Report 10805A
July 1996

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Meteorological Satellites (METSAT) and Earth Observing System (EOS) Advanced Microwave Sounding Unit-A (AMSU-A) Stress Analysis Report

Contract No. NAS 5-32314
CDRL: 113

Submitted to:

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

Submitted by:

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Subject: Contract NAS5-32314 (INTEGRATED AMSU-A)
CDRL 113B METSAT Stress Analysis Report, A1 Module
Report No. 10805A July 1996 Final

Attachment: (1) Aerojet Letter RHJ:metop96.doc, dated 31 July 1996

Dear Mrs. Farnan Lockard:

Aerojet submits the subject METSAT Stress Analysis Report, A1 in accordance with contract negotiations.

Should any questions arise concerning this submittal, please contact Mr. R. Hauerwaas at (818) 812-1163 or me at (818) 812-2010.

Sincerely yours,

Cathy Woodington

Cathy Woodington
Contract Manager

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Attachment 1

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Electronic Systems Plant

TO: B. Kelly

DATE: 31 July 1996
170-1:8611:x2398
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FROM: R. Heffner

SUBJECT: Action Item Responses to April 1996 Critical Design Review (CDR) Comments - METSAT/AMSU-A1 Mechanical/Structural Subsystem

COPIES TO: R. Burnes, R. Hauerwaas, B. Morris, P. Patel, File

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

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

(2) NASA/GSFC Comments to AMSU-A1 METSAT Stress Analysis Report, (CDRL 113), W. Case, April 11, 1996.

(3) "Critical Design Review for The Advanced Microwave Sounding Unit-A (AMSU-A)", Report 10808, Book 2 of 2, April 1996.

PURPOSE

The purposes of this writing is to respond to the action items of Reference 2 resulting from the Reference 1 CDRL document and the Reference 3 CDR presentation. Additional stress analysis required per Reference 2, on the Aerojet CDRL 113 AMSU-A1 METSAT Stress Analysis Report (Reference 1), is presented in the A revision to the 10805 report. The Report 10805 A revision is a complete document, superseding the 1 April 1996 submittal. The Revision A analysis in Report 10805 is the result of an updated finite element model, therefore all analysis in the Report 10805 A revision is new.

RESPONSES

The action items of Reference 2 pertaining to the METSAT/AMSU-A1 Stress Analysis are responded to in this writing. The action items along with their responses follow.

Action Item : Add to the A1 stress analysis for METSAT (CDRL 113B - A1): (1) Margin of Safety (MS) calculations for the panel flanges (as was done for the EOS loads), (2) A review of the MS's calculated for the sidemount in the areas of the mounting bolts where the calculated stress gradients are shown to be high (in report 10805). One area shows a MS of 0.16 in an area where the model appears that it might not be fine enough to accurately predict the stress gradients shown in the report.

Response: The Reference 1 CDRL report was composed from analysis performed using a NASTRAN finite element model with an error in the sidemount structure in the vicinity of the upper aft spacecraft mounting bolt (in the vicinity of the above mentioned +0.16 MS). This anomaly invalidates the Reference 1 analysis. An entirely new stress analysis is presented in the A revision to Report 10805.

The A revision to Report 10805 also responds to the Reference 2 comments. Analysis on the panel flanges to the METSAT random vibration loads is included in the revised CDRL report. Correction of the modeling anomaly at the sidemount spacecraft upper aft mounting bolt significantly reduces the sidemount large stress gradient reported in Reference 1. The minimum MS of +0.16, reported in Reference 1 at the sidemount (and referred to in the action item), per random vibration 8.8 Grms Z-loading, increases to +1.58 in the corrected Revision A analysis. The finite element model of Revision A is also refined in the sidemount spacecraft upper aft mounting bolt region.

Concerning the panel flanges, without design changes, the minimum MS in the METSAT Revision A analysis would be at the upper aft panel side flanges in the vicinities of the upper aft panel reinforced DC/DC converter upper mounting regions, where negative margins would be seen (MS = -.84, see Figure 1). Thus, a design modification is warranted. Taking into consideration the slightly more severe METOP random vibration 9.66 Grms spectrum (versus the 8.8 Grms METSAT spectrum), and the knowledge that a potential DC/DC converter weight increase is expected (from the present 3.50 maximum specification weight used in the finite element model to as high as 4.50 lb), the flange thicknesses are increased as follows (see Figure 2):

1331642-3 Upper Aft Panel

	Was	Is
Lower flange	.095/.105	.110/.120
Upper flange	.050/.060	.060/.070
Left Side Flange	.050/.060	.145/.155 @ DC/DC Conv Upper Mounting Region
		.075/.085 Below DC/DC Converter Upper Mounting Region
		.060/.070 All other locations
Right Side Flange	.050/.060	.145/.155 @ DC/DC Conv Upper Mounting Region
		.075/.085 Below DC/DC Converter Upper Mounting Region
		.060/.070 All other locations

With the above flange thickness increases, the minimum MS in the upper aft panel becomes +.36 at the right side flange DC/DC Converter upper mounting region with METSAT 3σ random vibration loads and factors of safety of 1.25 yield/1.4 ultimate applied (see Figure 2). Projected weight increase with flange thickening is +.05 lb.

The upper front panel lower flange requires a thickness of >/= .045 inches to demonstrate, analytically, a positive MS with 3σ random vibration loads and factors of safety of 1.25 yield/1.4 ultimate applied. Lower flange thickness per drawing 1331352-3 is .050 +/- .010. Therefore, the as-built hardware was inspected and found to have minimum t = .050 thick lower flanges in the area of the maximum load. With minimum t = .050 lower flanges, the minimum MS is +.34 at the upper aft panel lower flange.

After considering the above upper aft panel design change and the lower front panel as-built dimensions, the remaining flange minimum MS is then seen in the lower motor mount panel upper flange, where a MS of +.06 is noted with METSAT 3σ random vibration loads and factors of safety of 1.25 yield/1.4 ultimate applied.

The Report 10805 A revision is written similarly to Reference 1. Static design load results are reported first (Tables 1 through 9), followed by the modal effective weight summary (Table 10) random vibration loads (Tables 11 through 14), natural frequencies, transmissibility's, rattlespace (Table 15), mounting bolt hardware stresses (Tables 16 through 26), panel flange bending stresses (Tables 27 through 36), and panel mounting screw stresses due to flange bending loads (Table 37 through 46).

A comparison of margins of safety of the A revision report to the Ref 1 report is as follows:

Margins of Safety Summary

Subject	A Revision Report	Reference 1 Report
Design Loads Cases 1-8 (Table 1)	+1.61	+0.26
Random Vibration 8.8 Grms (Table 11 Rev A, Table 10 Ref 1)	+0.62	+0.16
Rattlespace - Lower Cage Cards (Table 15 Rev A, Table 14 Ref 1)	.037-.005=.032 clearance	.037-.025=.012 clearance
Mounting Screws Tension/Shear (Table 19 Rev A, Table 18 Ref 1)	+0.25	+0.14
Shear Pins Sidemount Shear Tearout (Table 20 Rev A, Table 19 Ref 1)	+0.23	+0.23
Shear Pins Sidemount Bearing (Table 20 Rev A, Table 19 Ref 1)	+0.72	+0.72
Mounting Screws Tension W/O Shear (Table 24 Rev A, Table 21 Ref 1)	+0.13	+0.11
Mounting Screws Member Compression (Table 25 Rev A, Table 24 Ref 1)	+0.76	+0.76
Mounting Screws Sidemount Thread Shear (Table 25 Rev A, Table 24 Ref 1)	+0.71	+0.69

Panel Flange Bending

Upper Front Panel	+0.34	-------
Upper Right Front Support Panel	+0.76	-------
Lower Right Panel	+4.84	-------
Lower Aft Panel	+1.05	-------
Upper Motor Mount Panel	+1.75	-------
Lower Motor Mount Panel	+0.06	-------
Lower Front Panel	+0.33	-------
Upper Aft Panel	+0.36	-------
Upper Right Panel	+0.48	-------
Lower Right Front Support Panel	+0.94	-------

Panel Mounting Screws

Upper Front Panel	+5.6	-------
Upper Right Front Support Panel	+6.1	-------
Lower Right Panel	+13	-------
Lower Aft Panel	+5.3	-------
Upper Motor Mount Panel	+11	-------
Lower Motor Mount Panel	+5.5	-------
Lower Front Panel	+6.0	-------
Upper Aft Panel	+0.32	-------
Upper Right Panel	+7.7	-------
Lower Right Front Support Panel	+22	-------

