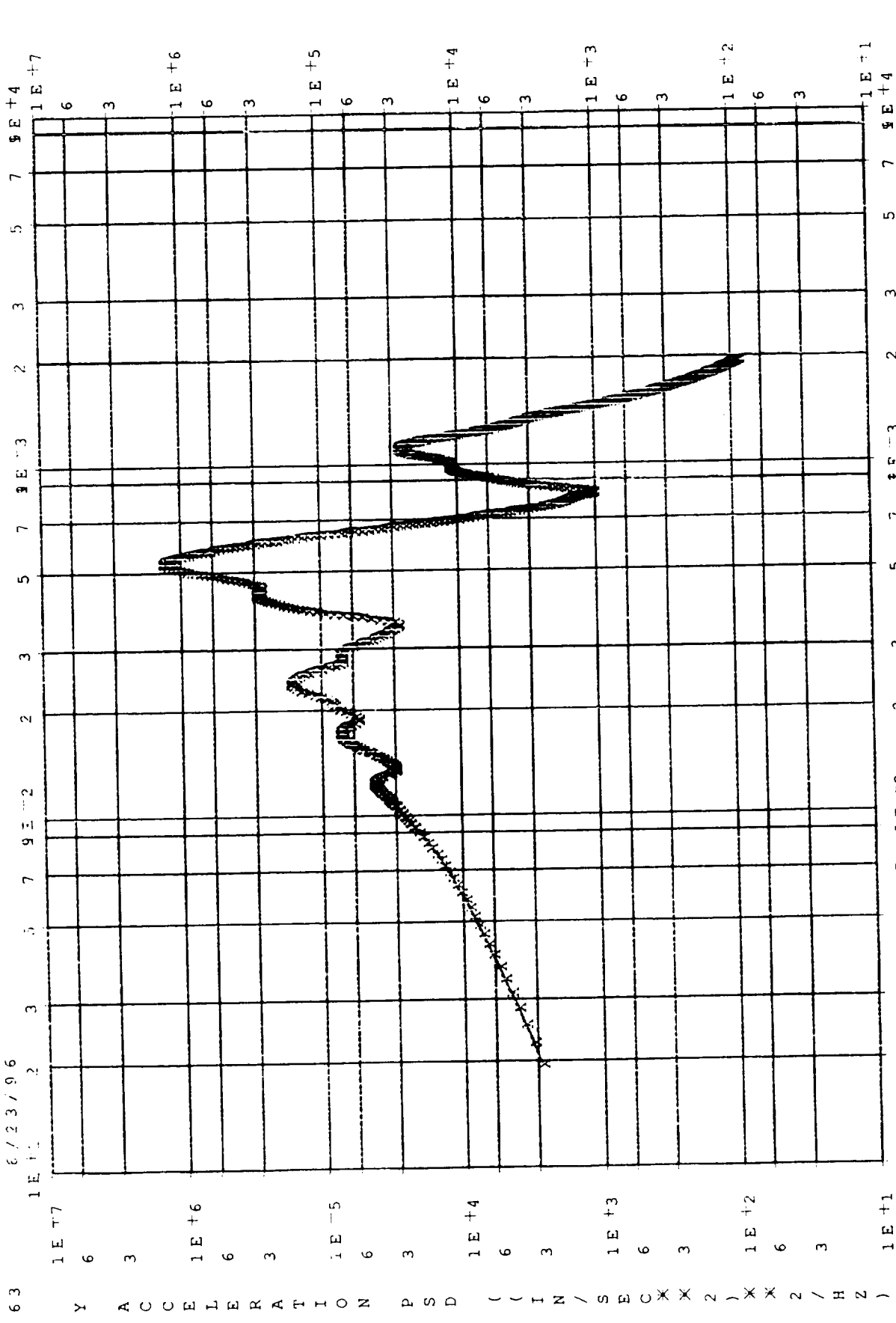


Figure 38 METOP AMSU-A1 Random Vibration PSD Curve Response
Power Control/Monitor Bracket Y-Load Y-Response, 34.34 grms

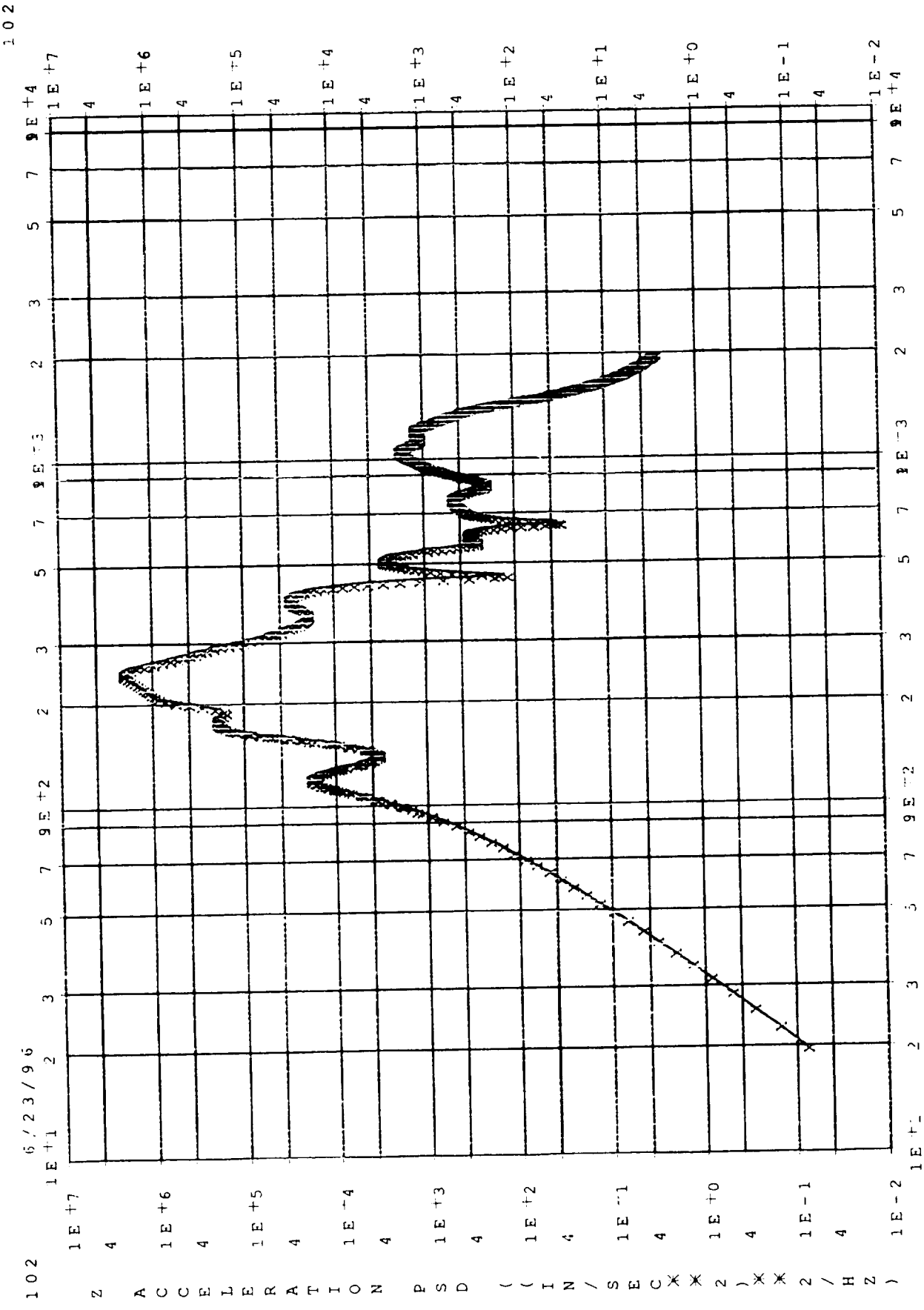


Figure 39 METOP AMSU-A1 Random Vibration PSD Curve Response
Upper Reflector Y-Load Z-Response, 28.56 grms

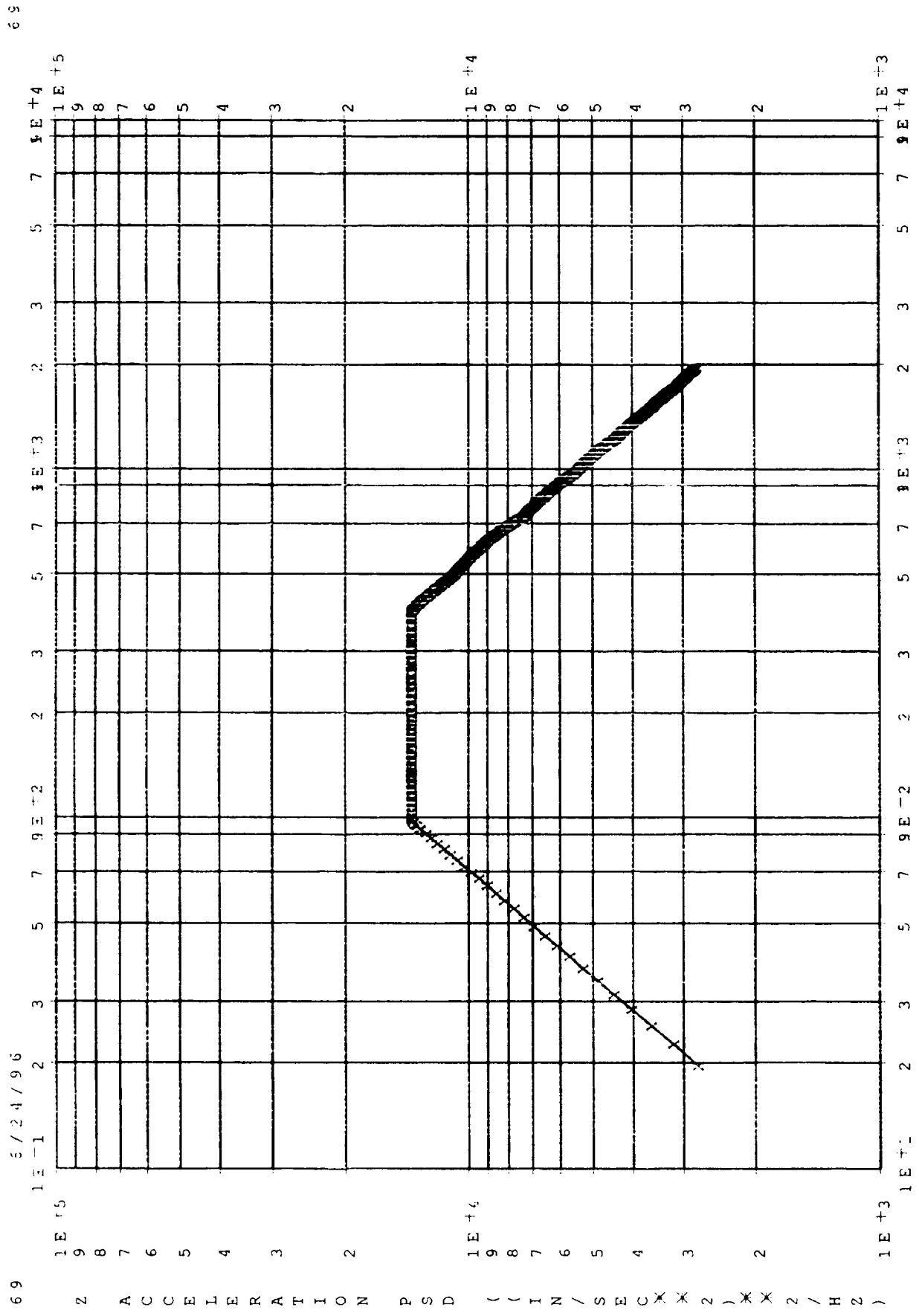


Figure 40 METOP AMSU-A1 Input Random Vibration PSD Curve 9.66 grms, Z Direction

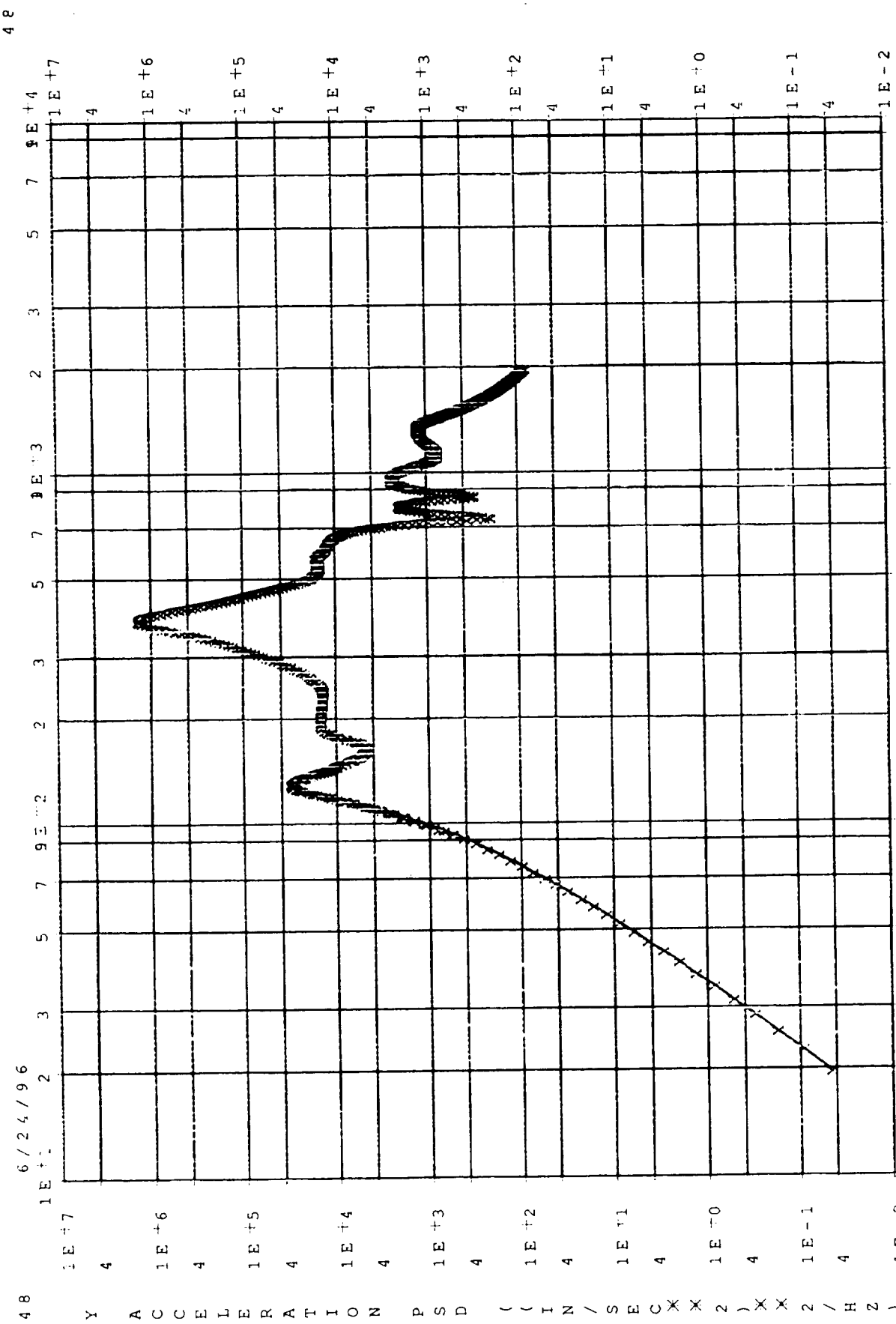


Figure 41 METOP AMSU-A1 Random Vibration PSD Curve Response
Upper Right Front Support Z-Load Y-Response, 24.68 grms

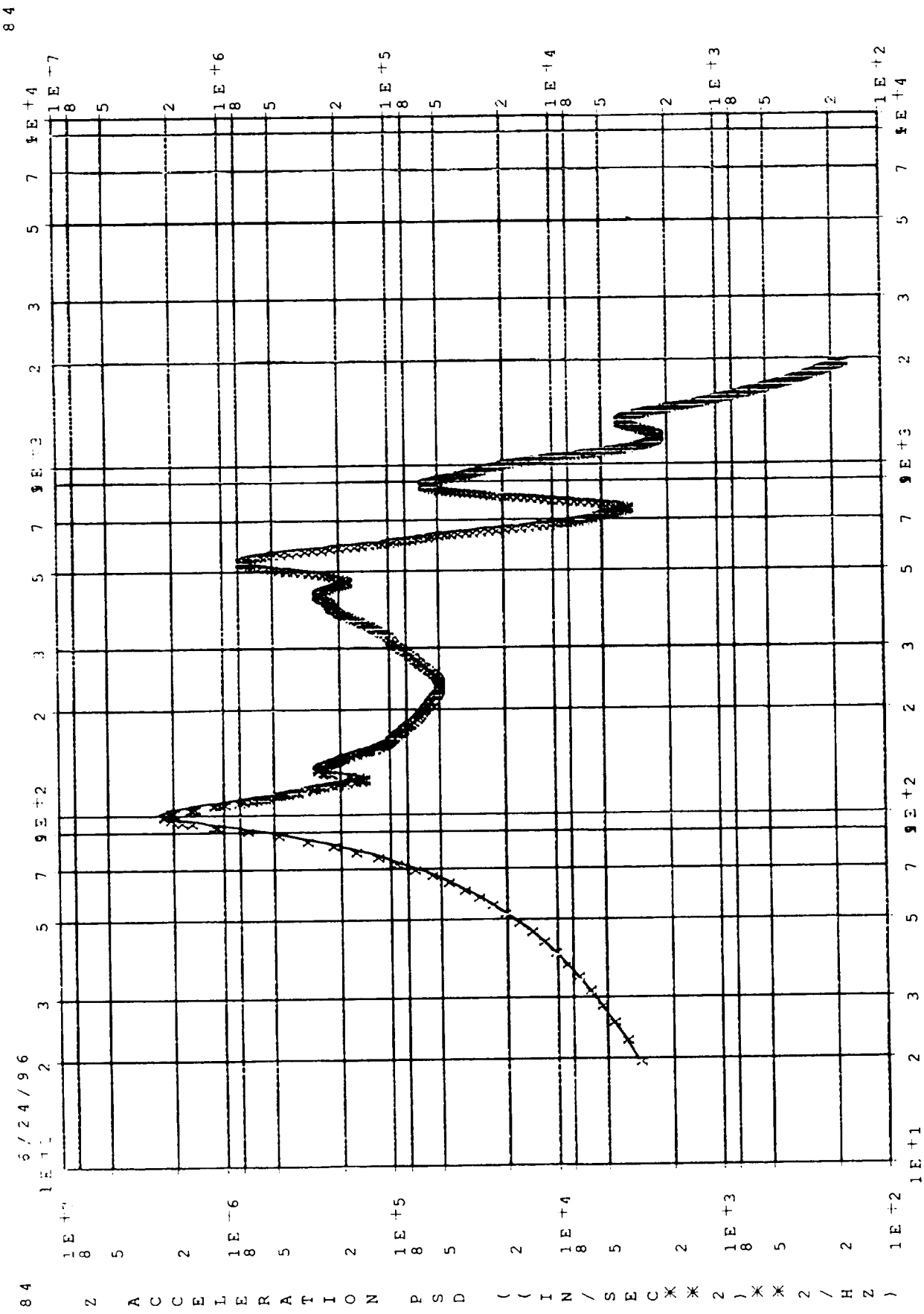


Figure 42 METOP AMSU-A1 Random Vibration PSD Curve Response
Top Panel Z-Load Z-Response, 33.65 grms

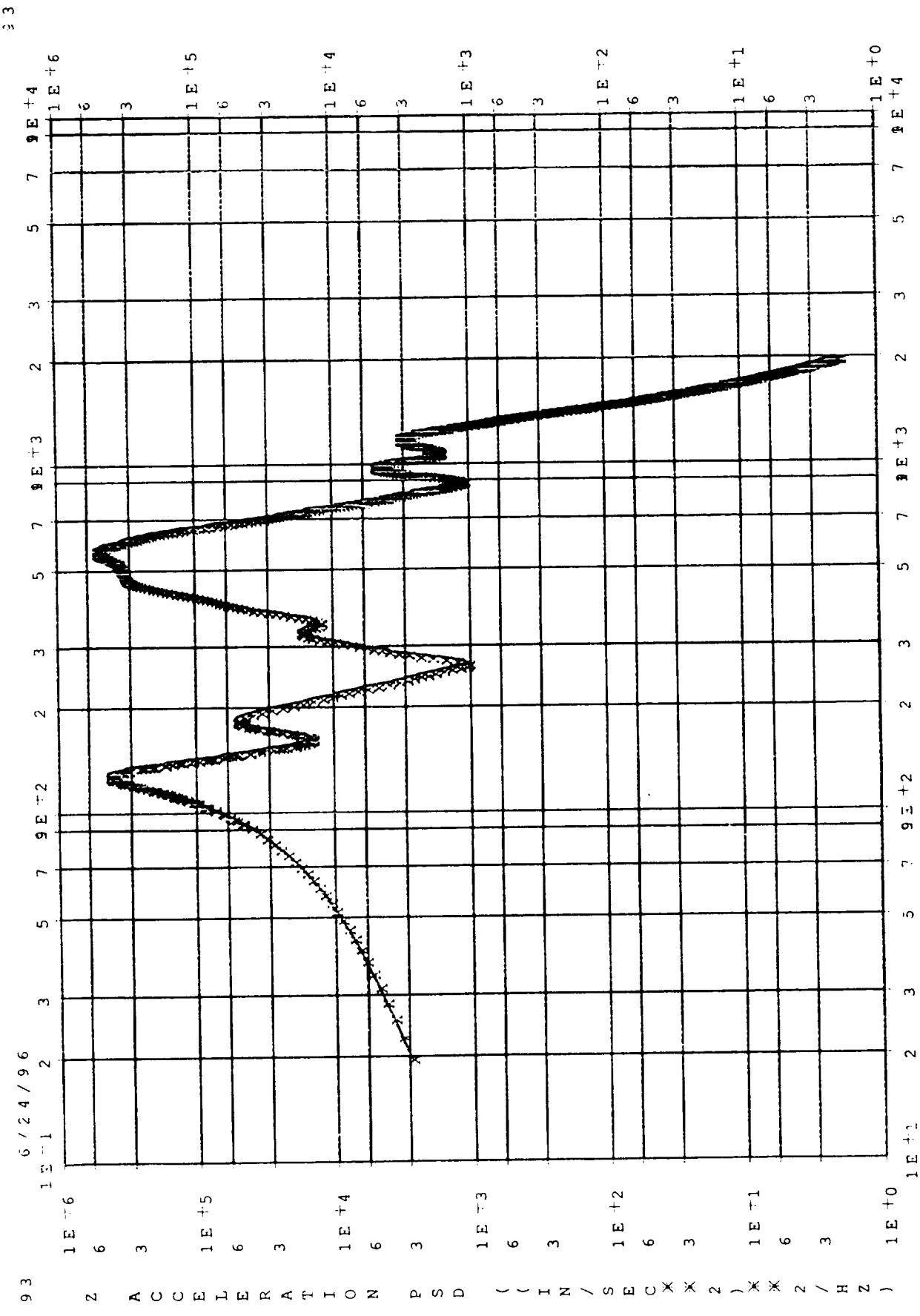


Figure 43 METOP AMSU-A1 Random Vibration PSD Curve Response
Upper Card Cage Card Z-Load Z-Response, 26.20 grms

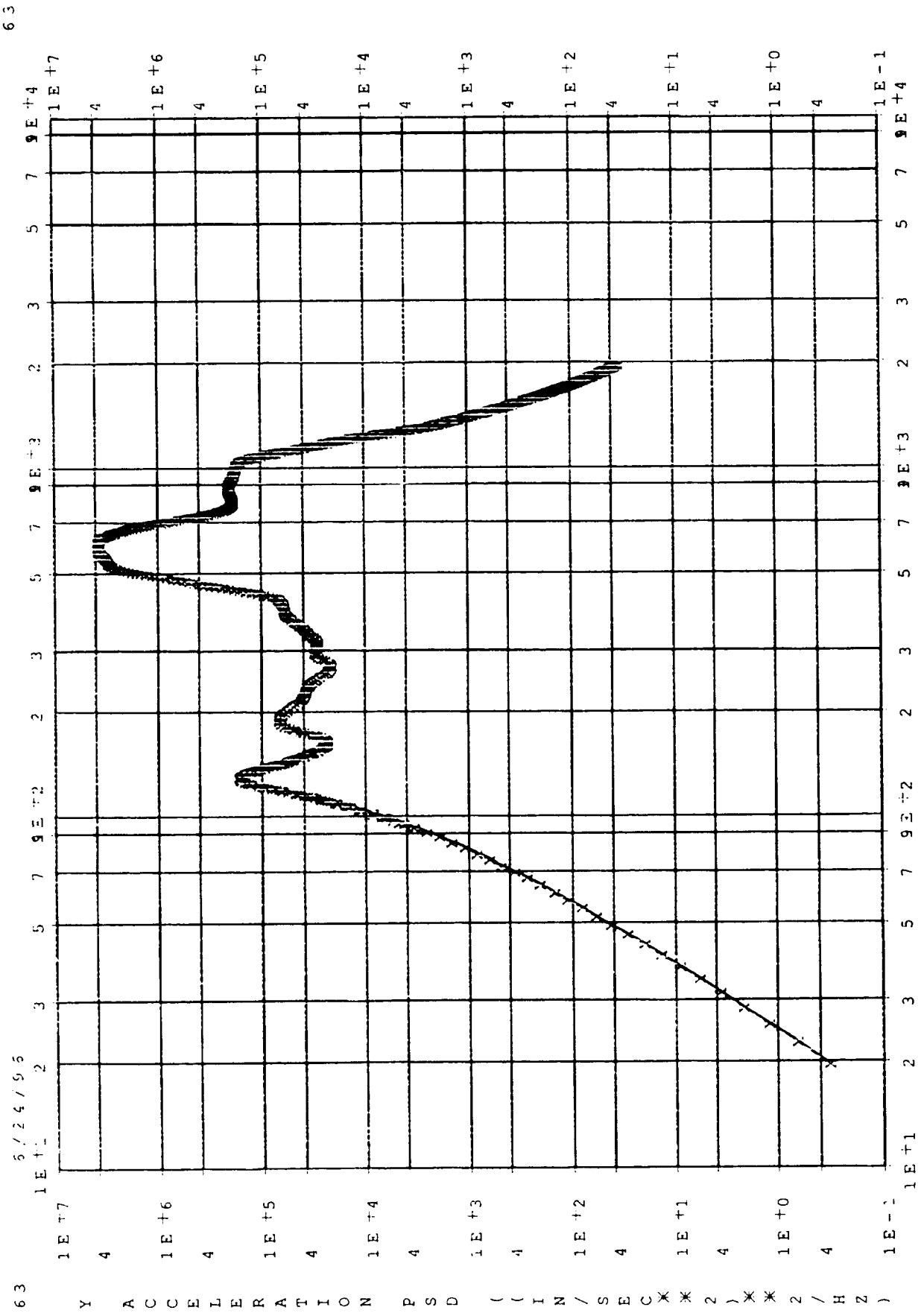


Figure 44 METOP AMSU-A1 Random Vibration PSD Curve Response
Power Control/Monitor Bracket Z-Load Y-Response, 72.49 grms

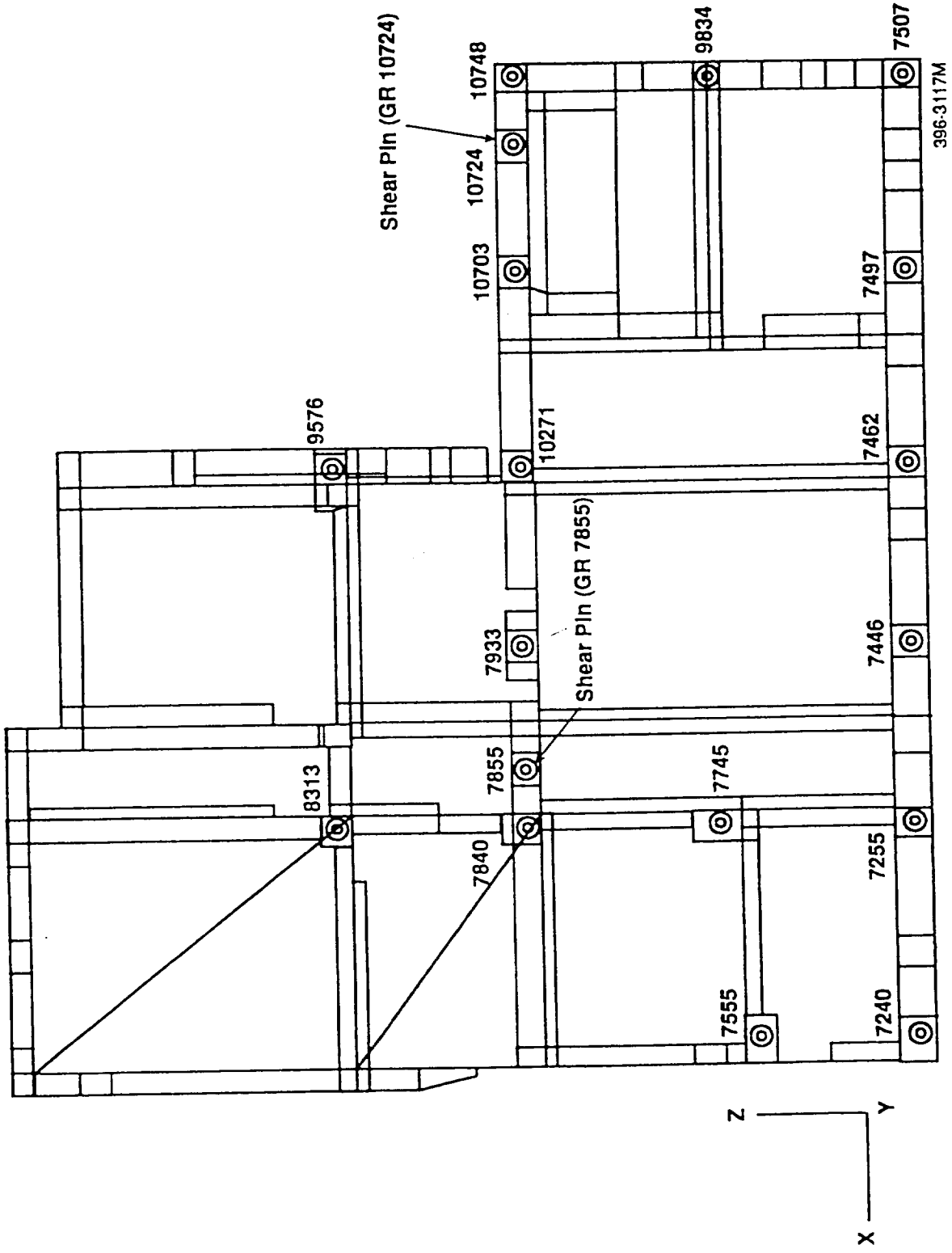


Figure 45 METSAT AMSU-A1 Spacecraft Mounting Bolt and Shear Pin Grids

Appendix A

NASTRAN FINITE ELEMENT MODEL

The NASTRAN finite element model of the METSAT AMSU-A1 Module is shown as an assembly in Figure A-1 thru A-4 in this appendix. Figures A-1, A-2, and A-3 show different views of the model. Figure A-4 is a section view of the model, showing the components modeled in the interior (i.e., shelves, card cages, warmload structures). Elements and grids are highlighted in the piece part models of Report 10738, Revision A, METSAT Advanced Microwave Sounding Unit -A1 (AMSU-A1) Structural Mathematical Model, July 1996.

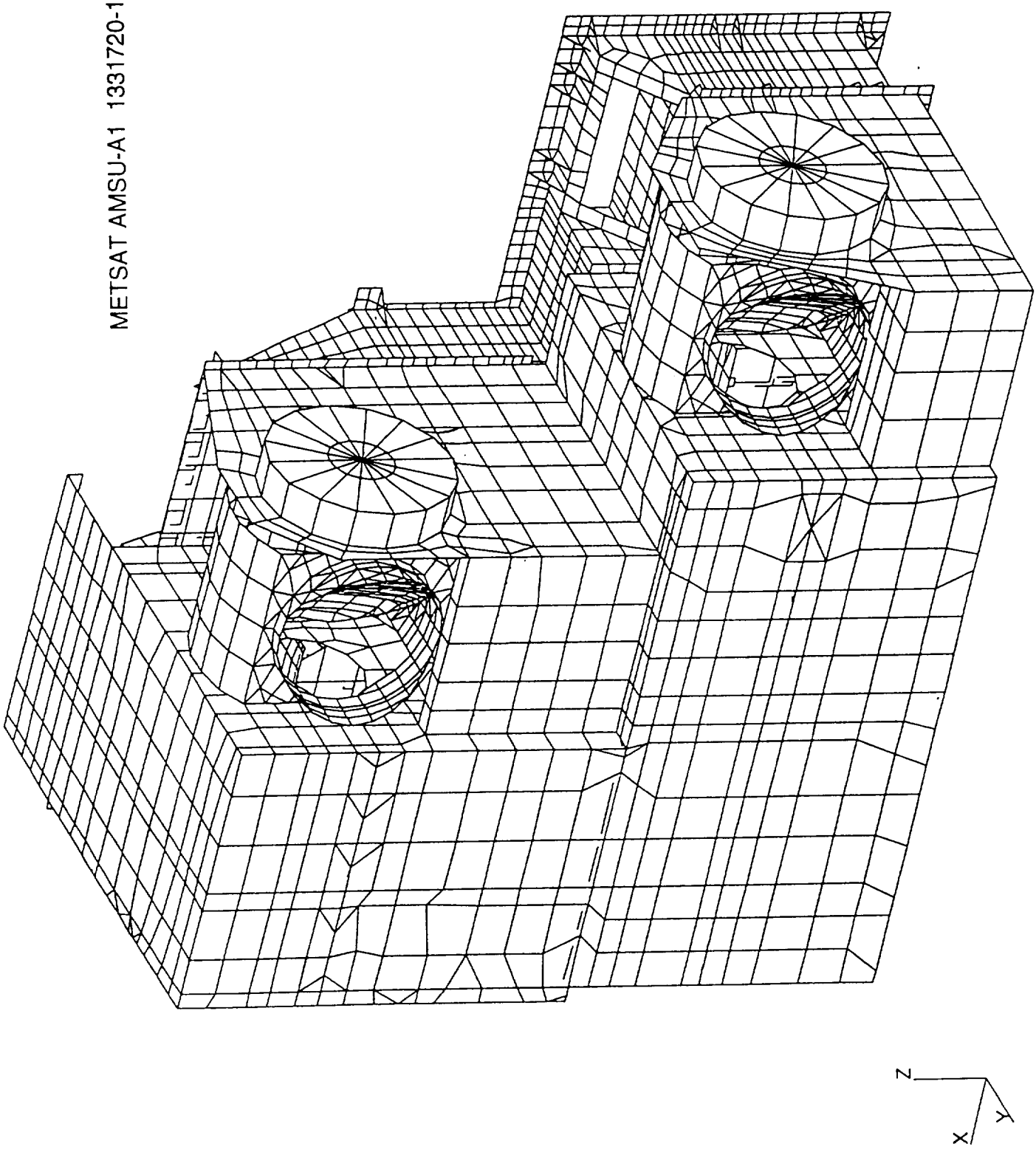


Figure A-1

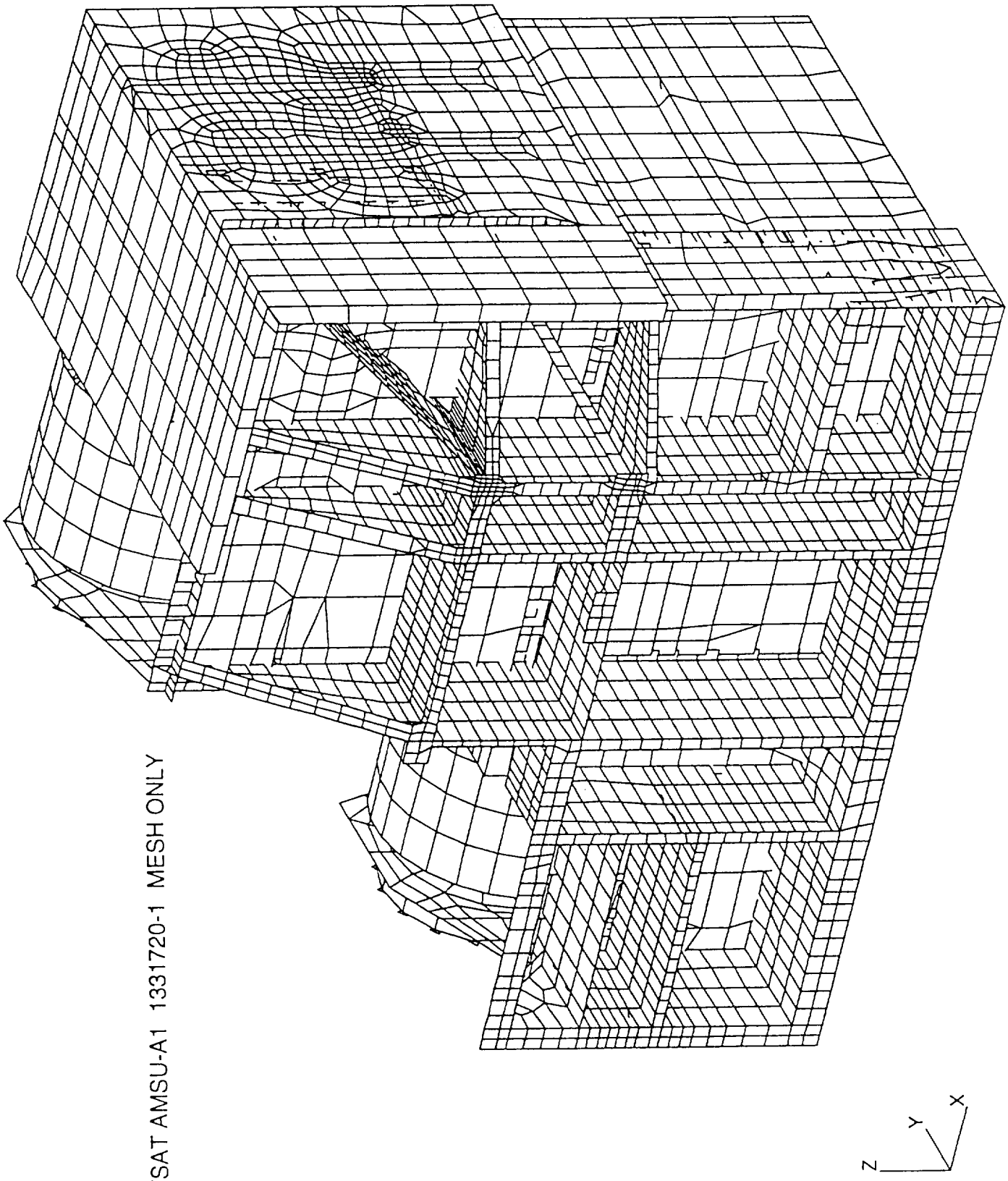
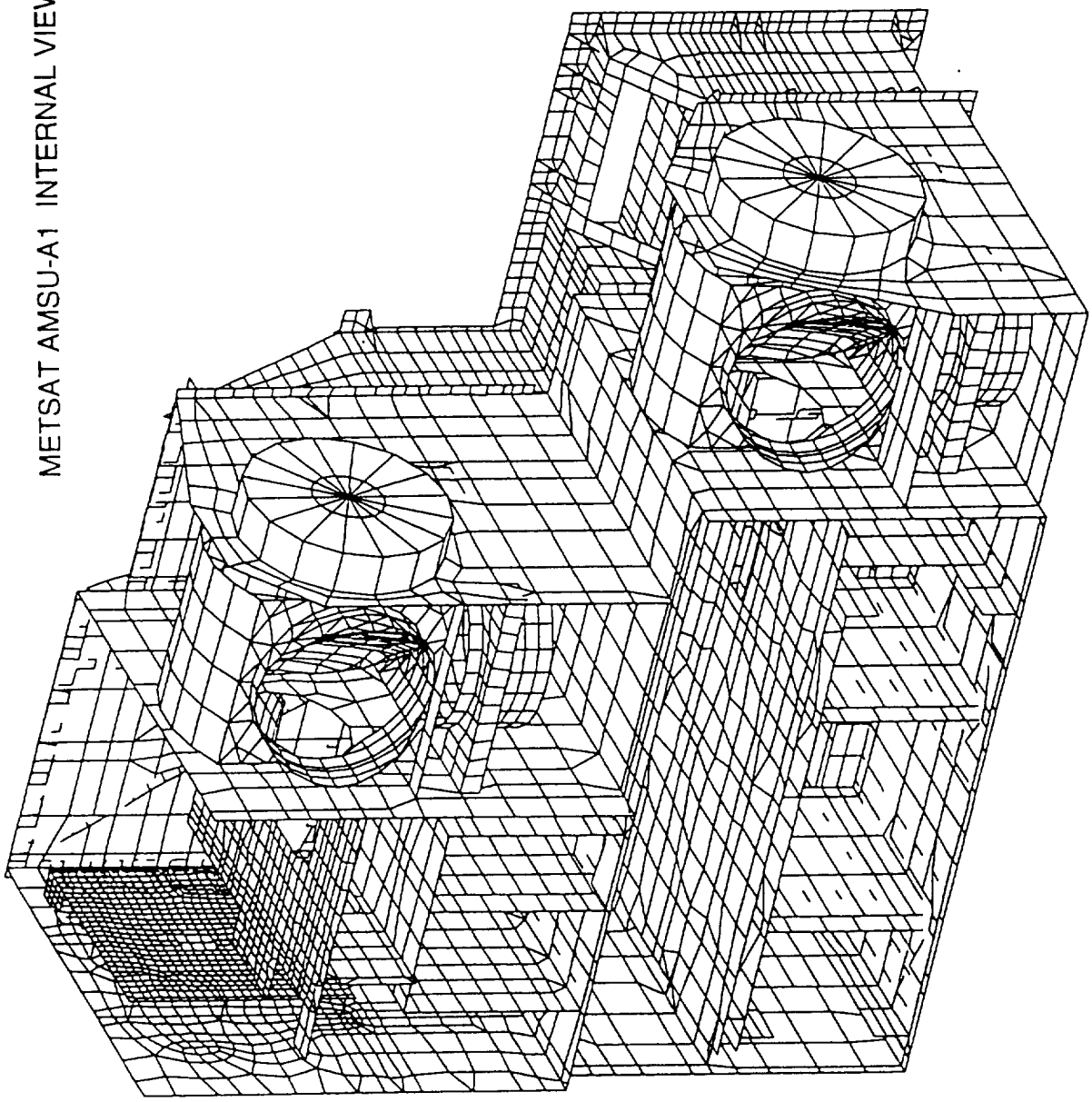


Figure A-2

Figure A-3

METSAT AMSU-A1 INTERNAL VIEW - MESH ONLY



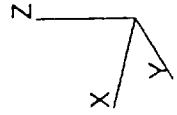


Figure A-4

Appendix B

NASTRAN FINITE ELEMENT MODEL

MATHEMATICAL VALIDITY CHECK

To demonstrate the mathematical soundness of the NASTRAN model, the model is subjected to the GSFC 422-11-12-01 Paragraph 11.1.4.i Deliverable Model Validity Check, where a rigid-body or stiffness-equilibrium check is performed. Using NASTRAN Solution 3, a DIAG 64 ALTER 126 DMAP is run. The NASTRAN Executive Control Data Deck consists of:

```
ID AMSU1,RANDOM
TIME 60
SOL 3
$
DIAG 64
$
COMPILE SOL3,SOUIN=MSCSOU
ALTER 126
VECPLOT, ,BGPDT,EQEXIN,CSTM,,,,/RBGLOBAL/GRDPNT=0//4 $
VEC USET/V1/'G'/'F'/'COMP' $
PARTN RBGLOBAL,V1/RBFF,,,/0 $
TRNSP RBFF/RBFFT $
MPYAD KFF,RBFFT,/KFFR/ $
MATGPR GPL,USET,SIL,KFFR//'F'///1.E-2 $
DIAGONAL KFF/KFFD/OPT='SQUARE'/POWER=-1. $
MPYAD KFFD,KFFR,/KFFRN/ $
MATGPR GPL,USET,SIL,KFFRN//'F'///SMALL=1.E-5 $
ENDALTER
CEND
```

A NASTRAN correspondence on the rigid-body check describes the requirements of the test.

"The basic function of this check is to multiply through a cross product the free stiffness matrix by the model rigid body matrix. The matrix that results from this multiplication can be thought of as the internal forces that must be applied to the structure to overcome any model internal constraint to achieve the desired rigid body motion. This matrix is titled the KFFR Matrix. The smaller the magnitude of the numbers in the matrix, the less internal constraint present in the model. The DMAP will print any values larger than 10^{-2}. In an attempt to evaluate the effect of any internal constraint, the KFFR Matrix is divided by the diagonal stiffness term of each respective row. The resulting matrix is considered "normalized" and is titled the KFFRN Matrix. A satisfactory KFFRN Matrix will generally have terms less than 10^{-5}."

Thus terms of the KFFRN Matrix need be less than 10^{-5}.

The NASTRAN METSAT AMSU-A1 finite element model has been checked to conform to GSFC 422-11-12-01 Paragraph 11.1.4.i requirements. All terms of the KFFRN Matrix are less than 10^{-5}. The NASTRAN rigid-body check solution follows.

N A S T R A N E X E C U T I V E C O N T R O L D E C K E C H O

```
ID AMSUA1,RANDOM
TIME 16
SOL 3
$
DIAG 64
$
COMPILE SOL3,SOUIN=MSCSOU
ALTER 126
VECPLOT, ,BGPDT,EQEXIN,CSTM,,,,/REGLOBAL/GRDPNT=0//4 $
VEC USET/V1/'G'/'F'/'COMP' $
PARTN RBGLOBAL,V1,/RBFF,,,/0 $
TRNSP RBFF/RBFFT $
MPYAD KFF,RBFFT,/KFFR/ $
MATGPR GPL,USET,SIL,KFFR//'F'///1.E-2 $
DIAGONAL KFF/KFFD/OPT='SQUARE'/POWER=-1. $
MPYAD KFFD,KFFR,/KFFRN/ $
MATGPR GPL,USET,SIL,KFFRN//'F'///SMALL=1.E-5 $
ENDALTER
$
$
CEND
```

C A S E C O N T R O L D E C K E C H O

```
CARD
COUNT
 1      $
 2      TITLE = LARGE FIELD DATA TRANS ALTER 126 EQUILIB CHECK - METSAT
 3      $
 4      $
 5      $       JUNE 7 1996 SIDEMOUNT UPDATE
 6      $       MESH IMPROVEMENT AT CONNECTIONS OF ANGLED STIFFENERS TO MOUNTING          BOLT FL
 7      $       INCREASES STIFFNESS AT UPPER MOUNTING BOLTS
 8      $
 9      $
10      $
11      $       ADDED CBARS TO UPPER AND LOWER REFLECTORS
12      $       MODIFIED GRIDS IN UPPER WARMLOAD (PUT IN PLANE)
13      $
14      $
15      $       SIDEMOUNT -     PUT GRIDS IN LOCAL ANALYSIS COORD SYSTEMS
16      $        FOR SKEWED PLANES
17      $        SURFACE   LOCAL ANALYSIS CCORD SYS
18      $
19      $       LOWER BASEPLATE T=.200 RIDGE BELOW LOWER AFT PANEL REMOVED
20      $        IN METSAT (SET TO T=.060)
21      $
22      $       PANEL FLANGES INCREASED TO REQ'D EOS/METSAT LEVELS
23      $
24      $       UPPER FRONT PANEL (1331352) RIB PUT BACK TO T=.07 (WAS .08)
25      $
26      $       UP CARD CAGE TOP PANEL (1331162-3) PUT BACK TO T=.05 (WAS .06)
27      $
28      $       LOWER BASEPLATE CBAR OFFSETS ADDED
29      $               PBAR 5 COORD 0 <0,.3125,0> PBAR 6 COORD C <0,.156,0>
30      $
31      $       1331404 LOWER BASEPLATE CONCEPT (METSAT)
32      $
33      $       1331582 SIDEMOUNT ADDED W/RATIOED DENSITY TO GIVE 12.50 LB
34      $
35      $       SIGNAL PROCESSOR/CARD CAGES
36      $               NO CHANGE TO LOWER CARD CAGE FROM EOS
37      $               2 CARDS PUT IN UPPER CARD CAGE (W = 2 X .30 LB)
38      $
39      $       1331648 TOP PANEL MODELED (ADDED FLAPS AROUND SIDEMOUNT)
40      $
41      $       1331640 LEFT PANEL NEW T=.050 (WAS .062 ON EOS) ALSO REMOVED NON
42      $       STRUCTURAL MASS SINCE NO MIRRORS ARE APPLIED TO METSAT LEFT PNL
43      $
44      $       NEW POWER CONTROL/MONITOR FILTER BOX  1356907 REPLACES 1356761
45      $        NO FILTERS IN METSAT, ALSO ENCLOSURE LOWER COVER REMOVED
46      $
47      $       ADD 1331336 ALIGNMENT CUBE MASS TO UPPER MOTOR MOUNT
48      $
49      $       ADD 1331097 CARD RETAINER MASS TO UPPER RIGHT PANEL
50      $
```

C A S E C O N T R O L D E C K E C H O

```
CARD
COUNT
51      $       ADD INSULATION MASS TO SIDEMOUNT (8 CONM2'S 10677-10684)
52      $
53      $       REMOVED INSULATION NSM FROM LEFT PANEL AND COVERS
54      $
55      $       REVISED UPPER CARDS RETENTION AT TOP AND BOTTOM OF CARDS
56      $        (EXTENDED THE RETENTION LENGTH)
57      $
58      $       CORRECTED SOME FREE SURFACES IN UPPER CARDS
59      $
60      $       PROVIDED AN EFFECTIVE THICKNESS FOR TOP PANEL W/MIRRORS
61      $        THAT TAKES INTO EFFECT THE .010 EPOXY-GLASS SHEET
62      $        (INCREASES EFFECTIVE T TO .064 (WAS .052) AND RAISES
63      $         1ST MODE TO 101.7 HZ)
64      $
65      $
66      $       REMOVE ALL SPC'S
67      $
68      ECHO = NONE
69      $
70      SUBCASE 1
71      $ SUBCASE NAME : EQUILIBRIUM
72         SUBTITLE=EQUILIBRIUM
73         METHOD = 1
74         VECTOR(SORT1,REAL)=ALL
75         SPCFORCES(SORT1,REAL)=ALL
76      BEGIN BULK
```

INPUT BULK DATA CARD COUNT = 42728

TOTAL COUNT= 42122

SEQUENCE PROCESSOR OUTPUT

THERE ARE 9307 POINTS DIVIDED INTO 1 GROUP(S).

CONNECTION DATA

ELEMENT TYPE	NUMBER	ASSEMBLY TIME(SEC)
BEAM	124	0.13
ELAS1	29	0.00
QUAD4	8288	17.40
BAR	894	0.80
TRIA3	688	0.69

TOTAL MATRIX ASSEMBLY TIME FOR 10022 ELEMENTS IS 19.03 SECONDS.

RIGID ELEMENT PROCESSING COMPLETED.

ORIGINAL PERFORMANCE DATA

SUPER(GROUP) ID	NO. GRIDS	AV. CONNECTIVITY	C-AVERAGE	C-RMS	C-MAXIMUM	P-GROUPS	P-AVERAGE	DECOMP TIME(SEC) (6.0 DOF/GRID)
0	9307	8.67	514.46	609.27	1071	97	579.43	62629.938

RESEQUENCED PERFORMANCE DATA

SUPER(GROUP) ID	NO. GRIDS	AV. CONNECTIVITY	C-AVERAGE	C-RMS	C-MAXIMUM	P-GROUPS	P-AVERAGE	DECOMP TIME(SEC) (6.0 DOF/GRID)	METHOD
0	9307	8.67	141.32	162.27	264	0	0.00	4679.772	ACTIVE

O U T P U T F R O M G R I D P O I N T W E I G H T G E N E R A T O R

REFERENCE POINT = 0

M O

* 3.860000E+10	3.597437E-18	3.924477E-18	-4.742077E-17	3.637418E+11	-1.975457E+11 *
* 3.597437E-18	3.860000E+10	-2.616318E-18	-3.637418E+11	2.076702E-17	6.055359E+11 *
* 3.924477E-18	-2.616318E-18	3.860000E+10	1.975457E+11	-6.055359E+11	3.556557E-16 *
* -4.742077E-17	-3.637418E+11	1.975457E+11	4.428663E+12	-3.098939E+12	-5.706185E+12 *
* 3.637418E+11	2.076702E-17	-6.055359E+11	-3.098939E+12	1.292699E+13	-1.861544E+12 *
* -1.975457E+11	6.055359E+11	3.556557E-16	-5.706185E+12	-1.861544E+12	1.051031E+13 *

S

* 1.000000E+00	0.000000E+00	0.000000E+00	*
* 0.000000E+00	1.000000E+00	0.000000E+00	*
* 0.000000E+00	0.000000E+00	1.000000E+00	*

DIRECTION MASS AXIS SYSTEM (S)	MASS	X-C.G.	Y-C.G.	Z-C.G.
X	3.860000E+10	-1.228517E-27	5.117764E+00	9.423364E+00
Y	3.860000E+10	1.568746E+01	5.380058E-28	9.423364E+00
Z	3.860000E+10	1.568746E+01	5.117764E+00	9.213880E-27

I(S)

* -6.553600E+05	-2.621440E+05	0.000000E+00	*
* -2.621440E+05	-5.242880E+05	-2.621440E+05	*
* 0.000000E+00	-2.621440E+05	0.000000E+00	*

I(Q)

* -8.918806E+05			*
*	-4.107130E+05		*
*		1.229460E+05	*

Q

* 7.284717E-01	-6.702843E-01	-1.415905E-01	*
* -6.572776E-01	-6.255454E-01	-4.203317E-01	*
* 1.931704E-01	3.692640E-01	-8.962552E-01	*

KEEP

POINT	VALUE	POINT	VALUE	POINT	VALUE	POINT	VALUE	POINT	VALUE
COLUMN 1 (4003-T1).									
COLUMN 2 (4003-T2).									
COLUMN 3 (4003-T3).									
COLUMN 4 (4003-R1).									
2166 T1	3.39045E-02	2166 R2	1.15137E-02	2167 R2	1.44013E-02	3343 T1	-2.42962E-02	3343 R2	-2.83282E-02
3357 T1	-4.76191E-02	3357 R2	-1.02337E-02	3342 T1	8.17207E-02	2168 T1	-3.95110E-02	2168 R2	1.44814E-02
7248 T1	2.09117E-02	7238 T1	2.31287E-02	7247 R2	-1.95223E-02	7247 R3	1.62478E-02	7237 T1	-5.82559E-02
7236 T1	1.02005E-02	7104 T1	-1.08867E-02	7283 T1	-4.31142E-02	7288 R2	1.18344E-02	7289 R2	2.91412E-02
7289 R3	2.37814E-02	7290 T1	6.39906E-02	7102 T1	-3.44161E-02	7103 T1	1.62626E-02	11982 T2	-1.28618E-02
11998 T2	1.28618E-02	11997 T2	1.38390E-02	11981 T2	-1.38390E-02	7136 T1	-1.08868E-02	7321 T1	-4.31142E-02
7321 R2	1.18344E-02	7322 R2	2.91412E-02	7322 R3	2.37813E-02	7323 T1	6.39906E-02	7134 T1	-3.44161E-02
7135 T1	1.62626E-02	11996 T2	-2.19104E-02	11980 T2	2.19104E-02	11995 T2	-2.19104E-02	11979 T2	2.19104E-02
11994 T2	1.38389E-02	11976 T2	-1.38389E-02	11993 T2	1.18847E-02	11977 T2	-1.18847E-02	11991 T2	1.38390E-02
11975 T2	-1.38390E-02	11990 T2	1.38390E-02	11974 T2	-1.38390E-02	11989 T2	-1.99562E-02	11973 T2	1.99562E-02
11987 T2	1.38390E-02	11971 T2	-1.38390E-02	12893 T3	1.16542E-02	12899 T2	-1.01903E-02	12894 T3	3.55197E-02
12894 R2	-1.23889E-02	12923 T3	-1.38944E-02	12643 T2	1.81689E-02	12627 T2	-1.03372E-02	12644 T2	1.99857E-02
13017 T3	-1.78033E-02	12982 T1	1.58070E-02	12895 T2	-2.09410E-02	12895 R1	-1.14938E-02	8213 T1	-2.30251E-02
8213 R2	-1.23579E-02	8219 T1	3.50399E-02	12930 T3	2.52854E-02	12623 T2	1.60772E-02	12645 T2	-2.62790E-02
12645 R3	-1.05974E-02	12977 T3	-4.55781E-02	12978 T3	3.06609E-02	12879 T3	-1.27185E-02	12980 T3	-1.70832E-02
13016 T3	-1.08438E-02	7861 T1	3.95770E-02	7861 R3	1.33432E-02	7344 T1	-5.82627E-02	7847 T1	5.65272E-02
8216 T1	-1.02793E-02	7848 T1	-6.49823E-02	7849 T1	2.54053E-02	12904 R1	1.45524E-02	12974 T3	-1.16628E-02
12975 R2	2.08334E-02	12976 T1	-1.26841E-02	12976 T3	4.51377E-02	13015 T3	1.41488E-02	13004 T3	1.16481E-02
12908 R2	1.04218E-02	12907 T3	1.32432E-02	12907 R1	-1.99648E-02	12907 R2	1.85271E-02	12910 T3	-2.40597E-02
12910 R1	1.46586E-02	12910 R2	1.62280E-02	12912 R2	-1.15645E-02	12911 T1	-1.74758E-02	13005 T3	2.97717E-02
12921 T3	-1.11552E-02	12926 T3	1.55561E-02	13006 T3	-1.73237E-02	13006 R2	-1.27281E-02	12927 T1	1.42438E-02
13007 T3	-2.58405E-02	13009 T3	-2.08578E-02	12613 T2	-1.00056E-02	12647 T2	1.87229E-02	12647 R3	-1.82002E-02
12969 T3	1.93848E-02	13014 T3	3.35115E-02	12951 T3	-2.13440E-02	12949 T3	1.46409E-02	12950 T3	-1.42717E-02
12607 T2	1.03881E-02	12648 T2	-2.77316E-02	12648 R3	-1.23686E-02	12958 T3	-1.76654E-02	12958 R1	-1.19449E-02
12962 T3	1.92964E-02	12961 T3	-1.23872E-02	12956 T3	1.14803E-02	12963 T3	-1.85897E-02	12968 T3	-2.14831E-02
13011 T3	1.37934E-02	12964 T3	1.28376E-02	13012 T3	-2.26145E-02	12650 R3	-1.63554E-02	12569 T2	-1.30904E-02
12569 R3	-1.19484E-02	12495 T1	1.60255E-02	12495 T2	-2.61771E-02	12504 T2	1.29924E-02	10593 T1	1.19863E-02
10504 R3	1.35789E-02	10575 R3	-1.33035E-02	10503 T1	2.10348E-02	10582 T1	-1.32567E-02	11896 T3	-2.61292E-02
11896 R2	2.26836E-02	12456 T3	-1.38494E-02	12456 R2	6.50668E-02	12457 R2	8.79754E-02	12458 T3	1.02024E-02
12458 R2	8.79664E-02	12459 T3	6.85071E-02	12459 R2	4.48703E-02	10871 T1	1.97601E-02	10869 T1	2.35442E-02
10867 R3	1.56718E-02	10464 T1	-1.38416E-02	10560 T1	-1.41045E-02	8324 T3	3.81972E-02	8324 R2	-2.36083E-02
8322 T3	-6.05111E-02	8322 R2	4.29923E-02	8312 T3	4.68301E-02	8312 R2	-2.82480E-02	12451 T3	4.69296E-02
12451 R2	-9.47084E-02	12452 R2	-1.22856E-01	12453 T3	2.55604E-02	12453 R2	-1.21661E-01	12454 T3	-8.60774E-02
12454 R2	-5.81074E-02	12446 R2	-6.02857E-02	12441 R2	7.54175E-02	12447 R2	-4.85882E-02	12448 T3	-1.11884E-02
12448 R1	-1.07286E-02	12448 R2	-3.07002E-02	12449 T3	1.46613E-02	12449 R2	-1.66657E-02	12442 T3	8.27383E-02
12443 T3	-1.10265E-02	12443 R2	-3.98017E-02	12444 T3	-7.46907E-02	12444 R2	-2.15240E-02	8320 T3	4.42928E-02
8320 R2	-2.70955E-02	12436 R2	-5.78040E-02	12437 T3	-7.36888E-02	12437 R2	-1.45658E-02	12438 T3	-2.14906E-02
12438 R2	-2.09936E-02	12439 T3	-3.20923E-02	12439 R2	-1.03700E-02	10874 T1	5.94188E-02	10874 R2	6.40415E-02
10874 R3	1.93559E-02	10465 T1	-1.26481E-01	10465 R2	2.72777E-02	10561 T1	7.24320E-02	10553 T1	-7.65151E-02
10553 R2	-1.05479E-02	10466 T1	6.07909E-02	10466 R2	-1.33429E-02	10466 R3	-1.24550E-02	12776 T3	1.95978E-02
12776 R2	-1.10890E-02	9179 T1	1.73571E-02	9179 T1	2.19995E-02	12781 T3	1.93161E-02	12784 T3	-2.65979E-02
12784 R1	-1.09753E-02	12783 T3	4.02576E-02	12785 T3	3.49428E-02	12785 R1	-1.35543E-02	9187 R2	1.22774E-02

KFFR

POINT	VALUE	POINT	VALUE	POINT	VALUE	POINT	VALUE	POINT	VALUE
9188 R2	1.18990E-02	12789 T3	1.91351E-02	12790 R2	1.01104E-02	12792 R1	-1.06349E-02	12793 T3	-1.09965E-02
12793 R2	-1.24027E-02	12794 T3	-1.08134E-02	9197 T1	-1.43412E-02	9198 T1	-1.43412E-02	10664 T1	1.72939E-02
10664 R3	1.02857E-02	10610 T1	2.23465E-02	10665 T1	-4.17255E-02	12797 R1	-1.89017E-02	12797 R2	-1.21638E-02
12799 R2	1.31106E-02	12800 R2	1.23034E-02	12801 R2	1.18256E-02	12804 T3	-1.68224E-02	12805 T3	-1.03398E-02
12806 R2	-1.09394E-02	12807 R1	-1.19277E-02	12807 R2	-1.22367E-02	12803 R1	1.06447E-02	12802 T3	-3.40803E-02
9223 R3	1.15167E-02	9222 T1	-1.97614E-02	9222 R3	1.43540E-02	12812 T3	-2.09299E-02	12813 T3	1.01297E-02
12814 R1	1.00498E-02	12815 R1	-1.33706E-02	12811 R1	-1.09403E-02	12811 R2	-1.34655E-02	12810 R1	1.56802E-02
12809 R1	1.01699E-02	9227 R2	-1.03309E-02	12820 T3	2.47636E-02	12821 R2	-1.38104E-02	12824 R1	1.41028E-02
12824 R2	-1.93738E-02	12823 T3	-3.84991E-02	12823 R2	-1.02901E-02	9237 T1	1.09608E-02	10656 T1	-5.58442E-02
10656 R2	1.63810E-02	10656 R3	-1.26930E-02	10786 T1	9.38752E-02	10786 R3	-3.62797E-02	12826 T3	2.48499E-02
12827 R1	1.35206E-02	12828 R2	-1.21802E-02	12829 T3	1.14594E-02	12829 R2	-1.18285E-02	12831 R1	1.45009E-02
12830 T3	4.22777E-02	12833 R1	1.16144E-02	10655 T1	-3.32389E-02	10655 R2	-2.17256E-02	10647 T1	1.54903E-02
10647 R2	-1.59271E-02	10647 R3	-2.27672E-02	10790 T1	8.82246E-02	10790 R2	1.52235E-02	10790 R3	3.51950E-02
10793 T1	1.42671E-02	10793 R2	6.35365E-02	10793 R3	3.49977E-02	10796 T1	-1.51196E-01	10796 R2	1.07697E-02
10796 R3	1.62465E-02	12839 R2	1.14375E-02	12840 T3	-1.74060E-02	12841 T3	-4.05141E-02	10628 T1	6.33417E-02
10628 R2	-1.87824E-02	12842 T3	-1.41797E-02	12843 T3	2.54292E-02	12844 T3	1.74271E-02	12844 R2	1.10639E-02
12845 T3	4.42351E-02	12845 R2	1.01374E-02	12852 T3	-4.34285E-02	10458 T1	-4.83646E-02	10452 T1	1.34348E-02
12851 T3	-2.63814E-02	12855 T3	-1.59535E-02	12855 R1	1.17569E-02	12857 T3	1.50149E-02	12857 R1	1.23791E-02
12859 R1	1.66855E-02	12858 T3	1.13060E-02	12860 T3	3.94993E-02	12860 R1	1.01924E-02	9802 R3	1.06947E-02
8774 T1	2.93907E-02	8804 T1	-7.38691E-02	8804 R3	1.66575E-02	8763 T1	4.44785E-02	8744 T1	-2.93907E-02
8800 T1	7.38691E-02	8800 R3	-1.66575E-02	8741 T1	-4.44785E-02	8700 T1	-4.44782E-02	8788 T1	-8.50372E-02
8788 R2	3.81033E-02	8788 R3	-1.66575E-02	8695 T1	5.00622E-02	8691 T1	7.94532E-02	3795 T1	-1.14123E-02
3775 T1	1.20185E-02	3796 T1	-1.14182E-02	3776 T1	1.20185E-02	3797 T1	1.14269E-02	3777 T1	-1.20185E-02
3794 T1	1.14064E-02	3771 T1	-1.20185E-02	6336 R3	-1.50683E-02	6338 R3	1.50683E-02	6340 R2	-1.42288E-02
6333 T1	4.22603E-02	6335 T1	-4.22605E-02	6323 T1	4.22603E-02	6321 T1	-4.22605E-02	6320 R3	-1.50683E-02
6318 R3	1.50683E-02	6316 R2	-1.42289E-02						

COLUMN 5 (4003-R2).

7256 T2	-1.26970E-02	7365 T2	-1.25634E-02	7365 R3	1.03491E-02	7363 R3	1.32247E-02	7361 T2	1.14716E-02
7361 R3	1.02604E-02	7359 T2	1.53098E-02	7622 T2	4.50802E-02	7626 T2	-4.50806E-02	8189 T2	4.16864E-02
11984 T2	-1.54552E-02	12000 T2	1.54552E-02	8191 T2	-1.16699E-02	8191 R3	-1.60897E-02	11939 T2	-3.08964E-02
11982 T2	2.21442E-02	11998 T2	-2.21442E-02	11997 T2	-2.38265E-02	11981 T2	2.38265E-02	11996 T2	3.77231E-02
11980 T2	-3.77231E-02	11995 T2	3.77231E-02	11979 T2	-3.77231E-02	11994 T2	-2.38264E-02	11978 T2	2.38265E-02
11993 T2	-2.04619E-02	11977 T2	2.04619E-02	11991 T2	-2.38265E-02	11975 T2	2.38265E-02	11990 T2	-2.38265E-02
11974 T2	2.38265E-02	11989 T2	3.43585E-02	11973 T2	-3.43585E-02	11987 T2	-2.38265E-02	11971 T2	2.38265E-02
8681 T2	2.37639E-02	8682 R1	-1.83044E-02	8121 T2	-3.97163E-02	2231 T2	1.52732E-02	8139 R1	1.80068E-02
8140 T2	4.18293E-02	5522 T2	-2.15083E-02	12643 T2	-2.96785E-02	12631 T2	1.49632E-02	12627 T1	-1.03372E-02
12627 T2	1.68856E-02	12644 T2	-3.26462E-02	12644 R3	1.59659E-02	13017 T3	2.90813E-02	12982 T1	-2.58204E-02
12982 T2	-1.27298E-02	12623 T1	1.60772E-02	12623 T2	-2.82618E-02	12645 T2	4.29261E-02	12645 R3	1.73106E-02
13016 T3	1.77131E-02	12646 T2	-1.33221E-02	12646 R3	1.42774E-02	12976 T1	2.07192E-02	12976 T2	1.02227E-02
13015 T3	-2.31117E-02	13004 T3	-1.90269E-02	12911 T1	2.95386E-02	12911 T2	1.40718E-02	12911 T3	-1.03628E-02
13005 T3	-4.86314E-02	13006 T3	2.82980E-02	13005 R2	2.07910E-02	12927 T1	-2.32669E-02	12927 T2	-1.14799E-02
13007 T3	4.22099E-02	12943 T1	-1.10494E-02	13009 T3	3.40707E-02	12613 T1	-1.00056E-02	12613 T2	1.63439E-02
12647 T2	-3.05834E-02	12647 R3	2.97296E-02	12972 T1	1.41777E-02	13014 T3	-3.47403E-02	7871 T2	-2.37639E-02
12950 T1	-1.45831E-02	13010 T3	1.57287E-02	13010 R2	-1.16753E-02	12607 T1	1.03881E-02	12607 T2	-1.69688E-02
12648 T2	4.52989E-02	12648 R3	2.02038E-02	12963 T1	-1.19722E-02	13013 T3	1.28959E-02	13013 R2	-1.17567E-02
13011 T3	-2.25312E-02	12964 T1	-1.36958E-02	13012 T3	3.69402E-02	12649 T2	-1.16819E-02	12649 R3	1.29469E-02
12650 T2	-1.37819E-02	12650 R3	2.67161E-02	12569 T2	2.13829E-02	12569 R3	1.95174E-02	12493 T1	-2.61773E-02
12495 T2	4.27597E-02	12504 T2	-2.12228E-02	12504 R1	-1.09750E-02	8318 T2	1.68433E-02	11909 T2	-1.07171E-02
12692 T2	-2.60185E-02	12696 T2	1.67042E-02	12693 T2	-3.56670E-02	12694 T2	5.80667E-02	12698 T2	-3.41819E-02

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POINT	VALUE	POINT	VALUE	POINT	VALUE	POINT	VALUE	POINT	VALUE
10691 T2	-2.80034E-02	10692 T2	2.30202E-02	10660 T2	1.03582E-01	10660 R1	2.70417E-02	10660 R3	3.67691E-02
10661 T2	-1.04599E-01	10661 R1	-3.54193E-02	10706 R3	-7.46095E-02	10665 T2	-1.03434E-01	10665 R1	-2.80014E-02
10665 R3	3.75712E-02	10656 T2	1.03435E-01	10666 R1	3.44703E-02	12783 T2	3.90570E-02	12771 T2	-1.95286E-02
12771 R1	1.55282E-02	10713 T2	2.16411E-02	10717 T2	-2.16411E-02	12784 T2	4.05787E-02	12772 T2	-1.93901E-02
12772 R1	1.19933E-02	12772 R3	-1.06700E-02	10714 T2	-2.16411E-02	10719 T2	2.16411E-02	12755 T2	3.22233E-02
9275 T2	-1.56640E-02	10670 T2	1.76203E-01	10670 R1	8.39874E-02	10670 R3	8.86926E-02	10671 T2	-1.76201E-01
10671 R1	-6.52971E-02	12756 T2	-2.62096E-02	12768 T2	3.09801E-02	12219 T2	1.44861E-02	10723 R3	-1.76852E-01
12757 T2	-4.69913E-02	12767 R3	1.13374E-02	10675 T2	-1.79890E-01	10675 R1	-8.29575E-02	10675 R3	8.88483E-02
10676 T2	1.79895E-01	10676 R1	6.63246E-02	12759 T2	3.63610E-02	12766 T2	-2.55740E-02	12237 T2	3.71392E-02
12242 T2	1.33158E-02	12247 T2	2.47519E-02	12280 T2	1.00347E-02	12280 R3	1.40539E-02	12274 T2	-5.61814E-02
12279 T2	1.33167E-02	12279 R1	1.68491E-02	12273 T2	-2.66325E-02	12279 T2	5.18567E-02	12278 R3	1.70490E-02
12272 T2	-6.76010E-02	12252 T2	3.38005E-02	12277 T2	3.38005E-02	12277 R3	1.70566E-02	12271 T2	-6.76010E-02
12266 T2	2.30761E-02	12283 T2	2.30761E-02	12283 R3	1.16448E-02	12281 T2	-4.61523E-02	10681 T2	-9.35206E-02
10681 R1	-2.51219E-02	10680 T2	1.02732E-01	10680 R1	3.53209E-02	10680 R3	4.70608E-02	12759 T2	4.55219E-02
12765 T2	-2.63144E-02	12765 R3	-1.10091E-02	12297 T2	2.02230E-02	12292 T2	4.37839E-02	12292 R3	1.30070E-02
12287 T2	-8.26725E-02	12287 R3	1.21371E-02	12296 T2	2.21579E-02	12291 T2	2.21582E-02	12291 R3	1.11815E-02
12286 T2	-4.43161E-02	12295 T2	2.20960E-02	10748 R1	-3.68590E-02	10751 T2	-2.81215E-01	10751 R1	-1.57414E-01
10751 R3	-5.38418E-02	10749 T2	3.11570E-01	10749 R1	4.79245E-02	10749 R3	1.67683E-01	10685 T2	-1.48444E-01
10685 R1	-4.52337E-02	10685 R3	-1.39428E-02	10666 T2	1.32609E-01	10686 R3	1.18619E-02	10781 T2	3.03453E-02
10782 T2	-3.03453E-02	12760 T2	1.00730E-02	12764 T2	-3.86555E-02	12764 R1	1.27546E-02	12761 T2	4.69362E-02
12763 T2	-3.27402E-02	12763 R1	3.31880E-02	12763 R3	-1.45879E-02	9924 T2	3.69104E-02	9886 R1	1.53992E-02
2826 T2	-3.76525E-02	11911 T2	-2.37301E-02	11911 R3	3.52173E-01	12348 T2	-1.63768E-02	12343 T2	-6.15406E-02
12401 T2	1.52689E-02	12404 T2	2.45495E-02	12400 T2	5.72643E-02	12400 R1	-1.34901E-02	12403 T2	-1.14508E-02
12394 T2	-2.29739E-02	12425 T2	2.95107E-02	12424 R1	-1.31337E-02	12384 T2	2.53896E-02	12423 T2	-3.32152E-02
12375 T2	-1.14879E-02	12421 T2	1.14879E-02	12370 T2	-1.12234E-02	12420 T2	1.12234E-02	12681 T2	1.78393E-02
12715 T2	-1.95284E-02	12720 T2	-2.13233E-02	12725 T2	-2.45861E-02	12730 T2	-1.31033E-02	12735 T2	3.11084E-02
12740 T2	-1.16373E-02	12745 T2	-2.11022E-02	12748 T2	2.60015E-02	12750 T2	-1.63693E-02	12750 R1	-1.22044E-02
8552 T2	3.16134E-02	8552 R1	1.34497E-02	2009 T2	1.28797E-02	5505 T2	-2.23692E-02	2953 T2	1.11654E-02
5511 T2	-2.09972E-02	5511 R3	2.07200E-02	5512 R3	2.70713E-02	2952 R3	-1.47497E-02	5513 R3	2.75002E-02
2960 R3	-1.57683E-02	5514 R3	2.74637E-02	2959 R3	-1.57665E-02	5515 T2	1.14591E-02	5515 R3	2.43711E-02
2958 R3	-1.36213E-02	5516 T2	1.13013E-02	5516 R3	1.67951E-02	2957 R3	-1.00295E-02	5517 R3	1.37293E-02
5518 R3	1.37458E-02	5519 R3	1.35386E-02	5520 R3	1.10260E-02	2738 T2	-1.33383E-02	5508 T2	1.74885E-02
3733 T2	1.91973E-02	3733 T3	-5.86642E-02	4718 T2	3.35955E-02	4718 T3	-6.71053E-02	3721 T2	-1.91974E-02
3721 T3	-5.35924E-02	3727 T1	1.10843E-02	3727 T3	2.15414E-01	4722 T3	3.03393E-02	4703 T2	-3.35952E-02
4703 T3	-6.63908E-02	3739 T3	-2.67964E-02	4816 T2	1.67977E-02	4816 T3	-3.31954E-02	3744 T3	7.83747E-02
4830 T2	1.67977E-02	4830 T3	-1.83829E-02	3751 T3	7.17331E-02	4834 T2	-1.67977E-02	4834 T3	-4.24116E-02
4846 T2	-1.67977E-02	4846 T3	-3.67772E-02	4852 T3	1.01225E-02	4851 T2	1.67977E-02	4851 T3	-3.78195E-02
3762 T2	2.87960E-02	3762 T3	1.35696E-02	4838 T2	5.03932E-02	4838 T3	-1.11642E-01	3757 T2	-2.87960E-02
3757 T3	-8.03888E-02	3767 T1	1.10840E-02	3767 T3	2.93788E-01	4842 T2	-1.67975E-02	4842 T3	1.19564E-02
4823 T2	-5.03929E-02	4823 T3	-9.95863E-02	3734 T2	1.91973E-02	3734 T3	-5.86642E-02	4758 T2	3.35955E-02
4758 T3	-6.71053E-02	3728 T1	1.10843E-02	3728 T3	2.15413E-01	3722 T2	-1.91974E-02	3722 T3	-5.35925E-02
4762 T3	3.03393E-02	4743 T2	-3.35952E-02	4743 T3	-6.63908E-02				

COLUMN 6 (4003-R3).