R. J. Heffner
Mechanical/Structural Analysis

B. T. Kelly, Team Leader
Mechanical/Structural/Thermal Team

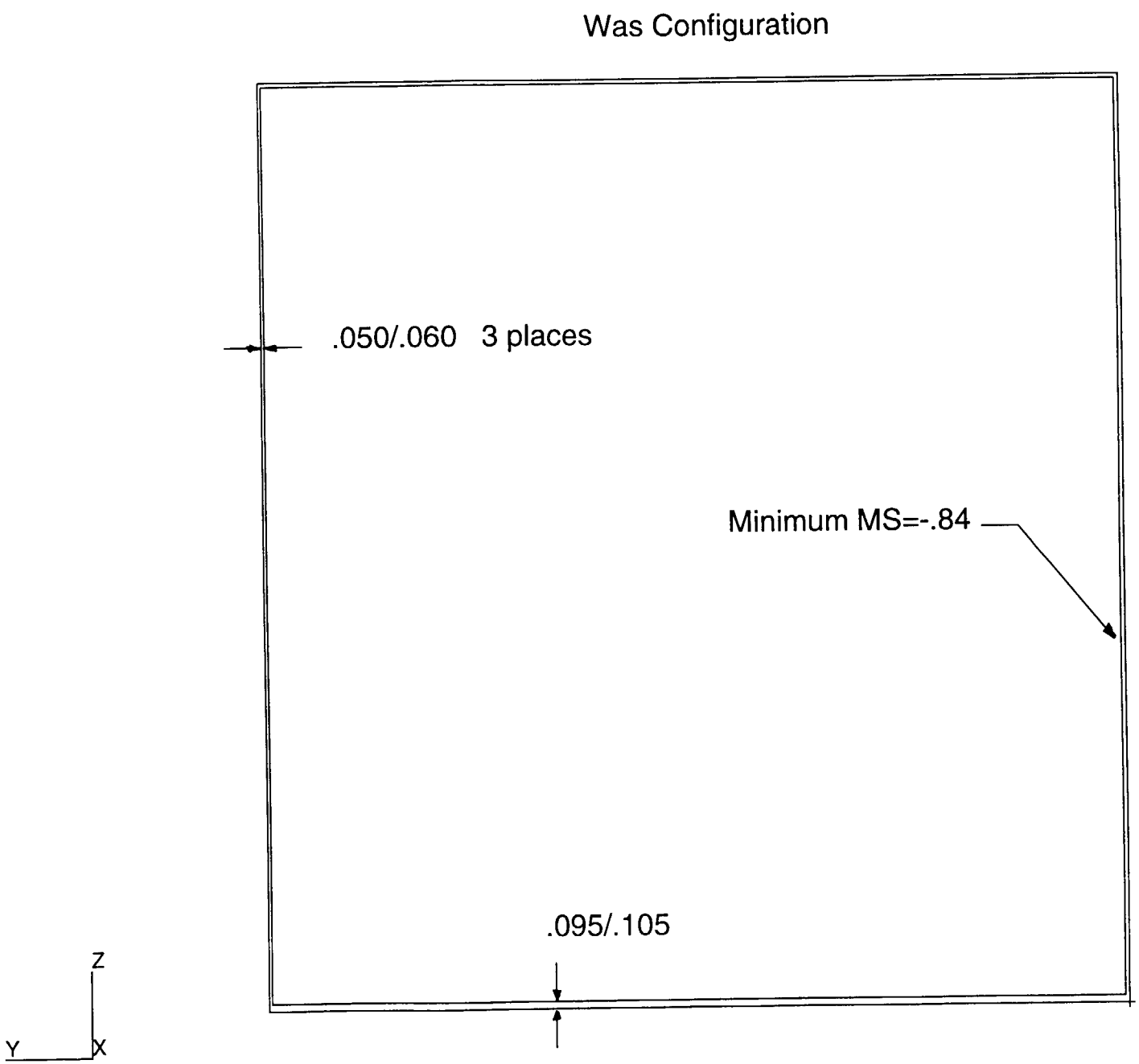

Figure 1 1331642-3 Upper Aft Panel Flanges

Is Configuration

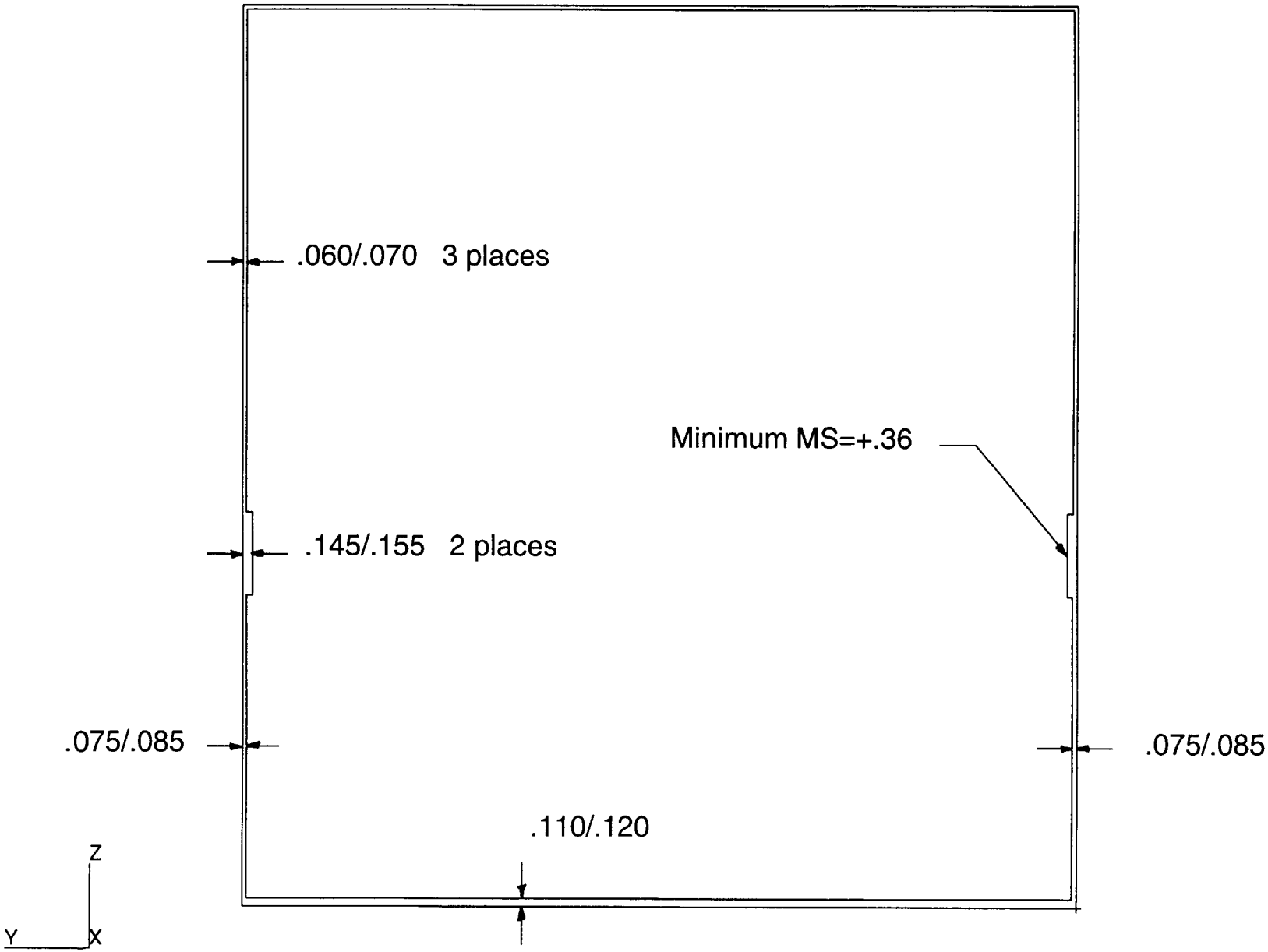

Figure 2 1331642-3 Upper Aft Panel Flanges

Report 10805A
July 1996

Meteorological Satellites (METSAT) and Earth Observing System (EOS) Advanced Microwave Sounding Unit-A (AMSU-A) Stress Analysis Report

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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 structural margins of safety and natural frequency predictions for the METSAT design at Critical Design Review (CDR). 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 Meteorological Satellites Project (METSAT) Advanced Microwave Sounding Units-A (AMSU-A), Module A1. This report is submitted to fulfill the requirements of Contract NAS 5-32314 CDRL 113, Stress Analysis Report, for the METSAT AMSU-A1 Module. The Stress Analysis Report for the A2 module has been submitted under separate cover.

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 METSAT environmental conditions given in Appendix E of the GSFC-S-79 PAR document.

In addition, the dynamic analysis results are used to show that the METSAT AMSU-A1 Module natural frequencies are above 100 hertz (Hz) and that the simplified test and analytical model requirements of GSFC-S-79 PAR for METSAT General Instruments can be applied to the METSAT AMSU-A1 module.

1.3 Document Status and Schedule

This is the submittal of the Stress Analysis Report for the METSAT AMSU-A1 Module after CDR, in July 1996.

Section 2

SUMMARY OF RESULTS AND CONCLUSIONS

A stress analysis of the primary structure of the METSAT AMSU-A1 Module has been performed using the static loads given in Appendix E, Section 1.2, of GSFC 422-S-79 PAR. Combined with factors of safety (1.4 ultimate, 1.25 yield), the static loads minimum margins of safety summary is given in Table I. The METSAT AMSU-A1 Module exhibits positive margins of safety (MS) in all parts of the structure for static design loads. Minimum MS is +1.61 and is in the sidemount at the -X upper mounting bolt region for case 4 loads of Gy = –20.6 Gz = 19.6 (in Aerojet METSAT coordinate system). Figures 5 and 6 show the stress contour plot of the sidemount critical region, with maximum *von Mises* stress of 10,727 psi. Figures 7 through 14 show the full model contour plots, for load cases 1 through 4, shell surfaces 1 and 2. Figures 15 through 22 show full model beam stress maximums and minimums, for load cases 1 through 4. Maximum beam stress is 11,596 psi, in the power control/monitor standoffs for load case 2 (Gy = -20.6 Gz = –19.6), producing a MS of +2.04. Tables II through IX present summarized MS and stresses for individual component hardware for load cases 1 through 4.

The first natural frequency of the METSAT AMSU-A1 Module is predicted at 101.8 Hz. As shown in Figure 23, 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 X, the modal effective weight and participation factor summary for the first 16 modes.

Figures 23 through 34 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 24 through 27). 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 28). 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 yz-plane. Mode 7 (121.4 Hz) shows pronounced rotation along the X-axis by the reflectors, with more movement in the upper reflector (Figure 29). Mode 8 (121.9 Hz) is similar to mode 7, but with the predominant movement in lower reflector (Figure 30). Mode 9 (122.0 Hz) movement in also an X-axis rotation in the lower reflector (Figure 31).

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 32 and 33). 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 34).

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

A stress analysis of the primary structure of the METSAT AMSU-A1 Module has been performed using the random vibration spectrum given in Appendix E, Section 1.3, of the GSFC 422-S-79 PAR. An extensive random vibration stress spreadsheet is included in Appendix D of this report. Q levels resulting from application of the qualification level random vibration spectrum (8.8 grms) with critical damping of 7 percent are tabulated for each component for each loading condition. Combined with factors of safety of 1.4 ultimate, 1.25 yield, the random vibration minimum margins of safety summary is given in Table XI. RMS stress levels are taken to the 3σ level (3.0 x stress at 8.8 grms load), multiplied by factors of safety (1.25 yield, 1.4 ultimate), and compared to material yield and ultimate strengths. All positive margins

result from this task, with the highest loaded region being the power control/monitor standoffs with an MS of +0.62. Minimum margins of safety are given for each of the three individual loading directions in Tables XII through XIV.

Transmissibility's of various regions of the NASTRAN model are identified in the Transmissibility Summary Table of Appendix E. Q levels resulting from application of the qualification level random vibration spectrum (8.8 grms) with critical damping of 7 percent are tabulated for each component for each loading condition. Large Q-values (greater than 4) are found at the power control/monitor bracket (Z-load, Y-response Q = 8.6, X-load, Y-response Q = 7.8, and Y-load, Y-response Q = 4.3), the upper right front support panel (Y-load, Y-response Q = 8.0), the upper reflector (X-load, Z-response Q = 8.0), the lower reflector (X-load, X-response Q = 7.0), the left panel (Y-load, Y-response Q = 5.4), the lower warmload (Y-load, Y-response Q = 4.4), the top panel (X-load, X-response Q = 4.0), 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 8.6, is hardware new to the AMSU design in METSAT/EOS. Plots of PSD input spectrum versus frequency and response versus frequency are included for the higher loaded locations (see Figures 35 through 46 for X-axis loading, Figures 47 through 55 for Y-axis loading, and Figures 56 through 60 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 (8.8 grms). As shown in Table XV, 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 8.8 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 E contains rattlespace deflections in the summary sheets.

Mounting bolt load results for the A-286 #10-32UNRF-3A screws identify an overall minimum margin of safety of +0.13 (Table XXIV). The condition of bolt tensile load only (with all shear reacted at the shear pins) is the higher loaded case, for each of design load case considered. To the preload (1315 lb for T = 50 in-lb), the external load is added, considering the bolted joint stiffness. Factors of safety of 1.4 ultimate, 1.25 yield are applied to the external load but not the preload. Additionally, interactive tension plus shear stress (with shear reacted at both mounting bolts and shear pins), bearing and shear tearout in the sidemount at the 2 shear pins (all shear at shear pins), joint member compression, thread shear, and sidemount bearing and shear tearout at the 16 mounting bolts, all identify no margins less than +0.23 (see Tables XVI through XXVI).

The panel flange bending stresses, summarized in Tables XXVII through XXXVI, show all positive margins of safety. Loading condition is the 8.8 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 = +0.36 with minimum t = 0.145 local flanges. The upper front panel lower flange with minimum as-built lower flange thickness of t = 0.050 for random vibration loads, shows a minimum MS of +0.34. Minimum calculated MS, at the lower motor mount panel upper flange, is +0.06 for 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 XXVIII through XXXVII, 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 = +0.32 for the NAS1352N06 screws.

Based on the large margins of safety for static and random vibration loads application, the upper aft panel side flanges redesign, and the upper front panel lower flange inspected thicknesses, the AMSU-A1 Module will maintain structural integrity in the METSAT launch 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

Aerojet

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
Report 10738A July 1996	METSAT Advanced Microwave Sounding Unit -A1 (AMSU-A1) Structural Mathematical Model

Section 4

METHOD OF ANALYSIS

4.1 Finite Element Model

Figures 1 through 4 display the NASTRAN finite element model of the METSAT AMSU-A1 structure. The basic coordinate system used in the METSAT analysis is identical to that used in the EOS analysis (Ref. Aerojet Report 10381). This orientation differs from the METSAT PAR document that utilizes the spacecraft coordinate system identified on GE ATN Spacecraft Assembly Drawing 3278200. A comparison of systems follows:

Aerojet METSAT Coordinate Sys.	GSFC-S-79 PAR Coordinate Sys.
+X Axis	–Y Axis
+Y Axis	–Z Axis
+Z Axis	+X 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, in the Aerojet METSAT coordinate system axes, at the center of gravity (cg), are shown below. The cg is measured relative to the sidemount lower corner on the spacecraft side by the lower reflector (GRID 7508).

Mass	119.4 lb.
Center of Gravity	
x	15.218 in
y	8.831
z	9.926
Moment of Inertia (@ cg)	
Ixx	7351 lb-in^2
Ixy	32
Ixz	1803
Iyx	32
Iyy	12587
Iyz	145
Izx	1803
Izy	145
Izz	9114

Appendix A, in Figures A1 through A4, shows the model assembly. Figures A1, A2, and A3 show different views of the assembled structure, while Figure A4 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 61) at the two dowel pin locations. The constraints are imposed using NASTRAN single point constraint cards.

4.3 Load Application

Eight combinations of design loads are evaluated. Referencing Appendix E, Section 1.2, PAR individual loads, Load Cases 1 through 8 in the Aerojet METSAT Coordinate System are:

Load Case	Loading
1	Gy= –20.6, Gx= –21.2
2	Gy= –20.6, Gx= 21.2
3	Gy= –20.6, Gz= –19.6
4	Gy= –20.6, Gz= 19.6
5	Gy= 20.6, Gx= –21.2
6	Gy= 20.6, Gx= 21.2
7	Gy= 20.6, Gz= –19.6
8	Gy= 20.6, Gz= 19.6

With the exception of algebraic sign, Load Cases 1, 2, 3, and 4 are identical to Load Cases 6, 5, 8, and 7, respectively. Thus only Cases 1 through 4 are evaluated.

For the random vibration loadings (Ref. Appendix E, Section 1.3, PAR), the qualification level (8.8 grms) PSD spectrum is applied along the three orthogonal axes. Three load cases are run, each load case representing the random spectrum in one of the axes shown in Figure 1.

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

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

where: c/c_c = fraction of critical damping

With c/c_c 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 employed.

Section 5

RESULTS

The finite element model is primarily made up of beam (NASTRAN CBAR and CBEAM) elements, shell (NASTRAN CQUAD4 and CTRIA3) elements, and point (NASTRAN CONM2) elements. The maximum *von Mises* stresses for plate elements and the maximum and minimum principal stresses for beam elements are used for margins of safety calculations. For the static loads analyses, the output from each evaluated load case (cases 1 through 4) is reviewed, with maximum stress contour plots drawn up based on the structural component for the shell elements, and maximum/minimum stress plots constructed for the beam elements. The static load cases maximum contour and maximum stress plots are included in Appendix C.

The stresses shown in Tables II through IX are summarized results of the structural component contour and stress plots. The stresses are multiplied by factor of safety 1.25 to calculate the yield margins of safety and by factor of safety 1.4 to calculate the ultimate margins of safety. Table I shows the overall highest stresses and lowest margins of Tables II through VIII for the static design loads.

The first 12 non-rigid body natural frequency mode shapes are depicted in Figures 23 through 34, 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).

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 XII through XIV are statistical 3σ stress levels, and are the results of the random vibration spectrum (qualification level, 8.8 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 XII through XIV 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 XI summarizes the minimum margins for the three cases. The worst axis of load application depends on the orientation of the structural item. Appendix D contains an extensive random vibration stress table, identifying the stress levels for the elements evaluated, for each orthogonal load direction.