3029 T3	1.68668E-02	3028 R2	-1.36274E-02	3027 R2	-1.90478E-02	3026 R2	-2.07030E-02	3025 R2	-1.98395E-02
3024 R2	-1.67805E-02	3023 T3	1.30187E-02	3023 R1	1.08545E-02	3023 R2	-1.71642E-02	3022 T3	-1.62843E-02
3010 T3	1.22726E-02	1579 T1	4.37142E-02	1579 T2	1.62182E-01	1579 T3	6.16600E-02	1579 R1	4.40275E-02
1435 T2	-1.36318E-01	1435 T3	-6.64114E-02	1425 T1	-1.87819E-01	1425 T2	-1.31186E-02	1425 T3	-3.41147E-02
1425 R2	4.97539E-02	5582 T1	-1.50402E-01	5582 T2	6.30915E-02	5582 T3	1.07104E-02	5582 R1	1.22251E-02
5582 R2	2.30646E-02	1415 T1	-2.81065E-01	1415 T2	7.44386E-02	1415 T3	-1.60118E-02	1415 R1	1.11528E-02

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POINT	VALUE	POINT	VALUE	POINT	VALUE	POINT	VALUE	POINT	VALUE
1415 R2	9.10848E-02	5585 T1	-3.79029E-01	5585 R2	5.81198E-02	1405 T1	-3.66451E-01	1405 R2	1.09624E-01
5586 T1	-4.56597E-01	5586 R2	7.00124E-02	1395 T1	-3.23150E-01	1395 T3	1.05597E-02	1395 R2	9.19131E-02
5587 T1	-4.06381E-01	5587 R2	6.23101E-02	1385 T1	-1.52788E-01	1385 T2	-7.44387E-02	1385 T3	2.06480E-02
1385 R1	-1.11527E-02	1385 R2	4.28373E-02	5589 T1	-2.50413E-01	5589 R2	3.83925E-02	1375 T1	-1.06256E-01
1375 T2	-7.44384E-02	1375 R1	-1.11527E-02	1375 R2	1.98812E-02	5589 T1	-7.23305E-02	5589 R2	1.10886E-02
1569 T1	2.94835E-01	1569 T2	1.11559E-01	1569 T3	2.34041E-02	1569 R1	1.64309E-02	1569 R2	-6.63512E-02
1559 T1	6.60094E-01	1559 T2	1.11558E-01	1559 T3	1.65948E-02	1559 R1	1.67144E-02	1559 R2	-1.49205E-01
1549 T1	8.23048E-01	1549 R2	-1.79636E-01	1539 T1	7.32531E-01	1539 T3	-1.05641E-02	1539 R2	-1.54223E-01
1529 T1	4.03181E-01	1529 T2	-1.11559E-01	1529 T3	-2.12319E-02	1529 R1	-1.67141E-02	1523 R2	-8.07298E-02
1519 T1	1.78587E-01	1519 T2	-1.11558E-01	1519 R1	-1.67141E-02	1519 R2	-3.07697E-02	7259 T3	-1.31467E-02
7261 T3	1.26082E-02	1214 T3	5.22577E-02	12160 R2	1.00092E-02	12048 T3	-4.13333E-02	8066 T3	-1.67203E-02
12026 T3	-2.06176E-02	11961 T3	1.27140E-02	12057 T3	2.20233E-02	12057 R1	-1.24770E-02	12041 R1	-1.46758E-02
11993 T3	-2.69959E-02	11962 T3	1.07992E-02	12056 R1	-1.26358E-02	12040 R1	-1.50886E-02	12024 R1	-1.47275E-02
12893 T3	-1.58667E-02	12899 T2	1.38736E-02	12894 T3	-4.93586E-02	12894 R2	1.68670E-02	12923 T3	1.89166E-02
12895 T2	2.85102E-02	12895 R1	1.56483E-02	12895 R3	1.17017E-02	12980 T3	-3.44250E-02	12977 T3	6.20527E-02
12978 T3	-4.17435E-02	12978 R1	-1.35293E-02	12979 T3	1.73167E-02	12980 T3	2.34321E-02	12904 R1	-1.99935E-02
12619 T3	2.21495E-02	12620 T3	1.50663E-02	12620 R1	1.57460E-02	12621 T3	-1.07696E-02	12621 R1	1.93962E-02
12974 T3	1.58764E-02	12974 R1	-1.11350E-02	12975 R2	-2.83638E-02	12976 T3	-5.51948E-02	12908 T3	-1.43187E-02
12908 R2	-1.62863E-02	12907 T3	-1.80301E-02	12907 R1	2.71812E-02	12907 R2	-2.52239E-02	12910 T3	3.27562E-02
12910 R1	-1.99570E-02	12910 R2	-2.20937E-02	12932 T3	-1.34464E-02	12912 R2	1.57446E-02	12911 T3	1.48809E-02
12921 T3	1.51873E-02	12926 T3	-2.11817E-02	12541 T3	-1.53975E-02	12917 T3	-1.76908E-02	12615 T3	-1.74684E-02
12615 R1	1.19341E-02	12614 T3	2.58868E-02	12614 R1	1.39558E-02	12613 T3	1.28022E-02	12969 T3	-2.63916E-02
12970 R1	1.05464E-02	12971 T3	-1.00900E-02	12951 T3	2.90590E-02	12949 T3	-1.99330E-02	12950 T3	1.50255E-02
12959 T3	2.40507E-02	12958 R1	1.62624E-02	12962 T3	-2.62715E-02	12962 R1	1.13483E-02	12961 T3	1.69647E-02
12967 R2	1.14350E-02	12956 T3	-1.56299E-02	12963 T3	2.53077E-02	12963 R2	-1.11301E-02	12968 T3	2.56321E-02
12964 T3	-2.16147E-02	11896 T3	2.02496E-02	11896 R2	-1.75794E-02	12456 T3	1.07330E-02	12456 R2	-5.04257E-02
12457 R2	-6.81795E-02	12458 R2	-6.81724E-02	12459 T3	-5.30919E-02	12459 R2	-3.47737E-02	5324 T3	-2.96022E-02
8324 R2	1.82960E-02	8322 T3	4.68951E-02	8322 R2	-3.33183E-02	8312 T3	-3.62925E-02	8312 R2	2.13918E-02
12451 T3	-3.63696E-02	12451 R2	7.33974E-02	12452 R2	9.52109E-02	12453 T3	-1.98089E-02	12453 R2	9.43007E-02
12454 T3	6.67085E-02	12454 R2	4.50323E-02	12446 R2	4.67204E-02	12441 R2	-5.84473E-02	12447 R2	3.76551E-02
12448 R2	2.37921E-02	12449 T3	-1.13623E-02	12449 R2	1.29156E-02	12442 T3	-6.41208E-02	12443 R2	3.03456E-02
12444 T3	5.78840E-02	12444 R2	1.66808E-02	8320 T3	-3.43262E-02	8320 R2	2.09985E-02	12436 R2	4.47972E-02
12437 T3	5.71076E-02	12437 R2	3.45377E-02	12438 T3	1.66549E-02	12438 R2	1.62697E-02	12439 T3	2.48710E-02
12776 T3	-1.51879E-02	12692 T2	1.23442E-02	12781 T3	-1.49697E-02	12784 T3	2.06129E-02	12783 T3	-3.11989E-02
12785 T3	-2.70801E-02	12785 R1	1.05043E-02	12693 T2	1.69217E-02	12789 T3	-1.48294E-02	12694 T2	-2.75490E-02
12698 T2	1.62172E-02	12797 R1	1.46485E-02	12799 R2	-1.01605E-02	12788 T2	-1.85301E-02	12804 T3	1.30371E-02
12802 T3	2.64117E-02	12754 T2	-1.92521E-02	12812 T3	1.62118E-02	12815 R1	1.03620E-02	12811 R2	1.04356E-02
12810 R1	-1.21519E-02	12755 T2	-1.52879E-02	12820 T3	-1.91914E-02	12821 R2	1.07029E-02	12824 R1	-1.09294E-02
12824 R2	1.50144E-02	12823 T3	2.98362E-02	12756 T2	1.24348E-02	12768 T2	-1.46981E-02	9533 T3	-1.54747E-02
12826 T3	-1.92582E-02	12827 R1	-1.04782E-02	12831 R1	-1.12379E-02	12830 T3	-3.27645E-02	12757 T2	2.22944E-02
9247 T3	1.56409E-02	12840 T3	1.34893E-02	12841 T3	3.13978E-02	12758 T2	-1.72510E-02	12766 T2	1.21333E-02
12237 T2	-2.18503E-02	12247 T2	-1.45624E-02	12274 T2	3.30535E-02	12273 T2	1.56688E-02	12273 T2	-3.05091E-02
12278 R3	-1.00305E-02	12272 T2	3.97721E-02	12252 T2	-1.38860E-02	12277 T2	-1.98860E-02	12277 R3	-1.00350E-02
12271 T2	3.97721E-02	12266 T2	-1.35765E-02	12283 T2	-1.35765E-02	12281 T2	2.71530E-02	12842 T3	1.09890E-02
12843 T3	-1.97072E-02	12844 T3	-1.35057E-02	12845 T3	-3.42814E-02	12759 T2	-2.15973E-02	12765 T2	1.24845E-02
12297 T2	-1.18979E-02	12292 T2	-2.57596E-02	12287 T2	4.86391E-02	12296 T2	-1.30363E-02	12291 T2	-1.30364E-02
12286 T2	2.60727E-02	12295 T2	-1.29998E-02	12852 T3	3.36564E-02	12764 T2	1.83396E-02	12761 T2	-2.22683E-02
12763 T2	1.55332E-02	12763 R1	-1.57456E-02	12851 T3	2.04451E-02	12855 T3	1.23637E-02	12857 T3	-1.16363E-02
12859 R1	-1.29310E-02	12860 T3	-3.06113E-02	12343 T2	2.91971E-02	12404 T2	-1.16472E-02	12400 T2	-2.71683E-02
12394 T2	1.06997E-02	12425 T2	-1.40010E-02	12384 T2	-1.20458E-02	12423 T2	1.57585E-02	12720 T2	1.01166E-02

KEFF

POINT	VALUE	POINT	VALUE	POINT	VALUE	POINT	VALUE	POINT	VALUE
12725 T2	1.16546E-02	12735 T2	-1.47590E-02	12745 T2	1.00117E-02	12749 T2	-1.23361E-02	8552 T2	-1.49986E-02
8185 T3	-7.56028E-02	8185 R2	-1.69057E-02	8164 T3	4.53143E-02	8169 T3	3.12885E-02	8727 T3	-2.37850E-02
8722 T3	2.37350E-02	8710 T3	1.32164E-02	8707 T3	-1.32164E-02	8830 T3	-2.47215E-02	8829 R2	-1.38349E-02
8825 T3	2.47216E-02	3672 T3	-2.46227E-02	5539 T3	1.85347E-02	3847 T3	-1.21990E-02	3847 R1	-1.45793E-02
3869 R1	1.49058E-02	3834 T3	1.23669E-02	3834 R1	-1.04679E-02	3882 R1	1.11316E-02	3671 T3	1.22531E-02
3833 T3	1.22011E-02	3790 T3	-1.18249E-02	3759 T3	1.20185E-02	3788 T3	1.06552E-02	3638 R1	1.02498E-02
1511 R1	-1.31340E-02	3632 R1	1.34532E-02	1512 R1	-1.32146E-02	3626 R1	1.35781E-02	3620 T3	-1.05536E-02
3620 R1	1.17712E-02	3452 T3	1.78575E-02	1472 R1	1.32146E-02	1471 R1	1.25292E-02	3457 T3	-1.78575E-02
3625 T3	1.05536E-02	3625 R1	-1.17712E-02	3631 R1	-1.35781E-02	3637 R1	-1.29160E-02	3643 R1	-1.03287E-02
2949 T3	-1.28629E-02	2970 T3	1.02102E-02	2952 T3	1.00558E-02	2969 T3	-4.43300E-02	2969 R2	-1.09317E-02
2968 T3	2.60670E-02	2968 R1	-1.71141E-02	2963 R2	-2.51714E-02	2959 T3	-1.80178E-02	2967 T3	1.93598E-02
2967 R2	-1.33452E-02	2958 T3	-3.56672E-02	2965 R1	1.32205E-02	2957 T3	-1.47566E-02	2956 T3	3.14024E-02
2954 T3	-2.69233E-02	2964 R2	-1.09935E-02	2963 T3	-5.49578E-02	2963 R1	1.72115E-02	2963 R2	-3.24435E-02
2951 T3	-1.47455E-02	2962 T3	6.00111E-02	2962 R1	1.30676E-02	2962 R2	-1.94484E-02	2950 T3	-1.01896E-02
2954 T3	1.01896E-02	3757 T3	-1.20186E-02	3004 R2	1.25410E-02	3005 R2	1.43593E-02	3006 R2	1.08116E-02
3007 T3	1.30056E-02	3008 T3	-2.22144E-02	3001 T3	-1.18581E-02	4966 T3	1.28512E-02	4967 R2	-1.38073E-02
4968 R2	-1.43314E-02	4969 T3	-1.03222E-02	4970 T3	-1.01004E-02	4965 T3	1.48760E-02	5039 T3	3.56299E-02
5104 T3	-3.96243E-02	5117 T3	-3.10734E-02	5117 R1	1.72457E-02	5117 R2	2.48284E-02	5130 R1	1.36506E-02
5130 R2	3.57801E-02	5145 R2	3.79706E-02	5160 T3	2.58297E-02	5160 R2	2.94745E-02	5171 T3	3.24315E-02
5178 T3	3.20704E-02	5180 R1	1.85440E-02	5180 R2	-1.30018E-02	5181 T3	-2.15561E-02	5067 T3	-3.50065E-02
5052 R1	1.16948E-02	5052 R2	-1.61649E-02	2948 T3	-3.66167E-02	2946 T3	3.47021E-02	2945 T3	2.04348E-02
2944 T3	-2.28014E-02	2943 T3	4.91049E-02	2942 T3	2.32512E-02	2941 T3	-2.69237E-02	11648 T3	-1.20889E-02

POINT	KEFRN VALUE	POINT	VALUE	POINT	VALUE	POINT	VALUE	POINT	VALUE
COLUMN	1 (4003-T1) .								
COLUMN	2 (4003-T2) .								
COLUMN	3 (4003-T3) .								
COLUMN	4 (4003-R1) .								
COLUMN	5 (4003-R2) .								
COLUMN	6 (4003-R3) .								

Appendix C

METOP RANDOM VIBRATION STRESSES

(7 PERCENT CRITICAL DAMPING Q=7)

RANDOM VIBRATION SUMMARY - METOP QUALIFICATION LEVEL (9.66 GRMS) JUNE 1996

LOWER BASEPLATE
QUAD ELEMENT
6061-T6 FTY=35000 PSI

		X-LOAD			Y-LOAD			Z-LOAD		
ELEMENT ID.	STRESS ID.	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS
179 Z1	3	271	310	930	337	389	1166	1443	1459	4378
	5	144			133			353		
	7	81			115			134		
179 Z2	10	269	305	915	321	362	1085	1417	1440	4319
	12	142			104			237		
	14	77			102			164		
197 Z1	3	407	426	1277	480	501	1504	2097	2127	6382
	5	204			252			918		
	7	63			72			191		
197 Z2	10	398	414	1243	460	497	1492	2032	2033	6099
	12	227			202			871		
	14	55			105			39		
3523 Z1	3	245	275	824	232	273	820	877	892	2676
	5	132			129			199		
	7	66			77			101		
3523 Z2	10	259	282	845	253	295	885	977	1003	3008
	12	108			113			237		
	14	62			88			140		
3522 Z1	3	255	435	1304	185	437	1310	750	1481	4444
	5	367			352			1370		
	7	110			146			286		
3522 Z2	10	248	462	1387	303	508	1525	940	1661	4984
	12	412			431			1578		
	14	104			126			245		

215 Z1	3	300	310	929	340	370	1111	1579	1609	4827
	5	123			139			515		
	7	43			84			183		
215 Z2	10	310	317	951	350	381	1143	1596	1608	4824
	12	136			117			489		
	14	37			90			113		
3524 Z1	3	172	198	594	155	226	679	526	604	1811
	5	90			64			164		
	7	52			108			185		
3524 Z2	10	173	195	586	148	240	720	525	590	1770
	12	82			82			192		
	14	50			120			160		
LOWER BASEPLATE										
BAR ELEMENT										
6061-T6 FTY=35000 PSI										
			X-LOAD			Y-LOAD			Z-LOAD	
ELEMENT ID.	STRESS ID.	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS
10	2	91	144	431	88	125	376	331	360	1080
	3	40	92	276	91	129	387	281	310	931
	4	40	92	276	91	129	387	281	310	931
	5	91	144	431	88	125	376	331	360	1080
	6	52			37			29		
	12	409	462	1385	221	258	775	168	197	590
	13	124	176	529	89	127	380	244	273	818
	14	124	176	529	89	127	380	244	273	818
	15	409	462	1385	221	258	775	168	197	590

25	2	337	351	1053	882	924	2772	2724	2751	8252		
	3	339	353	1059	869	911	2734	2695	2721	8164		
	4	339	353	1059	869	911	2734	2695	2721	8164		
	5	337	351	1053	882	924	2772	2724	2751	8252		
	6	14			42			26				
	12	353	367	1101	952	994	2983	2911	2937	8812		
	13	380	394	1181	942	984	2951	2901	2927	8782		
	14	380	394	1181	942	984	2951	2901	2927	8782		
	15	353	367	1101	952	994	2983	2911	2937	8812		
34	2	240	266	798	743	782	2345	2379	2463	7388		
	3	238	263	790	745	783	2350	2387	2470	7411		
	4	238	263	790	745	783	2350	2387	2470	7411		
	5	240	266	798	743	782	2345	2379	2463	7388		
	6	26			38			83				
	12	356	381	1144	1007	1045	3135	3330	3413	10239		
	13	350	376	1127	1007	1045	3135	3301	3384	10153		
	14	350	376	1127	1007	1045	3135	3301	3384	10153		
	15	356	381	1144	1007	1045	3135	3330	3413	10239		
35	2	334	369	1106	951	1000	2999	3334	3421	10262		
	3	327	362	1086	953	1001	3004	3306	3392	10176		
	4	327	362	1086	953	1001	3004	3306	3392	10176		
	5	334	369	1106	951	1000	2999	3334	3421	10262		
	6	35			48			86				
	12	327	362	1086	963	1012	3035	3513	3599	10798		
	13	337	372	1115	953	1001	3002	3507	3593	10780		
	14	337	372	1115	953	1001	3002	3507	3593	10780		
	15	327	362	1086	963	1012	3035	3513	3599	10798		
36	2	438	485	1454	1368	1465	4394	3114	3190	9571		
	3	409	456	1367	1362	1459	4376	3102	3178	9533		
	4	409	456	1367	1362	1459	4376	3102	3178	9533		
	5	438	485	1454	1368	1465	4394	3114	3190	9571		
	6	47			97			76				
	12	242	289	867	806	902	2706	1638	1714	5142		
	13	256	303	909	792	889	2667	1671	1747	5240		
	14	256	303	909	792	889	2667	1671	1747	5240		
	15	242	289	867	806	902	2706	1638	1714	5142		

87	2	422	445	1336	759	781	2344	2173	2188	6564
	3	422	445	1335	753	776	2327	2145	2160	6481
	4	422	445	1335	753	776	2327	2145	2160	6481
	5	422	445	1336	759	781	2344	2173	2188	6564
	6	23			23			15		
	12	376	399	1198	825	848	2545	2062	2077	6230
	13	377	400	1200	807	830	2490	2042	2057	6170
	14	377	400	1200	807	830	2490	2042	2057	6170
	15	376	399	1198	825	848	2545	2062	2077	6230
88	2	400	435	1306	870	909	2728	2153	2205	6614
	3	401	436	1308	852	892	2675	2133	2185	6554
	4	401	436	1308	852	892	2675	2133	2185	6554
	5	400	435	1306	870	909	2728	2153	2205	6614
	6	35			40			52		
	12	606	641	1923	1237	1277	3830	3203	3255	9765
	13	610	645	1934	1416	1456	4367	3381	3433	10300
	14	610	645	1934	1416	1456	4367	3381	3433	10300
	15	606	641	1923	1237	1277	3830	3203	3255	9765
89	2	517	548	1644	1129	1154	3463	2755	2837	8512
	3	515	546	1637	1050	1075	3225	2664	2747	8241
	4	515	546	1637	1050	1075	3225	2664	2747	8241
	5	517	548	1644	1129	1154	3463	2755	2837	8512
	6	30			25			83		
	12	148	178	534	119	144	432	358	441	1323
	13	150	181	542	177	202	605	398	480	1441
	14	150	181	542	177	202	605	398	480	1441
	15	148	178	534	119	144	432	358	441	1323
93	2	123	196	589	277	307	920	1029	1061	3182
	3	123	196	588	273	303	909	1037	1069	3206
	4	123	196	588	273	303	909	1037	1069	3206
	5	123	196	589	277	307	920	1029	1061	3182
	6	73			30			32		
	12	223	296	888	380	410	1229	1471	1502	4507
	13	218	292	875	388	418	1255	1453	1485	4455
	14	218	292	875	388	418	1255	1453	1485	4455
	15	223	296	888	380	410	1229	1471	1502	4507

LOWER MOTOR MT PANEL
QUAD ELEMENT
7075-T6 FTY=66000 PSI

ELEMENT ID.	STRESS ID.	X-LOAD RMS COMP STRESS	X-LOAD RMS PRIN STRESS	X-LOAD RMS 3 SIG STRESS	Y-LOAD RMS COMP STRESS	Y-LOAD RMS PRIN STRESS	Y-LOAD RMS 3 SIG STRESS	Z-LOAD RMS COMP STRESS	Z-LOAD RMS PRIN STRESS	Z-LOAD RMS 3 SIG STRESS
2481 Z1	3	799	1956	5868	161	469	1407	190	597	1791
	5	1943			433			574		
	7	123			105			96		
2481 Z2	10	653	1736	5208	178	505	1516	221	605	1816
	12	1686			429			547		
	14	232			158			150		
2501 Z1	3	2325	2392	7175	644	652	1955	738	750	2249
	5	688			211			232		
	7	336			57			78		
2501 Z2	10	2375	2424	7271	660	667	2002	752	759	2278
	12	765			199			224		
	14	283			58			64		
2505 Z1	3	1958	1982	5946	1222	1229	3687	537	596	1789
	5	895			331			233		
	7	164			81			147		
2505 Z2	10	1713	1949	5846	405	482	1445	586	670	2010
	12	864			250			192		
	14	505			133			200		
2512 Z1	3	2386	2426	7277	1206	1213	3639	703	733	2200
	5	1075			232			247		
	7	231			82			122		
2512 Z2	10	1881	2129	6386	432	454	1361	637	705	2115
	12	612			178			177		
	14	612			78			190		
2503 Z1	3	3391	3406	10218	844	845	2535	976	978	2934
	5	1038			236			282		
	7	191			27			40		

2503 Z2	10	3311	3335	10005	811	813	2440	954	958	2873
	12	1136			290			330		
	14	229			38			49		
2496 Z1	3	2901	2962	8887	792	811	2432	886	904	2711
	5	1301			351			397		
	7	319			93			94		
2496 Z2	10	3167	3233	9700	821	855	2566	962	1003	3008
	12	1566			446			509		
	14	332			119			141		

LOWER MOTOR MT PANEL
BAR ELEMENT
7075-T6 FTY=66000 PSI

		X-LOAD			Y-LOAD			Z-LOAD		
ELEMENT ID.	STRESS ID.	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS
2546	2	4431	4947	14841	628	776	2327	932	1066	3199
	3	4621	5137	15411	627	775	2324	963	1097	3292
	4	4621	5137	15411	627	775	2324	963	1097	3292
	5	4431	4947	14841	628	776	2327	932	1066	3199
	6	516			147			135		
	12	1856	2372	7117	231	378	1134	403	537	1612
	13	1978	2494	7482	255	403	1209	436	571	1712
	14	1978	2494	7482	255	403	1209	436	571	1712
	15	1856	2372	7117	231	378	1134	403	537	1612

2565	2	1704	3033	9099	228	391	1173	391	667	2002	
	3	1694	3023	9069	227	390	1169	382	658	1975	
	4	1694	3023	9069	227	390	1169	382	658	1975	
	5	1704	3033	9099	228	391	1173	391	667	2002	
	6	1329			163			276			
	12	3679	5008	15024	467	630	1890	780	1056	3167	
	13	3726	5055	15165	485	648	1943	798	1074	3221	
	14	3726	5055	15165	485	648	1943	798	1074	3221	
	15	3679	5008	15024	467	630	1890	780	1056	3167	
2603	2	276	1013	3039	174	261	783	69	238	714	
	3	448	1185	3555	165	252	755	90	259	776	
	4	2666	3403	10210	406	493	1478	609	778	2333	
	5	2616	3353	10060	414	501	1503	603	772	2316	
	6	737			87			169			
	12	139	876	2627	58	145	435	43	212	637	
	13	199	936	2809	109	196	589	68	237	711	
	14	499	1236	3708	357	444	1333	194	363	1090	
	15	453	1191	3572	331	418	1253	179	348	1043	
2602	2	150	889	2668	56	142	425	30	203	610	
	3	239	979	2936	62	148	443	44	217	651	
	4	1148	1888	5664	577	663	1988	186	359	1078	
	5	1116	1855	5566	576	661	1984	180	354	1061	
	6	740			86			173			
	12	419	1159	3476	110	195	586	129	302	907	
	13	147	887	2661	59	144	433	68	241	723	
	14	2079	2818	8455	632	718	2154	463	637	1911	
	15	2156	2895	8686	647	732	2197	490	664	1991	
2564	2	799	1831	5494	140	279	836	209	428	1285	
	3	823	1855	5564	131	270	809	202	422	1266	
	4	823	1855	5564	131	270	809	202	422	1266	
	5	799	1831	5494	140	279	836	209	428	1285	
	6	1032			139			220			
	12	2709	3741	11222	351	490	1470	580	800	2399	
	13	2695	3727	11181	345	484	1452	570	790	2371	
	14	2695	3727	11181	345	484	1452	570	790	2371	
	15	2709	3741	11222	351	490	1470	580	800	2399	

UPPER MOTOR MT PANEL
QUAD ELEMENT
7075-T6 FTY=66000 PSI

		X-LOAD			Y-LOAD			Z-LOAD		
ELEMENT ID.	STRESS ID.	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS
2331 Z1	3	658	735	2205	302	334	1001	154	176	529
	5	429			113			94		
	7	154			84			43		
2331 Z2	10	712	973	2918	324	356	1069	167	208	624
	12	118			41			52		
	14	472			101			80		
2332 Z1	3	2110	2118	6355	789	801	2402	499	503	1509
	5	657			299			164		
	7	107			78			35		
2332 Z2	10	2083	2174	6523	766	787	2361	489	502	1507
	12	1100			399			266		
	14	313			89			57		
2287 Z1	3	50	123	369	113	137	411	129	210	629
	5	41			35			22		
	7	78			50			123		
2287 Z2	10	27	86	258	66	106	319	82	164	493
	12	18			24			30		
	14	64			58			105		

UPPER MOTOR MT PANEL
BAR ELEMENT
7075-T6 FTY=66000 PSI

ELEMENT ID.	STRESS ID.	X-LOAD RMS COMP STRESS	X-LOAD RMS PRIN STRESS	X-LOAD RMS 3 SIG STRESS	Y-LOAD RMS COMP STRESS	Y-LOAD RMS PRIN STRESS	Y-LOAD RMS 3 SIG STRESS	Z-LOAD RMS COMP STRESS	Z-LOAD RMS PRIN STRESS	Z-LOAD RMS 3 SIG STRESS
2383	2	661	1165	3494	190	374	1123	104	247	742
	3	591	1095	3285	160	345	1034	91	234	703
	4	591	1095	3285	160	345	1034	91	234	703
	5	661	1165	3494	190	374	1123	104	247	742
	6	504			185			143		
	12	2189	2692	8077	535	720	2160	498	642	1925
	13	2141	2645	7935	533	718	2154	484	627	1882
	14	2141	2645	7935	533	718	2154	484	627	1882
	15	2189	2692	8077	535	720	2160	498	642	1925
2365	2	72	159	476	86	154	461	100	202	605
	3	400	487	1461	208	276	827	163	265	795
	4	400	487	1461	208	276	827	163	265	795
	5	72	159	476	86	154	461	100	202	605
	6	87			68			102		
	12	141	227	682	79	147	441	46	148	445
	13	299	385	1156	173	241	723	78	180	539
	14	299	385	1156	173	241	723	78	180	539
	15	141	227	682	79	147	441	46	148	445
2376	2	447	686	2058	182	290	870	206	285	856
	3	164	403	1209	109	218	653	223	303	908
	4	164	403	1209	109	218	653	223	303	908
	5	447	686	2058	182	290	870	206	285	856
	6	239			108			80		
	12	248	487	1462	107	215	645	130	210	630
	13	109	348	1045	70	178	534	153	233	698
	14	109	348	1045	70	178	534	153	233	698
	15	248	487	1462	107	215	645	130	210	630

2413	2	210	327	980	139	190	569	124	187	560
	3	264	381	1142	211	261	784	338	401	1203
	4	264	381	1142	211	261	784	338	401	1203
	5	210	327	980	139	190	569	124	187	560
	6	117			51			63		
	12	38	154	463	17	67	202	18	81	244
	13	43	160	480	32	82	247	29	92	275
	14	43	160	480	32	82	247	29	92	275
	15	38	154	463	17	67	202	18	81	244
UPPER MOTOR MT PANEL										
BEAM ELEMENT										
7075-T6 FTY=66000 PSI										
			X-LOAD			Y-LOAD			Z-LOAD	
ELEMENT ID.	STRESS ID.	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS
2444	4	1452		4357	327		980	264		791
	5	1037		3110	260		779	208		623
	6	1411		4232	329		988	265		795
	7	1076		3227	254		761	205		615
	104	878		2634	433		1300	224		671
	105	2475		7424	647		1942	477		1430
	106	808		2423	401		1203	205		615
	107	2533		7598	674		2023	493		1478
2397	4	1214		3641	378		1134	366		1097
	5	745		2236	328		983	281		844
	6	1062		3186	308		924	309		926
	7	1141		3423	323		969	324		972
	104	291		874	108		325	100		301
	105	488		1464	144		432	108		325
	106	1248		3743	289		868	261		784
	107	1121		3364	265		796	245		734

2396	4	1603		4808	561		1683	431		1292
	5	2064		6193	546		1639	551		1654
	6	1733		5199	527		1580	434		1301
	7	1664		4992	549		1648	417		1252
	104	646		1939	242		726	241		722
	105	280		840	293		878	181		543
	106	1453		4359	428		1285	284		851
	107	1365		4094	381		1143	262		786
2395	4	820		2459	217		652	160		480
	5	1424		4273	322		966	265		794
	6	558		1675	375		1125	232		697
	7	556		1669	384		1152	246		738
	104	1636		4907	584		1751	486		1459
	105	956		2869	378		1135	324		971
	106	626		1879	468		1404	332		997
	107	731		2193	506		1517	357		1072
LOWER FRONT PANEL										
QUAD ELEMENT										
6061-T6 FTY=35000 PSI										
			X-LOAD			Y-LOAD			Z-LOAD	
ELEMENT ID.	STRESS ID.	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS
1234 Z1	3	980	1021	3064	285	371	1114	101	458	1374
	5	853			291			177		
	7	84			83			317		
1234 Z2	10	1097	1148	3444	384	451	1353	134	465	1396
	12	843			298			106		
	14	125			101			345		
1237 Z1	3	188	213	638	189	280	839	66	445	1336
	5	47			54			44		
	7	64			143			390		

1237 Z2	10	179	200	600	199	294	883	77	473	1420
	12	28			53			59		
	14	60			152			405		
1238 Z1	3	269	300	899	287	317	952	140	402	1206
	5	63			20			36		
	7	86			95			310		
1238 Z2	10	257	286	857	291	319	957	136	359	1077
	12	56			19			41		
	14	82			92			266		
1235 Z1	3	119	615	1845	128	327	980	113	536	1607
	5	595			200			263		
	7	101			158			340		
1235 Z2	10	193	636	1908	174	359	1078	76	570	1709
	12	594			195			180		
	14	136			174			439		
1225 Z1	3	539	680	2040	402	508	1523	188	446	1338
	5	429			179			137		
	7	188			186			282		
1225 Z2	10	386	635	1906	437	556	1667	131	480	1441
	12	365			158			60		
	14	260			217			383		
1226 Z1	3	180	209	628	204	314	941	58	428	1284
	5	72			94			167		
	7	63			155			310		
1226 Z2	10	259	279	838	326	414	1241	87	471	1414
	12	102			146			63		
	14	60			153			397		
1240 Z1	3	259	349	1047	280	321	964	118	236	709
	5	128			100			77		
	7	141			95			137		
1240 Z2	10	265	372	1115	287	342	1026	123	224	671
	12	147			113			66		
	14	155			113			126		
1334 Z1	3	54	176	527	59	192	577	66	187	560
	5	38			61			50		
	7	130			132			128		

1334 Z2	10	67	222	667	60	103	310	46	201	604
	12	83			47			83		
	14	147			50			136		
LOWER FRONT PANEL										
BAR ELEMENT										
6061-T6 FTY=35000 PSI										
			X-LOAD			Y-LOAD			Z-LOAD	
ELEMENT ID.	STRESS ID.	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS
1206	2	1207	1805	5414	658	961	2884	597	912	2737
	3	1124	1721	5163	588	891	2674	953	1268	3804
	4	1124	1721	5163	588	891	2674	953	1268	3804
	5	1207	1805	5414	658	961	2884	597	912	2737
	6	597			304			315		
	12	331	928	2784	195	499	1496	206	521	1564
	13	342	940	2819	198	501	1504	164	480	1439
	14	342	940	2819	198	501	1504	164	480	1439
	15	331	928	2784	195	499	1496	206	521	1564
1155	2	109	128	384	46	56	167	66	101	302
	3	113	132	395	118	127	381	78	112	337
	4	113	132	395	118	127	381	78	112	337
	5	109	128	384	46	56	167	66	101	302
	6	19			9			35		
	12	79	98	293	69	78	234	63	97	292
	13	607	626	1877	420	429	1287	273	308	923
	14	607	626	1877	420	429	1287	273	308	923
	15	79	98	293	69	78	234	63	97	292

1156	2	83	99	296	78	86	259	75	100	300
	3	623	639	1916	424	431	1294	292	318	953
	4	623	639	1916	424	431	1294	292	318	953
	5	83	99	296	78	86	259	75	100	300
	6	15			8			25		
	12	171	186	558	88	96	289	91	116	349
	13	325	340	1021	268	276	827	112	137	412
	14	325	340	1021	268	276	827	112	137	412
	15	171	186	558	88	96	289	91	116	349
1183	2	499	537	1612	231	278	833	198	268	804
	3	169	207	620	51	97	292	82	152	457
	4	169	207	620	51	97	292	82	152	457
	5	499	537	1612	231	278	833	198	268	804
	6	38			46			70		
	12	471	509	1527	235	282	845	191	261	784
	13	214	252	756	68	114	342	70	140	420
	14	214	252	756	68	114	342	70	140	420
	15	471	509	1527	235	282	845	191	261	784
1161	2	229	245	734	593	612	1837	400	409	1227
	3	443	458	1375	202	221	664	196	205	615
	4	443	458	1375	202	221	664	196	205	615
	5	229	245	734	593	612	1837	400	409	1227
	6	16			19			9		
	12	104	120	359	214	233	699	67	76	229
	13	118	133	400	43	63	188	28	37	110
	14	118	133	400	43	63	188	28	37	110
	15	104	120	359	214	233	699	67	76	229
1216	2	523	561	1683	196	265	796	482	680	2039
	3	134	172	516	149	218	653	507	705	2114
	4	134	172	516	149	218	653	507	705	2114
	5	523	561	1683	196	265	796	482	680	2039
	6	38			69			198		
	12	450	489	1466	191	260	779	433	631	1894
	13	230	269	806	274	343	1029	670	868	2604
	14	230	269	806	274	343	1029	670	868	2604
	15	450	489	1466	191	260	779	433	631	1894

1363	2	35	141	424	69	204	612	60	166	497
	3	39	146	437	37	172	517	36	141	423
	4	39	146	437	37	172	517	36	141	423
	5	35	141	424	69	204	612	60	166	497
	6	107			135	271	813	106		
	12	40	147	440	74	209	628	63	169	506
	13	63	170	509	45	181	542	34	139	418
	14	63	170	509	45	181	542	34	139	418
	15	40	147	440	74	209	628	63	169	506
1369	2	127	174	521	134	239	718	94	179	537
	3	179	226	677	143	248	744	107	192	577
	4	179	226	677	143	248	744	107	192	577
	5	127	174	521	134	239	718	94	179	537
	6	46			105			85		
	12	88	135	404	62	167	501	45	130	390
	13	152	198	595	118	223	668	96	182	545
	14	152	198	595	118	223	668	96	182	545
	15	88	135	404	62	167	501	45	130	390
LOWER AFT PANEL										
QUAD ELEMENT										
2024-T851 FTY=58000 PSI										
			X-LOAD			Y-LOAD			Z-LOAD	
ELEMENT ID.	STRESS ID.	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS
330 Z1	3	45	418	1255	38	301	904	54	397	1192
	5	380			265			382		
	7	120			98			74		
330 Z2	10	34	305	914	24	230	690	37	334	1003
	12	271			202			332		
	14	96			76			25		

342 Z1	3	128	432	1296	67	321	962	53	684	2053
	5	285			192			279		
	7	211			181			506		
342 Z2	10	52	325	974	28	246	739	129	608	1823
	12	159			117			204		
	14	213			168			440		
345 Z1	3	112	167	502	97	198	595	269	312	935
	5	55			108			146		
	7	79			95			84		
345 Z2	10	135	217	651	94	201	603	337	701	2103
	12	152			119			253		
	14	73			94			404		
355 Z1	3	130	184	551	86	163	490	310	433	1299
	5	75			66			184		
	7	76			87			175		
355 Z2	10	140	180	541	97	156	467	344	526	1579
	12	84			44			86		
	14	62			81			284		
334 Z1	3	106	647	1940	60	468	1403	244	424	1273
	5	556			418			334		
	7	222			143			128		
334 Z2	10	65	408	1224	56	318	953	124	468	1405
	12	302			239			139		
	14	190			143			337		
344 Z1	3	114	300	901	163	258	773	529	597	1790
	5	123			75			152		
	7	181			131			174		
344 Z2	10	107	331	994	116	299	898	446	844	2532
	12	164			158			334		
	14	194			161			451		
352 Z1	3	127	352	1055	59	259	777	166	533	1600
	5	224			141			83		
	7	169			153			407		
352 Z2	10	111	344	1033	64	259	776	155	623	1869
	12	207			151			304		
	14	179			145			387		

LOWER AFT PANEL
BAR ELEMENT
2024-T851 FTY=58000 PSI

ELEMENT ID.	STRESS ID.	X-LOAD				Y-LOAD				Z-LOAD			
		RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS		RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS		RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	
304	2	124	143	430		253	263	789		857	889	2668	
	3	244	263	790		210	220	660		751	783	2350	
	4	244	263	790		210	220	660		751	783	2350	
	5	124	143	430		253	263	789		857	889	2668	
	6	19				10				33			
	12	400	419	1256		297	307	922		549	582	1745	
	13	315	334	1003		231	242	725		475	507	1522	
	14	315	334	1003		231	242	725		475	507	1522	
	15	400	419	1256		297	307	922		549	582	1745	
312	2	81	133	398		76	109	326		28	53	160	
	3	41	92	276		22	55	164		81	107	321	
	4	41	92	276		22	55	164		81	107	321	
	5	81	133	398		76	109	326		28	53	160	
	6	51				32				26			
	12	332	384	1151		123	155	465		158	184	551	
	13	267	318	955		435	467	1400		512	538	1613	
	14	267	318	955		435	467	1400		512	538	1613	
	15	332	384	1151		123	155	465		158	184	551	
314	2	115	136	408		126	151	452		478	556	1668	
	3	126	147	440		184	209	626		536	614	1841	
	4	126	147	440		184	209	626		536	614	1841	
	5	115	136	408		126	151	452		478	556	1668	
	6	21				25				78			
	12	47	68	205		45	70	210		114	192	575	
	13	48	69	206		81	106	319		135	213	640	
	14	48	69	206		81	106	319		135	213	640	
	15	47	68	205		45	70	210		114	192	575	

313	2	268	300	900		121	147	440		212	224	672											
	3	270	302	905		443	469	1407		574	586	1757											
	4	270	302	905		443	469	1407		574	586	1757											
	5	268	300	900		121	147	440		212	224	672											
	6	32				26				12													
	12	732	763	2290		186	212	635		268	280	840											
	13	481	512	1537		279	305	914		170	182	545											
	14	481	512	1537		279	305	914		170	182	545											
	15	732	763	2290		186	212	635		268	280	840											
305	2	314	329	988		232	248	745		554	616	1847											
	3	268	283	850		196	212	636		304	365	1096											
	4	268	283	850		196	212	636		304	365	1096											
	5	314	329	988		232	248	745		554	616	1847											
	6	15				16				61													
	12	68	83	248		38	55	164		41	103	308											
	13	195	210	630		163	179	537		221	283	848											
	14	195	210	630		163	179	537		221	283	848											
	15	68	83	248		38	55	164		41	103	308											
UPPER BASEPLATE																							
QUAD ELEMENT																							
6061-T6 FTY=35000 PSI																							
			X-LOAD				Y-LOAD				Z-LOAD												
ELEMENT ID.	STRESS ID.	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS		RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS		RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS											
5801 Z1	3	230	244	733		133	170	510		91	227	681											
	5	151				87				156													
	7	37				56				98													
5801 Z2	10	742	747	2242		457	470	1410		307	356	1067											
	12	482				253				218													
	14	37				53				82													

698 Z1	3	337	579	1737	217	526	1579	462	828	2484
	5	319			303			287		
	7	251			263			445		
698 Z2	10	247	475	1424	204	548	1643	387	718	2155
	12	286			253			257		
	14	207			318			391		
697 Z1	3	254	509	1528	478	588	1764	382	652	1955
	5	181			282			269		
	7	290			183			321		
697 Z2	10	216	566	1699	506	609	1828	415	754	2263
	12	223			264			325		
	14	346			189			382		
690 Z1	3	17	214	641	12	149	446	40	219	656
	5	18			40			76		
	7	196			121			159		
690 Z2	10	18	202	605	22	153	459	37	208	624
	12	21			48			69		
	14	182			117			154		

UPPER BASEPLATE
BAR ELEMENT
6061-T6 FTY=35000 PSI

		X-LOAD			Y-LOAD			Z-LOAD		
ELEMENT ID.	STRESS ID.	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS
5805	2	357	465	1396	222	283	848	163	217	651
	3	192	301	902	170	231	693	158	212	636
	4	192	301	902	170	231	693	158	212	636
	5	357	465	1396	222	283	848	163	217	651
	6	109			61			54		
	12	1684	1792	5377	983	1044	3133	661	715	2145
	13	1605	1714	5142	1037	1098	3294	781	835	2505
	14	1605	1714	5142	1037	1098	3294	781	835	2505
	15	1684	1792	5377	983	1044	3133	661	715	2145

621	2	644	754	2263	358	420	1260	248	296	887
	3	524	634	1902	319	381	1143	224	272	816
	4	524	634	1902	319	381	1143	224	272	816
	5	644	754	2263	358	420	1260	248	296	887
	6	110			62			48		
	12	107	217	652	89	152	456	98	146	439
	13	203	313	939	102	165	494	85	132	397
	14	203	313	939	102	165	494	85	132	397
	15	107	217	652	89	152	456	98	146	439
660	2	367	431	1293	580	624	1871	253	449	1348
	3	249	313	940	549	593	1779	396	592	1777
	4	249	313	940	549	593	1779	396	592	1777
	5	367	431	1293	580	624	1871	253	449	1348
	6	64			44			197		
	12	139	203	608	275	319	958	230	426	1279
	13	288	352	1056	320	364	1092	148	344	1033
	14	288	352	1056	320	364	1092	148	344	1033
	15	139	203	608	275	319	958	230	426	1279
657	2	41	103	309	102	219	656	128	175	524
	3	64	126	377	77	194	581	30	76	228
	4	64	126	377	77	194	581	30	76	228
	5	41	103	309	102	219	656	128	175	524
	6	62			117			46		
	12	143	205	615	409	526	1577	204	250	750
	13	140	202	605	420	537	1610	370	417	1250
	14	140	202	605	420	537	1610	370	417	1250
	15	143	205	615	409	526	1577	204	250	750
658	2	84	148	445	315	432	1297	349	391	1174
	3	102	167	500	289	407	1220	453	495	1485
	4	102	167	500	289	407	1220	453	495	1485
	5	84	148	445	315	432	1297	349	391	1174
	6	64			118			42		
	12	347	412	1235	538	655	1966	190	233	698
	13	381	446	1337	538	656	1968	252	295	884
	14	381	446	1337	538	656	1968	252	295	884
	15	347	412	1235	538	655	1966	190	233	698

659	2	392	442	1327	537	612	1837	205	253	759
	3	315	366	1098	524	599	1797	350	399	1196
	4	315	366	1098	524	599	1797	350	399	1196
	5	392	442	1327	537	612	1837	205	253	759
	6	51			75			48		
	12	333	383	1149	530	605	1816	196	245	734
	13	256	307	920	544	619	1857	614	663	1988
	14	256	307	920	544	619	1857	614	663	1988
	15	333	383	1149	530	605	1816	196	245	734
670	2	105	168	505	58	151	454	106	302	906
	3	142	206	618	150	243	730	361	556	1669
	4	142	206	618	150	243	730	361	556	1669
	5	105	168	505	58	151	454	106	302	906
	6	64			94			196		
	12	78	142	426	40	134	401	113	309	927
	13	120	183	550	137	231	692	330	526	1577
	14	120	183	550	137	231	692	330	526	1577
	15	78	142	426	40	134	401	113	309	927
UPPER FRONT PANEL										
QUAD ELEMENT										
7075-T6 FTY=66000 PSI										
			X-LOAD			Y-LOAD			Z-LOAD	
ELEMENT ID.	STRESS ID.	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS
1532 Z1	3	101	207	620	118	297	892	100	235	705
	5	32			48			107		
	7	136			212			131		
1532 Z2	10	118	223	670	101	301	902	214	305	916
	12	45			41			53		
	14	137			228			151		
1540 Z1	3	238	338	1015	239	413	1238	181	434	1302
	5	194			248			235		
	7	121			170			224		

1540 Z2	10	261	362	1087	210	521	1564	96	475	1424
	12	256			456			370		
	14	104			143			199		
1538 Z1	3	252	370	1111	184	300	899	156	430	1291
	5	76			160			210		
	7	186			127			246		
1538 Z2	10	194	277	831	245	370	1109	272	494	1482
	12	69			156			183		
	14	131			163			263		
1539 Z1	3	163	377	1130	159	371	1113	114	422	1267
	5	174			259			219		
	7	208			154			250		
1539 Z2	10	179	383	1149	130	491	1472	72	487	1461
	12	242			399			280		
	14	170			182			293		
1550 Z1	3	133	291	874	99	299	896	50	377	1131
	5	169			242			180		
	7	139			106			254		
1550 Z2	10	128	325	976	120	402	1207	79	469	1407
	12	297			322			241		
	14	75			150			298		
1551 Z1	3	125	504	1512	102	531	1592	86	449	1348
	5	462			494			263		
	7	126			126			260		
1551 Z2	10	193	699	2097	149	643	1930	64	554	1663
	12	683			606			359		
	14	91			135			310		
1544 Z1	3	82	221	664	77	373	1120	171	358	1074
	5	63			159			229		
	7	149			252			156		
1544 Z2	10	93	226	679	118	370	1111	246	351	1054
	12	47			97			71		
	14	155			263			172		

UPPER FRONT PANEL
BAR ELEMENT
7075-T6 FTY=66000 PSI

ELEMENT ID.	STRESS ID.	X-LOAD RMS COMP STRESS	X-LOAD RMS PRIN STRESS	X-LOAD RMS 3 SIG STRESS	Y-LOAD RMS COMP STRESS	Y-LOAD RMS PRIN STRESS	Y-LOAD RMS 3 SIG STRESS	Z-LOAD RMS COMP STRESS	Z-LOAD RMS PRIN STRESS	Z-LOAD RMS 3 SIG STRESS
1406	2	4476	4890	14669	3148	3588	10763	806	1172	3516
	3	3841	4255	12765	3883	4323	12969	1163	1528	4585
	4	3841	4255	12765	3883	4323	12969	1163	1528	4585
	5	4476	4890	14669	3148	3588	10763	806	1172	3516
	6	414			440			366		
	12	4786	5200	15600	2255	2695	8084	1025	1391	4173
	13	4289	4703	14109	3158	3597	10792	1808	2174	6521
	14	4289	4703	14109	3158	3597	10792	1808	2174	6521
	15	4786	5200	15600	2255	2695	8084	1025	1391	4173
1407	2	2258	2752	8256	992	1413	4238	1470	1897	5691
	3	2317	2811	8434	1062	1483	4448	1437	1864	5592
	4	2317	2811	8434	1062	1483	4448	1437	1864	5592
	5	2258	2752	8256	992	1413	4238	1470	1897	5691
	6	494			421			427		
	12	1352	1847	5540	1040	1461	4382	800	1226	3679
	13	1396	1890	5671	1090	1511	4532	767	1193	3580
	14	1396	1890	5671	1090	1511	4532	767	1193	3580
	15	1352	1847	5540	1040	1461	4382	800	1226	3679
1405	2	228	679	2036	833	1331	3993	409	527	1582
	3	224	675	2025	159	657	1971	237	355	1066
	4	224	675	2025	159	657	1971	237	355	1066
	5	228	679	2036	833	1331	3993	409	527	1582
	6	451			498			118		
	12	1131	1582	4747	1634	2133	6398	443	562	1685
	13	1043	1494	4482	1109	1607	4822	314	433	1298
	14	1043	1494	4482	1109	1607	4822	314	433	1298
	15	1131	1582	4747	1634	2133	6398	443	562	1685

1397	2	1132	1642	4927	702	1194	3582	787	1365	4095			
	3	1120	1631	4892	756	1248	3743	734	1312	3936			
	4	1120	1631	4892	756	1248	3743	734	1312	3936			
	5	1132	1642	4927	702	1194	3582	787	1365	4095			
	6	511			492			578					
	12	192	702	2107	302	794	2382	226	804	2412			
	13	203	713	2140	296	788	2364	258	836	2509			
	14	203	713	2140	296	788	2364	258	836	2509			
	15	192	702	2107	302	794	2382	226	804	2412			
1346	2	520	536	1607	324	397	1192	282	456	1368			
	3	436	451	1354	135	208	625	195	369	1108			
	4	436	451	1354	135	208	625	195	369	1108			
	5	520	536	1607	324	397	1192	282	456	1368			
	6	15			73			175					
	12	246	262	785	249	322	967	211	386	1157			
	13	124	140	419	85	159	476	158	332	997			
	14	124	140	419	85	159	476	158	332	997			
	15	246	262	785	249	322	967	211	386	1157			
1350	2	135	183	548	99	144	432	105	160	480			
	3	84	132	396	153	198	593	105	160	479			
	4	84	132	396	153	198	593	105	160	479			
	5	135	183	548	99	144	432	105	160	480			
	6	47			45			55					
	12	34	81	243	32	77	230	21	76	228			
	13	69	117	350	157	202	605	126	181	543			
	14	69	117	350	157	202	605	126	181	543			
	15	34	81	243	32	77	230	21	76	228			

UPPER AFT PANEL
QUAD ELEMENT
2024-T851 FTY=58000 PSI

ELEMENT ID.	STRESS ID.	X-LOAD RMS COMP STRESS	X-LOAD RMS PRIN STRESS	X-LOAD RMS 3 SIG STRESS	Y-LOAD RMS COMP STRESS	Y-LOAD RMS PRIN STRESS	Y-LOAD RMS 3 SIG STRESS	Z-LOAD RMS COMP STRESS	Z-LOAD RMS PRIN STRESS	Z-LOAD RMS 3 SIG STRESS
6866 Z1	3	627	2178	6533	356	814	2441	303	602	1807
	5	2125			801			577		
	7	286			75			88		
6866 Z2	10	722	1983	5948	354	774	2323	290	577	1730
	12	1948			752			552		
	14	209			97			83		
6865 Z1	3	994	2299	6896	369	724	2173	271	504	1511
	5	1113			568			388		
	7	1244			236			164		
6865 Z2	10	827	2073	6219	358	702	2105	267	464	1391
	12	1030			522			351		
	14	1140			248			149		
7298 Z1	3	5155	7421	22264	1402	1747	5242	946	1161	3483
	5	6197			1167			789		
	7	1666			447			283		
7298 Z2	10	4861	6933	20800	1333	1602	4805	910	1089	3268
	12	5969			1125			768		
	14	1414			358			240		
7299 Z1	3	1446	4997	14990	615	880	2639	544	767	2301
	5	4873			719			596		
	7	663			206			195		
7299 Z2	10	1373	4813	14440	543	807	2421	492	721	2163
	12	4704			704			594		
	14	612			165			171		
6897 Z1	3	378	1851	5554	314	526	1578	285	449	1348
	5	1480			434			388		
	7	739			140			100		

6897 Z2	10	629	1757	5270	301	503	1510	276	394	1183	
	12	1325			366			319			
	14	697			167			95			
6898 Z1	3	1588	2484	7453	395	729	2186	511	653	1958	
	5	1397			642			457			
	7	987			170			166			
6898 Z2	10	1349	2361	7084	411	710	2131	503	653	1958	
	12	1324			596			455			
	14	1025			185			172			
7334 Z1	3	2520	4714	14141	689	869	2608	416	548	1644	
	5	4502			631			440			
	7	681			208			119			
7334 Z2	10	2383	4580	13741	675	809	2428	440	539	1617	
	12	4404			628			426			
	14	623			156			106			
7335 Z1	3	4049	5577	16731	509	700	2099	567	685	2055	
	5	4865			591			486			
	7	1043			143			153			
7335 Z2	10	3810	5326	15979	456	649	1948	491	617	1852	
	12	4760			579			471			
	14	927			117			136			

UPPER AFT PANEL
BAR ELEMENT
2024-T851 FTY=58000 PSI

ELEMENT ID.	STRESS ID.	X-LOAD RMS COMP STRESS	X-LOAD RMS PRIN STRESS	X-LOAD RMS 3 SIG STRESS	Y-LOAD RMS COMP STRESS	Y-LOAD RMS PRIN STRESS	Y-LOAD RMS 3 SIG STRESS	Z-LOAD RMS COMP STRESS	Z-LOAD RMS PRIN STRESS	Z-LOAD RMS 3 SIG STRESS
1665	2	1049	1426	4279	349	487	1461	236	382	1147
	3	1654	2032	6095	359	496	1489	236	383	1149
	4	1654	2032	6095	359	496	1489	236	383	1149
	5	1049	1426	4279	349	487	1461	236	382	1147
	6	378			138			147		
	12	136	514	1542	151	289	867	96	243	729
	13	401	779	2336	114	252	755	86	232	697
	14	401	779	2336	114	252	755	86	232	697
	15	136	514	1542	151	289	867	96	243	729
1668	2	86	123	368	107	153	459	76	129	386
	3	319	356	1068	140	185	556	89	141	424
	4	319	356	1068	140	185	556	89	141	424
	5	86	123	368	107	153	459	76	129	386
	6	37			46			52		
	12	131	168	503	115	160	480	74	126	378
	13	346	382	1146	138	184	551	90	143	428
	14	346	382	1146	138	184	551	90	143	428
	15	131	168	503	115	160	480	74	126	378
1669	2	194	290	870	43	97	291	30	83	249
	3	317	413	1239	92	146	438	69	122	366
	4	317	413	1239	92	146	438	69	122	366
	5	194	290	870	43	97	291	30	83	249
	6	96			54			53		
	12	89	184	553	35	89	268	21	74	221
	13	144	240	720	30	84	252	23	76	228
	14	144	240	720	30	84	252	23	76	228
	15	89	184	553	35	89	268	21	74	221

1680	2	874	1000	3000	294	317	952	448	508	1523
	3	777	902	2707	309	332	997	392	452	1357
	4	777	902	2707	309	332	997	392	452	1357
	5	874	1000	3000	294	317	952	448	508	1523
	6	125			24			60		
	12	616	741	2224	200	223	670	342	403	1208
	13	611	737	2210	213	237	710	286	347	1040
	14	611	737	2210	213	237	710	286	347	1040
	15	616	741	2224	200	223	670	342	403	1208
1681	2	360	553	1660	69	121	364	72	189	567
	3	360	554	1661	153	206	617	203	320	959
	4	360	554	1661	153	206	617	203	320	959
	5	360	553	1660	69	121	364	72	189	567
	6	194			53			117		
	12	152	346	1037	79	132	395	97	214	642
	13	87	280	841	76	129	386	78	195	584
	14	87	280	841	76	129	386	78	195	584
	15	152	346	1037	79	132	395	97	214	642
7262	2	657	1311	3933	163	272	817	104	179	538
	3	663	1317	3951	160	270	810	101	176	528
	4	663	1317	3951	160	270	810	101	176	528
	5	657	1311	3933	163	272	817	104	179	538
	6	654			110			75		
	12	921	1575	4725	107	217	651	96	171	513
	13	853	1508	4523	101	211	632	85	160	480
	14	853	1508	4523	101	211	632	85	160	480
	15	921	1575	4725	107	217	651	96	171	513

LOWER SHELF
QUAD ELEMENT
BERYLLIUM FTY=50000 PSI

ELEMENT ID	STRESS ID.	X-LOAD RMS COMP STRESS	X-LOAD RMS PRIN STRESS	X-LOAD RMS 3 SIG STRESS	Y-LOAD RMS COMP STRESS	Y-LOAD RMS PRIN STRESS	Y-LOAD RMS 3 SIG STRESS	Z-LOAD RMS COMP STRESS	Z-LOAD RMS PRIN STRESS	Z-LOAD RMS 3 SIG STRESS
1065 Z1	3	871	1848	5544	895	2105	6314	299	690	2071
	5	196			279			222		
	7	1271			1486			428		
1065 Z2	10	707	1593	4779	858	1992	5976	349	672	2017
	12	223			276			158		
	14	1102			1395			408		
1107 Z1	3	284	424	1272	766	1158	3475	1598	2655	7964
	5	159			461			1109		
	7	193			523			1278		
1107 Z2	10	308	451	1353	775	1160	3480	1597	2643	7930
	12	180			425			1097		
	14	197			532			1272		
1049 Z1	3	1384	1395	4185	2173	2236	6707	944	976	2927
	5	68			161			71		
	7	119			361			169		
1049 Z2	10	1248	1257	3770	1869	1917	5751	867	895	2685
	12	66			164			72		
	14	101			289			151		
1064 Z1	3	1000	1224	3672	1677	1824	5473	823	862	2587
	5	81			268			354		
	7	506			479			141		
1064 Z2	10	1042	1119	3357	1424	1516	4549	805	838	2514
	12	87			257			359		
	14	282			341			125		
1047 Z1	3	278	602	1807	518	1397	4190	270	2484	7452
	5	260			1005			1998		
	7	333			587			1037		

1047 Z2	10	358	749	2246	646	1379	4136	389	2590	7771		
	12	370			935			2063				
	14	384			571			1077				
1115, Z1	3	176	420	1261	261	610	1829	1098	2216	6648		
	5	197			150			226				
	7	233			400			1492				
1115,Z2	10	181	470	1410	204	511	1532	1034	2100	6300		
	12	160			187			381				
	14	299			315			1354				
1116 Z1	3	170	409	1227	243	679	2038	969	2620	7859		
	5	96			179			606				
	7	274			467			1823				
1116 Z2	10	163	446	1337	176	609	1828	898	2519	7557		
	12	123			163			571				
	14	302			440			1777				
1135 Z1	3	164	349	1046	237	597	1790	911	2211	6632		
	5	97			182			648				
	7	216			386			1425				
1135 Z2	10	151	412	1235	208	527	1582	907	2092	6277		
	12	127			166			616				
	14	272			340			1323				
1113 Z1	3	138	329	987	193	445	1334	189	1161	3483		
	5	48			85			76				
	7	232			301			1027				
1113 Z2	10	334	514	1542	262	512	1537	206	1105	3314		
	12	160			105			92				
	14	252			319			954				

LOWER SHELF
BEAM ELEMENT
BERYLLIUM FTY=50000 PSI

ELEMENT ID.	STRESS ID.	X-LOAD RMS COMP STRESS	X-LOAD RMS PRIN STRESS	X-LOAD RMS 3 SIG STRESS	Y-LOAD RMS COMP STRESS	Y-LOAD RMS PRIN STRESS	Y-LOAD RMS 3 SIG STRESS	Z-LOAD RMS COMP STRESS	Z-LOAD RMS PRIN STRESS	Z-LOAD RMS 3 SIG STRESS
463	4	68		205	213		640	437		1310
	5	170		509	448		1344	1020		3061
	6	167		501	445		1334	1029		3086
	7	88		264	318		954	372		1117
	104	138		414	252		756	461		1383
	105	363		1089	543		1630	1277		3832
	106	358		1074	530		1591	1260		3780
	107	181		542	370		1111	604		1812
831	4	56		169	52		156	96		288
	5	174		523	154		462	84		252
	6	82		247	113		340	173		520
	7	68		203	102		307	175		524
	104	59		178	57		171	83		250
	105	45		134	43		128	157		471
	106	101		303	85		255	300		900
	107	94		283	81		244	291		874
464	4	32		97	36		109	106		317
	5	25		74	37		110	111		334
	6	31		92	83		249	252		756
	7	30		91	83		248	251		754
	104	84		253	223		670	276		827
	105	92		276	228		685	317		950
	106	222		667	547		1640	745		2235
	107	221		663	547		1641	741		2223

UPPER SHELF
QUAD ELEMENT
BERYLLIUM FTY=50000 PSI

ELEMENT ID.	STRESS ID.	X-LOAD RMS COMP STRESS	X-LOAD RMS PRIN STRESS	X-LOAD RMS 3 SIG STRESS	Y-LOAD RMS COMP STRESS	Y-LOAD RMS PRIN STRESS	Y-LOAD RMS 3 SIG STRESS	Z-LOAD RMS COMP STRESS	Z-LOAD RMS PRIN STRESS	Z-LOAD RMS 3 SIG STRESS
2007	3	28	1057	3171	29	1195	3585	31	1529	4586
2007	5	1046			1187			1502		
2007	7	104			99			201		
2007	10	27	1143	3430	29	1018	3053	31	1600	4799
2007	12	1134			1006			1577		
2007	14	102			109			190		
2021	3	21	1077	3230	23	1194	3583	25	1543	4630
2021	5	1067			1187			1523		
2021	7	98			93			176		
2021	10	22	1152	3455	22	1049	3147	26	1581	4744
2021	12	1144			1039			1563		
2021	14	94			102			167		
1980	3	188	909	2727	190	722	2166	302	1427	4280
1980	5	790			610			1242		
1980	7	293			245			455		
1980	10	153	908	2724	269	1189	3567	406	1461	4383
1980	12	809			1018			1224		
1980	14	273			396			500		
1988	3	350	897	2690	357	754	2263	543	1436	4307
1988	5	711			567			1112		
1988	7	319			273			537		
1988	10	288	881	2643	509	1108	3325	746	1521	4563
1988	12	722			863			1103		
1988	14	307			383			569		
1989	3	587	787	2362	584	717	2151	902	1212	3635
1989	5	315			250			474		
1989	7	308			249			478		

1989	10	501	723	2168	864	1104	3313	1234	1488	4464
1989	12	317			433			472		
1989	14	300			401			508		
1801	3	202	231	693	211	238	715	361	406	1219
1801	5	43			25			43		
1801	7	74			76			128		
1801	10	201	221	664	172	195	585	353	393	1179
1801	12	26			27			39		
1801	14	63			62			118		
1802	3	132	330	990	115	297	892	250	583	1749
1802	5	85			60			68		
1802	7	220			208			414		
1802	10	142	315	946	152	335	1005	251	562	1685
1802	12	38			40			35		
1802	14	219			232			404		
1815	3	126	511	1533	134	483	1448	202	806	2417
1815	5	198			124			142		
1815	7	347			354			633		
1815	10	123	446	1339	83	420	1259	187	761	2282
1815	12	107			120			103		
1815	14	331			318			614		
2090	3	202	600	1801	291	719	2158	397	1002	3007
2090	5	141			179			202		
2090	7	428			481			696		
2090	10	235	596	1788	196	551	1653	499	1195	3584
2090	12	126			134			254		
2090	14	412			385			809		
2089	3	124	619	1857	200	679	2038	284	1063	3190
2089	5	182			184			281		
2089	7	465			487			781		
2089	10	137	610	1829	129	571	1712	326	1115	3344
2089	12	167			158			297		
2089	14	457			427			803		
2099	3	198	600	1799	302	712	2137	325	945	2835
2099	5	87			86			160		
2099	7	453			507			698		

2099	10	211	592	1776	183	543	1629	408	1108	3325
2099	12	84			89			176		
2099	14	440			404			808		
2023	3	41	1081	3243	45	1160	3479	66	1552	4656
2023	5	1066			1150			1522		
2023	7	123			104			210		
2023	10	39	1137	3410	36	1068	3205	66	1578	4735
2023	12	1126			1052			1554		
2023	14	109			129			193		
1983	3	127	806	2418	120	885	2656	234	1265	3796
1983	5	770			856			1175		
1983	7	157			151			305		
1983	10	116	861	2582	117	760	2280	232	1347	4041
1983	12	833			725			1262		
1983	14	144			150			308		
UPPER SHELF										
BAR ELEMENT										
BERYLLIUM FTY=50000 PSI										
			X-LOAD			Y-LOAD			Z-LOAD	
ELEMENT ID.	STRESS ID.	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS
1782	2	163	298	895	161	296	888	246	505	1514
1782	3	218	354	1062	213	349	1046	377	636	1909
1782	4	218	354	1062	213	349	1046	377	636	1909
1782	5	163	298	895	161	296	888	246	505	1514
1782	6	136			135			259		
1782	12	120	256	768	108	243	729	129	388	1163
1782	13	276	411	1234	263	398	1195	487	746	2238
1782	14	276	411	1234	263	398	1195	487	746	2238
1782	15	120	256	768	108	243	729	129	388	1163

LOWER RIGHT FRONT SUPPORT PANEL
QUAD ELEMENT
6061-T6 FTY=35000 PSI

ELEMENT ID.	STRESS ID.	X-LOAD RMS COMP STRESS	X-LOAD RMS PRIN STRESS	X-LOAD RMS 3 SIG STRESS	Y-LOAD RMS COMP STRESS	Y-LOAD RMS PRIN STRESS	Y-LOAD RMS 3 SIG STRESS	Z-LOAD RMS COMP STRESS	Z-LOAD RMS PRIN STRESS	Z-LOAD RMS 3 SIG STRESS
2205	3	137	260	780	89	204	612	68	142	427
2205	5	150			172			89		
2205	7	117			61			63		
2205	10	93	238	714	112	202	607	62	149	446
2205	12	148			154			100		
2205	14	114			66			65		

LOWER RIGHT FRONT SUPPORT PANEL
BAR ELEMENT
6061-T6 FTY=35000 PSI

ELEMENT ID.	STRESS ID.	X-LOAD RMS COMP STRESS	X-LOAD RMS PRIN STRESS	X-LOAD RMS 3 SIG STRESS	Y-LOAD RMS COMP STRESS	Y-LOAD RMS PRIN STRESS	Y-LOAD RMS 3 SIG STRESS	Z-LOAD RMS COMP STRESS	Z-LOAD RMS PRIN STRESS	Z-LOAD RMS 3 SIG STRESS
2222	2	128	265	796	157	190	570	154	251	752
2222	3	102	239	716	215	248	745	187	283	850
2222	4	102	239	716	215	248	745	187	283	850
2222	5	128	265	796	157	190	570	154	251	752
2222	6	137			33			97		
2222	12	112	249	746	262	295	884	216	313	940
2222	13	136	273	819	285	318	955	292	389	1166
2222	14	136	273	819	285	318	955	292	389	1166
2222	15	112	249	746	262	295	884	216	313	940

2219	2	350	420	1259	98	137	412	94	132	396
2219	3	577	647	1941	130	169	508	160	199	596
2219	4	577	647	1941	130	169	508	160	199	596
2219	5	350	420	1259	98	137	412	94	132	396
2219	6	70			39			38		
2219	12	869	939	2817	187	226	679	232	270	811
2219	13	1261	1331	3992	280	320	959	348	387	1161
2219	14	1261	1331	3992	280	320	959	348	387	1161
2219	15	869	939	2817	187	226	679	232	270	811
2223	2	188	423	1269	38	87	262	35	101	304
2223	3	405	640	1919	75	125	375	84	151	452
2223	4	405	640	1919	75	125	375	84	151	452
2223	5	188	423	1269	38	87	262	35	101	304
2223	6	234			50			66		
2223	12	221	456	1368	63	113	339	49	116	347
2223	13	295	530	1589	77	127	381	69	136	407
2223	14	295	530	1589	77	127	381	69	136	407
2223	15	221	456	1368	63	113	339	49	116	347
2212	2	207	365	1096	154	245	735	123	232	697
2212	3	111	269	808	104	195	584	144	254	761
2212	4	111	269	808	104	195	584	144	254	761
2212	5	207	365	1096	154	245	735	123	232	697
2212	6	158			91			110		
2212	12	26	185	555	23	114	342	21	131	393
2212	13	18	177	530	19	110	331	23	132	397
2212	14	18	177	530	19	110	331	23	132	397
2212	15	26	185	555	23	114	342	21	131	393

LOWER RIGHT PANEL
QUAD ELEMENT
6061-T6 FTY=35000 PSI

ELEMENT ID.	STRESS ID.	X-LOAD RMS COMP STRESS	X-LOAD RMS PRIN STRESS	X-LOAD RMS 3 SIG STRESS	Y-LOAD RMS COMP STRESS	Y-LOAD RMS PRIN STRESS	Y-LOAD RMS 3 SIG STRESS	Z-LOAD RMS COMP STRESS	Z-LOAD RMS PRIN STRESS	Z-LOAD RMS 3 SIG STRESS
529	3	253	468	1404	1159	1381	4144	1202	1322	3965
529	5	141			802			540		
529	7	265			359			306		
529	10	200	367	1100	1150	1353	4059	619	699	2097
529	12	119			802			393		
529	14	203			335			156		
465	3	54	91	272	96	147	441	59	186	558
465	5	40			91			49		
465	7	43			53			132		
465	10	34	71	213	99	163	490	61	145	436
465	12	50			84			63		
465	14	28			71			83		
606	3	274	355	1065	164	284	851	109	395	1184
606	5	68			54			31		
606	7	152			166			322		
606	10	216	288	865	200	286	857	306	486	1458
606	12	96			70			95		
606	14	118			136			265		
599	3	62	487	1460	99	290	871	77	336	1007
599	5	434			158			144		
599	7	149			159			223		
599	10	107	364	1093	114	224	672	171	320	960
599	12	347			133			123		
599	14	66			100			171		
589	3	75	300	900	232	661	1983	378	461	1382
589	5	283			639			160		
589	7	62			96			157		

589	10	211	267	802	271	649	1947	117	577	1732	
589	12	119			614			569			
589	14	91			115			63			
588	3	47	210	631	79	390	1171	43	316	949	
588	5	148			214			104			
588	7	101			234			241			
588	10	111	195	584	89	348	1044	80	393	1178	
588	12	43			195			80			
588	14	113			199			312			
598	3	166	766	2299	170	497	1491	192	438	1313	
598	5	708			357			270			
598	7	187			214			203			
598	10	257	347	1041	173	348	1045	201	412	1237	
598	12	314			247			150			
598	14	55			133			236			
530	3	172	416	1248	639	799	2396	998	1061	3183	
530	5	100			382			335			
530	7	278			258			214			
530	10	183	426	1278	758	899	2697	333	595	1785	
530	12	104			395			327			
530	14	279			266			265			
580	3	163	328	984	624	1218	3654	188	329	987	
580	5	237			1095			280			
580	7	122			270			83			
580	10	163	310	929	724	1224	3671	232	426	1279	
580	12	229			1114			290			
580	14	109			234			163			

LOWER RIGHT PANEL
BAR ELEMENT
6061-T6 FTY=35000 PSI

ELEMENT ID.	STRESS ID.	X-LOAD RMS COMP STRESS	X-LOAD RMS PRIN STRESS	X-LOAD RMS 3 SIG STRESS	Y-LOAD RMS COMP STRESS	Y-LOAD RMS PRIN STRESS	Y-LOAD RMS 3 SIG STRESS	Z-LOAD RMS COMP STRESS	Z-LOAD RMS PRIN STRESS	Z-LOAD RMS 3 SIG STRESS
440	2	84	113	340	130	174	522	395	570	1710
440	3	78	108	323	129	173	519	334	509	1528
440	4	78	108	323	129	173	519	334	509	1528
440	5	84	113	340	130	174	522	395	570	1710
440	6	30			44			175		
440	12	54	84	252	88	133	398	237	412	1236
440	13	52	82	246	81	125	376	245	420	1261
440	14	52	82	246	81	125	376	245	420	1261
440	15	54	84	252	88	133	398	237	412	1236
430	2	178	349	1048	169	244	731	77	179	538
430	3	65	237	710	121	196	588	71	174	521
430	4	65	237	710	121	196	588	71	174	521
430	5	178	349	1048	169	244	731	77	179	538
430	6	172			75			102		
430	12	192	364	1091	103	178	533	70	172	517
430	13	139	311	934	80	155	465	54	156	469
430	14	139	311	934	80	155	465	54	156	469
430	15	192	364	1091	103	178	533	70	172	517
449	2	447	913	2738	136	285	856	242	457	1372
449	3	348	814	2441	137	286	858	141	356	1069
449	4	348	814	2441	137	286	858	141	356	1069
449	5	447	913	2738	136	285	856	242	457	1372
449	6	466			150			215		
449	12	851	1317	3950	243	393	1178	416	632	1895
449	13	561	1027	3080	201	350	1050	263	479	1436
449	14	561	1027	3080	201	350	1050	263	479	1436
449	15	851	1317	3950	243	393	1178	416	632	1895

434	2	335	460	1379	145	266	797	123	241	724
434	3	210	334	1003	94	215	646	75	193	579
434	4	210	334	1003	94	215	646	75	193	579
434	5	335	460	1379	145	266	797	123	241	724
434	6	124			121			118		
434	12	274	398	1194	128	250	749	105	224	671
434	13	231	355	1065	107	228	683	76	194	583
434	14	231	355	1065	107	228	683	76	194	583
434	15	274	398	1194	128	250	749	105	224	671
LOWER RIGHT PANEL										
BEAM ELEMENT										
6061-T6 FTY=35000 PSI										
			X-LOAD			Y-LOAD			Z-LOAD	
ELEMENT ID.	STRESS ID.	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS
822	4	313		938	74		221	190		571
822	5	273		818	123		369	86		259
822	6	250		749	117		352	195		586
822	7	256		769	124		373	215		645
822	104	227		682	92		275	168		503
822	105	329		987	138		414	193		579
822	106	1238		3715	268		804	536		1609
822	107	1230		3689	258		773	533		1600
462	4	52		156	42		126	83		250
462	5	79		236	75		224	97		292
462	6	63		189	132		395	230		691
462	7	55		166	128		385	229		687
462	104	16		47	33		98	99		298
462	105	20		60	48		145	81		243
462	106	36		107	90		270	214		642
462	107	35		106	89		267	216		648

463	4	68		205	213		640	437		1310
463	5	170		509	448		1344	1020		3061
463	6	167		501	445		1334	1029		3086
463	7	88		264	318		954	372		1117
463	104	138		414	252		756	461		1383
463	105	363		1089	543		1630	1277		3832
463	106	358		1074	530		1591	1260		3780
463	107	181		542	370		1111	604		1812
464	4	32		97	36		109	106		317
464	5	25		74	37		110	111		334
464	6	31		92	83		249	252		756
464	7	30		91	83		248	251		754
464	104	84		253	223		670	276		827
464	105	92		276	228		685	317		950
464	106	222		667	547		1640	745		2235
464	107	221		663	547		1641	741		2223
UPPER RIGHT FRONT SUPPORT PANEL										
QUAD ELEMENT										
6061-T6 FTY=35000 PSI										
			X-LOAD			Y-LOAD			Z-LOAD	
ELEMENT ID.	STRESS ID.	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS
2230	3	48	237	712	106	259	777	71	121	364
2230	5	37			178			65		
2230	7	194			111			53		
2230	10	74	317	952	119	272	817	83	153	459
2230	12	191			248			110		
2230	14	175			61			55		
2237	3	56	286	859	88	263	788	39	113	338
2237	5	68			240			95		
2237	7	224			64			36		

2237	10	43	291	874	95	297	890	50	112	337
2237	12	83			243			86		
2237	14	227			104			40		
2236	3	89	284	852	512	520	1560	212	220	659
2236	5	38			110			50		
2236	7	219			58			37		
2236	10	94	288	865	544	554	1662	220	228	683
2236	12	60			122			59		
2236	14	210			66			37		
2231	3	72	264	792	336	352	1056	140	167	500
2231	5	31			100			57		
2231	7	212			63			54		
2231	10	66	261	784	344	405	1214	159	187	560
2231	12	53			114			54		
2231	14	202			132			61		
UPPER RIGHT FRONT SUPPORT PANEL										
BAR ELEMENT										
6061-T6 FTY=35000 PSI										
			X-LOAD			Y-LOAD			Z-LOAD	
ELEMENT ID.	STRESS ID.	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS
2270	2	807	1377	4130	549	902	2706	366	607	1820
2270	3	763	1332	3997	524	877	2631	371	612	1836
2270	4	763	1332	3997	524	877	2631	371	612	1836
2270	5	807	1377	4130	549	902	2706	366	607	1820
2270	6	569			353			241		
2270	12	1647	2216	6647	1075	1429	4286	716	957	2872
2270	13	1573	2142	6425	1046	1399	4197	718	959	2877
2270	14	1573	2142	6425	1046	1399	4197	718	959	2877
2270	15	1647	2216	6647	1075	1429	4286	716	957	2872

2255	2	56	94	283	45	86	258	68	170	510		
2255	3	192	230	689	121	162	486	92	194	581		
2255	4	192	230	689	121	162	486	92	194	581		
2255	5	56	94	283	45	86	258	68	170	510		
2255	6	38			41			102				
2255	12	102	140	421	53	94	282	62	164	491		
2255	13	194	232	696	120	161	482	87	189	567		
2255	14	194	232	696	120	161	482	87	189	567		
2255	15	102	140	421	53	94	282	62	164	491		
2255	2	137	371	1113	153	270	810	84	167	501		
2269	3	145	379	1137	125	241	724	79	162	486		
2269	4	145	379	1137	125	241	724	79	162	486		
2269	5	137	371	1113	153	270	810	84	167	501		
2269	6	234			117			83				
2269	12	237	471	1414	208	325	974	122	206	617		
2269	13	232	466	1398	185	302	905	114	198	593		
2269	14	232	466	1398	185	302	905	114	198	593		
2269	15	237	471	1414	208	325	974	122	206	617		
2265	2	67	107	320	37	88	263	67	123	369		
2265	3	71	110	331	68	118	355	132	188	563		
2265	4	71	110	331	68	118	355	132	188	563		
2265	5	67	107	320	37	88	263	67	123	369		
2265	6	39			51			56				
2265	12	94	134	401	98	148	445	259	315	945		
2265	13	83	122	367	154	204	613	206	262	786		
2265	14	83	122	367	154	204	613	206	262	786		
2265	15	94	134	401	98	148	445	259	315	945		
2261	2	185	218	654	112	154	462	141	171	512		
2261	3	113	147	440	68	110	331	95	124	373		
2261	4	113	147	440	68	110	331	95	124	373		
2261	5	185	218	654	112	154	462	141	171	512		
2261	6	33			42			29				
2261	12	121	154	463	223	266	798	167	197	590		
2261	13	121	154	463	132	175	524	141	171	512		
2261	14	121	154	463	132	175	524	141	171	512		
2261	15	121	154	463	223	266	798	167	197	590		

2266	2	699	1066	3199	149	257	771	128	207	622
2266	3	177	544	1631	44	152	456	32	112	335
2266	4	177	544	1631	44	152	456	32	112	335
2266	5	699	1066	3199	149	257	771	128	207	622
2266	6	367			108			80		
2266	12	331	698	2095	121	229	686	63	143	429
2266	13	174	541	1622	81	189	566	34	114	342
2266	14	174	541	1622	81	189	566	34	114	342
2266	15	331	698	2095	121	229	686	63	143	429
UPPER RIGHT PANEL										
QUAD ELEMENT										
6061-T6 FTY=35000 PSI										
			X-LOAD			Y-LOAD			Z-LOAD	
ELEMENT ID.	STRESS ID.	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS
1652	3	402	1226	3677	65	349	1046	60	305	916
1652	5	1203			318			283		
1652	7	137			93			74		
1652	10	368	823	2470	131	335	1005	126	290	869
1652	12	793			283			251		
1652	14	117			103			80		
1653	3	454	1295	3886	86	339	1017	79	311	932
1653	5	1249			291			274		
1653	7	198			111			92		
1653	10	463	1181	3544	203	321	963	162	289	868
1653	12	1157			274			266		
1653	14	132			74			54		
1654	3	382	1463	4390	57	403	1209	68	325	974
1654	5	1433			358			274		
1654	7	181			125			115		
1654	10	392	1378	4133	157	324	971	102	257	770
1654	12	1364			318			250		
1654	14	118			31			32		

1655	3		333	1275	3824		43	409	1228		46	314	943
1655	5		1274				402				294		
1655	7		33				51				73		
1655	10		355	1236	3708		163	365	1096		130	286	858
1655	12		1232				362				271		
1655	14		62				27				49		
1575	3		103	218	654		184	264	793		100	256	769
1575	5		74				156				175		
1575	7		128				93				112		
1575	10		105	216	649		190	268	804		103	253	760
1575	12		75				152				180		
1575	14		125				95				105		
1615	3		354	716	2148		423	976	2928		340	643	1929
1615	5		592				933				596		
1615	7		211				155				119		
1615	10		289	647	1940		451	1004	3013		284	629	1887
1615	12		576				946				602		
1615	14		158				179				97		
UPPER RIGHT PANEL													
BAR ELEMENT													
6061-T6 FTY=35000 PSI													
				X-LOAD				Y-LOAD				Z-LOAD	
ELEMENT ID.	STRESS ID.		RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS		RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS		RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS
1571	2		185	240	719		226	318	954		269	452	1355
1571	3		74	129	386		110	202	605		83	266	798
1571	4		74	129	386		110	202	605		83	266	798
1571	5		185	240	719		226	318	954		269	452	1355
1571	6		54				92				183		
1571	12		182	236	709		212	304	913		258	440	1321
1571	13		81	135	405		106	198	594		98	280	840
1571	14		81	135	405		106	198	594		98	280	840
1571	15		182	236	709		212	304	913		258	440	1321

TOP PANEL
QUAD ELEMENT
6061-T6 FTY=35000 PSI

ELEMENT ID.	STRESS ID.	X-LOAD RMS COMP STRESS	X-LOAD RMS PRIN STRESS	X-LOAD RMS 3 SIG STRESS	Y-LOAD RMS COMP STRESS	Y-LOAD RMS PRIN STRESS	Y-LOAD RMS 3 SIG STRESS	Z-LOAD RMS COMP STRESS	Z-LOAD RMS PRIN STRESS	Z-LOAD RMS 3 SIG STRESS
2148	3	403	426	1277	326	359	1078	846	853	2560
2148	5	349			299			677		
2148	7	42			45			36		
2148	10	391	424	1271	329	366	1098	859	864	2593
2148	12	355			307			643		
2148	14	48			46			35		
10210	3	1308	1836	5507	127	178	535	269	387	1162
10210	5	933			101			195		
10210	7	690			63			150		
10210	10	598	697	2092	101	132	397	157	199	596
10210	12	417			81			105		
10210	14	167			40			63		
10203	3	1804	1806	5419	188	197	591	382	390	1170
10203	5	783			74			160		
10203	7	53			33			43		
10203	10	1296	1334	4002	189	196	589	327	342	1025
10203	12	401			86			141		
10203	14	187			28			55		
10198	3	1035	1036	3108	140	145	434	241	243	728
10198	5	416			62			89		
10198	7	26			19			16		
10198	10	1157	1166	3497	151	156	467	243	252	755
10198	12	276			53			77		
10198	14	87			23			38		
10139	3	195	206	618	55	65	196	687	707	2120
10139	5	41			13			143		
10139	7	42			23			105		

10139	10	191	203	609	46	59	176	670	694	2081
10139	12	45			20			139		
10139	14	43			22			114		
10140	3	110	131	393	77	81	242	448	496	1488
10140	5	28			12			73		
10140	7	46			16			142		
10140	10	107	130	390	71	76	227	438	491	1474
10140	12	27			11			70		
10140	14	49			17			149		
TOP PANEL										
BEAM ELEMENT										
6061-T6 FTY=35000 PSI										
			X-LOAD			Y-LOAD			Z-LOAD	
ELEMENT ID.	STRESS ID.	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS
2186	4	104		312	16		48	17		51
2186	5	393		1179	127		382	139		417
2186	6	232		697	101		302	103		308
2186	7	355		1064	132		397	141		422
2186	104	82		245	11		32	14		42
2186	105	188		563	34		102	40		119
2186	106	71		214	36		108	37		112
2186	107	169		508	36		107	40		120
2196	4	20		60	5		16	10		31
2196	5	37		110	21		62	33		99
2196	6	33		98	29		88	45		135
2196	7	38		114	24		71	36		107
2196	104	20		60	5		16	10		31
2196	105	30		91	16		48	25		75
2196	106	111		332	143		429	132		397
2196	107	39		117	32		96	34		103

2197	4		24			71		20			60		33			99
2197	5		24			72		16			48		31			93
2197	6		115			344		158			475		133			398
2197	7		34			101		32			96		38			114
2197	104		24			71		20			60		33			99
2197	105		52			156		109			326		171			514
2197	106		146			439		185			556		151			453
2197	107		70			210		133			400		187			561
2194	4		26			78		31			93		36			107
2194	5		81			242		113			338		150			449
2194	6		83			249		31			94		107			320
2194	7		86			257		109			327		157			471
2194	104		26			78		31			93		36			107
2194	105		49			147		22			66		35			105
2194	106		64			193		81			243		65			196
2194	107		51			154		27			82		35			104
LEFT PANEL																
QUAD ELEMENT																
6061-T6 FTY=35000 PSI																
				X-LOAD					Y-LOAD				Z-LOAD			
ELEMENT ID.	STRESS ID.		RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS		RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS		RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS			
2982	3		81	337	1011		226	486	1459		120	205	614			
2982	5		274				451				169					
2982	7		128				96				55					
2982	10		53	286	857		139	428	1283		191	284	853			
2982	12		222				413				252					
2982	14		122				65				55					
3041	3		547	596	1787		901	921	2762		623	638	1913			
3041	5		197				331				267					
3041	7		139				107				74					

3041	10	799	829	2486	752	771	2314	411	429	1286		
3041	12	338			297			195				
3041	14	122			96			64				
5765	3	182	386	1159	279	794	2383	304	565	1695		
5765	5	368			790			544				
5765	7	62			45			75				
5765	10	317	599	1798	220	700	2099	173	311	933		
5765	12	503			690			283				
5765	14	165			69			62				
2809	3	44	129	386	132	556	1669	81	294	883		
2809	5	63			528			178				
2809	7	74			109			158				
2809	10	45	144	433	107	511	1534	194	716	2147		
2809	12	84			487			627				
2809	14	77			99			215				
2810	3	38	112	336	194	612	1837	92	285	855		
2810	5	66			596			205				
2810	7	59			83			124				
2810	10	46	143	430	162	547	1641	256	779	2338		
2810	12	104			535			760				
2810	14	62			68			101				
5724	3	734	765	2295	781	796	2389	371	387	1162		
5724	5	293			246			162				
5724	7	122			91			60				
5724	10	660	694	2083	705	718	2155	244	264	791		
5724	12	245			243			113				
5724	14	125			80			54				
3050	3	531	959	2878	428	639	1917	202	285	854		
3050	5	707			407			206				
3050	7	329			221			81				
3050	10	445	623	1870	390	588	1765	147	220	660		
3050	12	487			398			141				
3050	14	156			195			76				
5725	3	269	725	2175	112	462	1385	77	232	695		
5725	5	690			433			200				
5725	7	127			101			70				

5725	10	285	620	1860	159	426	1277	86	189	568	
5725	12	578			400			159			
5725	14	118			84			56			
5029	3	120	406	1217	48	286	859	54	245	734	
5029	5	52			212			192			
5029	7	318			133			101			
5029	10	100	377	1131	65	218	655	57	129	387	
5029	12	52			151			80			
5029	14	300			102			59			
5030	3	61	292	877	38	225	674	70	157	472	
5030	5	89			96			100			
5030	7	217			155			71			
5030	10	49	269	806	32	166	497	73	144	433	
5030	12	69			85			80			
5030	14	209			104			68			
3052	3	41	218	653	141	238	713	95	166	498	
3052	5	29			93			128			
3052	7	182			119			52			
3052	10	155	319	957	203	242	726	263	281	843	
3052	12	85			50			30			
3052	14	196			86			67			
3030	3	217	311	933	477	486	1457	230	243	728	
3030	5	108			120			108			
3030	7	138			56			42			
3030	10	285	370	1109	514	531	1592	359	364	1091	
3030	12	130			115			56			
3030	14	143			84			40			
3042	3	122	293	879	380	419	1257	162	184	552	
3042	5	81			135			119			
3042	7	191			105			38			
3042	10	213	365	1095	424	444	1331	320	332	997	
3042	12	113			113			43			
3042	14	186			79			60			
2815	3	91	273	820	317	868	2605	109	266	798	
2815	5	230			859			193			
2815	7	89			73			107			