The transmissibility's (Q levels) shown in Appendix E are the result of the output level grms acceleration divided by the input level grms acceleration (8.8 grms for each qualification level), for critical damping at 7 percent. Output shown in Appendix E consists of the root mean square (rms) response (rms in units of in/sec^2, the grms response (grms in units of g), and the transmissibility's Q (response grms divided by input grms). Plots of the input spectra are shown in Figures 35, 47, and 56 for the X, Y, and Z loadings, respectively, identifying 8.84 grms input levels. Plots response (in units of (in/sec^2)^2 /Hz) versus frequency are included for the higher loaded locations (see Figures 36 through 46 for X-axis loading, Figures 48 through 55 for Y-axis loading, and Figures 57 through 60 for Z-axis loading).

The rattlespace calculations are tabulated in Appendix E 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.

Mounting bolt hand calculated stress analysis is included for the sixteen #10-32UNF mounting screws (and two 0.375 diameter shear pins). Interactive tension plus shear stress checks are performed on the 16 screws for the 8 design load cases, summarized in Tables XVI through XIX, with resulting minimum margin +0.25 (Table XIX). Bearing and shear tearout calculations in the sidemount at the 2 shear pins, assuming all shear is taken out only at the 2 pins, shows a minimum margin of +0.23 (Table XX). Mounting bolt tensile stresses, based on the same shear reaction assumption, show a +0.13 minimum margin of safety (see Table XXIV of Tables XXI through XXIV). Additional stress calculations for joint member compression, thread shear, and sidemount bearing and shear tearout at the 16 mounting bolts, identify no margins less than +0.71 (Tables XXV and XXVI).

The flange bending stresses, summarized in Tables XXVII through XXXVI, 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 (+0.36) for the 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 for the random vibration 3σ loading with factors of safety 1.25 yield, 1.4 ultimate applied. With lower flange specified drawing thickness of 0.050 ± 0.010, the as-built hardware has been inspected and shows a minimum t = 0.050 lower flange thickness. 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 = +0.06 for the 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 XXVII through XLVI, 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 = +0.32 for the NAS1352N06 screws.

5.1 AMSU-A1 METSAT 1331552 Sidemount Mounting Bolt/Pin Stresses per Static Loads

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

Eight combinations of design loads are evaluated. Referencing Appendix E, Section 1.2, PAR individual loads, Load Cases 1 through 8 in the Aerojet METSAT Coordinate System are:

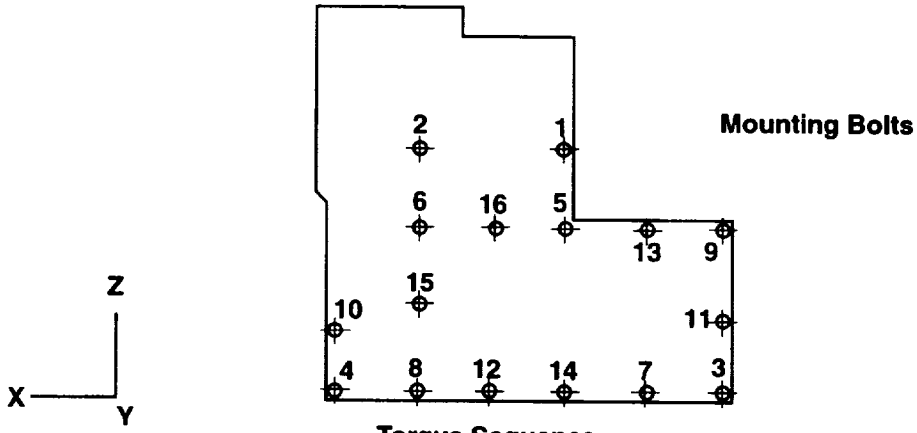
Load Case	Loading
1	Gy= –20.6, Gx=–21.2
2	Gy= –20.6, Gx= 21.2
3	Gy= –20.6, Gz=–19.6
4	Gy= –20.6, Gz=–19.6
5	Gy= 20.6, Gx=–21.2
6	Gy= 20.6, Gx= 21.2
7	Gy= 20.6, Gz=–19.6
8	Gy= 20.6, Gz= 19.6

With the exception of algebraic sign, load Cases 1,2,3, and 4 are identical to Load Cases 6, 5, 8, and 7, respectively. Thus only Cases 1 through 4 are evaluated.

FACTOR OF SAFETY 1.4 ULTIMATE

ASSUMPTIONS

1. Stresses in bolts derived from NASTRAN SPC forces based on above load cases plus bolt preload (50 in-lb as shown in drawing 1333964).
2. There are 16 bolts plus two dowel pins shown in the NASTRAN sketch. A list of NASTRAN grid numbers is included. Grids 7855 and 10724 are the shear pins.
3. Bolt grids react tension/compression (NASTRAN T2) plus shear (NASTRAN T1, T3).



Torque Sequence:

Torque screws to 20 ± 2 in lbs in the order shown
Torque screws to 30 ± 2 in lbs in the order shown
Torque screws to 40 ± 2 in lbs in the order shown
Torque screws to 50 ± 2 in lbs in the order shown

396-3116M

4. Pin grids react only shear (NASTRAN T1, T3).
5. Interactive tension plus shear considered in accordance with MIL-HDBK-5, Figure 1.5.3.5, $R_S^3+R_T^2 = 1$ curve.
6. Allowables for A286 screws and pins based on NAS1351N3-32 with F_{TU}=160000 psi and tensile area of AS=0.01999 in^2 (.190-32UNRF-3A). Shear load allowable based on F_{SU}=0.6 x F_{TU} and area per minor diameter, 0.1517 in (0.01807 in^2).

   Allowable

Tension	3200 lb	.190-32UNRF-3A
Shear	1735 lb	

7. The factor of safety, 1.4, is applied only to applied loads, not to preload.
8. Preload at 50 in-lb torque, F_i

$$F_i = \frac{T}{.2d} = \frac{50}{(.2)(.190)} = 1315 \text{ lb}$$

Bolt loads based on the four evaluated load cases (NASTRAN) follow.

Detailed calculations are performed for the most severe case, Grid 8313, Case 4.

Gy = –20.6, Gz = 19.6

$F_t = T_2 = 1415$ lb

$F_s = \sqrt{T1^2 + T3^2} = \sqrt{61^2 + 66^2} = 90$ lb

$F_i = 1315$ lb

Total bolt tensile load, Fb, is a function of preload, applied tension, and joint stiffness.

$$Fb = Fi + \frac{k_b Ft}{k_b + k_m}$$ (Shigley, "Mechanical Engineering Design," 4th Edition)

$$k_b = \frac{E_b A}{\ell}$$ $E_b = 28 \times 10^6$ psi

$A = \pi/4\,(.190)^2 = 0.2835$ in^2

ℓ = Grip of screw

0.437 + 0.31 + 0.06 = 0.807 in

= 983743 lb/in

$$k_m = \frac{\pi E_m d}{2 \mathrm{Ln} \frac{5(\ell + d/2)}{\ell + 2.5d}}$$ for G-10 spacer only with fibers ⊥ thickness use only properties

E_m = 2,500,000 psi

ℓ = 0.807 in

d = 0.190 in

= 593,160 lb / in

Therefore,

$$\frac{k_b}{k_b + k_m} = 0.623845$$

Apply the applied load directly to the preload for GRID 8313 Case 4, applying FS = 1.4, and stiffness factor

$f_t = 1315 + 1.4(0.624)(1415) = 2551$ lb

$f_s = 1.4\,(90) = 126$ lb

$$r_t = \frac{ft}{F_{tu}} = \frac{2551}{3200} = 0.797$$

$$rs = \frac{fs}{F_{su}} = \frac{126}{1735} = 0.0726$$

F O R C E S O F S I N G L E - P O I N T C O N S T R A I N T

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
7240	G	-1.150475E+01	-2.308063E+02	-1.932467E+02	0.0	0.0	0.0
7255	G	1.704103E+02	-6.667104E+01	-4.122255E+01	0.0	0.0	0.0
7446	G	7.653661E+01	4.904039E+00	-1.094048E+01	0.0	0.0	0.0
7462	G	3.402306E+01	2.066600E+02	1.057857E+02	0.0	0.0	0.0
7497	G	8.737622E+01	5.608583E+01	3.483112E+01	0.0	0.0	0.0
7507	G	1.515906E+02	3.129030E+02	1.229639E+02	0.0	0.0	0.0
7555	G	3.094059E+01	-7.092370E+01	-4.221728E+01	0.0	0.0	0.0
7745	G	4.916122E+01	2.460296E+01	-3.874358E+01	0.0	0.0	0.0
7840	G	1.711216E+02	6.325173E+01	-4.153853E+01	0.0	0.0	0.0
7855	G	2.407013E+02	0.0	-8.143425E+00	0.0	0.0	0.0
7933	G	6.933346E+01	4.503124E+01	-1.269742E+01	0.0	0.0	0.0
8313	G	4.291951E+02	4.078265E+02	1.436252E+02	0.0	0.0	0.0
9576	G	2.573442E+02	4.393478E+02	-5.588730E+01	0.0	0.0	0.0
9834	G	4.878310E+02	4.620385E+02	2.127497E+01	0.0	0.0	0.0
10271	G	5.440712E+01	4.240285E+02	1.898773E+02	0.0	0.0	0.0
10703	G	1.815681E+02	3.277552E+02	-9.097468E+01	0.0	-2.798942E-20	0.0
10724	G	1.480344E+01	0.0	9.045010E+00	0.0	-7.231528E-20	0.0
10748	G	3.571492E+01	5.290018E+01	-9.179119E+01	0.0	1.730802E-20	0.0

Forces of Single-Point Constraint (Sheet 1 of 4)

SUBCASE 2

F O R C E S O F S I N G L E - P O I N T C O N S T R A I N T

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
7240	G	2.160906E+01	4.324717E+02	2.576815E+02	0.0	0.0	0.0
7255	G	-2.261883E+02	1.942011E+02	-1.476231E+01	0.0	0.0	0.0
7446	G	-1.846833E+02	9.340278E+00	-2.008085E+00	0.0	0.0	0.0
7462	G	-1.585676E+02	-5.606078E+01	-1.344829E+02	0.0	0.0	0.0
7497	G	-1.419548E+02	-2.624223E+01	-4.006616E+01	0.0	0.0	0.0
7507	G	-1.290166E+02	-2.449961E+02	-7.712297E+01	0.0	0.0	0.0
7555	G	-2.378767E+01	5.094666E+02	4.958028E+01	0.0	0.0	0.0
7745	G	-5.408296E+01	8.851803E+01	-1.069770E+02	0.0	0.0	0.0
7840	G	7.241022E+01	6.070613E+02	1.212534E+02	0.0	0.0	0.0
7855	G	-1.675526E+02	0.0	2.793463E+01	0.0	0.0	0.0
7933	G	-7.426967E+01	2.251427E+01	8.110397E+00	0.0	0.0	0.0
8313	G	-4.209350E+02	9.004758E+02	5.747405E+01	0.0	0.0	0.0
9576	G	-1.934309E+02	1.146213E+02	3.604144E+01	0.0	0.0	0.0
9834	G	-3.898563E+02	-1.767841E+02	9.045721E+00	0.0	0.0	0.0
10271	G	-2.426548E+02	2.165265E+01	-1.288466E+02	0.0	0.0	0.0
10703	G	-1.237897E+02	-1.905697E+01	-3.162248E+01	0.0	9.938755E-21	0.0
10724	G	-8.318752E+01	0.0	-2.101788E+01	0.0	8.653684E-20	0.0
10748	G	-1.061557E+01	8.175165E+01	-1.021499E+01	0.0	9.729974E-21	0.0

Forces of Single-Point Constraint (Sheet 2 of 4)

SUBCASE 3

F O R C E S O F S I N G L E - P O I N T C O N S T R A I N T

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
7240	G	1.496918E+02	4.248118E+02	3.083591E+02	0.0	0.0	0.0
7255	G	-1.714283E+02	3.691648E+02	1.301964E+02	0.0	0.0	0.0
7446	G	1.334422E+00	5.559219E+01	8.157663E+01	0.0	0.0	0.0
7462	G	-1.650544E+02	4.968589E+02	2.779029E+02	0.0	0.0	0.0
7497	G	3.208227E-01	9.325952E+01	7.492542E+01	0.0	0.0	0.0
7507	G	1.122518E+02	3.222846E+02	1.554500E+02	0.0	0.0	0.0
7555	G	1.455312E+01	2.296248E+02	9.036020E+01	0.0	0.0	0.0
7745	G	-3.447092E+01	1.439095E+02	7.911532E+01	0.0	0.0	0.0
7840	G	6.165983E+01	2.808315E+02	2.730477E+02	0.0	0.0	0.0
7855	G	9.443030E+01	0.0	2.352559E+02	0.0	0.0	0.0
7933	G	-2.566635E+01	2.428530E+01	9.705036E+00	0.0	0.0	0.0
8313	G	-5.293840E+01	-1.067254E+02	1.350590E+02	0.0	0.0	0.0
9576	G	-1.014966E+02	-1.723588E+02	1.049865E+02	0.0	0.0	0.0
9834	G	1.460581E+02	1.853117E+02	1.734016E+01	0.0	0.0	0.0
10271	G	-2.787283E+01	2.178517E+02	2.355006E+02	0.0	0.0	0.0
10703	G	-1.266849E+00	-8.053241E-01	4.574073E+01	0.0	-7.839818E-21	0.0
10724	G	2.745042E+01	0.0	2.643910E+00	0.0	-5.137628E-20	0.0
10748	G	-2.755592E+01	-1.049623E+02	8.240316E+01	0.0	-1.324761E-20	0.0