2815	10	73	269	806	211	707	2120	320	894	2681		
2815	12	223			687			877				
2815	14	94			100			97				
2816	3	63	239	717	226	693	2079	81	288	865		
2816	5	190			679			232				
2816	7	93			80			108				
2816	10	56	273	819	154	612	1835	241	889	2667		
2816	12	231			584			857				
2816	14	95			112			145				
2883	3	288	400	1199	149	241	724	82	219	658		
2883	5	50			139			51				
2883	7	197			97			152				
2883	10	343	447	1341	132	311	934	90	224	673		
2883	12	64			193			70				
2883	14	199			146			144				
2884	3	287	422	1266	187	250	749	73	207	620		
2884	5	93			53			41				
2884	7	211			111			149				
2884	10	356	481	1443	138	232	696	93	228	683		
2884	12	97			35			38				
2884	14	220			136			160				
5008	3	203	304	911	136	225	675	56	193	578		
5008	5	37			102			33				
5008	7	164			105			147				
5008	10	248	350	1049	109	325	974	70	199	596		
5008	12	47			143			44				
5008	14	176			198			141				

LOWER LEFT WARMLOAD SHIELD
QUAD ELEMENT
6061-T6 FTY=35000 PSI

ELEMENT ID.	STRESS ID.	X-LOAD RMS COMP STRESS	X-LOAD RMS PRIN STRESS	X-LOAD RMS 3 SIG STRESS	Y-LOAD RMS COMP STRESS	Y-LOAD RMS PRIN STRESS	Y-LOAD RMS 3 SIG STRESS	Z-LOAD RMS COMP STRESS	Z-LOAD RMS PRIN STRESS	Z-LOAD RMS 3 SIG STRESS
2637	3	615	830	2489	222	316	947	201	264	793
2637	5	155			176			98		
2637	7	381			115			103		
2637	10	587	834	2501	191	294	881	169	250	750
2637	12	136			158			71		
2637	14	414			118			120		
2638	3	211	661	1983	208	344	1033	112	251	753
2638	5	200			154			87		
2638	7	456			161			151		
2638	10	213	666	1997	223	365	1094	76	182	546
2638	12	218			160			72		
2638	14	450			170			108		
2635	3	424	528	1585	206	220	661	287	299	898
2635	5	35			43			69		
2635	7	227			50			53		
2635	10	388	517	1550	206	222	665	219	239	718
2635	12	73			36			81		
2635	14	239			55			56		
4929	3	392	552	1655	184	211	632	114	146	439
4929	5	42			22			17		
4929	7	285			71			64		
4929	10	413	607	1822	173	207	622	112	164	493
4929	12	55			18			29		
4929	14	327			81			84		

LOWER LEFT WARMLOAD SHIELD

BAR ELEMENT

6061-T6 FTY=35000 PSI

ELEMENT ID.	STRESS ID.	X-LOAD RMS COMP STRESS	X-LOAD RMS PRIN STRESS	X-LOAD RMS 3 SIG STRESS	Y-LOAD RMS COMP STRESS	Y-LOAD RMS PRIN STRESS	Y-LOAD RMS 3 SIG STRESS	Z-LOAD RMS COMP STRESS	Z-LOAD RMS PRIN STRESS	Z-LOAD RMS 3 SIG STRESS
2645	2	533	1626	4879	202	464	1391	135	422	1266
2645	3	775	1868	5603	247	509	1527	215	502	1505
2645	4	775	1868	5603	247	509	1527	215	502	1505
2645	5	533	1626	4879	202	464	1391	135	422	1266
2645	6	1093			262			287		
2645	12	601	1694	5082	299	561	1682	491	777	2332
2645	13	999	2092	6276	208	469	1408	398	684	2052
2645	14	999	2092	6276	208	469	1408	398	684	2052
2645	15	601	1694	5082	299	561	1682	491	777	2332
2645	2	345	1184	3553	131	352	1055	92	327	981
4927	3	305	1144	3432	125	345	1036	86	321	963
4927	4	305	1144	3432	125	345	1036	86	321	963
4927	5	345	1184	3553	131	352	1055	92	327	981
4927	6	839			220			235		
4927	12	628	1467	4402	116	336	1008	216	450	1351
4927	13	424	1263	3790	121	341	1023	239	474	1421
4927	14	424	1263	3790	121	341	1023	239	474	1421
4927	15	628	1467	4402	116	336	1008	216	450	1351
2643	2	555	950	2849	227	484	1452	641	856	2567
2643	3	541	936	2807	226	483	1450	641	856	2568
2643	4	541	936	2807	226	483	1450	641	856	2568
2643	5	555	950	2849	227	484	1452	641	856	2567
2643	6	395			257			215		
2643	12	867	1262	3787	142	399	1196	202	417	1251
2643	13	844	1239	3716	135	392	1176	195	410	1230
2643	14	844	1239	3716	135	392	1176	195	410	1230
2643	15	867	1262	3787	142	399	1196	202	417	1251

2652	2	939	1126	3378	222	476	1428	397	490	1470
2652	3	1189	1376	4128	422	676	2028	445	538	1613
2652	4	1189	1376	4128	422	676	2028	445	538	1613
2652	5	939	1126	3378	222	476	1428	397	490	1470
2652	6	187			254			93		
2652	12	766	953	2859	137	390	1171	275	368	1104
2652	13	537	724	2171	255	509	1526	233	326	977
2652	14	537	724	2171	255	509	1526	233	326	977
2652	15	766	953	2859	137	390	1171	275	368	1104
2652	2	65	287	861	93	172	516	153	206	619
2646	3	122	344	1031	107	186	558	153	206	618
2646	4	122	344	1031	107	186	558	153	206	618
2646	5	65	287	861	93	172	516	153	206	619
2646	6	222			79			53		
2646	12	166	388	1163	99	178	534	40	93	278
2646	13	183	405	1215	126	204	613	48	101	303
2646	14	183	405	1215	126	204	613	48	101	303
2646	15	166	388	1163	99	178	534	40	93	278
2646	2	282	465	1395	383	671	2013	335	727	2180
2651	3	466	649	1948	379	667	2001	420	812	2437
2651	4	466	649	1948	379	667	2001	420	812	2437
2651	5	282	465	1395	383	671	2013	335	727	2180
2651	6	183			288			392		
2651	12	419	602	1807	559	847	2540	744	1136	3407
2651	13	278	461	1383	314	601	1804	1158	1550	4651
2651	14	278	461	1383	314	601	1804	1158	1550	4651
2651	15	419	602	1807	559	847	2540	744	1136	3407

LOWER RIGHT WARMLOAD SHIELD
QUAD ELEMENT
6061-T6 FTY=35000 PSI

ELEMENT ID.	STRESS ID.	X-LOAD RMS COMP STRESS	X-LOAD RMS PRIN STRESS	X-LOAD RMS 3 SIG STRESS	Y-LOAD RMS COMP STRESS	Y-LOAD RMS PRIN STRESS	Y-LOAD RMS 3 SIG STRESS	Z-LOAD RMS COMP STRESS	Z-LOAD RMS PRIN STRESS	Z-LOAD RMS 3 SIG STRESS
2619	3	411	520	1561	155	184	553	180	212	637
2619	5	86			36			41		
2619	7	218			66			74		
2619	10	470	568	1705	159	183	549	173	208	624
2619	12	114			31			37		
2619	14	211			60			77		
2618	3	267	300	899	159	165	495	124	136	408
2618	5	113			74			57		
2618	7	78			23			31		
2618	10	306	333	1000	110	124	373	116	131	392
2618	12	74			73			56		
2618	14	84			27			33		
2614	3	237	296	888	97	114	342	81	105	316
2614	5	73			38			43		
2614	7	115			36			39		
2614	10	245	306	918	84	110	329	91	124	373
2614	12	61			40			57		
2614	14	123			43			47		
2613	3	158	236	707	79	106	317	64	111	332
2613	5	33			37			53		
2613	7	125			43			52		
2613	10	156	204	613	78	96	288	78	108	324
2613	12	31			28			43		
2613	14	91			35			44		

LOWER RIGHT WARMLOAD SHIELD
BAR ELEMENT
6061-T6 FTY=35000 PSI

ELEMENT ID.	STRESS ID.	X-LOAD RMS COMP STRESS	X-LOAD RMS PRIN STRESS	X-LOAD RMS 3 SIG STRESS	Y-LOAD RMS COMP STRESS	Y-LOAD RMS PRIN STRESS	Y-LOAD RMS 3 SIG STRESS	Z-LOAD RMS COMP STRESS	Z-LOAD RMS PRIN STRESS	Z-LOAD RMS 3 SIG STRESS
2633	2	846	947	2841	305	335	1006	328	373	1120
2633	3	1101	1202	3607	397	428	1283	495	540	1621
2633	4	1101	1202	3607	397	428	1283	495	540	1621
2633	5	846	947	2841	305	335	1006	328	373	1120
2633	6	101			31			46		
2633	12	1881	1982	5946	665	695	2086	721	767	2301
2633	13	2064	2165	6494	670	701	2102	858	904	2711
2633	14	2064	2165	6494	670	701	2102	858	904	2711
2633	15	1881	1982	5946	665	695	2086	721	767	2301
2627	2	547	1238	3715	225	501	1504	185	491	1474
2627	3	309	1000	3001	231	507	1522	161	467	1401
2627	4	309	1000	3001	231	507	1522	161	467	1401
2627	5	547	1238	3715	225	501	1504	185	491	1474
2627	6	692			276			306		
2627	12	1302	1993	5980	527	803	2410	648	955	2864
2627	13	924	1615	4846	266	542	1626	378	684	2052
2627	14	924	1615	4846	266	542	1626	378	684	2052
2627	15	1302	1993	5980	527	803	2410	648	955	2864

UPPER LEFT WARMLOAD SHIELD
QUAD ELEMENT
6061-T6 FTY=35000 PSI

ELEMENT ID.	STRESS ID.	X-LOAD RMS COMP STRESS	X-LOAD RMS PRIN STRESS	X-LOAD RMS 3 SIG STRESS	Y-LOAD RMS COMP STRESS	Y-LOAD RMS PRIN STRESS	Y-LOAD RMS 3 SIG STRESS	Z-LOAD RMS COMP STRESS	Z-LOAD RMS PRIN STRESS	Z-LOAD RMS 3 SIG STRESS
2676	3	449	644	1932	290	342	1027	153	181	543
2676	5	70			52			38		
2676	7	335			123			64		
2676	10	489	721	2162	263	326	979	154	195	585
2676	12	99			47			41		
2676	14	380			133			80		
2686	3	26	280	841	18	119	356	17	108	325
2686	5	112			53			59		
2686	7	207			81			67		
2686	10	88	243	729	31	93	278	37	104	311
2686	12	59			42			64		
2686	14	169			56			51		
2684	3	64	331	994	51	148	444	40	132	397
2684	5	63			65			75		
2684	7	268			90			73		
2684	10	54	368	1103	44	160	480	35	156	468
2684	12	53			50			77		
2684	14	314			113			98		
2683	3	136	341	1024	85	167	500	87	135	405
2683	5	29			50			43		
2683	7	253			97			66		
2683	10	116	345	1036	77	174	523	64	152	457
2683	12	43			49			85		
2683	14	263			110			77		
2682	3	211	447	1340	198	304	912	153	264	793
2682	5	148			228			207		
2682	7	265			90			80		

2682	10	188	427	1282	164	255	765	196	233	700
2682	12	119			178			169		
2682	14	272			84			49		

UPPER LEFT WARMLOAD SHIELD
BAR ELEMENT
6061-T6 FTY=35000 PSI

			X-LOAD			Y-LOAD			Z-LOAD	
ELEMENT ID.	STRESS ID.	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS
2691	2	730	1955	5865	249	714	2141	278	709	2127
2691	3	898	2123	6369	281	746	2237	283	715	2144
2691	4	898	2123	6369	281	746	2237	283	715	2144
2691	5	730	1955	5865	249	714	2141	278	709	2127
2691	6	1225			465			431		
2691	12	1183	2408	7224	404	869	2606	625	1057	3170
2691	13	1696	2921	8763	305	770	2311	634	1066	3197
2691	14	1696	2921	8763	305	770	2311	634	1066	3197
2691	15	1183	2408	7224	404	869	2606	625	1057	3170
2700	2	998	1279	3836	223	331	993	165	291	874
2700	3	1396	1677	5031	330	438	1313	250	376	1128
2700	4	1396	1677	5031	330	438	1313	250	376	1128
2700	5	998	1279	3836	223	331	993	165	291	874
2700	6	281			108			126		
2700	12	684	965	2895	144	252	757	115	242	725
2700	13	626	907	2720	138	246	737	119	245	734
2700	14	626	907	2720	138	246	737	119	245	734
2700	15	684	1440	4321	144	252	757	115	242	725
2690	2	466	1163	3489	221	619	1856	364	655	1965
2690	3	429	1126	3378	229	626	1879	362	653	1959
2690	4	429	1126	3378	229	626	1879	362	653	1959
2690	5	466	1163	3489	221	619	1856	364	655	1965
2690	6	697			398			291		

2690	6	697			398				291		
2690	12	1127	1824	5472	216	614	1842	314	605	1814	
2690	13	964	1661	4983	164	562	1686	308	599	1796	
2690	14	964	1661	4983	164	562	1686	308	599	1796	
2690	15	1127	1824	5472	216	614	1842	314	605	1814	
2690	2	805	1313	3940	448	858	2573	956	1243	3729	
2687	3	858	1366	4099	431	841	2524	917	1204	3612	
2687	4	858	1366	4099	431	841	2524	917	1204	3612	
2687	5	805	1313	3940	448	858	2573	956	1243	3729	
2687	6	508			410			287			
2687	12	389	897	2692	291	700	2101	462	749	2248	
2687	13	414	922	2767	296	705	2116	470	757	2271	
2687	14	414	922	2767	296	705	2116	470	757	2271	
2687	15	389	897	2692	291	700	2101	462	749	2248	
2692	2	546	651	1952	666	722	2167	822	889	2667	
2692	3	470	575	1726	510	566	1698	534	601	1804	
2692	4	470	575	1726	510	566	1698	534	601	1804	
2692	5	546	651	1952	666	722	2167	822	889	2667	
2692	6	105			56			67			
2692	12	169	274	822	112	169	506	116	183	549	
2692	13	167	272	816	131	187	562	107	174	523	
2692	14	167	272	816	131	187	562	107	174	523	
2692	15	169	274	822	112	169	506	116	183	549	

UPPER RIGHT WARMLOAD SHIELD

QUAD ELEMENT

6061-T6 FTY=35000 PSI

			X-LOAD			Y-LOAD			Z-LOAD		
ELEMENT ID.	STRESS ID.	RMS COMP	RMS PRIN	RMS 3 SIG	RMS COMP	RMS PRIN	RMS 3 SIG	RMS COMP	RMS PRIN	RMS 3 SIG	
		STRESS	STRESS	STRESS	STRESS	STRESS	STRESS	STRESS	STRESS	STRESS	
2659	3	418	432	1296	124	131	393	130	132	396	
2659	5	36			29			12			
2659	7	74			27			16			

2659	10	488	503	1510	156	170	509	142	144	432
2659	12	48			44			23		
2659	14	83			42			17		
2658	3	357	391	1174	90	128	385	95	103	310
2658	5	28			85			35		
2658	7	112			41			24		
2658	10	358	388	1164	121	150	450	104	111	334
2658	12	31			74			29		
2658	14	103			47			24		
UPPER RIGHT WARMLOAD SHIELD										
BAR ELEMENT										
6061-T6 FTY=35000 PSI										
			X-LOAD			Y-LOAD			Z-LOAD	
ELEMENT ID.	STRESS ID.	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS
2671	2	1388	2483	7449	399	654	1962	270	490	1471
2671	3	1350	2446	7337	390	645	1935	266	486	1457
2671	4	1350	2446	7337	390	645	1935	266	486	1457
2671	5	1388	2483	7449	399	654	1962	270	490	1471
2671	6	1095			255			220		
2671	12	2348	3443	10330	671	926	2778	461	681	2044
2671	13	2230	3326	9977	634	890	2669	436	656	1968
2671	14	2230	3326	9977	634	890	2669	436	656	1968
2671	15	2348	3443	10330	671	926	2778	461	681	2044
2666	2	397	411	1234	176	196	587	165	179	537
2666	3	650	665	1995	243	263	788	157	171	514
2666	4	650	665	1995	243	263	788	157	171	514
2666	5	397	411	1234	176	196	587	165	179	537
2666	6	15			20			15		
2666	12	440	455	1365	151	170	511	168	182	547
2666	13	406	420	1261	224	244	731	116	131	392
2666	14	406	420	1261	224	244	731	116	131	392
2666	15	440	455	1365	151	170	511	168	182	547

2660	2	131	188	563	241	274	822	88	122	365
2660	3	246	303	909	284	317	950	205	239	716
2660	4	246	303	909	284	317	950	205	239	716
2660	5	131	188	563	241	274	822	88	122	365
2660	6	57			33			34		
2660	12	171	228	683	135	168	503	45	79	236
2660	13	182	240	719	139	172	517	50	84	251
2660	14	182	240	719	139	172	517	50	84	251
2660	15	171	228	683	135	168	503	45	79	236
LOWER CARD CAGE ASSEMBLY										
QUAD ELEMENT										
6061-T6 FTY=35000 PSI										
			X-LOAD			Y-LOAD			Z-LOAD	
ELEMENT ID.	STRESS ID.	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS
3710	3	93	165	496	479	1068	3205	328	392	1176
3710	5	119			961			172		
3710	7	58			252			119		
3710	10	146	181	543	522	885	2656	573	682	2047
3710	12	101			765			166		
3710	14	54			209			238		
3760	3	670	714	2142	830	939	2816	1404	1580	4739
3760	5	292			526			325		
3760	7	137			212			470		
3760	10	668	692	2075	838	888	2663	1463	1528	4584
3760	12	230			281			776		
3760	14	104			174			221		
3689	3	168	350	1051	308	507	1521	503	717	2152
3689	5	247			310			139		
3689	7	137			198			352		
3689	10	202	375	1126	276	465	1396	587	900	2701
3689	12	197			152			453		
3689	14	176			244			374		

3599	3	224	482	1445	753	1748	5244	234	416	1248	
3599	5	97			138			88			
3599	7	315			1266			244			
3599	10	286	586	1758	696	1686	5057	460	700	2101	
3599	12	114			180			105			
3599	14	376			1221			379			
3711	3	99	201	602	774	1357	4070	282	380	1141	
3711	5	170			1336			264			
3711	7	56			111			107			
3711	10	172	206	617	820	1070	3211	786	829	2486	
3711	12	144			1026			207			
3711	14	45			106			163			
3686	3	587	667	2001	967	1025	3074	1684	1766	5298	
3686	5	205			215			269			
3686	7	192			216			350			
3686	10	565	600	1800	934	1001	3002	1773	1882	5647	
3686	12	131			206			436			
3686	14	128			230			398			
3585	3	291	457	1372	509	762	2287	378	2683	8048	
3585	5	439			735			2660			
3585	7	55			84			228			
3585	10	269	498	1494	457	852	2557	475	2746	8237	
3585	12	472			815			2723			
3585	14	78			122			227			
3593	3	576	608	1825	1486	1612	4836	341	383	1149	
3593	5	100			376			123			
3593	7	129			394			105			
3593	10	682	703	2110	1599	1717	5151	730	759	2276	
3593	12	62			243			58			
3593	14	116			418			142			
3594	3	143	350	1049	603	2044	6132	513	651	1954	
3594	5	70			225			62			
3594	7	241			1619			286			
3594	10	204	394	1182	809	2110	6331	789	1003	3008	
3594	12	62			155			61			
3594	14	251			1595			449			

3685	3		222	271	813		304	348	1043		559	653	1959
3685	5		53				41				30		
3685	7		103				116				242		
3685	10		189	235	705		331	389	1168		596	670	2010
3685	12		53				31				51		
3685	14		91				144				214		
3595	3		374	497	1492		899	2047	6142		1125	1195	3584
3595	5		118				393				91		
3595	7		216				1378				278		
3595	10		249	433	1299		806	1984	5953		881	1026	3078
3595	12		123				386				119		
3595	14		239				1372				362		
3547	3		94	293	878		338	2065	6195		356	568	1705
3547	5		37				159				61		
3547	7		226				1814				328		
3547	10		74	308	924		274	2013	6040		213	657	1971
3547	12		36				132				59		
3547	14		252				1809				515		
3571	3		647	1135	3405		1095	1903	5710		877	1967	5902
3571	5		190				375				1022		
3571	7		679				1111				1015		
3571	10		613	1107	3320		1004	1884	5651		996	1926	5777
3571	12		258				393				1106		
3571	14		647				1145				873		
LOWER CARD													
QUAD ELEMENT													
REINFORCED PLASTIC FTY=24000 PSI													
				X-LOAD				Y-LOAD				Z-LOAD	
ELEMENT ID.	STRESS ID.		RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS		RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS		RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS
4830	3		151	190	571		473	614	1841		144	175	525
4830	5		32				66				18		
4830	7		79				277				70		

4830	10	133	160	479	465	589	1768	141	180	539
4830	12	26			66			17		
4830	14	60			255			80		
4806	3	233	287	861	421	521	1562	159	235	704
4806	5	44			60			20		
4806	7	115			215			127		
4806	10	229	289	868	428	531	1594	168	224	672
4806	12	33			53			39		
4806	14	124			222			101		
UPPER CARD CAGE ASSEMBLY										
QUAD ELEMENT										
6061-T6 FTY=35000 PSI										
			X-LOAD			Y-LOAD			Z-LOAD	
ELEMENT ID.	STRESS ID.	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS
3250	3	866	1165	3496	800	1072	3215	1178	1600	4799
3250	5	997			913			1391		
3250	7	224			208			297		
3250	10	977	1305	3914	891	1200	3600	1328	1799	5396
3250	12	1137			1046			1564		
3250	14	234			218			332		
3259	3	561	893	2680	534	835	2505	755	1230	3689
3259	5	807			754			1112		
3259	7	169			156			237		
3259	10	712	991	2974	652	922	2767	1008	1351	4054
3259	12	933			866			1280		
3259	14	128			124			157		
3251	3	211	1600	4799	193	1480	4439	292	2194	6583
3251	5	1329			1232			1825		
3251	7	614			565			838		
3251	10	60	1516	4547	50	1402	4207	81	2085	6254
3251	12	1273			1178			1753		
3251	14	594			551			815		

3260	3	172	1310	3929	148	1207	3621	250	1802	5405		
3260	5	1174			1082			1618				
3260	7	392			364			534				
3260	10	39	1236	3708	31	1136	3409	53	1707	5122		
3260	12	1122			1033			1550				
3260	14	370			338			510				
3249	3	887	912	2735	817	839	2518	1174	1217	3652		
3249	5	596			547			808				
3249	7	89			80			133				
3249	10	910	921	2763	829	843	2528	1210	1226	3679		
3249	12	515			473			679				
3249	14	66			71			94				
3258	3	425	530	1590	412	503	1510	567	723	2170		
3258	5	442			418			609				
3258	7	96			88			134				
3258	10	491	550	1649	460	505	1516	697	788	2364		
3258	12	363			336			497				
3258	14	104			87			163				
3475	3	92	383	1148	71	338	1013	61	361	1082		
3475	5	355			289			287				
3475	7	90			114			148				
3475	10	94	409	1226	94	434	1301	85	464	1392		
3475	12	374			407			405				
3475	14	105			95			150				
3475	3	203	740	2221	163	598	1793	118	568	1705		
3476	5	721			566			477				
3476	7	102			118			203				
3476	10	204	756	2269	195	724	2172	148	660	1980		
3476	12	734			705			582				
3476	14	113			100			200				

UPPER CARD CAGE ASSEMBLY
BAR ELEMENT
6061-T6 FTY=35000 PSI

ELEMENT ID.	STRESS ID.	X-LOAD RMS COMP STRESS	X-LOAD RMS PRIN STRESS	X-LOAD RMS 3 SIG STRESS	Y-LOAD RMS COMP STRESS	Y-LOAD RMS PRIN STRESS	Y-LOAD RMS 3 SIG STRESS	Z-LOAD RMS COMP STRESS	Z-LOAD RMS PRIN STRESS	Z-LOAD RMS 3 SIG STRESS
3229	2	1759	1785	5355	1621	1645	4936	2384	2427	7280
3229	3	1932	1958	5874	1788	1813	5438	2669	2711	8133
3229	4	1932	1958	5874	1788	1813	5438	2669	2711	8133
3229	5	1759	1785	5355	1621	1645	4936	2384	2427	7280
3229	6	26			25			42		
3229	12	90	117	350	92	116	349	186	228	683
3229	13	125	152	455	119	143	430	175	217	651
3229	14	125	152	455	119	143	430	175	217	651
3229	15	90	117	350	92	116	349	186	228	683
3215	2	104	172	515	106	172	516	155	254	762
3215	3	160	228	685	172	238	715	223	321	964
3215	4	160	228	685	172	238	715	223	321	964
3215	5	104	172	515	106	172	516	155	254	762
3215	6	68			66			99		
3215	12	551	619	1858	521	587	1762	767	865	2596
3215	13	448	516	1547	423	490	1469	594	693	2079
3215	14	448	516	1547	423	490	1469	594	693	2079
3215	15	551	619	1858	521	587	1762	767	865	2596
3208	2	1293	1391	4172	1903	2088	6263	1194	1334	4001
3208	3	1549	1647	4942	2109	2293	6880	1384	1524	4571
3208	4	1549	1647	4942	2109	2293	6880	1384	1524	4571
3208	5	1293	1391	4172	1903	2088	6263	1194	1334	4001
3208	6	98			184			140		
3208	12	552	650	1951	749	933	2800	574	713	2140
3208	13	691	789	2366	543	727	2182	584	724	2171
3208	14	691	789	2366	543	727	2182	584	724	2171
3208	15	552	650	1951	749	933	2800	574	713	2140

3216	2		437	462	1385		579	608	1824		382	412	1237
3216	3		346	371	1112		631	660	1981		421	452	1356
3216	4		346	371	1112		631	660	1981		421	452	1356
3216	5		437	462	1385		579	608	1824		382	412	1237
3216	6		25				29				31		
3216	12		43	68	205		36	66	197		21	51	154
3216	13		51	76	227		40	69	207		37	68	204
3216	14		51	76	227		40	69	207		37	68	204
3216	15		43	68	205		36	66	197		21	51	154
UPPER CARD CAGE ASSEMBLY													
QUAD ELEMENT													
6061-T4 FTY=16000 PSI													
				X-LOAD				Y-LOAD				Z-LOAD	
ELEMENT ID.	STRESS ID.		RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS		RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS		RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS
3403	3		41	443	1330		53	569	1707		59	586	1758
3403	5		383				519				488		
3403	7		156				161				227		
3403	10		47	481	1442		49	546	1639		71	704	2112
3403	12		433				489				619		
3403	14		144				169				232		
3341	3		27	344	1032		36	318	953		32	455	1365
3341	5		334				299				442		
3341	7		56				73				73		
3341	10		52	361	1082		35	329	988		47	503	1510
3341	12		264				235				355		
3341	14		173				167				260		
3404	3		163	762	2285		233	1036	3107		151	789	2367
3404	5		722				999				647		
3404	7		154				171				301		
3404	10		182	809	2426		219	982	2945		191	937	2810
3404	12		768				946				796		
3404	14		160				166				325		

3395	3	181	367	1102	249	450	1350	182	360	1080
3395	5	300			384			192		
3395	7	112			115			173		
3395	10	199	363	1090	233	449	1346	225	390	1169
3395	12	300			385			200		
3395	14	102			117			177		
3396	3	671	730	2190	827	896	2689	603	708	2123
3396	5	394			541			252		
3396	7	141			157			218		
3396	10	650	707	2122	871	948	2844	499	596	1789
3396	12	408			542			263		
3396	14	131			177			180		
3387	3	57	275	824	53	316	947	61	223	670
3387	5	245			284			205		
3387	7	81			91			55		
3387	10	78	257	772	72	318	954	107	179	538
3387	12	229			287			138		
3387	14	71			87			55		

UPPER CARD CAGE ASSEMBLY
BAR ELEMENT
6061-T4 FTY=16000 PSI

		X-LOAD				Y-LOAD			Z-LOAD	
ELEMENT ID.	STRESS ID.	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS
3482	2	610	620	1861	659	670	2009	1195	1223	3670
3482	3	665	675	2026	700	711	2133	1359	1387	4161
3482	4	665	675	2026	700	711	2133	1359	1387	4161
3482	5	610	620	1861	659	670	2009	1195	1223	3670
3482	6	10			11			28		
3482	12	81	92	275	58	69	207	124	152	455
3482	13	85	96	287	57	68	205	49	77	231
3482	14	85	96	287	57	68	205	49	77	231
3482	15	81	92	275	58	69	207	124	152	455

UPPER CARD
QUAD ELEMENT
REINFORCED PLASTIC FTY=24000 PSI

		X-LOAD			Y-LOAD			Z-LOAD		
ELEMENT ID.	STRESS ID.	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS
10328	3	37	306	919	12	64	192	14	56	168
10328	5	304			63			55		
10328	7	25			7			6		
10328	10	33	325	975	13	71	213	11	63	188
10328	12	323			70			62		
10328	14	25			8			7		
10329	3	207	534	1601	27	76	229	28	63	188
10329	5	506			73			59		
10329	7	95			12			12		
10329	10	220	566	1697	26	86	258	27	68	205
10329	12	544			84			65		
10329	14	87			11			11		
10701	3	38	342	1025	12	69	208	15	65	196
10701	5	339			69			64		
10701	7	27			6			9		
10701	10	38	322	967	11	65	196	11	60	181
10701	12	320			65			59		
10701	14	27			7			8		
10702	3	222	581	1742	28	84	251	28	68	203
10702	5	559			81			64		
10702	7	88			12			12		
10702	10	209	551	1654	28	74	223	30	73	218
10702	12	525			71			69		
10702	14	96			13			13		

10693	3		52	384	1152		14	100	301		14	98	294
10693	5		379				98				96		
10693	7		39				12				12		
10693	10		52	356	1067		14	94	283		14	113	340
10693	12		350				92				112		
10693	14		41				13				12		
10292	3		51	337	1012		13	96	288		16	74	222
10292	5		332				95				73		
10292	7		41				11				10		
10292	10		50	364	1092		13	102	306		15	77	230
10292	12		359				101				75		
10292	14		39				10				10		
LOWER WARMLOAD													
QUAD ELEMENT													
6061-T6 FTY=35000 PSI													
				X-LOAD				Y-LOAD				Z-LOAD	
ELEMENT ID.	STRESS ID.		RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS		RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS		RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS
2789	3		619	1384	4152		756	1793	5380		478	1054	3162
2789	5		1333				1774				1030		
2789	7		197				141				117		
2789	10		841	1423	4268		1415	1954	5862		647	1091	3273
2789	12		1374				1912				1066		
2789	14		169				151				105		
2778	3		435	628	1884		785	858	2574		448	516	1547
2778	5		377				464				292		
2778	7		220				170				124		
2778	10		1083	1128	3383		1340	1371	4113		926	945	2834
2778	12		409				507				317		
2778	14		180				163				107		
2777	3		379	598	1794		651	926	2779		374	520	1560
2777	5		345				440				254		
2777	7		236				366				197		

2777	10	934	980	2941	1107	1166	3498	788	809	2427		
2777	12	357			480			266				
2777	14	170			201			106				
2788	3	592	1252	3755	684	1685	5054	493	1050	3150		
2788	5	1195			1584			990				
2788	7	194			317			183				
2788	10	751	1248	3743	1280	1792	5375	600	1026	3077		
2788	12	1209			1726			1003				
2788	14	139			184			98				
2771	3	207	619	1856	118	534	1602	37	391	1172		
2771	5	177			187			100				
2771	7	426			380			320				
2771	10	423	753	2258	318	535	1605	151	443	1329		
2771	12	151			182			95				
2771	14	445			277			319				
2772	3	790	998	2993	596	770	2310	515	698	2094		
2772	5	261			178			241				
2772	7	391			321			289				
2772	10	758	996	2988	515	657	1972	476	637	1910		
2772	12	277			194			183				
2772	14	414			257			270				
2760	3	1315	1408	4223	883	1010	3029	996	1092	3277		
2760	5	538			369			351				
2760	7	284			285			267				
2760	10	1355	1483	4450	869	987	2960	960	1070	3209		
2760	12	527			389			363				
2760	14	351			265			278				
2761	3	1220	1449	4347	907	1065	3196	1063	1221	3662		
2761	5	374			278			337				
2761	7	496			353			373				
2761	10	1146	1481	4442	900	1053	3160	1069	1245	3735		
2761	12	373			264			296				
2761	14	609			348			409				
2782	3	176	697	2090	94	685	2054	97	494	1481		
2782	5	126			165			105				
2782	7	545			554			393				

2782	10	303	757	2270	287	724	2173	244	583	1750		
2782	12	113			142			91				
2782	14	540			505			409				
2783	3	1062	1260	3779	1081	1244	3732	838	955	2864		
2783	5	396			355			315				
2783	7	414			380			273				
2783	10	1164	1330	3990	1104	1261	3782	871	997	2991		
2783	12	403			382			324				
2783	14	392			371			292				
2793	3	1438	1497	4492	1396	1447	4341	1104	1171	3512		
2793	5	562			603			393				
2793	7	236			207			228				
2793	10	1450	1558	4675	1291	1375	4126	1041	1138	3413		
2793	12	570			611			392				
2793	14	328			253			269				
2794	3	1721	1964	5892	1695	1869	5606	1429	1597	4791		
2794	5	567			522			450				
2794	7	583			484			439				
2794	10	1648	1991	5972	1695	1904	5713	1427	1631	4892		
2794	12	552			528			444				
2794	14	702			537			492				
2767	3	509	647	1941	627	685	2055	263	351	1053		
2767	5	347			292			221				
2767	7	203			151			107				
2767	10	1028	1070	3210	889	923	2769	645	669	2008		
2767	12	369			323			238				
2767	14	172			142			103				
2768	3	510	626	1877	557	745	2234	239	353	1059		
2768	5	302			283			178				
2768	7	194			294			141				
2768	10	897	936	2808	758	798	2394	554	570	1711		
2768	12	320			319			190				
2768	14	155			139			80				
5091	3	755	899	2698	1432	1638	4913	615	729	2187		
5091	5	892			1636			726				
5091	7	32			19			20				

5091	10	345	917	2752	736	1678	5035	313	745	2235
5091	12	909			1674			741		
5091	14	69			63			42		
5092	3	775	1029	3086	1257	1582	4746	593	777	2330
5092	5	965			1479			726		
5092	7	127			183			97		
5092	10	249	967	2900	571	1496	4489	257	730	2190
5092	12	961			1489			723		
5092	14	64			81			59		
5132	3	708	906	2718	979	1184	3553	438	557	1671
5132	5	862			1104			530		
5132	7	93			128			57		
5132	10	254	871	2612	434	1120	3359	147	525	1576
5132	12	861			1115			521		
5132	14	79			60			39		
5133	3	726	884	2651	1113	1258	3773	467	557	1671
5133	5	875			1255			555		
5133	7	37			20			12		
5133	10	283	898	2693	574	1290	3870	185	571	1713
5133	12	891			1286			567		
5133	14	63			52			38		
UPPER WARMLOAD										
QUAD ELEMENT										
6061-T6 FTY=35000 PSI										
			X-LOAD			Y-LOAD			Z-LOAD	
ELEMENT ID.	STRESS ID.	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS
2740	3	645	683	2050	1248	1285	3855	1321	1342	4026
2740	5	117			234			213		
2740	7	148			198			155		
2740	10	562	597	1791	1143	1186	3559	1172	1214	3642
2740	12	103			210			243		
2740	14	131			204			201		

5692	3	115	238	715	47	129	388	26	94	283		
5692	5	148			78			66				
5692	7	106			65			44				
5692	10	114	233	698	45	128	383	25	111	334		
5692	12	136			65			76				
5692	14	107			72			55				
2741	3	361	421	1263	579	709	2126	565	651	1952		
2741	5	252			295			282				
2741	7	101			232			178				
2741	10	470	522	1566	635	777	2331	653	782	2346		
2741	12	174			284			243				
2741	14	134			264			264				
2729	3	349	378	1135	590	697	2091	513	552	1655		
2729	5	142			296			279				
2729	7	83			207			102				
2729	10	413	549	1648	613	687	2060	663	732	2195		
2729	12	157			312			360				
2729	14	231			166			160				
2730	3	191	271	812	173	448	1345	76	309	928		
2730	5	76			146			100				
2730	7	125			288			221				
2730	10	269	388	1164	231	428	1284	144	393	1179		
2730	12	85			128			115				
2730	14	190			243			263				
2744	3	194	578	1733	333	897	2691	283	714	2142		
2744	5	500			784			643				
2744	7	172			253			175				
2744	10	361	581	1743	702	970	2911	504	727	2181		
2744	12	529			872			681				
2744	14	107			163			101				
2745	3	204	620	1861	384	902	2705	313	724	2171		
2745	5	538			875			716				
2745	7	186			118			58				
2745	10	407	638	1915	810	1036	3108	584	800	2399		
2745	12	568			957			768				
2745	14	127			134			82				

2733	3	223	350	1051	300	518	1554	254	398	1193	
2733	5	128			216			179			
2733	7	168			257			178			
2733	10	260	317	950	542	596	1787	519	543	1629	
2733	12	143			243			195			
2733	14	99			138			91			
2734	3	197	362	1087	398	467	1401	345	365	1096	
2734	5	142			238			210			
2734	7	191			125			57			
2734	10	328	394	1182	704	739	2217	687	698	2093	
2734	12	151			262			235			
2734	14	127			128			71			
2707	3	912	938	2813	2383	2428	7284	1537	1591	4772	
2707	5	301			771			501			
2707	7	128			272			241			
2707	10	548	663	1990	2104	2165	6496	1396	1445	4334	
2707	12	210			749			510			
2707	14	229			294			213			
2708	3	365	438	1315	792	910	2730	540	636	1908	
2708	5	261			461			250			
2708	7	114			230			192			
2708	10	708	769	2307	953	1083	3248	677	764	2293	
2708	12	196			379			225			
2708	14	187			302			217			
2718	3	208	302	905	740	783	2348	466	517	1552	
2718	5	73			232			147			
2718	7	147			153			137			
2718	10	312	381	1142	1181	1253	3760	645	687	2060	
2718	12	71			328			207			
2718	14	145			258			141			
2719	3	86	244	731	111	487	1462	35	348	1044	
2719	5	56			90			62			
2719	7	172			386			299			
2719	10	169	307	921	177	590	1770	112	364	1091	
2719	12	63			106			87			
2719	14	183			447			264			

5710	3	69	122	367	32	153	459	12	55	165		
5710	5	69			68			26				
5710	7	53			101			35				
5710	10	69	178	533	32	132	396	12	74	221		
5710	12	131			59			47				
5710	14	71			86			40				
2711	3	301	573	1720	662	1463	4388	257	820	2461		
2711	5	485			1431			802				
2711	7	155			159			101				
2711	10	702	773	2320	823	1463	4390	567	862	2585		
2711	12	596			1433			852				
2711	14	112			139			54				
2712	3	335	647	1941	684	1531	4594	242	863	2588		
2712	5	326			1520			854				
2712	7	316			100			73				
2712	10	587	654	1962	873	1586	4758	593	914	2741		
2712	12	383			1562			901				
2712	14	135			130			63				
2722	3	196	294	882	209	500	1500	56	270	811		
2722	5	42			391			198				
2722	7	157			178			125				
2722	10	171	249	746	826	871	2614	356	374	1123		
2722	12	69			406			218				
2722	14	118			146			54				
2723	3	147	432	1297	309	499	1496	92	264	793		
2723	5	63			438			232				
2723	7	325			108			75				
2723	10	172	258	775	1054	1079	3236	444	459	1378		
2723	12	60			483			251				
2723	14	131			121			57				

BEAM SUPPORT
BEAM ELEMENT
6061-T6 FTY=35000 PSI

ELEMENT ID.	STRESS ID.	X-LOAD RMS COMP STRESS	X-LOAD RMS PRIN STRESS	X-LOAD RMS 3 SIG STRESS	Y-LOAD RMS COMP STRESS	Y-LOAD RMS PRIN STRESS	Y-LOAD RMS 3 SIG STRESS	Z-LOAD RMS COMP STRESS	Z-LOAD RMS PRIN STRESS	Z-LOAD RMS 3 SIG STRESS
3159	4	95		286	287		861	394		1183
3159	5	247		740	328		985	408		1224
3159	6	407		1222	443		1330	304		913
3159	7	189		566	246		738	417		1250
3159	104	94		281	175		524	440		1321
3159	105	256		767	282		846	1078		3234
3159	106	318		954	582		1747	206		617
3159	107	212		635	261		783	1121		3364
3160	4	30		89	82		245	39		118
3160	5	293		879	168		505	360		1079
3160	6	462		1385	777		2330	432		1296
3160	7	240		721	95		285	401		1203
3160	104	164		492	82		245	363		1090
3160	105	183		548	92		275	322		967
3160	106	210		630	496		1487	520		1560
3160	107	223		670	145		436	308		925
3161	4	161		483	303		908	116		347
3161	5	335		1004	340		1020	173		518
3161	6	902		2707	1330		3989	610		1831
3161	7	212		636	144		432	174		521
3161	104	111		332	287		862	473		1420
3161	105	54		162	61		183	68		203
3161	106	361		1084	267		800	186		557
3161	107	43		129	47		140	30		89
3156	4	63		188	63		189	50		151
3156	5	124		372	72		217	34		101
3156	6	76		229	74		221	66		198
3156	7	126		377	74		221	34		103

3156	104	114		343	131		393		54			161
3156	105	35		105	120		360		43			128
3156	106	117		352	82		245		132			395
3156	107	33		98	95		284		47			141
3157	4	49		146	92		276		90			271
3157	5	131		394	133		399		56			167
3157	6	59		176	135		405		228			685
3157	7	132		395	109		328		46			137
3157	104	102		306	207		620		131			393
3157	105	134		402	241		724		281			844
3157	106	141		422	375		1124		252			755
3157	107	127		380	187		561		310			931
3158	4	47		141	42		125		195			585
3158	5	92		276	131		392		78			235
3158	6	69		208	244		733		310			931
3158	7	94		281	116		348		101			302
3158	104	160		479	248		745		150			449
3158	105	129		387	245		734		267			801
3158	106	303		910	379		1138		176			528
3158	107	104		313	170		510		259			778
3155	4	59		177	51		153		24			72
3155	5	345		1036	91		273		138			413
3155	6	51		153	139		417		54			162
3155	7	343		1030	97		290		135			405
3155	104	233		699	111		333		61			182
3155	105	96		288	101		304		41			122
3155	106	219		658	51		154		82			245
3155	107	98		293	91		273		38			113
3154	4	324		971	89		268		87			260
3154	5	513		1538	138		413		167			502
3154	6	298		893	148		444		101			304
3154	7	516		1548	143		428		167			502
3154	104	151		452	73		218		102			307
3154	105	567		1700	161		482		249			747
3154	106	132		397	86		258		78			234
3154	107	569		1706	163		489		252			757

3162	4	38		113	57		171	26		77	
3162	5	96		288	160		479	168		505	
3162	6	86		258	39		116	94		281	
3162	7	105		315	164		492	161		482	
3162	104	153		460	248		743	183		550	
3162	105	96		287	75		224	62		185	
3162	106	191		572	353		1060	166		498	
3162	107	70		210	20		61	92		275	
3153	4	30		89	62		185	59		178	
3153	5	249		746	219		658	468		1403	
3153	6	204		613	104		312	275		824	
3153	7	247		742	217		651	442		1326	
3153	104	177		532	116		348	221		663	
3153	105	180		540	137		411	374		1122	
3153	106	179		538	203		609	208		624	
3153	107	179		538	141		423	377		1131	
LOWER REFLECTOR											
QUAD ELEMENT											
6061-T6 FTY=35000 PSI											
			X-LOAD			Y-LOAD			Z-LOAD		
ELEMENT ID.	STRESS ID.	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	
4790	3	411	476	1429	148	162	486	290	304	913	
4790	5	397			145			287			
4790	7	72			16			16			
4790	10	387	468	1405	141	158	475	279	297	892	
4790	12	400			141			280			
4790	14	75			17			18			
4686	3	370	417	1252	139	155	465	292	308	925	
4686	5	397			141			296			
4686	7	31			15			14			

4686	10	369	402	1206	135	150	449	281	299	896		
4686	12	371			136			287				
4686	14	32			14			14				
4382	3	93	325	974	74	170	510	45	142	426		
4382	5	238			115			104				
4382	7	141			73			61				
4382	10	124	491	1472	86	250	751	54	246	738		
4382	12	422			206			199				
4382	14	159			85			95				
4365	3	257	663	1990	109	273	818	131	296	888		
4365	5	509			244			272				
4365	7	250			69			63				
4365	10	94	660	1980	62	284	852	69	333	998		
4365	12	622			272			323				
4365	14	147			51			51				
4532	3	1053	2813	8439	422	1140	3421	462	1264	3791		
4532	5	2745			1120			1242				
4532	7	346			120			132				
4532	10	965	2689	8067	407	1100	3300	435	1212	3635		
4532	12	2676			1095			1207				
4532	14	146			63			57				
4533	3	926	2777	8331	378	1127	3380	435	1257	3772		
4533	5	2733			1100			1230				
4533	7	287			140			150				
4533	10	1031	2720	8159	400	1100	3300	464	1227	3680		
4533	12	2716			1098			1225				
4533	14	84			41			36				
4514	3	602	1887	5660	312	910	2729	309	926	2779		
4514	5	1874			905			922				
4514	7	129			51			51				
4514	10	635	1863	5588	334	932	2795	333	938	2814		
4514	12	1842			908			918				
4514	14	160			119			110				
4515	3	1911	1916	5749	939	945	2834	951	953	2860		
4515	5	820			353			370				
4515	7	74			58			38				

4515	10	1888	1898	5694	909	913	2738	925	928	2785
4515	12	663			328			323		
4515	14	112			49			46		
4398	3	145	352	1057	120	246	737	70	176	527
4398	5	255			191			121		
4398	7	142			83			76		
4398	10	193	460	1381	129	295	886	76	243	728
4398	12	256			258			171		
4398	14	234			79			109		
4381	3	295	968	2905	165	497	1491	122	372	1116
4381	5	904			491			358		
4381	7	209			45			60		
4381	10	369	953	2860	166	533	1598	132	383	1149
4381	12	905			519			370		
4381	14	168			70			57		

LOWER REFLECTOR
BAR ELEMENT
7075-T6 FTY=66000 PSI

			X-LOAD			Y-LOAD			Z-LOAD	
ELEMENT ID.	STRESS ID.	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS
4573	2	475	485	1455	227	233	699	169	175	526
4573	3	523	532	1597	448	454	1363	313	319	957
4573	4	2703	2713	8139	3001	3008	9023	2204	2210	6630
4573	5	2589	2599	7797	2787	2794	8382	2062	2068	6204
4573	6	10			7			6		
4573	12	4	14	41	6	12	36	6	12	36
4573	13	9	18	55	11	18	53	12	18	54
4573	14	62	71	214	70	77	231	74	80	241
4573	15	58	67	202	65	72	215	68	75	224

4574	2		621	631	1893		321	328	985		240	247	742
4574	3		801	811	2432		570	577	1732		398	405	1214
4574	4		2976	2985	8955		3192	3199	9598		2161	2168	6505
4574	5		2655	2665	7994		2916	2924	8771		1976	1983	5950
4574	6		10				8				7		
4574	12		9	19	56		8	16	47		5	12	37
4574	13		18	27	82		16	24	72		11	18	54
4574	14		112	121	364		106	113	340		72	79	236
4574	15		103	113	338		98	105	316		66	73	220
POWER CONTROL/MONITOR - BRACKET													
QUAD ELEMENT													
6061-T6 FTY=35000 PSI													
				X-LOAD				Y-LOAD				Z-LOAD	
ELEMENT ID.	STRESS ID.		RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS		RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS		RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS
6495	3		178	2586	7757		109	488	1464		91	498	1493
6495	5		2460				457				447		
6495	7		551				109				144		
6495	10		265	2584	7753		82	448	1343		78	425	1275
6495	12		2479				432				415		
6495	14		494				76				60		
6496	3		1438	3319	9956		152	460	1379		151	507	1520
6496	5		2695				413				439		
6496	7		1083				120				156		
6496	10		1390	3355	10065		156	481	1444		158	476	1427
6496	12		2715				436				429		
6496	14		1121				122				121		
10383	3		298	1221	3663		138	254	763		201	365	1095
10383	5		1101				227				260		
10383	7		333				56				131		
10383	10		213	1342	4025		130	289	868		251	475	1425
10383	12		1058				239				293		
10383	14		566				90				201		

10351	3	196	1011	3034	69	213	638	102	305	916		
10351	5	892			201			242				
10351	7	312			41			113				
10351	10	199	785	2355	48	240	719	58	368	1105		
10351	12	629			208			260				
10351	14	302			78			184				
6497	3	1152	1203	3608	129	145	435	126	137	411		
6497	5	496			55			45				
6497	7	190			38			31				
6497	10	1111	1154	3463	129	153	458	129	149	446		
6497	12	494			55			45				
6497	14	169			48			45				
6498	3	364	1058	3174	94	139	418	81	131	392		
6498	5	599			62			55				
6498	7	564			59			61				
6498	10	395	1096	3289	92	147	440	91	149	447		
6498	12	599			62			56				
6498	14	590			68			73				
10401	3	372	1030	3089	202	229	688	508	517	1550		
10401	5	852			123			216				
10401	7	342			54			50				
10401	10	904	1081	3244	138	180	541	416	433	1299		
10401	12	814			126			197				
10401	14	217			48			64				
10403	3	432	1511	4533	141	256	768	346	510	1529		
10403	5	1458			213			307				
10403	7	238			70			182				
10403	10	750	1622	4865	102	285	856	259	574	1721		
10403	12	1531			217			330				
10403	14	281			112			277				
10395	3	92	601	1803	21	110	331	24	198	593		
10395	5	594			105			174				
10395	7	60			23			64				
10395	10	130	457	1370	19	176	527	20	409	1226		
10395	12	410			174			403				
10395	14	124			17			49				

10394	3	175	623	1869	58	90	269	123	168	504
10394	5	403			57			71		
10394	7	314			32			66		
10394	10	139	556	1668	73	103	309	185	213	640
10394	12	509			64			70		
10394	14	140			34			64		
6492	3	322	2391	7173	77	408	1223	98	723	2170
6492	5	2338			394			650		
6492	7	330			68			214		
6492	10	125	2165	6494	73	390	1170	81	568	1705
6492	12	2145			383			552		
6492	14	198			45			90		
POWER CONTROL/MONITOR - PWB										
QUAD ELEMENT										
REINFORCED PLASTIC FTY=24000 PSI										
			X-LOAD			Y-LOAD			Z-LOAD	
ELEMENT ID.	STRESS ID.	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS
5861	10	41	1232	3696	70	517	1550	48	386	1158
5861	12	1223			506			379		
5861	14	106			70			47		
5861	3	92	649	1946	65	475	1424	47	348	1044
5861	5	644			471			345		
5861	7	49			40			30		
5875	10	140	532	1596	65	233	698	66	207	620
5875	12	374			170			152		
5875	14	249			102			87		
5875	3	107	377	1132	50	206	618	51	172	516
5875	5	343			162			138		
5875	7	96			83			64		
5874	10	51	933	2800	84	462	1386	76	351	1052
5874	12	914			448			333		
5874	14	131			72			69		

5874	3	59	651	1952	73	435	1306	70	324	971		
5874	5	642			431			315				
5874	7	71			37			46				
5987	10	629	1248	3744	201	461	1382	154	347	1040		
5987	12	1067			434			327				
5987	14	335			83			62				
5987	3	315	653	1958	140	410	1231	110	305	916		
5987	5	644			405			300				
5987	7	53			38			31				
5866	10	28	497	1492	17	298	895	13	225	675		
5866	12	489			294			221				
5866	14	63			37			31				
5866	3	30	655	1965	17	315	944	13	234	702		
5866	5	649			311			230				
5866	7	62			36			30				
5866	10	90	542	1626	33	172	516	25	133	399		
5862	12	523			161			125				
5862	14	91			39			28				
5862	3	73	190	569	25	138	415	20	109	326		
5862	5	142			124			98				
5862	7	74			40			30				
5862	10	49	214	642	45	76	228	34	58	174		
5860	12	66			28			23				
5860	14	157			39			29				
5860	3	147	249	746	50	83	249	40	60	181		
5860	5	164			50			37				
5860	7	93			33			22				
5986	10	567	692	2075	198	264	791	146	197	591		
5986	12	156			76			58				
5986	14	258			111			84				
5986	3	194	322	965	97	188	565	81	147	440		
5986	5	68			76			55				
5986	7	180			101			78				
5867	10	47	582	1747	27	345	1036	20	257	772		
5867	12	581			345			256				
5867	14	25			10			15				

5867	3	46	725	2176	27	363	1090	20	267	800
5867	5	724			363			266		
5867	7	27			11			14		
POWER CONTROL/MONITOR - STANDOFFS										
BAR ELEMENT										
CRES 1/A HARD FTY=44000 PSI										
			X-LOAD			Y-LOAD			Z-LOAD	
ELEMENT ID.	STRESS ID.	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS	RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS
6481	2	41	121	362	42	60	179	53	68	203
6481	3	41	121	362	42	60	179	53	68	203
6481	4	196	276	827	236	254	762	180	195	585
6481	5	196	276	827	236	254	762	180	195	585
6481	6	79			18			15		
6481	12	901	981	2942	754	771	2314	949	963	2890
6481	13	901	981	2942	754	771	2314	949	963	2890
6481	14	2380	2459	7378	956	974	2922	1187	1202	3605
6481	15	2380	2459	7378	956	974	2922	1187	1202	3605
6482	2	235	292	876	51	68	204	50	70	209
6482	3	235	292	876	51	68	204	50	70	209
6482	4	179	236	708	182	199	597	134	154	461
6482	5	179	236	708	182	199	597	134	154	461
6482	6	57			17			20		
6482	12	2898	2955	8866	721	737	2212	958	978	2933
6482	13	2898	2955	8866	721	737	2212	958	978	2933
6482	14	2217	2274	6823	982	999	2996	1457	1477	4430
6482	15	2217	2274	6823	982	999	2996	1457	1477	4430
6483	2	148	198	595	103	137	412	72	93	278
6483	3	148	198	595	103	137	412	72	93	278
6483	4	285	336	1007	271	304	913	173	193	578
6483	5	285	336	1007	271	304	913	173	193	578
6483	6	50			34			20		

6483	12	4152	4202	12606	723	757	2272	982	1002	3007
6483	13	4152	4202	12606	723	757	2272	982	1002	3007
6483	14	1893	1943	5829	1265	1299	3898	1569	1589	4768
6483	15	1893	1943	5829	1265	1299	3898	1569	1589	4768
6484	2	269	285	855	131	140	419	77	83	250
6484	3	269	285	855	131	140	419	77	83	250
6484	4	141	157	470	143	152	455	98	104	312
6484	5	141	157	470	143	152	455	98	104	312
6484	6	16			9			7		
6484	12	5004	5020	15059	950	959	2877	1152	1159	3476
6484	13	5004	5020	15059	950	959	2877	1152	1159	3476
6484	14	2244	2260	6780	1852	1860	5580	2359	2366	7097
6484	15	2244	2260	6780	1852	1860	5580	2359	2366	7097
6486	2	435	473	1418	259	274	823	192	205	614
6486	3	435	473	1418	259	274	823	192	205	614
6486	4	397	434	1302	174	189	567	151	164	491
6486	5	397	434	1302	174	189	567	151	164	491
6486	6	37			15			13		
6486	12	2539	2576	7729	870	886	2657	1070	1083	3248
6486	13	2539	2576	7729	870	886	2657	1070	1083	3248
6486	14	4722	4760	14279	2207	2222	6666	1758	1772	5315
6486	15	4722	4760	14279	2207	2222	6666	1758	1772	5315
6479	2	580	613	1840	284	298	895	213	224	672
6479	3	580	613	1840	284	298	895	213	224	672
6479	4	128	161	482	137	151	452	97	108	324
6479	5	128	161	482	137	151	452	97	108	324
6479	6	33			14			11		
6479	12	8745	8778	26333	1443	1457	4372	1043	1054	3162
6479	13	8745	8778	26333	1443	1457	4372	1043	1054	3162
6479	14	2182	2215	6644	1638	1652	4957	1301	1312	3935
6479	15	2182	2215	6644	1638	1652	4957	1301	1312	3935
6485	2	213	228	683	88	95	285	68	72	217
6485	3	213	228	683	88	95	285	68	72	217
6485	4	162	176	528	120	126	379	96	100	301
6485	5	162	176	528	120	126	379	96	100	301
6485	6	14			7			4		

6485	12	3429	3443	10330	913	919	2758	1272	1276	3829	
6485	13	3429	3443	10330	913	919	2758	1272	1276	3829	
6485	14	2711	2726	8177	2116	2123	6368	2244	2248	6745	
6485	15	2711	2726	8177	2116	2123	6368	2244	2248	6745	
6480	2	160	214	643	35	45	135	34	43	130	
6480	3	160	214	643	35	45	135	34	43	130	
6480	4	97	152	455	68	79	236	61	70	210	
6480	5	97	152	455	68	79	236	61	70	210	
6480	6	55			10			9			
6480	12	8921	8975	26926	1223	1234	3701	1066	1075	3226	
6480	13	8921	8975	26926	1223	1234	3701	1066	1075	3226	
6480	14	6730	6785	20354	1146	1157	3470	1315	1324	3972	
6480	15	6730	6785	20354	1146	1157	3470	1315	1324	3972	

RADIATOR PANEL
QUAD ELEMENT
6061-T6 FTY=35000 PSI

ELEMENT ID.	STRESS ID.	RMS COMP STRESS	X-LOAD RMS PRIN STRESS	X-LOAD RMS 3 SIG STRESS	Y-LOAD RMS COMP STRESS	Y-LOAD RMS PRIN STRESS	Y-LOAD RMS 3 SIG STRESS	Z-LOAD RMS COMP STRESS	Z-LOAD RMS PRIN STRESS	Z-LOAD RMS 3 SIG STRESS
10065	3	220	665	1994	96	315	944	64	534	1601
10065	5	318			179			318		
10065	7	393			172			319		
10065	10	200	605	1814	123	302	906	87	537	1612
10065	12	380			138			337		
10065	14	301			171			301		
10066	3	150	525	1575	76	245	734	34	399	1196
10066	5	150			66			146		
10066	7	375			174			304		
10066	10	149	498	1495	117	265	794	49	422	1265
10066	12	232			54			164		
10066	14	305			177			309		
10070	3	163	587	1761	75	317	950	59	449	1348
10070	5	265			213			246		
10070	7	370			158			281		
10070	10	179	534	1603	66	282	845	41	430	1291
10070	12	240			160			224		
10070	14	323			162			283		
10071	3	217	632	1896	83	319	957	101	519	1556
10071	5	212			158			266		
10071	7	417			195			325		
10071	10	240	562	1685	61	290	870	68	478	1433
10071	12	183			133			236		
10071	14	349			190			315		
10113	3	134	671	2013	98	453	1359	56	663	1988
10113	5	640			401			658		
10113	7	130			136			56		

10113	10	97	909	2728	92	471	1414	50	665	1994
10113	12	857			411			654		
10113	14	207			151			82		
10058	3	102	693	2079	86	431	1293	41	579	1736
10058	5	625			362			567		
10058	7	201			154			80		
10058	10	83	960	2881	86	455	1366	33	656	1968
10058	12	924			390			645		
10058	14	178			155			81		
10097	3	1400	1760	5280	153	194	582	325	420	1261
10097	5	311			83			138		
10097	7	722			68			164		
10097	10	701	954	2863	61	140	420	205	285	856
10097	12	465			96			180		
10097	14	352			59			92		
10092	3	2212	2271	6814	248	272	816	551	644	1932
10092	5	853			116			268		
10092	7	291			61			187		
10092	10	1731	1775	5325	159	220	661	405	564	1693
10092	12	767			79			235		
10092	14	212			93			229		
10108	3	81	619	1856	95	341	1024	40	699	2097
10108	5	567			294			665		
10108	7	167			108			150		
10108	10	96	649	1947	102	338	1014	37	549	1646
10108	12	562			272			512		
10108	14	219			124			137		
10062	3	261	389	1168	190	229	687	70	417	1250
10062	5	296			163			384		
10062	7	109			51			107		
10062	10	165	368	1104	153	260	780	68	506	1517
10062	12	251			174			368		
10062	14	154			96			245		
10067	3	178	565	1694	141	330	991	36	207	622
10067	5	323			202			101		
10067	7	306			156			135		

10067	10		105	449	1347		105	316	949		33	265	794
10067	12		273				202				141		
10067	14		246				155				170		
SIDEMOUNT													
QUAD ELEMENT													
6061-T6 FTY=35000 PSI													
				X-LOAD				Y-LOAD				Z-LOAD	
ELEMENT ID.	STRESS ID.		RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS		RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS		RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS
9376	10		63	773	2319		90	1180	3541		199	2828	8485
9376	12		765				1160				2766		
9376	14		75				147				406		
9376	3		108	591	1772		169	979	2938		445	2521	7563
9376	5		589				978				2521		
9376	7		26				33				19		
9377	10		274	1020	3061		193	1519	4556		491	3795	11385
9377	12		637				1006				2546		
9377	14		535				825				2031		
9377	3		74	611	1833		46	978	2933		222	2450	7350
9377	5		364				597				1433		
9377	7		364				595				1505		
9378	10		76	879	2636		144	1276	3827		314	3111	9334
9378	12		748				997				2418		
9378	14		324				562				1393		
9378	3		134	675	2026		262	1007	3021		688	2482	7446
9378	5		537				700				1783		
9378	7		273				478				1120		
9335	10		284	489	1468		428	713	2138		1031	1781	5342
9335	12		102				206				382		
9335	14		282				380				1024		
9335	3		147	341	1022		218	579	1737		553	1434	4302
9335	5		190				246				714		
9335	7		171				347				797		

9337	10	267	448	1344	432	781	2343	1071	1930	5791	
9337	12	257			414			1065			
9337	14	186			358			862			
9337	3	302	577	1732	441	838	2513	1088	2098	6293	
9337	5	268			443			1083			
9337	7	292			396			1012			
8523	10	986	1117	3350	1257	1519	4556	2264	2765	8296	
8523	12	771			1477			2526			
8523	14	212			104			347			
8523	3	413	841	2523	1567	1823	5469	3130	3494	10482	
8523	5	548			1300			2693			
8523	7	354			366			540			
8524	10	581	1019	3057	966	1495	4486	1927	2772	8315	
8524	12	909			1264			2361			
8524	14	220			350			589			
8524	3	625	871	2614	1437	1646	4939	2530	3202	9607	
8524	5	464			1608			3161			
8524	7	317			89			166			
10778	10	330	946	2839	1366	1641	4922	2731	2977	8930	
10778	12	588			1520			2674			
10778	14	470			182			273			
10778	3	1248	1418	4254	1585	1732	5196	2869	3209	9626	
10778	5	782			1336			2717			
10778	7	328			241			408			
10779	10	192	346	1038	431	510	1531	909	997	2991	
10779	12	121			213			290			
10779	14	186			154			249			
10779	3	427	444	1331	924	937	2811	1684	1711	5132	
10779	5	59			168			434			
10779	7	79			100			186			
7509	10	672	801	2404	318	431	1293	871	1019	3057	
7509	12	240			115			301			
7509	14	269			189			326			
7509	3	355	919	2757	200	473	1418	419	1132	3397	
7509	5	284			144			361			
7509	7	598			299			742			

7510	10	411	798	2393	226	481	1442	513	921	2764
7510	12	190			82			276		
7510	14	484			318			514		
7510	3	570	1343	4028	284	692	2076	689	1710	5129
7510	5	144			123			128		
7510	7	963			482			1271		
7511	10	1045	1049	3148	545	561	1684	1279	1282	3845
7511	12	864			475			1073		
7511	14	29			38			23		
7511	3	2277	2331	6992	1218	1255	3765	2829	2894	8682
7511	5	234			119			309		
7511	7	336			206			409		
7512	10	85	564	1693	40	343	1029	98	667	2000
7512	12	166			180			160		
7512	14	437			222			537		
7512	3	1332	1854	5562	716	963	2890	1669	2357	7071
7512	5	400			169			576		
7512	7	871			443			1107		
7877	10	437	1256	3767	293	951	2854	198	546	1639
7877	12	473			390			189		
7877	14	800			608			353		
7877	3	359	1506	4519	214	1107	3321	223	779	2337
7877	5	393			284			161		
7877	7	1130			857			586		
7977	10	413	446	1337	108	198	594	106	179	537
7977	12	189			182			133		
7977	14	92			38			58		
7977	3	78	1018	3054	63	751	2252	46	489	1468
7977	5	768			545			374		
7977	7	485			376			227		
7406	10	2130	2204	6612	1583	1629	4887	2439	2534	7601
7406	12	138			121			113		
7406	14	390			265			480		
7406	3	2135	2230	6691	1565	1637	4911	2308	2371	7113
7406	5	109			98			141		
7406	7	450			332			374		

7407	10	1958	2300	6901	1473	1722	5167	1911	2310	6930	
7407	12	713			451			676			
7407	14	737			563			808			
7407	3	1821	2216	6647	1322	1616	4847	2046	2564	7691	
7407	5	710			408			865			
7407	7	770			595			937			
7408	10	624	2828	8485	415	1925	5775	616	3166	9498	
7408	12	2684			1826			2984			
7408	14	565			388			681			
7408	3	508	2740	8219	310	1859	5576	325	2594	7783	
7408	5	2650			1800			2562			
7408	7	448			303			271			
7408	10	3553	3605	10816	2435	2488	7465	3913	3929	11788	
7409	12	3166			2202			3321			
7409	14	152			124			100			
7409	3	3589	3680	11041	2468	2522	7565	3683	4025	12074	
7409	5	3281			2284			3681			
7409	7	191			113			343			
7409	10	2165	3357	10070	1575	2464	7392	2363	3330	9991	
7410	12	3320			2450			3300			
7410	14	210			110			173			
7410	3	2235	3445	10336	1614	2505	7516	2508	4180	12541	
7410	5	3390			2483			4113			
7410	7	258			141			335			
7410	10	530	1261	3784	954	1098	3294	1116	1329	3987	
8996	12	504			714			992			
8996	14	744			235			268			
8996	3	237	1239	3716	677	985	2955	794	927	2781	
8996	5	553			336			204			
8996	7	829			447			311			
8996	10	312	1644	4931	826	1702	5107	938	1876	5629	
8997	12	713			1388			1657			
8997	14	1114			525			453			
8997	3	253	1566	4697	1066	1758	5274	1199	1864	5593	
8997	5	257			686			682			
8997	7	1310			861			887			

9253	10	66	268	803	178	409	1227	204	553	1659		
9253	12	125			319			389				
9253	14	170			145			239				
9253	3	166	466	1397	563	699	2098	704	877	2630		
9253	5	126			390			696				
9253	7	319			205			177				
9257	10	166	378	1135	505	528	1583	554	629	1887		
9257	12	259			69			208				
9257	14	159			103			178				
9257	3	249	469	1408	922	938	2814	1042	1067	3200		
9257	5	112			569			797				
9257	7	281			77			82				
7845	10	1107	1404	4212	565	839	2517	1057	1166	3499		
7845	12	178			268			296				
7845	14	604			396			309				
7845	3	510	556	1667	567	592	1777	338	365	1096		
7845	5	128			131			248				
7845	7	140			108			56				
7846	10	428	1468	4403	561	1339	4018	497	1974	5922		
7846	12	989			515			1775				
7846	14	705			801			542				
7846	3	693	1267	3800	469	967	2900	320	493	1478		
7846	5	133			112			248				
7846	7	807			652			205				
7653	10	714	754	2261	634	666	1997	996	1052	3156		
7653	12	619			559			856				
7653	14	73			58			105				
7653	3	2027	2094	6281	1819	1878	5635	2806	2899	8696		
7653	5	92			85			114				
7653	7	365			326			506				
7654	10	121	514	1543	100	458	1373	182	717	2150		
7654	12	134			117			179				
7654	14	387			349			536				
7654	3	1313	1775	5324	1181	1593	4779	1811	2448	7344		
7654	5	194			173			241				
7654	7	854			765			1186				

7655	10	320	1356	4067	266	1217	3650	427	1848	5544	
7655	12	912			825			1242			
7655	14	678			610			928			
7655	3	806	1425	4274	716	1263	3788	1133	2013	6038	
7655	5	451			397			651			
7655	7	776			688			1094			
7655	10	149	1053	3159	138	924	2772	212	1479	4436	
7788	12	1044			915			1466			
7788	14	90			86			128			
7788	3	167	1281	3843	140	1149	3448	236	1762	5287	
7788	5	1116			1010			1529			
7788	7	429			375			597			
7788	10	53	979	2937	18	863	2589	55	1346	4037	
7789	12	189			173			253			
7789	14	856			764			1188			
7789	3	570	2209	6627	493	1972	5915	784	3066	9197	
7789	5	1472			1313			2052			
7789	7	1099			986			1521			
7789	10	166	573	1718	152	518	1555	216	794	2381	
7790	12	42			49			71			
7790	14	464			415			646			
7790	3	1358	1761	5284	1207	1567	4701	1896	2449	7346	
7790	5	228			173			312			
7790	7	786			708			1087			
9694	10	249	611	1833	544	969	2908	252	416	1249	
9694	12	391			432			217			
9694	14	282			478			181			
9694	3	564	699	2098	748	1056	3168	332	512	1537	
9694	5	124			395			305			
9694	7	279			451			193			
9695	10	178	365	1095	325	718	2153	129	382	1146	
9695	12	350			634			190			
9695	14	52			182			221			
9695	3	150	798	2393	229	1118	3353	114	580	1741	
9695	5	726			1060			519			
9695	7	216			226			169			

7785	10		149	1055	3166		125	938	2815		198	1462	4385
7785	12		308				250				425		
7785	14		823				748				1144		
7785	3		148	613	1839		127	542	1627		195	841	2524
7785	5		227				225				315		
7785	7		424				363				584		
7513	10		165	1538	4613		135	877	2631		146	1814	5441
7513	12		1133				634				1343		
7513	14		746				425				886		
7513	3		477	1182	3547		265	606	1818		641	1559	4676
7513	5		542				248				745		
7513	7		672				349				865		
SIDEMOUNT													
BAR ELEMENT													
6061-T6 FTY=35000 PSI													
				X-LOAD				Y-LOAD				Z-LOAD	
ELEMENT ID.	STRESS ID.		RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS		RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS		RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS
11487	2		96	224	672		81	423	1268		98	738	2213
11487	3		443	571	1712		306	648	1943		487	1128	3383
11487	4		443	571	1712		306	648	1943		487	1128	3383
11487	5		96	224	672		81	423	1268		98	738	2213
11487	6		128				342				640		
11487	12		261	389	1166		144	486	1457		189	829	2488
11487	13		167	295	884		125	467	1402		225	865	2594
11487	14		167	295	884		125	467	1402		225	865	2594
11487	15		261	389	1166		144	486	1457		189	829	2488

UPPER REFLECTOR
QUAD ELEMENT
6061-T6 FTY=35000 PSI

ELEMENT ID.	STRESS ID.	X-LOAD RMS COMP STRESS	X-LOAD RMS PRIN STRESS	X-LOAD RMS 3 SIG STRESS	Y-LOAD RMS COMP STRESS	Y-LOAD RMS PRIN STRESS	Y-LOAD RMS 3 SIG STRESS	Z-LOAD RMS COMP STRESS	Z-LOAD RMS PRIN STRESS	Z-LOAD RMS 3 SIG STRESS
4742	10	533	569	1708	421	432	1296	205	215	646
4742	12	538			424			207		
4742	14	34			9			9		
4742	3	580	589	1767	439	443	1329	215	221	662
4742	5	518			432			210		
4742	7	25			7			8		
4654	10	544	603	1810	439	470	1411	205	224	671
4654	12	570			442			208		
4654	14	45			29			17		
4654	3	539	630	1891	446	477	1430	209	226	679
4654	5	619			459			216		
4654	7	32			23			13		
4121	10	594	1789	5366	238	642	1925	278	801	2404
4121	12	1767			624			788		
4121	14	160			85			83		
4121	3	569	1812	5435	229	635	1906	260	802	2406
4121	5	1791			622			796		
4121	7	159			72			55		
4122	10	1829	1838	5515	627	632	1896	803	807	2420
4122	12	674			230			280		
4122	14	102			46			41		
4122	3	1856	1864	5592	645	651	1952	820	823	2469
4122	5	857			287			339		
4122	7	92			46			38		
3988	10	438	1235	3705	157	507	1522	119	335	1005
3988	12	1204			499			324		
3988	14	157			55			49		

3988	3		417	1251	3752		184	492	1476		110	333	998
3988	5		1192				481				317		
3988	7		222				57				59		
4005	10		245	509	1527		106	223	669		67	196	588
4005	12		347				187				130		
4005	14		207				65				92		
4005	3		158	451	1352		64	201	603		60	134	403
4005	5		338				153				104		
4005	7		182				81				47		
3865	10		462	815	2444		218	322	965		128	331	992
3865	12		669				223				304		
3865	14		226				101				73		
3865	3		326	628	1883		152	220	661		117	283	850
3865	5		610				204				279		
3865	7		72				34				27		
3868	10		401	615	1846		174	260	781		135	288	864
3868	12		610				254				286		
3868	14		33				24				19		
3868	3		532	684	2051		232	286	859		204	312	936
3868	5		669				272				310		
3868	7		48				28				15		
3989	10		100	358	1073		62	251	753		63	265	795
3989	12		310				205				219		
3989	14		111				93				97		
3989	3		75	258	773		35	168	503		42	156	467
3989	5		176				107				114		
3989	7		122				90				69		
3972	10		81	506	1518		66	316	947		64	334	1003
3972	12		447				291				323		
3972	14		158				78				55		
3972	3		189	523	1568		115	311	933		133	298	893
3972	5		369				255				278		
3972	7		226				104				57		
4139	10		894	2319	6957		534	1374	4121		458	1254	3762
4139	12		2309				1372				1250		
4139	14		120				40				55		

4139	3		978	2406	7219		559	1427	4282		478	1304	3912
4139	5		2352				1401				1283		
4139	7		280				150				131		
4140	10		825	2286	6857		488	1357	4071		467	1261	3783
4140	12		2278				1354				1259		
4140	14		108				53				37		
4140	3		730	2334	7001		443	1394	4183		442	1294	3881
4140	5		2298				1364				1264		
4140	7		238				168				159		
3821	10		895	906	2718		546	548	1645		520	521	1564
3821	12		605				352				287		
3821	14		57				21				19		
3821	3		820	827	2480		498	501	1503		494	495	1485
3821	5		465				258				192		
3821	7		50				25				18		
3822	10		810	817	2451		463	464	1393		426	429	1286
3822	12		310				117				133		
3822	14		60				22				26		
3822	3		878	932	2797		508	524	1571		463	477	1430
3822	5		356				148				114		
3822	7		177				76				71		
* ELEMENTS 3865, 3868, 3821, 3822 2024-T4 FTY=40000 PSI													
UPPER REFLECTOR													
BAR ELEMENT													
7075-T6 FTY=66000 PSI													
				X-LOAD				Y-LOAD				Z-LOAD	
ELEMENT ID.	STRESS ID.		RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS		RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS		RMS COMP STRESS	RMS PRIN STRESS	RMS 3 SIG STRESS
4180	2		349	360	1081		162	171	512		138	145	434
4180	3		357	369	1106		316	325	975		239	245	736
4180	4		1724	1736	5208		2149	2158	6474		1470	1477	4430
4180	5		1673	1685	5055		2000	2009	6026		1362	1368	4104
4180	6		12				9				6		

4180	12	8	19	58	7	16	48	4	10	31
4180	13	15	27	81	15	23	70	7	14	42
4180	14	101	113	338	92	101	302	47	54	162
4180	15	93	105	315	85	93	280	44	50	151
4181	2	483	494	1481	279	287	860	197	203	608
4181	3	590	601	1803	456	464	1391	316	322	966
4181	4	1846	1857	5571	2352	2359	7078	1642	1648	4945
4181	5	1620	1631	4893	2136	2144	6431	1496	1502	4505
4181	6	11			7			6		
4181	12	7	18	55	7	14	43	5	10	31
4181	13	14	25	75	14	22	65	9	15	46
4181	14	88	99	297	91	98	294	62	67	202
4181	15	81	92	276	84	91	273	57	63	188

Appendix D

METOP RANDOM VIBRATION ACCELERATIONS & DISPLACEMENTS

(7 PERCENT CRITICAL DAMPING Q=7)

METOP RANDOM VIBRATION ACCELERATIONS - TRANSMISSIBILITIES OF SELECTED ELEMENTS - X-LOAD

COMPONENT	GRID	LOAD DIR	X-RESPONSE			Y-RESPONSE			Z-RESPONSE		
			RMS	GRMS	Q	RMS	GRMS	Q	RMS	GRMS	Q
LARGE MASS	11911	X	3745	9.70	1.00	0	0.00	0.00	0	0.00	0.00
LOWER BASEPLATE	1001	X	3445	8.92	0.92	2721	7.05	0.73	1047	2.71	0.28
	1172	X	3066	7.94	0.82	2867	7.43	0.77	3961	10.26	1.06
	1019	X	3613	9.36	0.96	2902	7.52	0.77	1473	3.81	0.39
	1205	X	3027	7.84	0.81	3335	8.64	0.89	1928	4.99	0.51
	1124	X	3119	8.08	0.83	1504	3.89	0.40	3337	8.64	0.89
LOWER MOTOR MOUNT	1001	X	3445	8.92	0.92	2721	7.05	0.73	1047	2.71	0.28
	1172	X	3066	7.94	0.82	2867	7.43	0.77	3961	10.26	1.06
	2663	X	3508	9.09	0.94	2534	6.56	0.68	3954	10.24	1.06
	2875	X	3673	9.51	0.98	2183	5.65	0.58	1040	2.69	0.28
	2855	X	9122	23.63	2.44	3061	7.93	0.82	3332	8.63	0.89
	2861	X	5414	14.02	1.45	3002	7.78	0.80	2028	5.25	0.54
	2888	X	2573	6.67	0.69	2909	7.53	0.78	6608	17.11	1.76
	2892	X	2443	6.33	0.65	1813	4.70	0.48	4634	12.00	1.24
	2896	X	2577	6.68	0.69	2540	6.58	0.68	5652	14.64	1.51
	2884	X	2615	6.77	0.70	3395	8.79	0.91	6660	17.25	1.78
UPPER MOTOR MOUNT	1578	X	3236	8.38	0.86	1681	4.35	0.45	776	2.01	0.21
	1569	X	3137	8.12	0.84	1685	4.36	0.45	2094	5.42	0.56
	2710	X	8798	22.79	2.35	2154	5.58	0.58	2463	6.38	0.66
	2779	X	10296	26.67	2.75	2348	6.08	0.63	2169	5.62	0.58
	2783	X	3549	9.19	0.95	1971	5.10	0.53	834	2.16	0.22
	2764	X	3411	8.83	0.91	1968	5.10	0.53	1360	3.52	0.36
	2696	X	1956	5.07	0.52	2274	5.89	0.61	8225	21.30	2.20
	2700	X	1983	5.14	0.53	1493	3.87	0.40	5105	13.22	1.36
	2704	X	1910	4.95	0.51	1837	4.76	0.49	5464	14.15	1.46
	2692	X	2020	5.23	0.54	2386	6.18	0.64	6902	17.88	1.84

COMPONENT	GRID	LOAD DIR	X-RESPONSE RMS	X-RESPONSE GRMS	X-RESPONSE Q	Y-RESPONSE RMS	Y-RESPONSE GRMS	Y-RESPONSE Q	Z-RESPONSE RMS	Z-RESPONSE GRMS	Z-RESPONSE Q
LOWER FRONT PANEL	1455	X	3224	8.35	0.86	2335	6.05	0.62	1164	3.01	0.31
	1608	X	3150	8.16	0.84	2079	5.38	0.56	860	2.23	0.23
	1191	X	3030	7.85	0.81	2042	5.29	0.55	1330	3.44	0.36
	1005	X	3451	8.94	0.92	1774	4.60	0.47	765	1.98	0.20
	1979	X	901	2.33	0.24	2246	5.82	0.60	11535	29.88	3.08
	1970	X	2416	6.26	0.65	1073	2.78	0.29	4395	11.38	1.17
	1973	X	856	2.22	0.23	2204	5.71	0.59	6938	17.97	1.85
	1976	X	2060	5.34	0.55	733	1.90	0.20	4279	11.08	1.14
	1885	X	6847	17.73	1.83	2140	5.54	0.57	792	2.05	0.21
	1961	X	3126	8.10	0.83	2230	5.78	0.60	1300	3.37	0.35
	1963	X	3562	9.23	0.95	2505	6.49	0.67	1284	3.33	0.34
LOWER AFT PANEL	1315	X	3268	8.46	0.87	3554	9.21	0.95	2237	5.79	0.60
	1215	X	3190	8.26	0.85	3434	8.89	0.92	1489	3.86	0.40
	1019	X	3613	9.36	0.96	2902	7.52	0.77	1473	3.81	0.39
	1205	X	3027	7.84	0.81	3335	8.64	0.89	1928	4.99	0.51
	1260	X	4071	10.54	1.09	3414	8.84	0.91	1825	4.73	0.49
UPPER BASEPLATE	1455	X	3224	8.35	0.86	2335	6.05	0.62	1164	3.01	0.31
	1608	X	3150	8.16	0.84	2079	5.38	0.56	860	2.23	0.23
	1468	X	3190	8.26	0.85	3445	8.92	0.92	1559	4.04	0.42
	1458	X	3268	8.46	0.87	3745	9.70	1.00	2431	6.30	0.65
UPPER FRONT PANEL	1375	X	3230	8.37	0.86	907	2.35	0.24	1215	3.15	0.32
	1528	X	3305	8.56	0.88	893	2.31	0.24	438	1.13	0.12
	1993	X	5267	13.64	1.41	2312	5.99	0.62	1439	3.73	0.38
	2124	X	3347	8.67	0.89	2390	6.19	0.64	419	1.09	0.11
	2047	X	912	2.36	0.24	1819	4.71	0.49	4972	12.88	1.33
	2037	X	2342	6.07	0.63	1060	2.75	0.28	5243	13.58	1.40
	2050	X	956	2.48	0.26	2253	5.84	0.60	5852	15.16	1.56
	2060	X	2018	5.23	0.54	779	2.02	0.21	4068	10.54	1.09
	2078	X	10056	26.05	2.69	1045	2.71	0.28	610	1.58	0.16