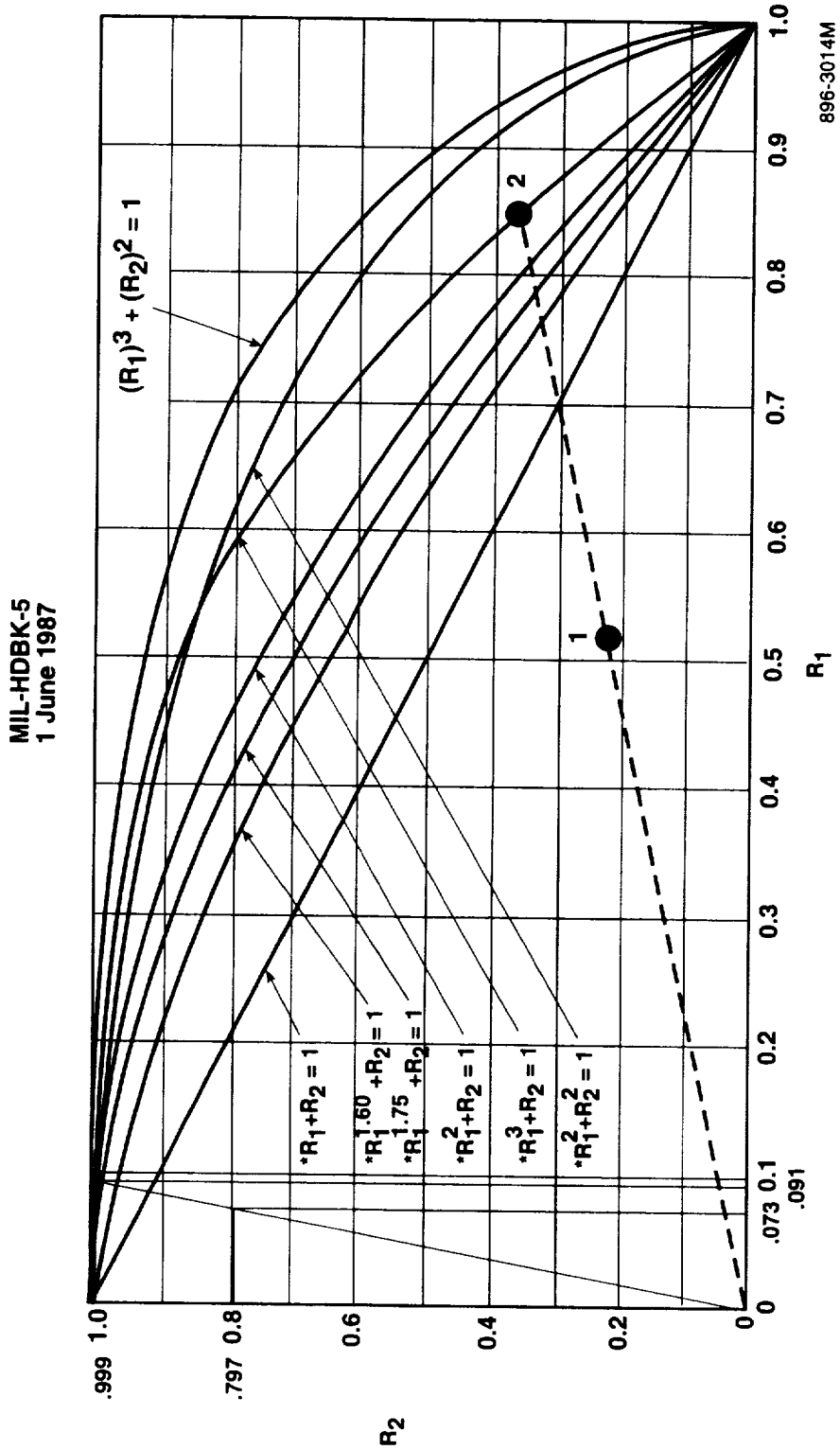
Forces of Single-Point Constraint (Sheet 3 of 4)

SUBCASE 4

F O R C E S O F S I N G L E - P O I N T C O N S T R A I N T

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
7240	G	-1.395875E+02	-2.231464E+02	-2.439243E+02	0.0	0.0	0.0
7255	G	1.156502E+02	-2.416347E+02	-1.861812E+02	0.0	0.0	0.0
7446	G	-1.094811E+02	-4.134787E+01	-9.452520E+01	0.0	0.0	0.0
7462	G	4.050983E+01	-3.462596E+02	-3.066002E+02	0.0	0.0	0.0
7497	G	-5.489940E+01	-6.341592E+01	-8.016047E+01	0.0	0.0	0.0
7507	G	-8.967787E+01	-2.543777E+02	-1.096091E+02	0.0	0.0	0.0
7555	G	-7.400199E+00	2.089180E+02	-8.299719E+01	0.0	0.0	0.0
7745	G	2.954918E+01	-3.078848E+01	-2.248359E+02	0.0	0.0	0.0
7840	G	1.818719E+02	3.894816E+02	-1.933329E+02	0.0	0.0	0.0
7855	G	-2.128159E+01	0.0	-2.154647E+02	0.0	0.0	0.0
7933	G	2.073013E+01	4.326021E+01	-1.429206E+01	0.0	0.0	0.0
8313	G	6.119852E+01	1.415028E+03	6.604026E+01	0.0	0.0	0.0
9576	G	1.654100E+02	7.263279E+02	-1.248324E+02	0.0	0.0	0.0
9834	G	-4.808335E+01	9.994270E+01	1.298054E+01	0.0	0.0	0.0
10271	G	-1.603748E+02	2.278294E+02	-1.744700E+02	0.0	0.0	0.0
10703	G	5.904524E+01	3.095035E+02	-1.683379E+02	0.0	-1.021085E-20	0.0
10724	G	-9.583450E+01	0.0	-1.461678E+01	0.0	6.559783E-20	0.0
10748	G	5.265528E+01	2.396142E+02	-1.844093E+02	0.0	4.028561E-20	0.0

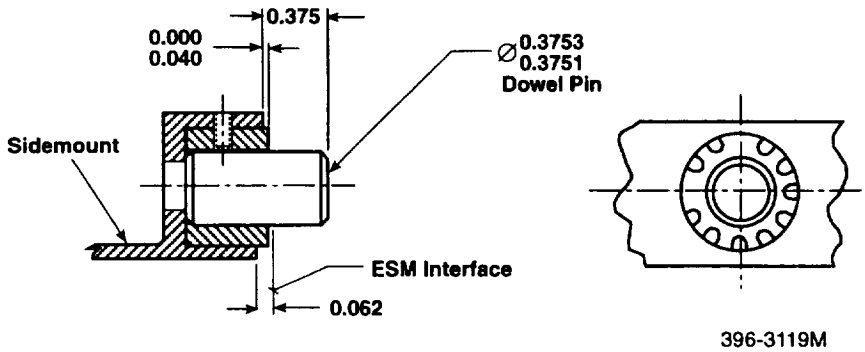
Forces of Single-Point Constraint (Sheet 4 of 4)



Typical Interaction Curves for Combined Loading Conditions

Shear Pins Shear Tearout

As shown in Drawing 1333964, Sheet 2, View D, and the 1331552-1 sidemount with the 1333395-2 and -3 spacers.



Shear tearout of the sidemount and bearing on the sidemount can be determined. The 133395-2 and -3 T1-6AL-4V spacers are scalloped along the OD, thus reducing the bearing area to the 6061-T6 sidemount.

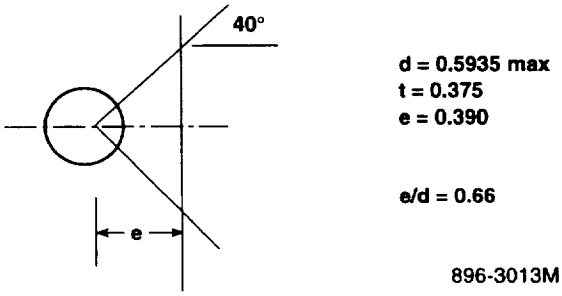
Shear Tearout of Aluminum Sidemount

Based on Case 4, GRID 7855 pin, from the NASTRAN solution with all shear reacted at the two shear pins (no SPC restraint in T1 or T3 for the 16 screws).

Max shear load

$$F = \sqrt{(111)^2 + (1913)^2} = 1916 \text{ lb}$$

Shear tearout of the aluminum sidemount for dimensions as noted, per Bruhn, "Analysis and Design of Airplane Structures," 1973, pages D.1.4-D.1.5.



$$AS = (e - \frac{d}{2}\cos 40)(t)(2) = 0.122 \text{ in}^2$$

Based on an ultimate load, with FS=1.4

$$T = \frac{1.4(1916)}{0.122} = 21{,}986 \text{ psi}$$

Shear allowable for sidemount, 6061-T6

F_{SU} = 27,000 psi

$$MS = \frac{27,000}{21,986} - 1 = +0.23 \text{ sidemount}$$

See Table XX for shear tearout MS summary.

Bearing of 1333395-2 Bushing onto Sidemount

With F = 1916 lb load

Bearing area without considering scallops in 1333395-2 bushing

$A = (0.375 - 0.010 - 0.035)(0.5936) = 0.196 \text{ in}^2$

Scallops considered for 40 percent of circumference

$\pi d = \pi (0.5936) = 1.865$
Remove 12 x 0.062 = 0.744

(0.744/1.865) x 100 = 40 percent

Bearing area with scallops

$A = (0.60)(0.196) = 0.118 \text{ in}^2$

With 1.25 FS for limit load

$$\sigma = \frac{1.25 \times 1916}{0.118} = 20,300 \text{ psi Limit with 1.25 FS}$$

With e/D = 0.66<<1.5 use Fbry = Fcy

Fcy = 35,000 psi

$$MS = \frac{35,000}{20,300} - 1 = +0.72 \text{ Sidemount with 1.25 FS limit}$$

With 1.4 FS for ultimate load

$$\sigma = \frac{1.4 \times 1916}{0.118} = 22,740 \text{ psi}$$

With e/D = 0.66<<1.5 Use $F_{bru}=F_{tu}$ = 42,000 psi

$$MS = \frac{42,000}{22,740} - 1 = +0.84 \text{ Sidemount with 1.4 FS ultimate}$$

The NASTRAN loads are given for load cases 1 through 4 in Table XX for the condition of all shear reacted in pins.

Mounting Bolt Stresses based on Static Loads for Condition of all Shear Reacted at Pins

Summary tables (Tables XXI through XXIV) for the four evaluated design load cases contain all data. Worst location is bolt at GRID 8313 for load case 4 (based on the assumption of kb/kb + km = 0.624) and FS of 1.4 applied to applied load minimum margin.

$$MS = \frac{3200}{(1.4)(0.624)(1749) + 1315} - 1 = +0.13$$

SUBCASE 1

F O R C E S O F S I N G L E - P O I N T C O N S T R A I N T

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
7240	G	0.0	-9.874654E+01	0.0	0.0	0.0	0.0
7255	G	0.0	-3.824416E+01	0.0	0.0	0.0	0.0
7446	G	0.0	6.221199E+00	0.0	0.0	0.0	0.0
7462	G	0.0	2.256227E+02	0.0	0.0	0.0	0.0
7497	G	0.0	6.256901E+01	0.0	0.0	0.0	0.0
7507	G	0.0	2.515095E+02	0.0	0.0	0.0	0.0
7555	G	0.0	-1.666355E+02	0.0	0.0	0.0	0.0
7745	G	0.0	1.364205E+01	0.0	0.0	0.0	0.0
7840	G	0.0	-1.242564E+02	0.0	0.0	0.0	0.0
7855	G	1.795526E+03	0.0	4.336206E+01	0.0	0.0	0.0
7933	G	0.0	5.684992E+01	0.0	0.0	0.0	0.0
8313	G	0.0	3.677610E+02	0.0	0.0	0.0	0.0
9576	G	0.0	4.375062E+02	0.0	0.0	0.0	0.0
9834	G	0.0	2.937166E+02	0.0	0.0	0.0	0.0
10271	G	0.0	6.437571E+02	0.0	0.0	0.0	0.0
10703	G	0.0	4.379902E+02	0.0	0.0	0.0	0.0
10724	G	7.350280E+02	0.0	-4.336206E+01	0.0	-4.004632E-20	0.0
10748	G	0.0	8.967153E+01	0.0	0.0	-1.448398E-19	0.0
						3.437454E-20	0.0

Forces of Single-Point Constraint (Sheet 1 of 4)

SUBCASE 2

F O R C E S O F S I N G L E - P O I N T C O N S T R A I N T

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
7240	G	0.0	2.381153E+02	0.0	0.0	0.0	0.0
7255	G	0.0	1.739431E+02	0.0	0.0	0.0	0.0
7446	G	0.0	9.301189E+00	0.0	0.0	0.0	0.0
7462	G	0.0	-2.812684E+01	0.0	0.0	0.0	0.0
7497	G	0.0	-1.764843E+01	0.0	0.0	0.0	0.0
7507	G	0.0	-1.406480E+02	0.0	0.0	0.0	0.0
7555	G	0.0	6.201996E+02	0.0	0.0	0.0	0.0
7745	G	0.0	6.905199E+01	0.0	0.0	0.0	0.0
7840	G	0.0	7.680912E+02	0.0	0.0	0.0	0.0
7855	G	-1.672131E+03	0.0	-4.336207E+01	0.0	0.0	0.0
7933	G	0.0	-1.096556E+01	0.0	0.0	0.0	0.0
8313	G	0.0	1.047597E+03	0.0	0.0	0.0	0.0
9576	G	0.0	1.194597E+02	0.0	0.0	0.0	0.0
9834	G	0.0	7.781662E+00	0.0	0.0	0.0	0.0
10271	G	0.0	-1.721214E+02	0.0	0.0	0.0	0.0
10703	G	0.0	-2.270925E+02	0.0	0.0	1.574671E-20	0.0
10724	G	-8.584225E+02	0.0	4.336208E+01	0.0	9.844039E-20	0.0
10748	G	0.0	1.996736E+00	0.0	0.0	-6.383711E-21	0.0

Forces of Single-Point Constraint (Sheet 2 of 4)

SUBCASE 3

F O R C E S O F S I N G L E - P O I N T C O N S T R A I N T

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
7240	G	0.0	2.700318E+02	0.0	0.0	0.0	0.0
7255	G	0.0	3.912783E+02	0.0	0.0	0.0	0.0
7446	G	0.0	5.406951E+01	0.0	0.0	0.0	0.0
7462	G	0.0	4.622511E+02	0.0	0.0	0.0	0.0
7497	G	0.0	9.547428E+01	0.0	0.0	0.0	0.0
7507	G	0.0	3.011851E+02	0.0	0.0	0.0	0.0
7555	G	0.0	3.374338E+02	0.0	0.0	0.0	0.0
7745	G	0.0	2.343174E+02	0.0	0.0	0.0	0.0
7840	G	0.0	3.678293E+02	0.0	0.0	0.0	0.0
7855	G	1.273211E+01	0.0	1.913108E+03	0.0	0.0	0.0
7933	G	0.0	6.072196E+01	0.0	0.0	0.0	0.0
8313	G	0.0	-3.337893E+02	0.0	0.0	0.0	0.0
9576	G	0.0	-5.296381E+01	0.0	0.0	0.0	0.0
9834	G	0.0	2.370037E+02	0.0	0.0	0.0	0.0
10271	G	0.0	3.219608E+02	0.0	0.0	0.0	0.0
10703	G	0.0	-1.446809E+02	0.0	0.0	-7.974856E-21	0.0
10724	G	-1.273211E+01	0.0	4.264612E+02	0.0	-3.689414E-19	0.0
10748	G	0.0	-1.431885E+02	0.0	0.0	-9.468250E-21	0.0

Forces of Single-Point Constraint (Sheet 3 of 4)

SUBCASE 4

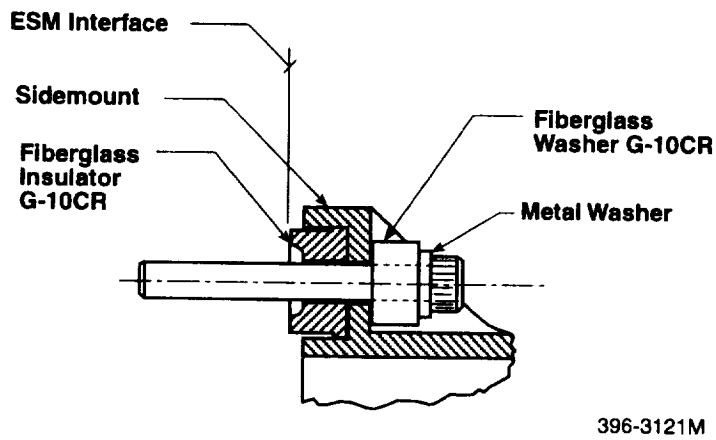
F O R C E S O F S I N G L E - P O I N T C O N S T R A I N T

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
7240	G	0.0	-1.306630E+02	0.0	0.0	0.0	0.0
7255	G	0.0	-2.555793E+02	0.0	0.0	0.0	0.0
7446	G	0.0	-3.854712E+01	0.0	0.0	0.0	0.0
7462	G	0.0	-2.647552E+02	0.0	0.0	0.0	0.0
7497	G	0.0	-5.055370E+01	0.0	0.0	0.0	0.0
7507	G	0.0	-1.903235E+02	0.0	0.0	0.0	0.0
7555	G	0.0	1.161304E+02	0.0	0.0	0.0	0.0
7745	G	0.0	-1.516234E+02	0.0	0.0	0.0	0.0
7840	G	0.0	2.760055E+02	0.0	0.0	0.0	0.0
7855	G	1.106625E+02	0.0	-1.913108E+03	0.0	0.0	0.0
7933	G	0.0	-1.483760E+01	0.0	0.0	0.0	0.0
8313	G	0.0	1.749147E+03	0.0	0.0	0.0	0.0
9576	G	0.0	6.099297E+02	0.0	0.0	0.0	0.0
9834	G	0.0	6.449465E+01	0.0	0.0	0.0	0.0
10271	G	0.0	1.496748E+02	0.0	0.0	0.0	0.0
10703	G	0.0	3.555786E+02	0.0	0.0	-1.632476E-20	0.0
10724	G	-1.106625E+02	0.0	-4.264612E+02	0.0	3.225420E-19	0.0
10748	G	0.0	2.348568E+02	0.0	0.0	3.745908E-20	0.0

Forces of Single-Point Constraint (Sheet 4 of 4)

Member Compression Under Preload

The mounting bolt joint is shown from a view on 1333964.



Where the metal CRES washer is considered as 0.440 OD, 0.195 ID, 0.060 thick. The fiberglass washer is G-10, 0.435 ∅ x 0.250 thick. The fiberglass insulator is also G-10, 0.590 ∅ x 0.310 thick (1333395-6).

The sidemount hole dimensions are a 0.287 max dia hole with 0.5925 max dia counterbore. Thickness of 0.287 Ø is 0.125.

Maximum load is the preload F = 1315 lb for 50 in-lb torque.

FS = 1.4 ultimate, 1.25 limit, material allowable.

Bolt	Assumed A-286 Steel	F_{TU} = 160,000 psi
Washer	Assumed A-286 Steel	F_{TU} = 160,000 psi
G-10CR Isolators	Laminates ⊥ (centerline)	F_{TU} = 60,000 psi
Sidemount	6061-T6 Aluminum	F_{TU} = 42,000 psi
		F_{TY} = 35,000 psi

With summarized MS calculations in Table XXV, member analysis follows.

Bolthead to Washer

Assume NAS1351N3-32 Screw
Assume NAS1149E0363P Washer

Head OD	0.313 minimum
Washer ID	0.203 + 0.010 = 0.213 maximum

$A = \pi/4\ (0.303^2 - 0.213^2) = 0.0365\ in^2$ minimum

$$FA = \frac{1315}{0.0365} = 36{,}100 \text{ psi}$$

$$MS = \frac{160{,}000}{1.4 \times 36{,}100} - 1 = +2.1 \text{ Bolt / Washer}$$

Washer to 0.435 OD x 0.250 thick Washer

Assume NAS 11440E0363P Washer

Washer OD	0.438 – 0.005 = 0.433 min	ID = 0.213 max
Isolator OD	0.435 – 0.002 = 0.433 min	(Assumed)

$$A = \pi/4\,(0.433^2 - 0.213^2) = 0.112\ \text{in}^2\,\text{min}$$

$$F / A = \frac{1315}{0.112} = 11{,}781\ \text{psi}$$

$$MS = \frac{60{,}000}{1.4 \times 11{,}781} - 1 = +2.6\ \text{Isolator}$$

Isolator to Sidemount Ledge

Isolator OD	0.433 min (Assumed)
Sidemount ID	0.287 max

$$A = \pi/4\,(0.433^2 - 0.287^2) = 0.083\ \text{in}^2$$

$$F/A = \frac{1315}{0.083} = 15{,}928\ \text{psi}$$

$$MS = \frac{35{,}000}{1.25 \times 15{,}928} - 1 = +0.76\ \text{Sidemount}$$

$$MS = \frac{42{,}000}{1.4 \times 15{,}928} - 1 = +0.88\ \text{Sidemount}$$

Sidemount Ledge to 1333395-6 .590 ∅ Isolator

Isolator OD	0.590 – 2 (0.030) = 0.530 min
Sidemount ID	0.287 max

$$A = \pi/4\,(0.530^2 - 0.287^2) = 0.156\ \text{in}^2$$

$$F/A = \frac{1315}{0.156} = 8433\ \text{psi}$$

$$MS = \frac{35{,}000}{1.25 \times 8{,}433} - 1 = +2.3\ \text{Sidemount}$$

$$MS = \frac{42{,}000}{1.4 \times 8{,}433} - 1 = +2.6\ \text{Sidemount}$$

0.590 ∅ Isolator to Spacecraft

Isolator OD	0.590 min
Isolator ID	0.385 max

$$A = \pi/4\,(0.590^2 - 0.385^2) = 0.157 \text{ in}^2$$

$$F/A = \frac{1315}{0.157} = 8377 \text{ psi}$$

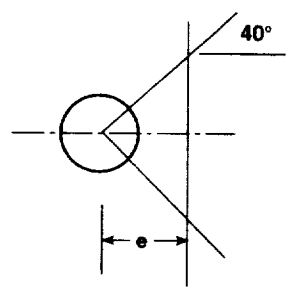
$$MS = \frac{60{,}000}{1.4 \times 8{,}377} - 1 = +4.1 \text{ Isolator}$$

Sidemount Mounting Bolts Shear Tearout

Maximum #10-32 screw shear load is from case 1, GRID 9834, from the condition of shear load reacted at both the 16 screws and the 2 pins, as shown in Table XXVI.

$$F = \sqrt{488^2 + 21^2} = 488 \text{ lb}$$

Shear tearout of the aluminum sidemount at the lower, 0.590 ∅ isolator, per Bruhn.



e = 0.390
d = 0.5925 $\frac{e}{d} = 0.66$
t = 0.250

AS = (e-d/2 cos40) (2t)
= 0.082 in^2

896-3015M

$$T = \frac{(1.4)(488)}{0.082} = 8387 \text{ psi}$$

$$F_{SU} = 27{,}000 \text{ psi}$$

$$MS = \frac{27{,}000}{8{,}387} - 1 = +2.2 \text{ Sidemount}$$

Bearing of 0.590 ∅ Isolator onto Sidemount Hole for Maximum Shear Load

F_{SMAX} = 488 lb GRID 9834 Case 1

$$F_t = (0.590)\,(0.250) = 0.148 \text{ in}^2$$

$$\sigma = \frac{1.25 \times 488}{0.148} = 4137 \text{ psi Limit with FS} = 1.25$$

With e/D = 0.66 << 1.5 Use Fbry = Fcy

Fcy = 35,000 psi 6061-T6

$$MS = \frac{35{,}000}{4{,}137} - 1 = +7.5 \text{ Sidemount}$$

Use Fbru = Ftu = 42,000 psi

$$MS = \frac{42{,}000}{\left(\frac{1.4x488}{0.148}\right)} - 1 = +8.1 \qquad \text{Sidemount}$$

For the isolator use Fbru = Fcu edge = 35,000 psi

$$MS = \frac{35{,}000}{\left(\frac{1.4x488}{0.148}\right)} - 1 = +6.6 \qquad 0.540\varnothing \text{ isolator}$$

Other load cases are summarized in the summary table, Table XXVI.

Thread Shear of 0.190-32UNF Screw into Spacecraft Mounting Surface

Assumptions

1. Screw material is A286 w/F_{TU}=160,000 psi
2. Thread type is 0.190-32UNRF-3A (NAS1351N3-32)
3. Spacecraft INT THRD is of similar material as screw
4. Length of engagement of joint ≥1∅(≥0.190)

Max shear load per Case 4 tensile max at GRID 8313 (all shear at shear pins)

F = 2843 lb Preload + applied load with assumed joint stiffness kb/kb + km = 0.624 with FS = 1.4.

Shear area

$$AS = \frac{pELe}{2} = 0.05065 \text{ in}^2 \quad E = 0.1697 \quad Le = 0.190$$

Allowable, $F_{SU} = 0.6 \times F_{TU} = 96{,}000$ psi

$$MS = \frac{96{,}000}{\frac{2{,}843}{0.05065}} - 1 = +7.1$$

Other load cases are addressed in Table XXV.