COMPONENT	GRID	LOAD DIR	X-RESPONSE RMS	X-RESPONSE GRMS	X-RESPONSE Q	Y-RESPONSE RMS	Y-RESPONSE GRMS	Y-RESPONSE Q	Z-RESPONSE RMS	Z-RESPONSE GRMS	Z-RESPONSE Q
UPPER AFT PANEL	1468	X	3190	8.26	0.85	3445	8.92	0.92	1559	4.04	0.42
	1458	X	3268	8.46	0.87	3745	9.70	1.00	2431	6.30	0.65
	2210	X	5266	13.64	1.41	2842	7.36	0.76	2702	7.00	0.72
	2240	X	3275	8.48	0.87	2881	7.46	0.77	1402	3.63	0.37
	2218	X	3262	8.45	0.87	3752	9.72	1.00	2212	5.73	0.59
	2223	X	3813	9.88	1.02	3652	9.46	0.98	1860	4.82	0.50
	2219	X	6823	17.67	1.82	3600	9.32	0.96	2251	5.83	0.60
	2224	X	7581	19.64	2.02	3535	9.16	0.94	1870	4.84	0.50
LOWER SHELF	1826	X	4158	10.77	1.11	2295	5.94	0.61	1518	3.93	0.41
	1828	X	4187	10.84	1.12	1909	4.94	0.51	1879	4.87	0.50
	1777	X	3905	10.11	1.04	2277	5.90	0.61	2569	6.65	0.69
	1779	X	3902	10.11	1.04	1907	4.94	0.51	2171	5.62	0.58
	1744	X	3665	9.49	0.98	2825	7.32	0.75	2212	5.73	0.59
	1767	X	3701	9.59	0.99	1358	3.52	0.36	2016	5.22	0.54
	1671	X	3360	8.70	0.90	1440	3.73	0.38	1614	4.18	0.43
	1641	X	3244	8.40	0.87	2085	5.40	0.56	1440	3.73	0.38
	1703	X	3487	9.03	0.93	1372	3.55	0.37	2193	5.68	0.59
	1699	X	3434	8.90	0.92	1620	4.20	0.43	1698	4.40	0.45
	1647	X	3390	8.78	0.91	2415	6.25	0.64	2665	6.90	0.71
	1631	X	3357	8.70	0.90	1884	4.88	0.50	1956	5.07	0.52
	1842	X	4208	10.90	1.12	3062	7.93	0.82	1321	3.42	0.35
	1776	X	3867	10.02	1.03	2496	6.47	0.67	2688	6.96	0.72
	1800	X	3921	10.16	1.05	1521	3.94	0.41	1784	4.62	0.48
	1827	X	4244	10.99	1.13	2143	5.55	0.57	1776	4.60	0.47
	1732	X	3603	9.33	0.96	1853	4.80	0.49	2742	7.10	0.73
	1718	X	3503	9.07	0.94	1460	3.78	0.39	1710	4.43	0.46
	1783	X	3790	9.82	1.01	1375	3.56	0.37	1650	4.27	0.44
	1853	X	4162	10.78	1.11	1362	3.53	0.36	699	1.81	0.19
	1858	X	4191	10.86	1.12	1996	5.17	0.53	932	2.41	0.25
	1805	X	3831	9.92	1.02	1571	4.07	0.42	2651	6.87	0.71
	1625	X	3404	8.82	0.91	3386	8.77	0.90	1827	4.73	0.49
	1694	X	3472	8.99	0.93	2728	7.07	0.73	2660	6.89	0.71

COMPONENT	GRID	LOAD DIR	X-RESPONSE			Y-RESPONSE			Z-RESPONSE		
			RMS	GRMS	Q	RMS	GRMS	Q	RMS	GRMS	Q
UPPER SHELF	2572	X	3632	9.41	0.97	2459	6.37	0.66	812	2.10	0.22
	2577	X	3621	9.38	0.97	1911	4.95	0.51	422	1.09	0.11
	2547	X	3366	8.72	0.90	2649	6.86	0.71	2732	7.08	0.73
	2551	X	3353	8.69	0.90	2067	5.35	0.55	1485	3.85	0.40
	2520	X	3250	8.42	0.87	2462	6.38	0.66	2858	7.40	0.76
	2525	X	3243	8.40	0.87	1917	4.96	0.51	1130	2.93	0.30
	2469	X	3167	8.20	0.85	1920	4.97	0.51	2178	5.64	0.58
	2464	X	3152	8.16	0.84	2470	6.40	0.66	3026	7.84	0.81
	2489	X	3165	8.20	0.85	2924	7.57	0.78	4113	10.65	1.10
	2420	X	3207	8.31	0.86	3288	8.52	0.88	4295	11.12	1.15
	2426	X	3209	8.31	0.86	2624	6.80	0.70	2790	7.23	0.75
	2355	X	3521	9.12	0.94	3169	8.21	0.85	2874	7.44	0.77
	2360	X	3483	9.02	0.93	2628	6.81	0.70	2208	5.72	0.59
	2300	X	3895	10.09	1.04	3017	7.81	0.81	2258	5.85	0.60
	2323	X	3834	9.93	1.02	2180	5.65	0.58	2410	6.24	0.64
	2318	X	3828	9.91	1.02	2481	6.43	0.66	2170	5.62	0.58
	2275	X	4122	10.68	1.10	2938	7.61	0.78	2114	5.47	0.56
	2241	X	4505	11.67	1.20	2484	6.43	0.66	1980	5.13	0.53
	2442	X	3173	8.22	0.85	2335	6.05	0.62	2836	7.35	0.76
LOWER RIGHT FRONT SUP	1176	X	3029	7.85	0.81	2032	5.26	0.54	1275	3.30	0.34
	1963	X	3562	9.23	0.95	2505	6.49	0.67	1284	3.33	0.34
	1172	X	3066	7.94	0.82	2867	7.43	0.77	3961	10.26	1.06
	2663	X	3508	9.09	0.94	2534	6.56	0.68	3954	10.24	1.06
	2661	X	3154	8.17	0.84	10922	28.29	2.92	2354	6.10	0.63
LOWER RIGHT PANEL	1379	X	3181	8.24	0.85	1802	4.67	0.48	1165	3.02	0.31
	1191	X	3030	7.85	0.81	2042	5.29	0.55	1330	3.44	0.36
	1205	X	3027	7.84	0.81	3335	8.64	0.89	1928	4.99	0.51
	1315	X	3268	8.46	0.87	3554	9.21	0.95	2237	5.79	0.60
	1455	X	3224	8.35	0.86	2335	6.05	0.62	1164	3.01	0.31

COMPONENT	GRID	LOAD	X-RESPONSE			Y-RESPONSE			Z-RESPONSE		
		DIR	RMS	GRMS	Q	RMS	GRMS	Q	RMS	GRMS	Q
UPPER RIGHT FRONT SUP	1998	X	4112	10.65	1.10	1806	4.68	0.48	1207	3.13	0.32
	1569	X	3137	8.12	0.84	1685	4.36	0.45	2094	5.42	0.56
	2691	X	4165	10.79	1.11	1848	4.79	0.49	2336	6.05	0.62
	1519	X	3138	8.13	0.84	913	2.37	0.24	1205	3.12	0.32
	2679	X	3549	9.19	0.95	4476	11.59	1.20	1315	3.41	0.35
UPPER RIGHT PANEL	1457	X	3268	8.46	0.87	3663	9.49	0.98	2347	6.08	0.63
	2154	X	3917	10.15	1.05	3915	10.14	1.05	1970	5.10	0.53
	2130	X	3890	10.07	1.04	5915	15.32	1.58	1456	3.77	0.39
	1345	X	3256	8.43	0.87	2221	5.75	0.59	1803	4.67	0.48
	1365	X	3233	8.37	0.86	998	2.59	0.27	1316	3.41	0.35
	2210	X	5266	13.64	1.41	2842	7.36	0.76	2702	7.00	0.72
	1993	X	5267	13.64	1.41	2312	5.99	0.62	1439	3.73	0.38
	1375	X	3230	8.37	0.86	907	2.35	0.24	1215	3.15	0.32
TOP PANEL	11025	X	4670	12.10	1.25	2472	6.40	0.66	4326	11.20	1.16
	11038	X	4714	12.21	1.26	2976	7.71	0.79	1374	3.56	0.37
	11175	X	3314	8.58	0.88	3297	8.54	0.88	1333	3.45	0.36
	11170	X	14771	38.26	3.94	3270	8.47	0.87	1714	4.44	0.46
	2627	X	3149	8.16	0.84	1336	3.46	0.36	4657	12.06	1.24
	11128	X	10701	27.72	2.86	3338	8.65	0.89	1457	3.77	0.39
	2210	X	5266	13.64	1.41	2842	7.36	0.76	2702	7.00	0.72
	1993	X	5267	13.64	1.41	2312	5.99	0.62	1439	3.73	0.38
LEFT PANEL	3243	X	3064	7.94	0.82	7152	18.52	1.91	844	2.19	0.23
	3251	X	3120	8.08	0.83	4066	10.53	1.09	545	1.41	0.15
	1001	X	3445	8.92	0.92	2721	7.05	0.73	1047	2.71	0.28
	1019	X	3613	9.36	0.96	2902	7.52	0.77	1473	3.81	0.39
	1608	X	3150	8.16	0.84	2079	5.38	0.56	860	2.23	0.23
	2124	X	3347	8.67	0.89	2390	6.19	0.64	419	1.09	0.11
	2240	X	3275	8.48	0.87	2881	7.46	0.77	1402	3.63	0.37

COMPONENT	GRID	LOAD DIR	X-RESPONSE			Y-RESPONSE			Z-RESPONSE		
			RMS	GRMS	Q	RMS	GRMS	Q	RMS	GRMS	Q
LOWER LEFT SHIELD	1878	X	3632	9.41	0.97	2000	5.18	0.53	788	2.04	0.21
	2829	X	3560	9.22	0.95	2091	5.42	0.56	1029	2.67	0.27
	1840	X	3972	10.29	1.06	2083	5.39	0.56	775	2.01	0.21
	2831	X	3563	9.23	0.95	2337	6.05	0.62	1641	4.25	0.44
	2913	X	3611	9.35	0.96	1607	4.16	0.43	3658	9.47	0.98
LOWER RIGHT SHIELD	1938	X	3527	9.13	0.94	2366	6.13	0.63	1093	2.83	0.29
	2835	X	3657	9.47	0.98	2537	6.57	0.68	3314	8.58	0.89
	2901	X	3517	9.11	0.94	2470	6.40	0.66	2601	6.74	0.69
	1963	X	3490	9.04	0.93	2505	6.49	0.67	1284	3.33	0.34
	2663	X	3193	8.27	0.85	2534	6.56	0.68	3954	10.24	1.06
UPPER LEFT SHIELD	2119	X	3490	9.04	0.93	1860	4.82	0.50	415	1.08	0.11
	2083	X	3193	8.27	0.85	1963	5.09	0.52	580	1.50	0.15
	2763	X	3331	8.63	0.89	1863	4.83	0.50	831	2.15	0.22
	2760	X	3269	8.47	0.87	1926	4.99	0.51	1375	3.56	0.37
	2933	X	3250	8.42	0.87	1541	3.99	0.41	3221	8.34	0.86
UPPER RIGHT SHIELD	2010	X	4045	10.48	1.08	1801	4.67	0.48	1167	3.02	0.31
	2918	X	4248	11.00	1.13	1852	4.80	0.49	2281	5.91	0.61
	1998	X	4112	10.65	1.10	1806	4.68	0.48	1207	3.13	0.32
	2691	X	4165	10.79	1.11	1848	4.79	0.49	2336	6.05	0.62
LOWER CARD CAGE	3673	X	4723	12.23	1.26	2837	7.35	0.76	2380	6.16	0.64
	3662	X	4280	11.09	1.14	5815	15.06	1.55	1848	4.79	0.49
	3671	X	5688	14.73	1.52	2815	7.29	0.75	3164	8.20	0.85
	3660	X	5809	15.04	1.55	5667	14.68	1.51	6009	15.56	1.60
	3655	X	3031	7.85	0.81	3060	7.93	0.82	1701	4.40	0.45
	3650	X	3518	9.11	0.94	2949	7.64	0.79	2525	6.54	0.67
	1179	X	3002	7.78	0.80	1739	4.51	0.46	1893	4.90	0.51
	1084	X	3226	8.35	0.86	1591	4.12	0.42	1828	4.73	0.49
	3735	X	5024	13.01	1.34	6122	15.86	1.63	1825	4.73	0.49
	3730	X	4731	12.25	1.26	3089	8.00	0.82	1600	4.15	0.43
	3764	X	4349	11.26	1.16	5737	14.86	1.53	1737	4.50	0.46

COMPONENT	GRID	LOAD DIR	X-RESPONSE RMS	X-RESPONSE GRMS	X-RESPONSE Q	Y-RESPONSE RMS	Y-RESPONSE GRMS	Y-RESPONSE Q	Z-RESPONSE RMS	Z-RESPONSE GRMS	Z-RESPONSE Q
LOWER CARD CAGE	3711	X	4052	10.49	1.08	6722	17.41	1.80	2748	7.12	0.73
	3708	X	3768	9.76	1.01	4726	12.24	1.26	2023	5.24	0.54
	3753	X	3742	9.69	1.00	2046	5.30	0.55	1997	5.17	0.53
LOWER CARD CAGE CARDS	4845	X	8029	20.80	2.14	3397	8.80	0.91	3459	8.96	0.92
	4822	X	4425	11.46	1.18	3720	9.64	0.99	1787	4.63	0.48
	4826	X	5516	14.29	1.47	4820	12.49	1.29	10030	25.98	2.68
	4813	X	2979	7.72	0.80	5925	15.35	1.58	10147	26.28	2.71
	4817	X	3700	9.58	0.99	2098	5.43	0.56	1727	4.47	0.46
	4777	X	3676	9.52	0.98	2098	5.43	0.56	1846	4.78	0.49
	4725	X	8162	21.14	2.18	2877	7.45	0.77	1501	3.89	0.40
	4765	X	8198	21.23	2.19	3148	8.15	0.84	1487	3.85	0.40
UPPER CARD CAGE	1469	X	3223	8.35	0.86	2856	7.40	0.76	1699	4.40	0.45
	1509	X	3200	8.29	0.85	1001	2.59	0.27	1443	3.74	0.39
	1514	X	3160	8.18	0.84	989	2.56	0.26	4662	12.07	1.25
	1474	X	3286	8.51	0.88	2867	7.43	0.77	4577	11.85	1.22
	3372	X	4030	10.44	1.08	4279	11.08	1.14	1818	4.71	0.49
	3381	X	4887	12.66	1.31	4284	11.10	1.14	4581	11.86	1.22
	3404	X	4982	12.90	1.33	3699	9.58	0.99	4741	12.28	1.27
	3395	X	4159	10.77	1.11	3652	9.46	0.98	1709	4.43	0.46
	2249	X	4413	11.43	1.18	2742	7.10	0.73	2051	5.31	0.55
	2448	X	3160	8.18	0.84	2727	7.06	0.73	3272	8.47	0.87
	3369	X	4520	11.71	1.21	3851	9.98	1.03	3020	7.82	0.81
UPPER CARD CAGE CARDS	11836	X	4133	10.71	1.10	3679	9.53	0.98	4053	10.50	1.08
	11251	X	4844	12.55	1.29	3402	8.81	0.91	4865	12.60	1.30
	11829	X	3202	8.29	0.86	2802	7.26	0.75	4100	10.62	1.09
	11203	X	3319	8.60	0.89	1698	4.40	0.45	5010	12.98	1.34
	11879	X	11454	29.67	3.06	2910	7.54	0.78	4217	10.92	1.13
	11312	X	11314	29.31	3.02	2795	7.24	0.75	4183	10.83	1.12

COMPONENT	GRID	LOAD DIR	X-RESPONSE			Y-RESPONSE			Z-RESPONSE		
			RMS	GRMS	Q	RMS	GRMS	Q	RMS	GRMS	Q
LOWER WARMLOAD	1945	X	3884	10.06	1.04	2239	5.80	0.60	1126	2.92	0.30
	1929	X	7047	18.25	1.88	2187	5.67	0.58	998	2.58	0.27
	2812	X	8806	22.81	2.35	2471	6.40	0.66	2129	5.51	0.57
	2810	X	4832	12.51	1.29	2454	6.36	0.66	1647	4.27	0.44
	1892	X	7007	18.15	1.87	2011	5.21	0.54	763	1.98	0.20
	1908	X	5037	13.05	1.35	2022	5.24	0.54	813	2.11	0.22
	2814	X	3587	9.29	0.96	2582	6.69	0.69	3013	7.80	0.80
	2815	X	4127	10.69	1.10	2557	6.62	0.68	3484	9.02	0.93
	3006	X	6204	16.07	1.66	5151	13.34	1.38	6309	16.34	1.68
	3036	X	4113	10.65	1.10	5644	14.62	1.51	7182	18.60	1.92
UPPER WARMLOAD	2009	X	4082	10.57	1.09	1498	3.88	0.40	1198	3.10	0.32
	2033	X	4400	11.40	1.18	1493	3.87	0.40	1060	2.74	0.28
	2080	X	4533	11.74	1.21	1400	3.63	0.37	616	1.60	0.16
	2056	X	4602	11.92	1.23	1436	3.72	0.38	758	1.96	0.20
	2939	X	4071	10.54	1.09	1722	4.46	0.46	1402	3.63	0.37
	2941	X	4585	11.88	1.22	2139	5.54	0.57	2701	7.00	0.72
	2738	X	3985	10.32	1.06	1768	4.58	0.47	2260	5.85	0.60
	2739	X	4607	11.93	1.23	1773	4.59	0.47	2100	5.44	0.56
	2976	X	4440	11.50	1.19	3690	9.56	0.99	2665	6.90	0.71
	2945	X	4113	10.65	1.10	3377	8.75	0.90	1541	3.99	0.41
LOWER REFLECTOR	4662	X	5158	13.36	1.38	2628	6.81	0.70	3221	8.34	0.86
	4085	X	3693	9.57	0.99	2624	6.80	0.70	2599	6.73	0.69
	4087	X	3895	10.09	1.04	3400	8.81	0.91	2907	7.53	0.78
	4176	X	5979	15.49	1.60	11932	30.90	3.19	10769	27.89	2.88
	4096	X	22681	58.74	6.06	18307	47.42	4.89	21392	55.41	5.71
POWER CNTRL/MON BKT	5591	X	6884	17.83	1.84	2927	7.58	0.78	1691	4.38	0.45
	5600	X	8302	21.50	2.22	3219	8.34	0.86	1697	4.40	0.45
	5590	X	6520	16.89	1.74	3438	8.90	0.92	1718	4.45	0.46
	11803	X	6968	18.05	1.86	24199	62.68	6.46	5719	14.81	1.53

COMPONENT	GRID	LOAD DIR	X-RESPONSE			Y-RESPONSE			Z-RESPONSE		
			RMS	GRMS	Q	RMS	GRMS	Q	RMS	GRMS	Q
POWER CNTRL/MON PWB	5878	X	6982	18.08	1.86	5419	14.03	1.45	3573	9.25	0.95
	6204	X	11218	29.06	3.00	4830	12.51	1.29	3877	10.04	1.04
PWR CNTRL/MON STANDOFF	6247	X	3676	9.52	0.98	5615	14.54	1.50	4234	10.97	1.13
	6015	X	8983	23.27	2.40	5248	13.59	1.40	3349	8.67	0.89
	5932	X	3485	9.03	0.93	5835	15.11	1.56	3435	8.90	0.92
	5999	X	7940	20.56	2.12	4638	12.01	1.24	3575	9.26	0.95
RADIATOR PANEL	10963	X	14770	38.25	3.94	3315	8.59	0.89	2303	5.97	0.62
	10968	X	3312	8.58	0.88	3198	8.28	0.85	1464	3.79	0.39
	10974	X	8631	22.36	2.31	1564	4.05	0.42	1356	3.51	0.36
	10969	X	9453	24.48	2.52	1567	4.06	0.42	1255	3.25	0.34
	10917	X	6624	17.16	1.77	1638	4.24	0.44	1680	4.35	0.45
SIDEMOUNT	8313	X	3745	9.70	1.00	0	0.00	0.00	0	0.00	0.00
	8229	X	3543	9.18	0.95	163	0.42	0.04	270	0.70	0.07
	7796	X	3691	9.56	0.99	269	0.70	0.07	69	0.18	0.02
	7840	X	3745	9.70	1.00	0	0.00	0.00	0	0.00	0.00
	8178	X	2260	5.85	0.60	2077	5.38	0.55	2672	6.92	0.71
	9338	X	3696	9.57	0.99	1380	3.58	0.37	1058	2.74	0.28
	9576	X	3745	9.70	1.00	0	0.00	0.00	0	0.00	0.00
	7508	X	3723	9.64	0.99	1225	3.17	0.33	43	0.11	0.01
	7240	X	3745	9.70	1.00	0	0.00	0.00	0	0.00	0.00
	9642	X	3410	8.83	0.91	289	0.75	0.08	129	0.33	0.03
UPPER REFLECTOR	4629	X	7247	18.77	1.94	2959	7.66	0.79	3420	8.86	0.91
	4399	X	4559	11.81	1.22	2041	5.29	0.55	1978	5.12	0.53
	4401	X	4912	12.72	1.31	2337	6.05	0.62	2817	7.30	0.75
	4490	X	7699	19.94	2.06	9077	23.51	2.42	9991	25.88	2.67
	4410	X	22943	59.42	6.13	17501	45.33	4.67	25350	65.66	6.77

METOP RANDOM VIBRATION ACCELERATIONS - TRANSMISSIBILITIES OF SELECTED ELEMENTS - Y-LOAD

COMPONENT	GRID	LOAD DIR	X-RESPONSE			Y-RESPONSE			Z-RESPONSE		
			RMS	GRMS	Q	RMS	GRMS	Q	RMS	GRMS	Q
LARGE MASS	11911	Y	0	0.00	0.00	3745	9.70	1.00	0	0.00	0.00
LOWER BASEPLATE	1001	Y	478	1.24	0.13	5141	13.32	1.37	724	1.87	0.19
	1172	Y	1884	4.88	0.50	5315	13.77	1.42	3889	10.07	1.04
	1019	Y	566	1.47	0.15	3847	9.96	1.03	1228	3.18	0.33
	1205	Y	1568	4.06	0.42	4118	10.67	1.10	2652	6.87	0.71
	1124	Y	1306	3.38	0.35	4341	11.24	1.16	5006	12.96	1.34
LOWER MOTOR MOUNT	1001	Y	478	1.24	0.13	5141	13.32	1.37	724	1.87	0.19
	1172	Y	1884	4.88	0.50	5315	13.77	1.42	3889	10.07	1.04
	2663	Y	1640	4.25	0.44	5785	14.98	1.55	3932	10.18	1.05
	2875	Y	527	1.37	0.14	5507	14.26	1.47	727	1.88	0.19
	2855	Y	3216	8.33	0.86	6971	18.06	1.86	3417	8.85	0.91
	2861	Y	1834	4.75	0.49	6938	17.97	1.85	2010	5.20	0.54
	2888	Y	2594	6.72	0.69	6788	17.58	1.81	1482	3.84	0.40
	2892	Y	5866	15.19	1.57	1589	4.11	0.42	2664	6.90	0.71
	2896	Y	2520	6.53	0.67	5604	14.52	1.50	1359	3.52	0.36
	2884	Y	6175	15.99	1.65	3549	9.19	0.95	2849	7.38	0.76
UPPER MOTOR MOUNT	1578	Y	611	1.58	0.16	4449	11.52	1.19	909	2.35	0.24
	1569	Y	1677	4.34	0.45	4480	11.60	1.20	2904	7.52	0.78
	2710	Y	3545	9.18	0.95	3752	9.72	1.00	3115	8.07	0.83
	2779	Y	3479	9.01	0.93	3695	9.57	0.99	2651	6.87	0.71
	2783	Y	1337	3.46	0.36	3494	9.05	0.93	928	2.40	0.25
	2764	Y	1250	3.24	0.33	3746	9.70	1.00	1552	4.02	0.41
	2696	Y	2328	6.03	0.62	3711	9.61	0.99	2643	6.85	0.71
	2700	Y	3761	9.74	1.00	1680	4.35	0.45	2514	6.51	0.67
	2704	Y	2292	5.94	0.61	4005	10.37	1.07	2863	7.41	0.76
	2692	Y	3820	9.89	1.02	2987	7.74	0.80	2891	7.49	0.77

COMPONENT	GRID	LOAD DIR	X-RESPONSE RMS	X-RESPONSE GRMS	X-RESPONSE Q	Y-RESPONSE RMS	Y-RESPONSE GRMS	Y-RESPONSE Q	Z-RESPONSE RMS	Z-RESPONSE GRMS	Z-RESPONSE Q
LOWER FRONT PANEL	1455	Y	1729	4.48	0.46	4480	11.60	1.20	2812	7.28	0.75
	1608	Y	830	2.15	0.22	4128	10.69	1.10	1435	3.72	0.38
	1191	Y	1971	5.11	0.53	5089	13.18	1.36	2560	6.63	0.68
	1005	Y	459	1.19	0.12	4797	12.42	1.28	1391	3.60	0.37
	1979	Y	2156	5.58	0.58	4988	12.92	1.33	3114	8.07	0.83
	1970	Y	5245	13.59	1.40	2168	5.62	0.58	1865	4.83	0.50
	1973	Y	1807	4.68	0.48	4560	11.81	1.22	2645	6.85	0.71
	1976	Y	4548	11.78	1.21	1861	4.82	0.50	1145	2.96	0.31
	1885	Y	1915	4.96	0.51	4686	12.14	1.25	1548	4.01	0.41
	1961	Y	1406	3.64	0.38	5219	13.52	1.39	2573	6.66	0.69
	1963	Y	1709	4.43	0.46	5337	13.82	1.43	2596	6.72	0.69
LOWER AFT PANEL	1315	Y	1968	5.10	0.53	3769	9.76	1.01	2893	7.49	0.77
	1215	Y	490	1.27	0.13	3688	9.55	0.99	1152	2.98	0.31
	1019	Y	566	1.47	0.15	3847	9.96	1.03	1228	3.18	0.33
	1205	Y	1568	4.06	0.42	4118	10.67	1.10	2652	6.87	0.71
	1260	Y	1319	3.42	0.35	4105	10.63	1.10	1967	5.10	0.53
UPPER BASEPLATE	1455	Y	1729	4.48	0.46	4480	11.60	1.20	2812	7.28	0.75
	1608	Y	830	2.15	0.22	4128	10.69	1.10	1435	3.72	0.38
	1468	Y	490	1.27	0.13	3637	9.42	0.97	1173	3.04	0.31
	1458	Y	1968	5.10	0.53	3759	9.74	1.00	2946	7.63	0.79
UPPER FRONT PANEL	1375	Y	1868	4.84	0.50	4213	10.91	1.13	3180	8.24	0.85
	1528	Y	462	1.20	0.12	4047	10.48	1.08	872	2.26	0.23
	1993	Y	2855	7.39	0.76	3571	9.25	0.95	3269	8.47	0.87
	2124	Y	1393	3.61	0.37	3621	9.38	0.97	868	2.25	0.23
	2047	Y	2276	5.89	0.61	3915	10.14	1.05	2770	7.17	0.74
	2037	Y	4019	10.41	1.07	2717	7.04	0.73	3597	9.32	0.96
	2050	Y	2286	5.92	0.61	3756	9.73	1.00	6773	17.54	1.81
	2060	Y	3930	10.18	1.05	1871	4.85	0.50	3429	8.88	0.92
	2078	Y	8946	23.17	2.39	3802	9.85	1.02	1502	3.89	0.40

COMPONENT	GRID	LOAD DIR	X-RESPONSE			Y-RESPONSE			Z-RESPONSE		
			RMS	GRMS	Q	RMS	GRMS	Q	RMS	GRMS	Q
UPPER AFT PANEL	1468	Y	490	1.27	0.13	3637	9.42	0.97	1173	3.04	0.31
	1458	Y	1968	5.10	0.53	3759	9.74	1.00	2946	7.63	0.79
	2210	Y	2869	7.43	0.77	3562	9.23	0.95	3118	8.08	0.83
	2240	Y	1384	3.58	0.37	3530	9.14	0.94	1174	3.04	0.31
	2218	Y	1408	3.65	0.38	3722	9.64	0.99	2402	6.22	0.64
	2223	Y	1117	2.89	0.30	3675	9.52	0.98	1810	4.69	0.48
	2219	Y	1633	4.23	0.44	3490	9.04	0.93	2428	6.29	0.65
	2224	Y	1045	2.71	0.28	3463	8.97	0.92	1813	4.70	0.48
LOWER SHELF	1826	Y	678	1.76	0.18	4758	12.32	1.27	2255	5.84	0.60
	1828	Y	682	1.77	0.18	4931	12.77	1.32	3700	9.58	0.99
	1777	Y	847	2.19	0.23	4754	12.31	1.27	4077	10.56	1.09
	1779	Y	847	2.19	0.23	4927	12.76	1.32	5073	13.14	1.35
	1744	Y	1104	2.86	0.29	4491	11.63	1.20	2146	5.56	0.57
	1767	Y	977	2.53	0.26	5266	13.64	1.41	3003	7.78	0.80
	1671	Y	1585	4.10	0.42	5176	13.41	1.38	3102	8.04	0.83
	1641	Y	1691	4.38	0.45	5559	14.40	1.48	3231	8.37	0.86
	1703	Y	1365	3.54	0.36	5387	13.95	1.44	5921	15.34	1.58
	1699	Y	1412	3.66	0.38	5051	13.08	1.35	1945	5.04	0.52
	1647	Y	1654	4.28	0.44	4683	12.13	1.25	4544	11.77	1.21
	1631	Y	1788	4.63	0.48	4920	12.74	1.31	3063	7.93	0.82
	1842	Y	637	1.65	0.17	4350	11.27	1.16	1010	2.62	0.27
	1776	Y	884	2.29	0.24	4651	12.05	1.24	3240	8.39	0.87
	1800	Y	836	2.16	0.22	5131	13.29	1.37	4469	11.58	1.19
	1827	Y	657	1.70	0.18	4831	12.51	1.29	2614	6.77	0.70
	1732	Y	1150	2.98	0.31	4939	12.79	1.32	4538	11.76	1.21
	1718	Y	1284	3.33	0.34	5146	13.33	1.37	2217	5.74	0.59
	1783	Y	908	2.35	0.24	5237	13.56	1.40	3375	8.74	0.90
	1853	Y	699	1.81	0.19	5266	13.64	1.41	976	2.53	0.26
	1858	Y	907	2.35	0.24	4746	12.29	1.27	1502	3.89	0.40
	1805	Y	810	2.10	0.22	5237	13.56	1.40	1910	4.95	0.51
	1625	Y	1867	4.84	0.50	4278	11.08	1.14	2626	6.80	0.70
	1694	Y	1408	3.65	0.38	4548	11.78	1.21	3439	8.91	0.92

COMPONENT	GRID	LOAD DIR	X-RESPONSE			Y-RESPONSE			Z-RESPONSE		
			RMS	GRMS	Q	RMS	GRMS	Q	RMS	GRMS	Q
UPPER SHELF	2572	Y	1213	3.14	0.32	4345	11.26	1.16	786	2.03	0.21
	2577	Y	1238	3.21	0.33	4089	10.59	1.09	845	2.19	0.23
	2547	Y	1216	3.15	0.32	4396	11.39	1.17	2615	6.77	0.70
	2551	Y	1218	3.15	0.33	4210	10.90	1.12	1524	3.95	0.41
	2520	Y	1264	3.27	0.34	4349	11.27	1.16	2969	7.69	0.79
	2525	Y	1258	3.26	0.34	4093	10.60	1.09	1342	3.48	0.36
	2469	Y	1474	3.82	0.39	4095	10.61	1.09	1993	5.16	0.53
	2464	Y	1494	3.87	0.40	4359	11.29	1.16	2887	7.48	0.77
	2489	Y	1376	3.56	0.37	4455	11.54	1.19	4281	11.09	1.14
	2420	Y	1679	4.35	0.45	4488	11.62	1.20	4322	11.19	1.15
	2426	Y	1677	4.34	0.45	4391	11.37	1.17	2553	6.61	0.68
	2355	Y	2020	5.23	0.54	4467	11.57	1.19	2877	7.45	0.77
	2360	Y	1990	5.16	0.53	4398	11.39	1.17	2176	5.64	0.58
	2300	Y	2275	5.89	0.61	4453	11.53	1.19	2535	6.56	0.68
	2323	Y	2245	5.81	0.60	4186	10.84	1.12	3112	8.06	0.83
	2318	Y	2235	5.79	0.60	4383	11.35	1.17	2603	6.74	0.70
	2275	Y	2404	6.23	0.64	4446	11.52	1.19	2667	6.91	0.71
	2241	Y	2604	6.74	0.70	4386	11.36	1.17	3156	8.17	0.84
	2442	Y	1591	4.12	0.42	4334	11.23	1.16	2474	6.41	0.66
LOWER RIGHT FRONT SUP	1176	Y	1869	4.84	0.50	5079	13.16	1.36	2541	6.58	0.68
	1963	Y	1709	4.43	0.46	5337	13.82	1.43	2596	6.72	0.69
	1172	Y	1884	4.88	0.50	5315	13.77	1.42	3889	10.07	1.04
	2663	Y	1640	4.25	0.44	5785	14.98	1.55	3932	10.18	1.05
	2661	Y	1070	2.77	0.29	9715	25.16	2.59	2154	5.58	0.58
LOWER RIGHT PANEL	1379	Y	1808	4.68	0.48	4610	11.94	1.23	3152	8.16	0.84
	1191	Y	1971	5.11	0.53	5089	13.18	1.36	2560	6.63	0.68
	1205	Y	1568	4.06	0.42	4118	10.67	1.10	2652	6.87	0.71
	1315	Y	1968	5.10	0.53	3769	9.76	1.01	2893	7.49	0.77
	1455	Y	1729	4.48	0.46	4480	11.60	1.20	2812	7.28	0.75

COMPONENT	GRID	LOAD	X-RESPONSE			Y-RESPONSE			Z-RESPONSE		
		DIR	RMS	GRMS	Q	RMS	GRMS	Q	RMS	GRMS	Q
UPPER RIGHT FRONT SUP	1998	Y	1494	3.87	0.40	3992	10.34	1.07	3032	7.85	0.81
	1569	Y	1677	4.34	0.45	4480	11.60	1.20	2904	7.52	0.78
	2691	Y	1497	3.88	0.40	3975	10.30	1.06	3012	7.80	0.80
	1519	Y	1737	4.50	0.46	4214	10.91	1.13	3034	7.86	0.81
	2679	Y	1553	4.02	0.41	25118	65.06	6.71	2947	7.63	0.79
UPPER RIGHT PANEL	1457	Y	1968	5.10	0.53	3763	9.75	1.00	2922	7.57	0.78
	2154	Y	2316	6.00	0.62	5727	14.83	1.53	3120	8.08	0.83
	2130	Y	2327	6.03	0.62	9453	24.48	2.52	3191	8.26	0.85
	1345	Y	1952	5.05	0.52	3912	10.13	1.04	3023	7.83	0.81
	1365	Y	1883	4.88	0.50	4155	10.76	1.11	3149	8.16	0.84
	2210	Y	2869	7.43	0.77	3562	9.23	0.95	3118	8.08	0.83
	1993	Y	2855	7.39	0.76	3571	9.25	0.95	3269	8.47	0.87
	1375	Y	1868	4.84	0.50	4213	10.91	1.13	3180	8.24	0.85
TOP PANEL	11025	Y	1620	4.20	0.43	3609	9.35	0.96	2796	7.24	0.75
	11038	Y	1593	4.13	0.43	3547	9.19	0.95	1068	2.77	0.29
	11175	Y	561	1.45	0.15	3722	9.64	0.99	1156	2.99	0.31
	11170	Y	3404	8.82	0.91	3715	9.62	0.99	1018	2.64	0.27
	2627	Y	1764	4.57	0.47	3426	8.87	0.92	4275	11.07	1.14
	11128	Y	3040	7.87	0.81	3389	8.78	0.91	1049	2.72	0.28
	2210	Y	2869	7.43	0.77	3562	9.23	0.95	3118	8.08	0.83
	1993	Y	2855	7.39	0.76	3571	9.25	0.95	3269	8.47	0.87
LEFT PANEL	3243	Y	592	1.53	0.16	15479	40.09	4.13	910	2.36	0.24
	3251	Y	686	1.78	0.18	16992	44.01	4.54	883	2.29	0.24
	1001	Y	478	1.24	0.13	5141	13.32	1.37	724	1.87	0.19
	1019	Y	566	1.47	0.15	3847	9.96	1.03	1228	3.18	0.33
	1608	Y	830	2.15	0.22	4128	10.69	1.10	1435	3.72	0.38
	2124	Y	1393	3.61	0.37	3621	9.38	0.97	868	2.25	0.23
	2240	Y	1384	3.58	0.37	3530	9.14	0.94	1174	3.04	0.31

COMPONENT	GRID	LOAD DIR	X-RESPONSE			Y-RESPONSE			Z-RESPONSE		
			RMS	GRMS	Q	RMS	GRMS	Q	RMS	GRMS	Q
LOWER LEFT SHIELD	1878	Y	511	1.32	0.14	4520	11.71	1.21	1368	3.54	0.37
	2829	Y	478	1.24	0.13	5226	13.54	1.40	711	1.84	0.19
	1840	Y	777	2.01	0.21	4710	12.20	1.26	1681	4.35	0.45
	2831	Y	1239	3.21	0.33	5585	14.47	1.49	1406	3.64	0.38
	2913	Y	660	1.71	0.18	5195	13.45	1.39	2213	5.73	0.59
LOWER RIGHT SHIELD	1938	Y	2003	5.19	0.53	5231	13.55	1.40	2347	6.08	0.63
	2835	Y	1643	4.25	0.44	5752	14.90	1.54	3410	8.83	0.91
	2901	Y	1713	4.44	0.46	5689	14.74	1.52	2781	7.20	0.74
	1963	Y	1709	4.68	0.48	5337	13.09	1.35	2596	7.18	0.74
	2663	Y	1640	4.51	0.47	5785	14.56	1.50	3932	11.74	1.21
UPPER LEFT SHIELD	2119	Y	1165	3.02	0.31	3859	10.00	1.03	879	2.28	0.23
	2083	Y	1303	3.38	0.35	4006	10.38	1.07	1484	3.84	0.40
	2763	Y	1100	2.85	0.29	3690	9.56	0.99	924	2.39	0.25
	2760	Y	1324	3.43	0.35	3778	9.79	1.01	1541	3.99	0.41
	2933	Y	1137	2.94	0.30	3877	10.04	1.04	3245	8.40	0.87
UPPER RIGHT SHIELD	2010	Y	1448	3.75	0.39	3988	10.33	1.07	2921	7.57	0.78
	2918	Y	1512	3.92	0.40	3973	10.29	1.06	2908	7.53	0.78
	1998	Y	1494	3.68	0.38	3992	8.94	0.92	3032	8.62	0.89
	2691	Y	1497	3.75	0.39	3975	9.22	0.95	3012	7.69	0.79
LOWER CARD CAGE	3673	Y	1661	4.30	0.44	4266	11.05	1.14	2898	7.51	0.77
	3662	Y	1285	3.33	0.34	4751	12.31	1.27	2594	6.72	0.69
	3671	Y	2822	7.31	0.75	4244	10.99	1.13	3567	9.24	0.95
	3660	Y	3216	8.33	0.86	4773	12.36	1.27	5303	13.73	1.42
	3655	Y	1553	4.02	0.41	4080	10.57	1.09	2907	7.53	0.78
	3650	Y	991	2.57	0.26	3999	10.36	1.07	2946	7.63	0.79
	1179	Y	1861	4.82	0.50	4633	12.00	1.24	3173	8.22	0.85
	1084	Y	962	2.49	0.26	4562	11.82	1.22	2507	6.49	0.67
	3735	Y	1451	3.76	0.39	9860	25.54	2.63	2396	6.21	0.64
	3730	Y	1235	3.20	0.33	10772	27.90	2.88	3392	8.78	0.91
	3764	Y	1593	4.13	0.43	9525	24.67	2.54	2507	6.49	0.67

COMPONENT	GRID	LOAD DIR	X-RESPONSE RMS	X-RESPONSE GRMS	X-RESPONSE Q	Y-RESPONSE RMS	Y-RESPONSE GRMS	Y-RESPONSE Q	Z-RESPONSE RMS	Z-RESPONSE GRMS	Z-RESPONSE Q
LOWER CARD CAGE	3711	Y	1000	2.59	0.27	11517	29.83	3.08	2722	7.05	0.73
	3708	Y	856	2.22	0.23	11526	29.85	3.08	2387	6.18	0.64
	3753	Y	1132	2.93	0.30	12585	32.60	3.36	2704	7.00	0.72
LOWER CARD CAGE CARDS	4845	Y	1903	4.93	0.51	4292	11.12	1.15	2474	6.41	0.66
	4822	Y	1308	3.39	0.35	4446	11.51	1.19	3032	7.85	0.81
	4826	Y	2977	7.71	0.80	4703	12.18	1.26	4740	12.28	1.27
	4813	Y	1711	4.43	0.46	4914	12.73	1.31	4730	12.25	1.26
	4817	Y	984	2.55	0.26	4381	11.35	1.17	2943	7.62	0.79
	4777	Y	987	2.56	0.26	4416	11.44	1.18	2919	7.56	0.78
	4725	Y	1215	3.15	0.32	4261	11.04	1.14	2408	6.24	0.64
	4765	Y	1161	3.01	0.31	4345	11.25	1.16	2454	6.36	0.66
UPPER CARD CAGE	1469	Y	1917	4.97	0.51	3833	9.93	1.02	2888	7.48	0.77
	1509	Y	1842	4.77	0.49	4154	10.76	1.11	3208	8.31	0.86
	1514	Y	1064	2.76	0.28	4095	10.61	1.09	6313	16.35	1.69
	1474	Y	1063	2.75	0.28	3826	9.91	1.02	5933	15.37	1.58
	3372	Y	2402	6.22	0.64	4800	12.43	1.28	3053	7.91	0.82
	3381	Y	2324	6.02	0.62	4811	12.46	1.28	5928	15.35	1.58
	3404	Y	2455	6.36	0.66	5864	15.19	1.57	6404	16.59	1.71
	3395	Y	2443	6.33	0.65	5823	15.08	1.56	3309	8.57	0.88
	2249	Y	2556	6.62	0.68	4425	11.46	1.18	3002	7.77	0.80
	2448	Y	1552	4.02	0.41	4408	11.42	1.18	3189	8.26	0.85
	3369	Y	2254	5.84	0.60	4953	12.83	1.32	2886	7.47	0.77
UPPER CARD CAGE CARDS	11836	Y	2442	6.32	0.65	5196	13.46	1.39	5920	15.33	1.58
	11251	Y	2359	6.11	0.63	5272	13.66	1.41	6627	17.16	1.77
	11829	Y	1870	4.84	0.50	5114	13.25	1.37	5991	15.52	1.60
	11203	Y	1097	2.84	0.29	4055	10.50	1.08	6839	17.71	1.83
	11879	Y	2414	6.25	0.64	4959	12.84	1.32	6161	15.96	1.65
	11312	Y	2409	6.24	0.64	4999	12.95	1.34	5979	15.49	1.60