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Table I METSAT AMSU-A1 Margins of Safety Summary, All Elements, Design Loads Cases 1 through 8

ITEM NO.*	DESCRIPTION	PART NUMBER	MATERIAL/ ALLOY	YIELD (psi)	ULTIMATE (psi)	STRESS** (psi)	MARGINS OF SAFETY YIELD	MARGINS OF SAFETY ULTIMATE	CASE EL TYPE
1	LOWER BASEPLATE ASSEMBLY	1331404-1	ALUM/6061-T651	35000	42000	5181	4.40	4.79	3 BEAM
2	LOWER MOTOR MOUNT PANEL	1331414-1	ALUM/7075-T651	66000	75000	4263	11.39	11.57	1 BEAM
3	UPPER MOTOR MOUNT PANEL	1331389-1	ALUM/7075-T651	66000	75000	2703	18.53	18.82	1 BEAM
4	LOWER FRONT PANEL	1331401-1	ALUM/6061-T651	35000	42000	2344	10.95	11.80	1 BEAM
5	LOWER AFT PANEL	1331652-1	ALUM/2024-T851	58000	66000	2159	20.49	20.84	4 BEAM
6	UPPER BASEPLATE ASSEMBLY	1331356-3	ALUM/6061-T651	35000	42000	2576	9.87	10.65	2 BEAM
7	UPPER FRONT PANEL	1331352-3	ALUM/7075-T651	66000	75000	4533	10.65	10.82	1 BEAM
8	UPPER AFT PANEL	1331642-3	ALUM/2024-T851	58000	66000	5087	8.12	8.27	1 SHELL
9	LOWER RF SHELF ASSEMBLY	1356429-1	BE/SR-200E	50000	70000	8745	3.57	4.72	1 SHELL
10	UPPER RF SHELF ASSEMBLY	1356409-1	BE/SR-200E	50000	70000	3804	9.52	12.14	4 SHELL
11	LOWER RIGHT FRONT SUPT PANEL	1331447-1	ALUM/6061-T651	35000	42000	1525	17.36	18.67	1 BEAM
12	LOWER RIGHT PANEL	1331650-1	ALUM/6061-T6	35000	42000	1973	13.19	14.21	4 BEAM
13	UPPER RIGHT FRONT SUPT PANEL	1331390-1	ALUM/6061-T651	35000	42000	2457	10.40	11.21	2 BEAM
14	UPPER RIGHT PANEL	1331651-1	ALUM/6061-T6	35000	42000	1721	15.27	16.43	1 SHELL
15	TOP PANEL	1331648-1	ALUM/6061-T6	35000	42000	2301	11.17	12.04	2 SHELL
16	LEFT PANEL	1331640-1	ALUM/6061-T6	35000	42000	1948	13.37	14.40	4 SHELL
17	LOWER LEFT WARMLOAD SHIELD	1331445-1	ALUM/6061-T6	35000	42000	3593	6.79	7.35	1 BEAM
18	LOWER RIGHT WARMLOAD SHIELD	1331405-1	ALUM/6061-T6	35000	42000	3552	6.88	7.45	1 BEAM
19	UPPER LEFT WARMLOAD SHIELD	1331647-1	ALUM/6061-T6	35000	42000	3630	6.71	7.26	1 BEAM
20	UPPER RIGHT WARMLOAD SHIELD	1331646-1	ALUM/6061-T6	35000	42000	2096	12.36	13.31	1 BEAM
21	LOWER CARD CAGE ASSEMBLY	1331600-1	ALUM/6061-T6	35000	42000	3107	8.01	8.66	4 SHELL
22	LOWER CARD	1331600-1	REINF PLASTIC	24000	40000	994	18.32	27.74	4 SHELL
23	UPPER CARD CAGE ASSEMBLY	1331162-1	ALUM/6061-T6	35000	42000	3415	7.20	7.78	4 BEAM
23a	UPPER CARD CAGE ASSEMBLY	1331162-1	ALUM/6061-T4	16000	30000	3057	3.19	6.01	4 BEAM
24	UPPER CARD	1331162-1	REINF PLASTIC	24000	40000	529	35.29	53.01	1 SHELL
25	LOWER CALIBRATION SOURCE ASSY	1331380-1	ALUM/6061-T6	35000	42000	1984	13.11	14.12	3 SHELL
26	UPPER CALIBRATION SOURCE ASSY	1331380-2	ALUM/6061-T6	35000	42000	1904	13.71	14.76	3 SHELL
27	BEAM SUPPORT	1331406-1	ALUM/7075-T6	66000	75000	2576	19.50	19.80	2 BEAM
28	LOWER REFLECTOR	1355777-1	ALUM/6061-T6	35000	42000	1602	16.48	17.73	1 BEAM
29	POWER CONTROL/MONITOR, BKT	1356790-1	ALUM/6061-T6	35000	42000	3211	7.72	8.34	2 SHELL
30	POWER CNTL/MNTR ASSY, PWB	1356962-1	REINF PLASTIC	24000	40000	891	20.55	31.07	1 SHELL
31	PWR CNTL/MNTR ASSY, STANDOFFS	1356962-1	CRES 1/4 HARD	44000	122000	11596	2.04	6.51	2 BEAM
32	RADIATOR PANEL	1331511-1	ALUM/6061-T6	35000	42000	2622	9.68	10.44	2 SHELL
33	SIDEMOUNT ASSEMBLY	1331552-1	ALUM/6061-T6	35000	42000	10727	1.61	1.80	4 SHELL
34	UPPER REFLECTOR	1355777-1	ALUM/6061-T6	35000	42000	1610	16.39	17.63	1 BEAM

*DESIGN LOADS CASE 1 Gy=-20.6 Gx=-21.2, CASE 2 Gy=-20.6,Gx=21.2, CASE 3 Gy=-20.6,Gz=-19.6, CASE 4 Gy=-20.6,Gz=19.6
DESIGN LOADS CASE 5 Gy=20.6 Gx=-21.2, CASE 6 Gy=20.6,Gx=21.2, CASE 7 Gy=20.6,Gz=-19.6, CASE 8 Gy=20.6,Gz=19.6
**VON MISES STRESS FOR SHELL ELEMENTS, ABSOLUTE VALUE OF MAXIMUM PRINCIPAL STRESS OR MINIMUM PRINCIPAL STRESS FOR BEAM ELEMENTS.

Table II METSAT AMSU-A1 Margins of Safety Summary, Shell Elements, Design Loads Case 1 Gy=-20.6 Gx=-21.2

ITEM NO.*	DESCRIPTION	PART NUMBER	MATERIAL/ ALLOY	YIELD (psi)	ULTIMATE (psi)	VON MISES STRESS (psi)	MARGINS OF SAFETY	
							YIELD	ULTIMATE
1	LOWER BASEPLATE ASSEMBLY	1331404-1	ALUM/6061-T651	35000	42000	771	35.32	37.91
2	LOWER MOTOR MOUNT PANEL	1331414-1	ALUM/7075-T651	66000	75000	3543	13.90	14.12
3	UPPER MOTOR MOUNT PANEL	1331389-1	ALUM/7075-T651	66000	75000	1972	25.77	26.17
4	LOWER FRONT PANEL	1331401-1	ALUM/6061-T651	35000	42000	1625	16.23	17.46
5	LOWER AFT PANEL	1331652-1	ALUM/2024-T851	58000	66000	731	62.47	63.49
6	UPPER BASEPLATE ASSEMBLY	1331356-3	ALUM/6061-T651	35000	42000	1064	25.32	27.20
7	UPPER FRONT PANEL	1331352-3	ALUM/7075-T651	66000	75000	869	59.76	60.65
8	UPPER AFT PANEL	1331642-3	ALUM/2024-T851	58000	66000	5087	8.12	8.27
9	LOWER RF SHELF ASSEMBLY	1356429-1	BE/SR-200E	50000	70000	8745	3.57	4.72
10	UPPER RF SHELF ASSEMBLY	1356409-1	BE/SR-200E	50000	70000	991	39.36	49.45
11	LOWER RIGHT FRONT SUPPORT PANEL	1331447-1	ALUM/6061-T651	35000	42000	573	47.87	51.36
12	LOWER RIGHT PANEL	1331650-1	ALUM/6061-T6	35000	42000	1221	21.93	23.57
13	UPPER RIGHT FRONT SUPPORT PANEL	1331390-1	ALUM/6061-T651	35000	42000	928	29.17	31.33
14	UPPER RIGHT PANEL	1331651-1	ALUM/6061-T6	35000	42000	1721	15.27	16.43
15	TOP PANEL	1331648-1	ALUM/6061-T6	35000	42000	2043	12.71	13.68
16	LEFT PANEL	1331640-1	ALUM/6061-T6	35000	42000	1666	15.81	17.01
17	LOWER LEFT WARMLOAD SHIELD	1331445-1	ALUM/6061-T6	35000	42000	2011	12.92	13.92
18	LOWER RIGHT WARMLOAD SHIELD	1331405-1	ALUM/6061-T6	35000	42000	766	35.55	38.16
19	UPPER LEFT WARMLOAD SHIELD	1331647-1	ALUM/6061-T6	35000	42000	1245	21.49	23.10
20	UPPER RIGHT WARMLOAD SHIELD	1331646-1	ALUM/6061-T6	35000	42000	397	69.53	74.57
21	LOWER CARD CAGE ASSEMBLY	1331600-1	ALUM/6061-T6	35000	42000	2693	9.40	10.14
22	LOWER CARD	1331600-1	REINF PLASTIC	24000	40000	873	20.99	31.73
23	UPPER CARD CAGE ASSEMBLY	1331162-1	ALUM/6061-T6	35000	42000	537	51.14	54.87
23a	UPPER CARD CAGE ASSEMBLY	1331162-1	ALUM/6061-T4	16000	30000	537	22.84	38.90
24	UPPER CARD	1331162-1	REINF PLASTIC	24000	40000	529	35.29	53.01
25	LOWER CALIBRATION SOURCE ASSY	1331380-1	ALUM/6061-T6	35000	42000	1014	26.61	28.59
26	UPPER CALIBRATION SOURCE ASSY	1331380-2	ALUM/6061-T6	35000	42000	853	31.83	34.17
27	BEAM SUPPORT	1331406-1	ALUM/7075-T6	66000	75000	*******		
28	LOWER REFLECTOR	1355777-1	ALUM/6061-T6	35000	42000	777	35.04	37.61
29	POWER CONTROL/MONITOR, BRACKET	1356790-1	ALUM/6061-T6	35000	42000	2336	10.99	11.84
30	POWER CNTL/MNTR ASSY, PWB	1356962-1	REINF PLASTIC	24000	40000	891	20.55	31.07
31	POWER CNTL/MNTR ASSY, STANDOFFS	1356962-1	CRES 1/4 HARD	44000	122000	*******		
32	RADIATOR PANEL	1331511-1	ALUM/6061-T6	35000	42000	1773	14.79	15.92
33	SIDEMOUNT ASSEMBLY	1331552-1	ALUM/6061-T6	35000	42000	6437	3.35	3.66
34	UPPER REFLECTOR	1355777-1	ALUM/6061-T6	35000	42000	771	35.32	37.91

*ALSO DESIGN LOADS CASE 6 Gy=20.6 Gx=21.2

Table III METSAT AMSU-A1 Margins of Safety Summary, Beam Elements, Design Loads Case 1 Gy=-20.6 Gx=-21.2

ITEM NO.*	DESCRIPTION	PART NUMBER	MATERIAL/ ALLOY	YIELD (psi)	ULTIMATE (psi)	MAXIMUM** STRESS (psi)	MARGINS OF SAFETY	
							YIELD	ULTIMATE
1	LOWER BASEPLATE ASSEMBLY	1331404-1	ALUM/6061-T651	35000	42000	1449	18.32	19.70
2	LOWER MOTOR MOUNT PANEL	1331414-1	ALUM/7075-T651	66000	75000	4263	11.39	11.57
3	UPPER MOTOR MOUNT PANEL	1331389-1	ALUM/7075-T651	66000	75000	2703	18.53	18.82
4	LOWER FRONT PANEL	1331401-1	ALUM/6061-T651	35000	42000	2344	10.95	11.80
5	LOWER AFT PANEL	1331652-1	ALUM/2024-T851	58000	66000	1478	30.39	30.90
6	UPPER BASEPLATE ASSEMBLY	1331356-3	ALUM/6061-T651	35000	42000	1395	19.07	20.51
7	UPPER FRONT PANEL	1331352-3	ALUM/7075-T651	66000	75000	4533	10.65	10.82
8	UPPER AFT PANEL	1331642-3	ALUM/2024-T851	58000	66000	2581	16.98	17.27
9	LOWER RF SHELF ASSEMBLY	1356429-1	BE/SR-200E	50000	70000	1588	24.19	30.49
10	UPPER RF SHELF ASSEMBLY	1356409-1	BE/SR-200E	50000	70000	437	90.53	113.42
11	LOWER RIGHT FRONT SUPPORT PANEL	1331447-1	ALUM/6061-T651	35000	42000	1525	17.36	18.67
12	LOWER RIGHT PANEL	1331650-1	ALUM/6061-T6	35000	42000	1301	20.52	22.06
13	UPPER RIGHT FRONT SUPPORT PANEL	1331390-1	ALUM/6061-T651	35000	42000	2096	12.36	13.31
14	UPPER RIGHT PANEL	1331651-1	ALUM/6061-T6	35000	42000	1254	21.33	22.92
15	TOP PANEL	1331648-1	ALUM/6061-T6	35000	42000	500	55.00	59.00
16	LEFT PANEL	1331640-1	ALUM/6061-T6	35000	42000	*******		
17	LOWER LEFT WARMLOAD SHIELD	1331445-1	ALUM/6061-T6	35000	42000	3593	6.79	7.35
18	LOWER RIGHT WARMLOAD SHIELD	1331405-1	ALUM/6061-T6	35000	42000	3552	6.88	7.45
19	UPPER LEFT WARMLOAD SHIELD	1331647-1	ALUM/6061-T6	35000	42000	3630	6.71	7.26
20	UPPER RIGHT WARMLOAD SHIELD	1331646-1	ALUM/6061-T6	35000	42000	2096	12.36	13.31
21	LOWER CARD CAGE ASSEMBLY	1331600-1	ALUM/6061-T6	35000	42000	*******		
22	LOWER CARD	1331600-1	REINF PLASTIC	24000	40000	*******		
23	UPPER CARD CAGE ASSEMBLY	1331162-1	ALUM/6061-T6	35000	42000	1657	15.90	17.11
23a	UPPER CARD CAGE ASSEMBLY	1331162-1	ALUM/6061-T4	16000	30000	323	38.63	65.34
24	UPPER CARD	1331162-1	REINF PLASTIC	24000	40000	*******		
25	LOWER CALIBRATION SOURCE ASSY	1331380-1	ALUM/6061-T6	35000	42000	*******		
26	UPPER CALIBRATION SOURCE ASSY	1331380-2	ALUM/6061-T6	35000	42000	*******		
27	BEAM SUPPORT	1331406-1	ALUM/7075-T6	66000	75000	1002	51.69	52.46
28	LOWER REFLECTOR	1355777-1	ALUM/7075-T6	66000	75000	1602	31.96	32.44
29	POWER CONTROL/MONITOR, BRACKET	1356790-1	ALUM/6061-T6	35000	42000	*******		
30	POWER CNTL/MNTR ASSY, PWB	1356962-1	REINF PLASTIC	24000	40000	*******		
31	POWER CNTL/MNTR ASSY, STANDOFFS	1356962-1	CRES 1/4 HARD	44000	122000	10547	2.34	7.26
32	RADIATOR PANEL	1331511-1	ALUM/6061-T6	35000	42000	*******		
33	SIDEMOUNT ASSEMBLY	1331552-1	ALUM/6061-T6	35000	42000	2437	10.49	11.31
34	UPPER REFLECTOR	1355777-1	ALUM/7075-T6	66000	75000	1610	31.80	32.27