COMPONENT	GRID	LOAD DIR	X-RESPONSE RMS	X-RESPONSE GRMS	X-RESPONSE Q	Y-RESPONSE RMS	Y-RESPONSE GRMS	Y-RESPONSE Q	Z-RESPONSE RMS	Z-RESPONSE GRMS	Z-RESPONSE Q
LOWER WARMLOAD	1945	Y	3329	8.62	0.89	5207	13.49	1.39	2401	6.22	0.64
	1929	Y	4426	11.46	1.18	5134	13.30	1.37	2295	5.94	0.61
	2812	Y	7321	18.96	1.96	5378	13.93	1.44	1896	4.91	0.51
	2810	Y	3033	7.86	0.81	5298	13.72	1.41	1288	3.33	0.34
	1892	Y	4976	12.89	1.33	4891	12.67	1.31	1755	4.54	0.47
	1908	Y	4725	12.24	1.26	4951	12.82	1.32	1959	5.08	0.52
	2814	Y	7259	18.80	1.94	5570	14.43	1.49	3024	7.83	0.81
	2815	Y	1430	3.70	0.38	5611	14.53	1.50	3510	9.09	0.94
	3006	Y	4188	10.85	1.12	10861	28.13	2.90	6431	16.66	1.72
	3036	Y	2520	6.53	0.67	13202	34.19	3.53	9614	24.90	2.57
UPPER WARMLOAD	2009	Y	1557	4.03	0.42	3992	10.34	1.07	2971	7.70	0.79
	2033	Y	2248	5.82	0.60	3978	10.30	1.06	2633	6.82	0.70
	2080	Y	3495	9.05	0.93	3826	9.91	1.02	1570	4.07	0.42
	2056	Y	5875	15.22	1.57	3883	10.06	1.04	1903	4.93	0.51
	2939	Y	3536	9.16	0.94	4019	10.41	1.07	1580	4.09	0.42
	2941	Y	2306	5.97	0.62	4559	11.81	1.22	6377	16.52	1.70
	2738	Y	1637	4.24	0.44	4084	10.58	1.09	2928	7.58	0.78
	2739	Y	2203	5.71	0.59	4080	10.57	1.09	2618	6.78	0.70
	2976	Y	3819	9.89	1.02	8519	22.06	2.28	4833	12.52	1.29
	2945	Y	1609	4.17	0.43	5889	15.25	1.57	8022	20.78	2.14
LOWER REFLECTOR	4662	Y	2080	5.39	0.56	6814	17.65	1.82	2492	6.45	0.67
	4085	Y	777	2.01	0.21	6131	15.88	1.64	2579	6.68	0.69
	4087	Y	1006	2.61	0.27	6938	17.97	1.85	2852	7.39	0.76
	4176	Y	2419	6.27	0.65	8515	22.05	2.27	3912	10.13	1.04
	4096	Y	6921	17.93	1.85	11454	29.67	3.06	6311	16.35	1.69
POWER CNTRL/MON BKT	5591	Y	2743	7.10	0.73	3479	9.01	0.93	1580	4.09	0.42
	5600	Y	2545	6.59	0.68	3398	8.80	0.91	1576	4.08	0.42
	5590	Y	1165	3.02	0.31	3422	8.86	0.91	1582	4.10	0.42
	11803	Y	4718	12.22	1.26	13260	34.35	3.54	1827	4.73	0.49

COMPONENT	GRID	LOAD DIR	X-RESPONSE RMS	X-RESPONSE GRMS	X-RESPONSE Q	Y-RESPONSE RMS	Y-RESPONSE GRMS	Y-RESPONSE Q	Z-RESPONSE RMS	Z-RESPONSE GRMS	Z-RESPONSE Q
POWER CNTRL/MON PWB	5878	Y	5358	13.88	1.43	4230	10.96	1.13	2543	6.59	0.68
	6204	Y	5492	14.23	1.47	4307	11.16	1.15	3239	8.39	0.86
PWR CNTRL/MON STANDOFF	6247	Y	1820	4.71	0.49	4195	10.87	1.12	3496	9.06	0.93
	6015	Y	1583	4.10	0.42	4393	11.38	1.17	2664	6.90	0.71
	5932	Y	1783	4.62	0.48	4253	11.02	1.14	2599	6.73	0.69
	5999	Y	2153	5.58	0.58	4238	10.98	1.13	2693	6.98	0.72
RADIATOR PANEL	10963	Y	3404	8.82	0.91	3686	9.55	0.98	1454	3.76	0.39
	10968	Y	561	1.45	0.15	3661	9.48	0.98	1145	2.97	0.31
	10974	Y	4704	12.18	1.26	3223	8.35	0.86	1181	3.06	0.32
	10969	Y	4478	11.60	1.20	3222	8.35	0.86	755	1.96	0.20
	10917	Y	7027	18.20	1.88	3009	7.79	0.80	1135	2.94	0.30
SIDEMOUNT	8313	Y	0	0.00	0.00	3745	9.70	1.00	0	0.00	0.00
	8229	Y	242	0.63	0.06	3379	8.75	0.90	217	0.56	0.06
	7796	Y	149	0.39	0.04	3521	9.12	0.94	73	0.19	0.02
	7840	Y	0	0.00	0.00	3745	9.70	1.00	0	0.00	0.00
	8178	Y	3209	8.31	0.86	706	1.83	0.19	1560	4.04	0.42
	9338	Y	1313	3.40	0.35	2625	6.80	0.70	1971	5.10	0.53
	9576	Y	0	0.00	0.00	3745	9.70	1.00	0	0.00	0.00
	7508	Y	38	0.10	0.01	5469	14.16	1.46	42	0.11	0.01
	7240	Y	0	0.00	0.00	3745	9.70	1.00	0	0.00	0.00
	9642	Y	349	0.90	0.09	3382	8.76	0.90	274	0.71	0.07
UPPER REFLECTOR	4629	Y	6510	16.86	1.74	4372	11.32	1.17	2472	6.40	0.66
	4399	Y	1947	5.04	0.52	3819	9.89	1.02	2332	6.04	0.62
	4401	Y	2520	6.53	0.67	4235	10.97	1.13	2655	6.88	0.71
	4490	Y	3292	8.53	0.88	4572	11.84	1.22	4346	11.26	1.16
	4410	Y	10862	28.13	2.90	10760	27.87	2.87	11025	28.55	2.94

METOP RANDOM VIBRATION ACCELERATIONS - TRANSMISSIBILITIES OF SELECTED ELEMENTS - Z-LOAD

COMPONENT	GRID	LOAD DIR	X-RESPONSE			Y-RESPONSE			Z-RESPONSE		
			RMS	GRMS	Q	RMS	GRMS	Q	RMS	GRMS	Q
LARGE MASS	11911	Z	0	0.00	0.00	0	0.00	0.00	3745	9.70	1.00
LOWER BASEPLATE	1001	Z	351	0.91	0.09	2441	6.32	0.65	3532	9.15	0.94
	1172	Z	799	2.07	0.21	2606	6.75	0.70	4551	11.79	1.22
	1019	Z	455	1.18	0.12	2216	5.74	0.59	3543	9.18	0.95
	1205	Z	816	2.11	0.22	2417	6.26	0.65	3456	8.95	0.92
	1124	Z	591	1.53	0.16	2336	6.05	0.62	7437	19.26	1.99
LOWER MOTOR MOUNT	1001	Z	351	0.91	0.09	2441	6.32	0.65	3532	9.15	0.94
	1172	Z	799	2.07	0.21	2606	6.75	0.70	4551	11.79	1.22
	2663	Z	2410	6.24	0.64	945	2.45	0.25	4569	11.83	1.22
	2875	Z	653	1.69	0.17	1726	4.47	0.46	3505	9.08	0.94
	2855	Z	3057	7.92	0.82	3614	9.36	0.97	3665	9.49	0.98
	2861	Z	1852	4.80	0.49	3469	8.98	0.93	2897	7.50	0.77
	2888	Z	3018	7.82	0.81	3144	8.14	0.84	1700	4.40	0.45
	2892	Z	1430	3.70	0.38	3083	7.99	0.82	1653	4.28	0.44
	2896	Z	3005	7.78	0.80	1037	2.69	0.28	1897	4.91	0.51
	2884	Z	1568	4.06	0.42	3826	9.91	1.02	2593	6.72	0.69
UPPER MOTOR MOUNT	1578	Z	427	1.11	0.11	1735	4.49	0.46	3591	9.30	0.96
	1569	Z	859	2.22	0.23	1726	4.47	0.46	3288	8.52	0.88
	2710	Z	2758	7.14	0.74	3833	9.93	1.02	3415	8.85	0.91
	2779	Z	2835	7.34	0.76	4511	11.68	1.20	3139	8.13	0.84
	2783	Z	1071	2.77	0.29	3649	9.45	0.97	3519	9.11	0.94
	2764	Z	1513	3.92	0.40	3220	8.34	0.86	3171	8.21	0.85
	2696	Z	3049	7.90	0.81	4245	11.00	1.13	2027	5.25	0.54
	2700	Z	3238	8.39	0.86	3133	8.12	0.84	1707	4.42	0.46
	2704	Z	3030	7.85	0.81	2514	6.51	0.67	1679	4.35	0.45
	2692	Z	3316	8.59	0.89	3318	8.59	0.89	2047	5.30	0.55

COMPONENT	GRID	LOAD DIR	X-RESPONSE			Y-RESPONSE			Z-RESPONSE		
			RMS	GRMS	Q	RMS	GRMS	Q	RMS	GRMS	Q
LOWER FRONT PANEL	1455	Z	983	2.55	0.26	1309	3.39	0.35	3426	8.87	0.91
	1608	Z	495	1.28	0.13	1114	2.89	0.30	4053	10.50	1.08
	1191	Z	735	1.90	0.20	2672	6.92	0.71	3746	9.70	1.00
	1005	Z	357	0.93	0.10	2313	5.99	0.62	4080	10.57	1.09
	1979	Z	3339	8.65	0.89	1657	4.29	0.44	1812	4.69	0.48
	1970	Z	1703	4.41	0.45	3393	8.79	0.91	2095	5.43	0.56
	1973	Z	3408	8.83	0.91	1313	3.40	0.35	2642	6.84	0.71
	1976	Z	1321	3.42	0.35	3672	9.51	0.98	1599	4.14	0.43
	1885	Z	652	1.69	0.17	1579	4.09	0.42	4184	10.84	1.12
	1961	Z	1123	2.91	0.30	2472	6.40	0.66	3672	9.51	0.98
	1963	Z	2545	6.59	0.68	1918	4.97	0.51	3635	9.41	0.97
LOWER AFT PANEL	1315	Z	1198	3.10	0.32	1641	4.25	0.44	3474	9.00	0.93
	1215	Z	401	1.04	0.11	1579	4.09	0.42	3540	9.17	0.95
	1019	Z	455	1.18	0.12	455	1.18	0.12	3543	9.18	0.95
	1205	Z	816	2.11	0.22	816	2.11	0.22	3456	8.95	0.92
	1260	Z	745	1.93	0.20	1400	3.63	0.37	3087	8.00	0.82
UPPER BASEPLATE	1455	Z	983	2.55	0.26	1309	3.39	0.35	3426	8.87	0.91
	1608	Z	495	1.28	0.13	1114	2.89	0.30	4053	10.50	1.08
	1468	Z	401	1.04	0.11	1549	4.01	0.41	3557	9.21	0.95
	1458	Z	1198	3.10	0.32	1700	4.40	0.45	3498	9.06	0.93
UPPER FRONT PANEL	1375	Z	1013	2.62	0.27	2037	5.28	0.54	3597	9.32	0.96
	1528	Z	388	1.01	0.10	1899	4.92	0.51	3565	9.23	0.95
	1993	Z	2178	5.64	0.58	3884	10.06	1.04	3664	9.49	0.98
	2124	Z	1451	3.76	0.39	3804	9.85	1.02	3666	9.50	0.98
	2047	Z	3082	7.98	0.82	2766	7.16	0.74	2106	5.45	0.56
	2037	Z	3208	8.31	0.86	3223	8.35	0.86	2721	7.05	0.73
	2050	Z	3100	8.03	0.83	3393	8.79	0.91	5724	14.83	1.53
	2060	Z	3108	8.05	0.83	3075	7.96	0.82	2700	6.99	0.72
	2078	Z	3860	10.00	1.03	1941	5.03	0.52	3226	8.36	0.86

COMPONENT	GRID	LOAD DIR	X-RESPONSE			Y-RESPONSE			Z-RESPONSE		
			RMS	GRMS	Q	RMS	GRMS	Q	RMS	GRMS	Q
UPPER AFT PANEL	1468	Z	401	1.04	0.11	1549	4.01	0.41	3557	9.21	0.95
	1458	Z	1198	3.10	0.32	1700	4.40	0.45	3498	9.06	0.93
	2210	Z	2149	5.57	0.57	4786	12.40	1.28	3526	9.13	0.94
	2240	Z	1412	3.66	0.38	4842	12.54	1.29	3309	8.57	0.88
	2218	Z	938	2.43	0.25	1835	4.75	0.49	3153	8.17	0.84
	2223	Z	1270	3.29	0.34	1789	4.63	0.48	3171	8.21	0.85
	2219	Z	1431	3.71	0.38	3051	7.90	0.81	3161	8.19	0.84
	2224	Z	997	2.58	0.27	2998	7.77	0.80	3161	8.19	0.84
LOWER SHELF	1826	Z	665	1.72	0.18	1665	4.31	0.44	4482	11.61	1.20
	1828	Z	660	1.71	0.18	1764	4.57	0.47	5625	14.57	1.50
	1777	Z	598	1.55	0.16	1663	4.31	0.44	6156	15.95	1.64
	1779	Z	596	1.54	0.16	1762	4.56	0.47	6539	16.94	1.75
	1744	Z	622	1.61	0.17	1542	3.99	0.41	5450	14.12	1.46
	1767	Z	594	1.54	0.16	1981	5.13	0.53	6570	17.02	1.75
	1671	Z	850	2.20	0.23	1925	4.99	0.51	5746	14.88	1.53
	1641	Z	882	2.28	0.24	2088	5.41	0.56	3799	9.84	1.01
	1703	Z	729	1.89	0.19	2062	5.34	0.55	6659	17.25	1.78
	1699	Z	753	1.95	0.20	1844	4.78	0.49	7571	19.61	2.02
	1647	Z	909	2.35	0.24	1631	4.22	0.44	6417	16.62	1.71
	1631	Z	993	2.57	0.27	1766	4.57	0.47	5427	14.06	1.45
	1842	Z	727	1.88	0.19	1490	3.86	0.40	3547	9.19	0.95
	1776	Z	596	1.54	0.16	1611	4.17	0.43	6030	15.62	1.61
	1800	Z	597	1.55	0.16	1893	4.90	0.51	6526	16.90	1.74
	1827	Z	690	1.79	0.18	1705	4.42	0.46	4956	12.84	1.32
	1732	Z	635	1.64	0.17	1772	4.59	0.47	7919	20.51	2.12
	1718	Z	688	1.78	0.18	1903	4.93	0.51	7699	19.94	2.06
	1783	Z	590	1.53	0.16	1963	5.08	0.52	6455	16.72	1.72
	1853	Z	613	1.59	0.16	1980	5.13	0.53	3845	9.96	1.03
	1858	Z	651	1.69	0.17	1507	3.90	0.40	4186	10.84	1.12
	1805	Z	589	1.53	0.16	1939	5.02	0.52	5593	14.49	1.49
	1625	Z	1068	2.77	0.29	1488	3.86	0.40	3682	9.54	0.98
	1694	Z	755	1.96	0.20	1568	4.06	0.42	5790	15.00	1.55

COMPONENT	GRID	LOAD DIR	X-RESPONSE RMS	X-RESPONSE GRMS	X-RESPONSE Q	Y-RESPONSE RMS	Y-RESPONSE GRMS	Y-RESPONSE Q	Z-RESPONSE RMS	Z-RESPONSE GRMS	Z-RESPONSE Q
UPPER SHELF	2572	Z	975	2.53	0.26	3239	8.39	0.87	3263	8.45	0.87
	2577	Z	957	2.48	0.26	3108	8.05	0.83	3520	9.12	0.94
	2547	Z	1001	2.59	0.27	3256	8.43	0.87	3698	9.58	0.99
	2551	Z	989	2.56	0.26	3180	8.24	0.85	3802	9.85	1.02
	2520	Z	1024	2.65	0.27	3242	8.40	0.87	4356	11.28	1.16
	2525	Z	1018	2.64	0.27	3111	8.06	0.83	3769	9.76	1.01
	2469	Z	1152	2.98	0.31	3113	8.06	0.83	4533	11.74	1.21
	2464	Z	1101	2.85	0.29	3249	8.42	0.87	5094	13.19	1.36
	2489	Z	1064	2.76	0.28	3260	8.44	0.87	5028	13.02	1.34
	2420	Z	1133	2.93	0.30	3219	8.34	0.86	6886	17.83	1.84
	2426	Z	1136	2.94	0.30	3247	8.41	0.87	4784	12.39	1.28
	2355	Z	1240	3.21	0.33	3218	8.33	0.86	5700	14.76	1.52
	2360	Z	1227	3.18	0.33	3249	8.41	0.87	4163	10.78	1.11
	2300	Z	1358	3.52	0.36	3229	8.36	0.86	4131	10.70	1.10
	2323	Z	1352	3.50	0.36	3225	8.35	0.86	3860	10.00	1.03
	2318	Z	1337	3.46	0.36	3272	8.47	0.87	4019	10.41	1.07
	2275	Z	1427	3.70	0.38	3236	8.38	0.86	3733	9.67	1.00
	2241	Z	1542	3.99	0.41	3274	8.48	0.87	3603	9.33	0.96
	2442	Z	1124	2.91	0.30	3257	8.44	0.87	5580	14.45	1.49
LOWER RIGHT FRONT SUP	1176	Z	713	1.85	0.19	2661	6.89	0.71	3644	9.44	0.97
	1963	Z	2545	6.59	0.68	1918	4.97	0.51	3635	9.41	0.97
	1172	Z	799	2.07	0.21	2606	6.75	0.70	4551	11.79	1.22
	2663	Z	2410	6.24	0.64	945	2.45	0.25	4569	11.83	1.22
	2661	Z	1675	4.34	0.45	6255	16.20	1.67	3724	9.65	0.99
LOWER RIGHT PANEL	1379	Z	897	2.32	0.24	2557	6.62	0.68	3777	9.78	1.01
	1191	Z	735	1.90	0.20	2672	6.92	0.71	3746	9.70	1.00
	1205	Z	816	2.11	0.22	816	2.11	0.22	3456	8.95	0.92
	1315	Z	1198	3.10	0.32	1641	4.25	0.44	3474	9.00	0.93
	1455	Z	983	2.55	0.26	1309	3.39	0.35	3426	8.87	0.91

COMPONENT	GRID	LOAD DIR	X-RESPONSE RMS	X-RESPONSE GRMS	X-RESPONSE Q	Y-RESPONSE RMS	Y-RESPONSE GRMS	Y-RESPONSE Q	Z-RESPONSE RMS	Z-RESPONSE GRMS	Z-RESPONSE Q
UPPER RIGHT FRONT SUP	1998	Z	928	2.40	0.25	2709	7.02	0.72	3405	8.82	0.91
	1569	Z	859	2.22	0.23	1726	4.47	0.46	3288	8.52	0.88
	2691	Z	934	2.42	0.25	2611	6.76	0.70	3329	8.62	0.89
	1519	Z	912	2.36	0.24	2040	5.28	0.54	3417	8.85	0.91
	2679	Z	824	2.13	0.22	9528	24.68	2.54	3334	8.63	0.89
UPPER RIGHT PANEL	1457	Z	1198	3.10	0.32	1674	4.34	0.45	3487	9.03	0.93
	2154	Z	1345	3.48	0.36	4802	12.44	1.28	3578	9.27	0.96
	2130	Z	1320	3.42	0.35	6100	15.80	1.63	3557	9.21	0.95
	1345	Z	1152	2.98	0.31	1512	3.92	0.40	3544	9.18	0.95
	1365	Z	1042	2.70	0.28	1930	5.00	0.52	3588	9.29	0.96
	2210	Z	2149	5.57	0.57	4786	12.40	1.28	3526	9.13	0.94
	1993	Z	2178	5.64	0.58	3884	10.06	1.04	3664	9.49	0.98
	1375	Z	1013	2.62	0.27	2037	5.28	0.54	3597	9.32	0.96
TOP PANEL	11025	Z	2611	6.76	0.70	3790	9.82	1.01	12954	33.55	3.46
	11038	Z	2596	6.72	0.69	4969	12.87	1.33	4311	11.17	1.15
	11175	Z	479	1.24	0.13	1531	3.97	0.41	3379	8.75	0.90
	11170	Z	3797	9.83	1.01	1560	4.04	0.42	4428	11.47	1.18
	2627	Z	1262	3.27	0.34	4165	10.79	1.11	9528	24.68	2.54
	11128	Z	3186	8.25	0.85	3028	7.84	0.81	4346	11.26	1.16
	2210	Z	2149	5.57	0.57	4786	12.40	1.28	3526	9.13	0.94
	1993	Z	2178	5.64	0.58	3884	10.06	1.04	3664	9.49	0.98
LEFT PANEL	3243	Z	478	1.24	0.13	5477	14.19	1.46	3405	8.82	0.91
	3251	Z	517	1.34	0.14	7667	19.86	2.05	3571	9.25	0.95
	1001	Z	351	0.91	0.09	2441	6.32	0.65	3532	9.15	0.94
	1019	Z	455	1.18	0.12	2216	5.74	0.59	3543	9.18	0.95
	1608	Z	495	1.28	0.13	1114	2.89	0.30	4053	10.50	1.08
	2124	Z	1451	3.76	0.39	3804	9.85	1.02	3666	9.50	0.98
	2240	Z	1412	3.66	0.38	4842	12.54	1.29	3309	8.57	0.88

COMPONENT	GRID	LOAD DIR	X-RESPONSE			Y-RESPONSE			Z-RESPONSE		
			RMS	GRMS	Q	RMS	GRMS	Q	RMS	GRMS	Q
LOWER LEFT SHIELD	1878	Z	479	1.24	0.13	1345	3.48	0.36	4051	10.49	1.08
	2829	Z	505	1.31	0.13	966	2.50	0.26	3489	9.04	0.93
	1840	Z	594	1.54	0.16	1465	3.80	0.39	3896	10.09	1.04
	2831	Z	755	1.96	0.20	1093	2.83	0.29	3120	8.08	0.83
	2913	Z	577	1.49	0.15	865	2.24	0.23	7050	18.26	1.88
LOWER RIGHT SHIELD	1938	Z	2707	7.01	0.72	2707	7.01	0.72	3358	8.70	0.90
	2835	Z	2456	6.36	0.66	2456	6.36	0.66	3712	9.61	0.99
	2901	Z	2500	6.48	0.67	2500	6.48	0.67	4954	12.83	1.32
	1963	Z	2545	6.59	0.68	1918	4.97	0.51	3635	9.41	0.97
	2663	Z	2410	6.24	0.64	945	2.45	0.25	4569	11.83	1.22
UPPER LEFT SHIELD	2119	Z	868	2.25	0.23	2918	7.56	0.78	3584	9.28	0.96
	2083	Z	1053	2.73	0.28	3050	7.90	0.81	3208	8.31	0.86
	2763	Z	791	2.05	0.21	2968	7.69	0.79	3529	9.14	0.94
	2760	Z	1329	3.44	0.35	3017	7.81	0.81	3169	8.21	0.85
	2933	Z	1003	2.60	0.27	2815	7.29	0.75	9395	24.33	2.51
UPPER RIGHT SHIELD	2010	Z	1043	2.70	0.28	2706	7.01	0.72	3334	8.64	0.89
	2918	Z	965	2.50	0.26	2613	6.77	0.70	3260	8.44	0.87
	1998	Z	928	2.40	0.25	2709	7.02	0.72	3405	8.82	0.91
	2691	Z	934	2.42	0.25	2611	6.76	0.70	3329	8.62	0.89
LOWER CARD CAGE	3673	Z	1636	4.24	0.44	1909	4.94	0.51	4820	12.48	1.29
	3662	Z	1272	3.29	0.34	2810	7.28	0.75	5372	13.91	1.43
	3671	Z	1917	4.97	0.51	1776	4.60	0.47	5475	14.18	1.46
	3660	Z	2253	5.84	0.60	2733	7.08	0.73	6129	15.87	1.64
	3655	Z	795	2.06	0.21	2370	6.14	0.63	3921	10.15	1.05
	3650	Z	615	1.59	0.16	2351	6.09	0.63	4835	12.52	1.29
	1179	Z	731	1.89	0.20	2355	6.10	0.63	4297	11.13	1.15
	1084	Z	503	1.30	0.13	2386	6.18	0.64	5345	13.84	1.43
	3735	Z	1736	4.50	0.46	2741	7.10	0.73	5003	12.96	1.34
	3730	Z	1587	4.11	0.42	2890	7.49	0.77	7374	19.10	1.97
	3764	Z	1284	3.33	0.34	2801	7.26	0.75	5589	14.48	1.49

COMPONENT	GRID	LOAD DIR	X-RESPONSE RMS	X-RESPONSE GRMS	X-RESPONSE Q	Y-RESPONSE RMS	Y-RESPONSE GRMS	Y-RESPONSE Q	Z-RESPONSE RMS	Z-RESPONSE GRMS	Z-RESPONSE Q
LOWER CARD CAGE	3711	Z	923	2.39	0.25	4176	10.82	1.12	4176	10.82	1.12
	3708	Z	899	2.33	0.24	2458	6.37	0.66	2458	6.37	0.66
	3753	Z	992	2.57	0.26	3931	10.18	1.05	3931	10.18	1.05
LOWER CARD CAGE CARDS	4845	Z	2041	5.29	0.54	2244	5.81	0.60	6536	16.93	1.75
	4822	Z	1438	3.72	0.38	2089	5.41	0.56	6273	16.25	1.68
	4826	Z	2068	5.36	0.55	2017	5.22	0.54	8096	20.97	2.16
	4813	Z	729	1.89	0.19	3459	8.96	0.92	8130	21.06	2.17
	4817	Z	624	1.62	0.17	2392	6.20	0.64	6135	15.89	1.64
	4777	Z	615	1.59	0.16	2398	6.21	0.64	5985	15.50	1.60
	4725	Z	1642	4.25	0.44	2529	6.55	0.68	6195	16.05	1.65
	4765	Z	2103	5.45	0.56	2596	6.72	0.69	5966	15.45	1.59
UPPER CARD CAGE	1469	Z	1152	2.98	0.31	1475	3.82	0.39	4456	11.54	1.19
	1509	Z	1023	2.65	0.27	1927	4.99	0.51	3835	9.93	1.02
	1514	Z	556	1.44	0.15	1897	4.91	0.51	6447	16.70	1.72
	1474	Z	623	1.61	0.17	1478	3.83	0.39	6503	16.84	1.74
	3372	Z	1764	4.57	0.47	4306	11.15	1.15	5281	13.68	1.41
	3381	Z	5059	13.10	1.35	4264	11.04	1.14	6491	16.81	1.73
	3404	Z	5238	13.57	1.40	5679	14.71	1.52	6545	16.95	1.75
	3395	Z	1904	4.93	0.51	5635	14.59	1.50	4141	10.73	1.11
	2249	Z	1515	3.93	0.40	3253	8.43	0.87	3593	9.31	0.96
	2448	Z	1109	2.87	0.30	3246	8.41	0.87	4874	12.62	1.30
	3369	Z	4569	11.83	1.22	4366	11.31	1.17	4666	12.09	1.25
UPPER CARD CAGE CARDS	11836	Z	1886	4.89	0.50	6059	15.69	1.62	9882	25.60	2.64
	11251	Z	5028	13.02	1.34	4852	12.57	1.30	7050	18.26	1.88
	11829	Z	1188	3.08	0.32	4529	11.73	1.21	10114	26.20	2.70
	11203	Z	580	1.50	0.15	1848	4.79	0.49	7197	18.64	1.92
	11879	Z	1977	5.12	0.53	4237	10.97	1.13	7307	18.93	1.95
	11312	Z	1973	5.11	0.53	4258	11.03	1.14	6902	17.88	1.84

COMPONENT	GRID	LOAD DIR	X-RESPONSE			Y-RESPONSE			Z-RESPONSE		
			RMS	GRMS	Q	RMS	GRMS	Q	RMS	GRMS	Q
LOWER WARMLOAD	1945	Z	3957	10.25	1.06	2080	5.39	0.56	3396	8.80	0.91
	1929	Z	3387	8.77	0.90	2046	5.30	0.55	3275	8.48	0.87
	2812	Z	2188	5.67	0.58	1368	3.54	0.37	2899	7.51	0.77
	2810	Z	870	2.25	0.23	1327	3.44	0.35	3045	7.89	0.81
	1892	Z	1408	3.65	0.38	1905	4.93	0.51	3873	10.03	1.03
	1908	Z	1857	4.81	0.50	1943	5.03	0.52	3549	9.19	0.95
	2814	Z	5476	14.18	1.46	1439	3.73	0.38	3342	8.66	0.89
	2815	Z	2628	6.81	0.70	1442	3.73	0.39	3888	10.07	1.04
	3006	Z	1127	2.92	0.30	3307	8.57	0.88	4251	11.01	1.14
	3036	Z	3585	9.28	0.96	5508	14.27	1.47	5587	14.47	1.49
UPPER WARMLOAD	2009	Z	936	2.42	0.25	2449	6.34	0.65	3375	8.74	0.90
	2033	Z	1571	4.07	0.42	2437	6.31	0.65	3190	8.26	0.85
	2080	Z	1762	4.56	0.47	2319	6.01	0.62	3164	8.19	0.84
	2056	Z	3265	8.46	0.87	2359	6.11	0.63	3078	7.97	0.82
	2939	Z	1531	3.97	0.41	2238	5.80	0.60	3102	8.04	0.83
	2941	Z	1630	4.22	0.44	2290	5.93	0.61	4382	11.35	1.17
	2738	Z	880	2.28	0.23	2266	5.87	0.61	3279	8.49	0.88
	2739	Z	1364	3.53	0.36	2270	5.88	0.61	3111	8.06	0.83
	2976	Z	1651	4.28	0.44	6382	16.53	1.70	4055	10.50	1.08
	2945	Z	1022	2.65	0.27	3198	8.28	0.85	4746	12.29	1.27
LOWER REFLECTOR	4662	Z	4216	10.92	1.13	1639	4.25	0.44	3176	8.23	0.85
	4085	Z	1160	3.00	0.31	1546	4.00	0.41	3024	7.83	0.81
	4087	Z	1416	3.67	0.38	2089	5.41	0.56	3220	8.34	0.86
	4176	Z	2272	5.89	0.61	5671	14.69	1.51	5025	13.01	1.34
	4096	Z	4910	12.72	1.31	7618	19.73	2.03	6063	15.70	1.62
POWER CNTRL/MON BKT	5591	Z	5567	14.42	1.49	4575	11.85	1.22	3147	8.15	0.84
	5600	Z	7932	20.54	2.12	3850	9.97	1.03	3161	8.19	0.84
	5590	Z	3298	8.54	0.88	3073	7.96	0.82	3202	8.29	0.86
	11803	Z	5993	15.52	1.60	27986	72.48	7.47	7391	19.14	1.97

COMPONENT	GRID	LOAD DIR	X-RESPONSE			Y-RESPONSE			Z-RESPONSE		
			RMS	GRMS	Q	RMS	GRMS	Q	RMS	GRMS	Q
POWER CNTRL/MON PWB	5878	Z	3692	9.56	0.99	6989	18.10	1.87	4846	12.55	1.29
	6204	Z	4938	12.79	1.32	4006	10.38	1.07	4475	11.59	1.20
PWR CNTRL/MON STANDOFF	6247	Z	1455	3.77	0.39	7570	19.61	2.02	4483	11.61	1.20
	6015	Z	1576	4.08	0.42	3394	8.79	0.91	4745	12.29	1.27
	5932	Z	1666	4.31	0.44	7776	20.14	2.08	4636	12.01	1.24
	5999	Z	3940	10.20	1.05	4823	12.49	1.29	4704	12.18	1.26
RADIATOR PANEL	10963	Z	3797	9.83	1.01	1562	4.05	0.42	3838	9.94	1.03
	10968	Z	478	1.24	0.13	1568	4.06	0.42	3486	9.03	0.93
	10974	Z	3687	9.55	0.98	995	2.58	0.27	3518	9.11	0.94
	10969	Z	5478	14.19	1.46	975	2.53	0.26	3357	8.69	0.90
	10917	Z	2365	6.12	0.63	1026	2.66	0.27	3468	8.98	0.93
SIDEMOUNT	8313	Z	0	0.00	0.00	0	0.00	0.00	3745	9.70	1.00
	8229	Z	283	0.73	0.08	307	0.80	0.08	3598	9.32	0.96
	7796	Z	88	0.23	0.02	204	0.53	0.05	3713	9.62	0.99
	7840	Z	0	0.00	0.00	0	0.00	0.00	3745	9.70	1.00
	8178	Z	3916	10.14	1.05	2619	6.78	0.70	2084	5.40	0.56
	9338	Z	1053	2.73	0.28	2453	6.35	0.66	3935	10.19	1.05
	9576	Z	0	0.00	0.00	0	0.00	0.00	3745	9.70	1.00
	7508	Z	122	0.32	0.03	1097	2.84	0.29	3711	9.61	0.99
	7240	Z	0	0.00	0.00	0	0.00	0.00	3745	9.70	1.00
	9642	Z	891	2.31	0.24	416	1.08	0.11	3665	9.49	0.98
UPPER REFLECTOR	4629	Z	3092	8.01	0.83	3271	8.47	0.87	3082	7.98	0.82
	4399	Z	1256	3.25	0.34	3315	8.59	0.89	3069	7.95	0.82
	4401	Z	1718	4.45	0.46	4011	10.39	1.07	3445	8.92	0.92
	4490	Z	2522	6.53	0.67	6050	15.67	1.62	6301	16.32	1.68
	4410	Z	5091	13.19	1.36	7118	18.44	1.90	6581	17.05	1.76

METOP RANDOM VIBRATION DISPLACEMENTS - RATTLESPACE AT THE LOWER CARD CAGE CIRCUIT CARDS

COMPONENT	GRID	GRID	ΔX-DEFLECTION X-LOAD			ΔX-DEFLECTION Y-LOAD			ΔX-DEFLECTION Z-LOAD		
			GAP	1Σ ΔX	3Σ ΔX	GAP	1Σ ΔX	3Σ ΔX	GAP	1Σ ΔX	3Σ ΔX
LOWER CARD CAGE	4808	4848	0.037	0.00025	0.00074	0.037	0.00160	0.00481	0.037	0.00057	0.00172
CIRCUIT CARDS	4809	4849		0.00028	0.00083		0.00076	0.00229		0.00022	0.00065
	4810	4850		0.00013	0.00039		0.00033	0.00098		0.00008	0.00025
	4811	4851		0.00008	0.00023		0.00027	0.00080		0.00007	0.00021
	4812	4852		0.00006	0.00018		0.00021	0.00062		0.00007	0.00020
	4803	4843		0.00031	0.00094		0.00163	0.00488		0.00038	0.00114
	4804	4844		0.00030	0.00091		0.00074	0.00222		0.00025	0.00076
	4805	4845		0.00014	0.00041		0.00041	0.00124		0.00013	0.00040
	4806	4846		0.00008	0.00024		0.00028	0.00085		0.00008	0.00024
	4807	4847		0.00006	0.00017		0.00020	0.00060		0.00008	0.00023

METOP RANDOM VIBRATION DISPLACEMENTS - RATTLESPACE AT THE UPPER CARD CAGE CIRCUIT CARDS

COMPONENT	GRID	GRID	ΔX-DEFLECTION			ΔX-DEFLECTI			ΔX-DEFLECTION		
				X-LOAD			Y-LOAD			Z-LOAD	
			GAP	1Σ ΔX	3Σ ΔX	GAP	1Σ ΔX	3Σ ΔX	GAP	1Σ ΔX	3Σ ΔX
UPPER CARD CAGE	11300	11867	0.137	0.00056	0.00167	0.137	0.00016	0.00048	0.137	0.00032	0.00097
CIRCUIT CARDS	11301	11868		0.00041	0.00122		0.00011	0.00032		0.00021	0.00064
	11302	11869		0.00026	0.00078		0.00010	0.00031		0.00015	0.00046
	11303	11870		0.00015	0.00044		0.00011	0.00033		0.00017	0.00051
	11304	11871		0.00013	0.00038		0.00009	0.00028		0.00019	0.00057
	11305	11872		0.00015	0.00044		0.00009	0.00026		0.00018	0.00055
	11306	11873		0.00012	0.00035		0.00008	0.00023		0.00013	0.00040
	11307	11874		0.00006	0.00018		0.00007	0.00021		0.00008	0.00024
	11308	11875		0.00073	0.00219		0.00013	0.00038		0.00035	0.00104
	11309	11876		0.00055	0.00166		0.00011	0.00034		0.00024	0.00072
	11310	11877		0.00039	0.00117		0.00013	0.00040		0.00019	0.00056
	11311	11878		0.00024	0.00072		0.00013	0.00038		0.00018	0.00055
	11312	11879		0.00016	0.00047		0.00011	0.00034		0.00019	0.00058
	11313	11880		0.00014	0.00043		0.00011	0.00034		0.00019	0.00057
	11314	11881		0.00012	0.00036		0.00010	0.00030		0.00015	0.00044
	11315	11882		0.00010	0.00029		0.00010	0.00031		0.00010	0.00029
	11316	11883		0.00063	0.00190		0.00018	0.00053		0.00035	0.00105
	11317	11884		0.00050	0.00150		0.00017	0.00052		0.00027	0.00080
	11318	11885		0.00037	0.00111		0.00017	0.00052		0.00021	0.00062
	11319	11886		0.00024	0.00073		0.00014	0.00042		0.00017	0.00051
	11320	11887		0.00017	0.00052		0.00012	0.00035		0.00018	0.00053
	11321	11888		0.00016	0.00047		0.00013	0.00039		0.00018	0.00053
	11322	11889		0.00012	0.00037		0.00011	0.00034		0.00014	0.00043
	11323	11890		0.00006	0.00019		0.00007	0.00020		0.00008	0.00023

NASA
National Aeronautics and Space Administration

Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
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4. Title and Subtitle	5. Report Date
Integrated Advanced Microwave Sounding Unit-A (AMSU-A), METOP Stress Analysis, A1 Module	July 1996
	6. Performing Organization Code: ---
7. Author(s): R. Heffner	8. Performing Organization Report No.: 10849
	10. Work Unit No.: ---
9. Performing Organization Name and Address: Aerojet, 1100 W. Hollyvale, Azusa, CA 91702	11. Contract or Grant No.: NAS 5-32314
	13. Type of Report and Period Covered: Final
12. Sponsoring Agency Name and Address: NASA, Goddard Space Flight Center, Greenbelt, Maryland 20771	14. Sponsoring Agency Code: ---

15. Supplementary Notes: ---

16. ABSTRACT (*Maximum 200 words*)

This is the METOP Stress Analysis Report (Qual Level Random Vibration) for the Integrated Advanced Microwave Sounding Unit-A (AMSU-A) A1.

17. Key Words (Suggested by Author(s))	18. Distribution Statement
EOS Microwave System	Unclassified --- Unlimited

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of pages	22. Price
Unclassified	Unclassified		---

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REPORT DOCUMENTATION PAGE

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1. AGENCY USE ONLY (*Leave blank*)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED

4. TITLE AND SUBTITLE
Integrated Advanced Microwave Sounding Unit-A (AMSU-A), METOP Stress Analysis Report, A1

5. FUNDING NUMBERS
NAS 5-32314

6. AUTHOR(S)
R. Mehltretter

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
Aerojet
1100 W. Hollyvale
Azusa, CA 91702

8. PERFORMING ORGANIZATION REPORT NUMBER
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11. SUPPLEMENTARY NOTES
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12a. DISTRIBUTION/AVAILABILITY STATEMENT
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12b. DISTRIBUTION CODE
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13. ABSTRACT (*Maximum 200 words*)

This is the METOP Stress Analysis Report (Qual Level Random Vibration) for the Integrated Advanced Microwave Sounding Unit-A (AMSU-A) A1.

14. SUBJECT TERMS
EOS
Microwave System

15. NUMBER OF PAGES

16. PRICE CODE
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17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
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1. AGENCY USE ONLY *(Leave blank)*	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
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4. TITLE AND SUBTITLE

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5. FUNDING NUMBERS

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6. AUTHOR(S)

R. Mehitretter

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

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13. ABSTRACT *(Maximum 200 words)*

This is the METOP Stress Analysis Report (Qual Level Random Vibration) for the Integrated Advanced Microwave Sounding Unit–A (AMSU–A) A1.

14. SUBJECT TERMS

EOS, Microwave System

15. NUMBER OF PAGES

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16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
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