*ALSO DESIGN LOADS CASE 6 Gy=20.6 Gx=21.2

**ABSOLUTE VALUE OF MAXIMUM PRINCIPAL STRESS OR MINIMUM PRINCIPAL STRESS.

Table IV METSAT AMSU-A1 Margins of Safety Summary, Shell Elements, Design Loads Case 2 Gy=-20.6 Gx=21.2

ITEM NO.*	DESCRIPTION	PART NUMBER	MATERIAL/ ALLOY	YIELD (psi)	ULTIMATE (psi)	VON MISES STRESS (psi)	MARGINS OF SAFETY	
							YIELD	ULTIMATE
1	LOWER BASEPLATE ASSEMBLY	1331404-1	ALUM/6061-T651	35000	42000	675	40.48	43.44
2	LOWER MOTOR MOUNT PANEL	1331414-1	ALUM/7075-T651	66000	75000	4101	11.87	12.06
3	UPPER MOTOR MOUNT PANEL	1331389-1	ALUM/7075-T651	66000	75000	1426	36.03	36.57
4	LOWER FRONT PANEL	1331401-1	ALUM/6061-T651	35000	42000	1045	25.79	27.71
5	LOWER AFT PANEL	1331652-1	ALUM/2024-T851	58000	66000	1418	31.72	32.25
6	UPPER BASEPLATE ASSEMBLY	1331356-3	ALUM/6061-T651	35000	42000	1632	16.16	17.38
7	UPPER FRONT PANEL	1331352-3	ALUM/7075-T651	66000	75000	1717	29.75	30.20
8	UPPER AFT PANEL	1331642-3	ALUM/2024-T851	58000	66000	4667	8.94	9.10
9	LOWER RF SHELF ASSEMBLY	1356429-1	BE/SR-200E	50000	70000	1489	25.86	32.58
10	UPPER RF SHELF ASSEMBLY	1356409-1	BE/SR-200E	50000	70000	1110	35.04	44.05
11	LOWER RIGHT FRONT SUPPORT PANEL	1331447-1	ALUM/6061-T651	35000	42000	544	50.47	54.15
12	LOWER RIGHT PANEL	1331650-1	ALUM/6061-T6	35000	42000	1212	22.10	23.75
13	UPPER RIGHT FRONT SUPPORT PANEL	1331390-1	ALUM/6061-T651	35000	42000	821	33.10	35.54
14	UPPER RIGHT PANEL	1331651-1	ALUM/6061-T6	35000	42000	1345	19.82	21.30
15	TOP PANEL	1331648-1	ALUM/6061-T6	35000	42000	2301	11.17	12.04
16	LEFT PANEL	1331640-1	ALUM/6061-T6	35000	42000	1846	14.17	15.25
17	LOWER LEFT WARMLOAD SHIELD	1331445-1	ALUM/6061-T6	35000	42000	1959	13.29	14.31
18	LOWER RIGHT WARMLOAD SHIELD	1331405-1	ALUM/6061-T6	35000	42000	726	37.57	40.32
19	UPPER LEFT WARMLOAD SHIELD	1331647-1	ALUM/6061-T6	35000	42000	1466	18.10	19.46
20	UPPER RIGHT WARMLOAD SHIELD	1331646-1	ALUM/6061-T6	35000	42000	327	84.63	90.74
21	LOWER CARD CAGE ASSEMBLY	1331600-1	ALUM/6061-T6	35000	42000	2753	9.17	9.90
22	LOWER CARD	1331600-1	REINF PLASTIC	24000	40000	851	21.56	32.57
23	UPPER CARD CAGE ASSEMBLY	1331162-1	ALUM/6061-T6	35000	42000	715	38.16	40.96
23a	UPPER CARD CAGE ASSEMBLY	1331162-1	ALUM/6061-T4	16000	30000	550	22.27	37.96
24	UPPER CARD	1331162-1	REINF PLASTIC	24000	40000	526	35.50	53.32
25	LOWER CALIBRATION SOURCE ASSY	1331380-1	ALUM/6061-T6	35000	42000	1050	25.67	27.57
26	UPPER CALIBRATION SOURCE ASSY	1331380-2	ALUM/6061-T6	35000	42000	765	35.60	38.22
27	BEAM SUPPORT	1331406-1	ALUM/7075-T6	66000	75000	*******		
28	LOWER REFLECTOR	1355777-1	ALUM/6061-T6	35000	42000	677	40.36	43.31
29	POWER CONTROL/MONITOR, BRACKET	1356790-1	ALUM/6061-T6	35000	42000	3211	7.72	8.34
30	POWER CNTL/MNTR ASSY, PWB	1356962-1	REINF PLASTIC	24000	40000	868	21.12	31.92
31	POWER CNTL/MNTR ASSY, STANDOFFS	1356962-1	CRES 1/4 HARD	44000	122000	*******		
32	RADIATOR PANEL	1331511-1	ALUM/6061-T6	35000	42000	2622	9.68	10.44
33	SIDEMOUNT ASSEMBLY	1331552-1	ALUM/6061-T6	35000	42000	10137	1.76	1.96
34	UPPER REFLECTOR	1355777-1	ALUM/6061-T6	35000	42000	689	39.64	42.54

*ALSO DESIGN LOADS CASE 5 Gy=20.6 Gx=-21.2

Table V METSAT AMSU-A1 Margins of Safety Summary, Beam Elements, Design Loads Case 2 Gy=-20.6 Gx=21.2

ITEM NO.*	DESCRIPTION	PART NUMBER	MATERIAL/ ALLOY	YIELD (psi)	ULTIMATE (psi)	MAXIMUM** STRESS (psi)	MARGINS OF SAFETY	
							YIELD	ULTIMATE
1	LOWER BASEPLATE ASSEMBLY	1331404-1	ALUM/6061-T651	35000	42000	1155	23.24	24.97
2	LOWER MOTOR MOUNT PANEL	1331414-1	ALUM/7075-T651	66000	75000	3819	12.83	13.03
3	UPPER MOTOR MOUNT PANEL	1331389-1	ALUM/7075-T651	66000	75000	2457	20.49	20.80
4	LOWER FRONT PANEL	1331401-1	ALUM/6061-T651	35000	42000	1471	18.03	19.39
5	LOWER AFT PANEL	1331652-1	ALUM/2024-T851	58000	66000	120	385.67	391.86
6	UPPER BASEPLATE ASSEMBLY	1331356-3	ALUM/6061-T651	35000	42000	2576	9.87	10.65
7	UPPER FRONT PANEL	1331352-3	ALUM/7075-T651	66000	75000	2746	18.23	18.51
8	UPPER AFT PANEL	1331642-3	ALUM/2024-T851	58000	66000	2311	19.08	19.40
9	LOWER RF SHELF ASSEMBLY	1356429-1	BE/SR-200E	50000	70000	956	40.84	51.30
10	UPPER RF SHELF ASSEMBLY	1356409-1	BE/SR-200E	50000	70000	784	50.02	62.78
11	LOWER RIGHT FRONT SUPPORT PANEL	1331447-1	ALUM/6061-T651	35000	42000	1332	20.02	21.52
12	LOWER RIGHT PANEL	1331650-1	ALUM/6061-T6	35000	42000	842	32.25	34.63
13	UPPER RIGHT FRONT SUPPORT PANEL	1331390-1	ALUM/6061-T651	35000	42000	2457	10.40	11.21
14	UPPER RIGHT PANEL	1331651-1	ALUM/6061-T6	35000	42000	1048	25.72	27.63
15	TOP PANEL	1331648-1	ALUM/6061-T6	35000	42000	692	39.46	42.35
16	LEFT PANEL	1331640-1	ALUM/6061-T6	35000	42000	.....		
17	LOWER LEFT WARMLOAD SHIELD	1331445-1	ALUM/6061-T6	35000	42000	3588	6.80	7.36
18	LOWER RIGHT WARMLOAD SHIELD	1331405-1	ALUM/6061-T6	35000	42000	3211	7.72	8.34
19	UPPER LEFT WARMLOAD SHIELD	1331647-1	ALUM/6061-T6	35000	42000	3172	7.83	8.46
20	UPPER RIGHT WARMLOAD SHIELD	1331646-1	ALUM/6061-T6	35000	42000	1702	15.45	16.63
21	LOWER CARD CAGE ASSEMBLY	1331600-1	ALUM/6061-T6	35000	42000	.....		
22	LOWER CARD	1331600-1	REINF PLASTIC	24000	40000	.....		
23	UPPER CARD CAGE ASSEMBLY	1331162-1	ALUM/6061-T6	35000	42000	1816	14.42	15.52
23a	UPPER CARD CAGE ASSEMBLY	1331162-1	ALUM/6061-T4	16000	30000	336	37.10	62.78
24	UPPER CARD	1331162-1	REINF PLASTIC	24000	40000	.....		
25	LOWER CALIBRATION SOURCE ASSY	1331380-1	ALUM/6061-T6	35000	42000	.....		
26	UPPER CALIBRATION SOURCE ASSY	1331380-2	ALUM/6061-T6	35000	42000	.....		
27	BEAM SUPPORT	1331406-1	ALUM/7075-T6	66000	75000	2576	19.50	19.80
28	LOWER REFLECTOR	1355777-1	ALUM/7075-T6	66000	75000	986	52.55	53.33
29	POWER CONTROL/MONITOR, BRACKET	1356790-1	ALUM/6061-T6	35000	42000	.....		
30	POWER CNTL/MNTR ASSY, PWB	1356962-1	REINF PLASTIC	24000	40000	.....		
31	POWER CNTL/MNTR ASSY, STANDOFFS	1356962-1	CRES 1/4 HARD	44000	122000	11596	2.04	6.51
32	RADIATOR PANEL	1331511-1	ALUM/6061-T6	35000	42000	.....		
33	SIDEMOUNT ASSEMBLY	1331552-1	ALUM/6061-T6	35000	42000	1865	14.01	15.09
34	UPPER REFLECTOR	1355777-1	ALUM/7075-T6	66000	75000	903	57.47	58.33

*ALSO DESIGN LOADS CASE 5 Gy=20.6 Gx=-21.2

**ABSOLUTE VALUE OF MAXIMUM PRINCIPAL STRESS OR MINIMUM PRINCIPAL STRESS.

Table VI METSAT AMSU-A1 Margins of Safety Summary, Shell Elements, Design Loads Case 3 Gy=-20.6 Gz=-19.6

ITEM NO.*	DESCRIPTION	PART NUMBER	MATERIAL/ ALLOY	YIELD (psi)	ULTIMATE (psi)	VON MISES STRESS (psi)	MARGINS OF SAFETY	
							YIELD	ULTIMATE
1	LOWER BASEPLATE ASSEMBLY	1331404-1	ALUM/6061-T651	35000	42000	2065	12.56	13.53
2	LOWER MOTOR MOUNT PANEL	1331414-1	ALUM/7075-T651	66000	75000	1026	50.46	51.21
3	UPPER MOTOR MOUNT PANEL	1331389-1	ALUM/7075-T651	66000	75000	516	101.33	102.82
4	LOWER FRONT PANEL	1331401-1	ALUM/6061-T651	35000	42000	1235	21.67	23.29
5	LOWER AFT PANEL	1331652-1	ALUM/2024-T851	58000	66000	1745	25.59	26.02
6	UPPER BASEPLATE ASSEMBLY	1331356-3	ALUM/6061-T651	35000	42000	1056	25.52	27.41
7	UPPER FRONT PANEL	1331352-3	ALUM/7075-T651	66000	75000	1175	43.94	44.59
8	UPPER AFT PANEL	1331642-3	ALUM/2024-T851	58000	66000	1197	37.76	38.38
9	LOWER RF SHELF ASSEMBLY	1356429-1	BE/SR-200E	50000	70000	4607	7.68	9.85
10	UPPER RF SHELF ASSEMBLY	1356409-1	BE/SR-200E	50000	70000	3603	10.10	12.88
11	LOWER RIGHT FRONT SUPPORT PANEL	1331447-1	ALUM/6061-T651	35000	42000	194	143.33	153.64
12	LOWER RIGHT PANEL	1331650-1	ALUM/6061-T6	35000	42000	1554	17.02	18.31
13	UPPER RIGHT FRONT SUPPORT PANEL	1331390-1	ALUM/6061-T651	35000	42000	303	91.41	98.01
14	UPPER RIGHT PANEL	1331651-1	ALUM/6061-T6	35000	42000	839	32.37	34.76
15	TOP PANEL	1331648-1	ALUM/6061-T6	35000	42000	1621	16.27	17.51
16	LEFT PANEL	1331640-1	ALUM/6061-T6	35000	42000	1616	16.33	17.56
17	LOWER LEFT WARMLOAD SHIELD	1331445-1	ALUM/6061-T6	35000	42000	684	39.94	42.86
18	LOWER RIGHT WARMLOAD SHIELD	1331405-1	ALUM/6061-T6	35000	42000	181	153.70	164.75
19	UPPER LEFT WARMLOAD SHIELD	1331647-1	ALUM/6061-T6	35000	42000	441	62.49	67.03
20	UPPER RIGHT WARMLOAD SHIELD	1331646-1	ALUM/6061-T6	35000	42000	51	548.02	587.24
21	LOWER CARD CAGE ASSEMBLY	1331600-1	ALUM/6061-T6	35000	42000	3047	8.19	8.85
22	LOWER CARD	1331600-1	REINF PLASTIC	24000	40000	779	23.65	35.68
23	UPPER CARD CAGE ASSEMBLY	1331162-1	ALUM/6061-T6	35000	42000	2358	10.87	11.72
23a	UPPER CARD CAGE ASSEMBLY	1331162-1	ALUM/6061-T4	16000	30000	1312	8.76	15.33
24	UPPER CARD	1331162-1	REINF PLASTIC	24000	40000	264	71.73	107.23
25	LOWER CALIBRATION SOURCE ASSY	1331380-1	ALUM/6061-T6	35000	42000	1984	13.11	14.12
26	UPPER CALIBRATION SOURCE ASSY	1331380-2	ALUM/6061-T6	35000	42000	1904	13.71	14.76
27	BEAM SUPPORT	1331406-1	ALUM/7075-T6	66000	75000	*******		
28	LOWER REFLECTOR	1355777-1	ALUM/6061-T6	35000	42000	929	29.14	31.29
29	POWER CONTROL/MONITOR, BRACKET	1356790-1	ALUM/6061-T6	35000	42000	884	30.67	32.94
30	POWER CNTL/MNTR ASSY, PWB	1356962-1	REINF PLASTIC	24000	40000	188	101.13	150.98
31	POWER CNTL/MNTR ASSY, STANDOFFS	1356962-1	CRES 1/4 HARD	44000	122000	*******		
32	RADIATOR PANEL	1331511-1	ALUM/6061-T6	35000	42000	2099	12.34	13.29
33	SIDEMOUNT ASSEMBLY	1331552-1	ALUM/6061-T6	35000	42000	9509	1.94	2.15
34	UPPER REFLECTOR	1355777-1	ALUM/6061-T6	35000	42000	929	29.14	31.29

*ALSO DESIGN LOADS CASE 8 Gy=20.6 Gz=19.6

Table VII METSAT AMSU-A1 Margins of Safety Summary, Beam Elements, Design Loads Case 3 Gy=-20.6 Gz=-19.6

ITEM NO.*	DESCRIPTION	PART NUMBER	MATERIAL/ ALLOY	YIELD (psi)	ULTIMATE (psi)	MAXIMUM** STRESS (psi)	MARGINS OF SAFETY	
							YIELD	ULTIMATE
1	LOWER BASEPLATE ASSEMBLY	1331404-1	ALUM/6061-T651	35000	42000	5181	4.40	4.79
2	LOWER MOTOR MOUNT PANEL	1331414-1	ALUM/7075-T651	66000	75000	1251	41.21	41.82
3	UPPER MOTOR MOUNT PANEL	1331389-1	ALUM/7075-T651	66000	75000	775	67.13	68.12
4	LOWER FRONT PANEL	1331401-1	ALUM/6061-T651	35000	42000	1375	19.36	20.82
5	LOWER AFT PANEL	1331652-1	ALUM/2024-T851	58000	66000	1527	29.39	29.87
6	UPPER BASEPLATE ASSEMBLY	1331356-3	ALUM/6061-T651	35000	42000	1600	16.50	17.75
7	UPPER FRONT PANEL	1331352-3	ALUM/7075-T651	66000	75000	3266	15.17	15.40
8	UPPER AFT PANEL	1331642-3	ALUM/2024-T851	58000	66000	757	60.29	61.28
9	LOWER RF SHELF ASSEMBLY	1356429-1	BE/SR-200E	50000	70000	1581	24.30	30.63
10	UPPER RF SHELF ASSEMBLY	1356409-1	BE/SR-200E	50000	70000	1313	29.46	37.08
11	LOWER RIGHT FRONT SUPPORT PANEL	1331447-1	ALUM/6061-T651	35000	42000	480	57.33	61.50
12	LOWER RIGHT PANEL	1331650-1	ALUM/6061-T6	35000	42000	1581	16.71	17.98
13	UPPER RIGHT FRONT SUPPORT PANEL	1331390-1	ALUM/6061-T651	35000	42000	1494	17.74	19.08
14	UPPER RIGHT PANEL	1331651-1	ALUM/6061-T6	35000	42000	691	39.52	42.42
15	TOP PANEL	1331648-1	ALUM/6061-T6	35000	42000	563	48.73	52.29
16	LEFT PANEL	1331640-1	ALUM/6061-T6	35000	42000	*******		
17	LOWER LEFT WARMLOAD SHIELD	1331445-1	ALUM/6061-T6	35000	42000	890	30.46	32.71
18	LOWER RIGHT WARMLOAD SHIELD	1331405-1	ALUM/6061-T6	35000	42000	799	34.04	36.55
19	UPPER LEFT WARMLOAD SHIELD	1331647-1	ALUM/6061-T6	35000	42000	2154	12.00	12.93
20	UPPER RIGHT WARMLOAD SHIELD	1331646-1	ALUM/6061-T6	35000	42000	515	53.37	57.25
21	LOWER CARD CAGE ASSEMBLY	1331600-1	ALUM/6061-T6	35000	42000	*******		
22	LOWER CARD	1331600-1	REINF PLASTIC	24000	40000	*******		
23	UPPER CARD CAGE ASSEMBLY	1331162-1	ALUM/6061-T6	35000	42000	2628	9.65	10.42
23a	UPPER CARD CAGE ASSEMBLY	1331162-1	ALUM/6061-T4	16000	30000	2398	4.34	7.94
24	UPPER CARD	1331162-1	REINF PLASTIC	24000	40000	*******		
25	LOWER CALIBRATION SOURCE ASSY	1331380-1	ALUM/6061-T6	35000	42000	*******		
26	UPPER CALIBRATION SOURCE ASSY	1331380-2	ALUM/6061-T6	35000	42000	*******		
27	BEAM SUPPORT	1331406-1	ALUM/7075-T6	66000	75000	1600	32.00	32.48
28	LOWER REFLECTOR	1355777-1	ALUM/7075-T6	66000	75000	950	54.58	55.39
29	POWER CONTROL/MONITOR, BRACKET	1356790-1	ALUM/6061-T6	35000	42000	*******		
30	POWER CNTL/MNTR ASSY, PWB	1356962-1	REINF PLASTIC	24000	40000	*******		
31	POWER CNTL/MNTR ASSY, STANDOFFS	1356962-1	CRES 1/4 HARD	44000	122000	3496	9.07	23.93
32	RADIATOR PANEL	1331511-1	ALUM/6061-T6	35000	42000	*******		
33	SIDEMOUNT ASSEMBLY	1331552-1	ALUM/6061-T6	35000	42000	1045	25.79	27.71
34	UPPER REFLECTOR	1355777-1	ALUM/7075-T6	66000	75000	966	53.66	54.46

*ALSO DESIGN LOADS CASE 8 Gy=20.6 Gz=19.6

**ABSOLUTE VALUE OF MAXIMUM PRINCIPAL STRESS OR MINIMUM PRINCIPAL STRESS.

Table VIII METSAT AMSU-A1 Margins of Safety Summary, Shell Elements, Design Loads Case 4 Gy=-20.6 Gz=19.6

ITEM NO.*	DESCRIPTION	PART NUMBER	MATERIAL/ ALLOY	YIELD (psi)	ULTIMATE (psi)	VON MISES STRESS (psi)	MARGINS OF SAFETY	
							YIELD	ULTIMATE
1	LOWER BASEPLATE ASSEMBLY	1331404-1	ALUM/6061-T651	35000	42000	2016	12.89	13.88
2	LOWER MOTOR MOUNT PANEL	1331414-1	ALUM/7075-T651	66000	75000	1400	36.71	37.27
3	UPPER MOTOR MOUNT PANEL	1331389-1	ALUM/7075-T651	66000	75000	956	54.23	55.04
4	LOWER FRONT PANEL	1331401-1	ALUM/6061-T651	35000	42000	2017	12.88	13.87
5	LOWER AFT PANEL	1331652-1	ALUM/2024-T851	58000	66000	1631	27.45	27.90
6	UPPER BASEPLATE ASSEMBLY	1331356-3	ALUM/6061-T651	35000	42000	1811	14.46	15.57
7	UPPER FRONT PANEL	1331352-3	ALUM/7075-T651	66000	75000	1858	27.42	27.83
8	UPPER AFT PANEL	1331642-3	ALUM/2024-T851	58000	66000	1499	29.95	30.45
9	LOWER RF SHELF ASSEMBLY	1356429-1	BE/SR-200E	50000	70000	4621	7.66	9.82
10	UPPER RF SHELF ASSEMBLY	1356409-1	BE/SR-200E	50000	70000	3804	9.52	12.14
11	LOWER RIGHT FRONT SUPPORT PANEL	1331447-1	ALUM/6061-T651	35000	42000	171	162.74	174.44
12	LOWER RIGHT PANEL	1331650-1	ALUM/6061-T6	35000	42000	1237	21.64	23.25
13	UPPER RIGHT FRONT SUPPORT PANEL	1331390-1	ALUM/6061-T651	35000	42000	348	79.46	85.21
14	UPPER RIGHT PANEL	1331651-1	ALUM/6061-T6	35000	42000	733	37.20	39.93
15	TOP PANEL	1331648-1	ALUM/6061-T6	35000	42000	1668	15.79	16.99
16	LEFT PANEL	1331640-1	ALUM/6061-T6	35000	42000	1948	13.37	14.40
17	LOWER LEFT WARMLOAD SHIELD	1331445-1	ALUM/6061-T6	35000	42000	589	46.54	49.93
18	LOWER RIGHT WARMLOAD SHIELD	1331405-1	ALUM/6061-T6	35000	42000	180	154.56	165.67
19	UPPER LEFT WARMLOAD SHIELD	1331647-1	ALUM/6061-T6	35000	42000	938	28.85	30.98
20	UPPER RIGHT WARMLOAD SHIELD	1331646-1	ALUM/6061-T6	35000	42000	80	349.00	374.00
21	LOWER CARD CAGE ASSEMBLY	1331600-1	ALUM/6061-T6	35000	42000	3107	8.01	8.66
22	LOWER CARD	1331600-1	REINF PLASTIC	24000	40000	994	18.32	27.74
23	UPPER CARD CAGE ASSEMBLY	1331162-1	ALUM/6061-T6	35000	42000	3213	7.71	8.34
23a	UPPER CARD CAGE ASSEMBLY	1331162-1	ALUM/6061-T4	16000	30000	1585	7.08	12.52
24	UPPER CARD	1331162-1	REINF PLASTIC	24000	40000	174	109.34	163.20
25	LOWER CALIBRATION SOURCE ASSY	1331380-1	ALUM/6061-T6	35000	42000	1804	14.52	15.63
26	UPPER CALIBRATION SOURCE ASSY	1331380-2	ALUM/6061-T6	35000	42000	1857	14.08	15.16
27	BEAM SUPPORT	1331406-1	ALUM/7075-T6	66000	75000	*******		
28	LOWER REFLECTOR	1355777-1	ALUM/6061-T6	35000	42000	785	34.67	37.22
29	POWER CONTROL/MONITOR, BRACKET	1356790-1	ALUM/6061-T6	35000	42000	945	28.63	30.75
30	POWER CNTL/MNTR ASSY, PWB	1356962-1	REINF PLASTIC	24000	40000	200	95.00	141.86
31	POWER CNTL/MNTR ASSY, STANDOFFS	1356962-1	CRES 1/4 HARD	44000	122000	*******		
32	RADIATOR PANEL	1331511-1	ALUM/6061-T6	35000	42000	1164	23.05	24.77
33	SIDEMOUNT ASSEMBLY	1331552-1	ALUM/6061-T6	35000	42000	10727	1.61	1.80
34	UPPER REFLECTOR	1355777-1	ALUM/6061-T6	35000	42000	785	34.67	37.22

*ALSO DESIGN LOADS CASE 7 Gy=20.6 GZ=-19.6

Table IX METSAT AMSU-A1 Margins of Safety Summary, Beam Elements, Design Loads Case 4 Gy=-20.6 Gz=19.6

ITEM NO.*	DESCRIPTION	PART NUMBER	MATERIAL/ ALLOY	YIELD (psi)	ULTIMATE (psi)	MAXIMUM** STRESS (psi)	MARGINS OF SAFETY	
							YIELD	ULTIMATE
1	LOWER BASEPLATE ASSEMBLY	1331404-1	ALUM/6061-T651	35000	42000	4816	4.81	5.23
2	LOWER MOTOR MOUNT PANEL	1331414-1	ALUM/7075-T651	66000	75000	1005	51.54	52.30
3	UPPER MOTOR MOUNT PANEL	1331389-1	ALUM/7075-T651	66000	75000	1441	35.64	36.18
4	LOWER FRONT PANEL	1331401-1	ALUM/6061-T651	35000	42000	2209	11.68	12.58
5	LOWER AFT PANEL	1331652-1	ALUM/2024-T851	58000	66000	2159	20.49	20.84
6	UPPER BASEPLATE ASSEMBLY	1331356-3	ALUM/6061-T651	35000	42000	2479	10.29	11.10
7	UPPER FRONT PANEL	1331352-3	ALUM/7075-T651	66000	75000	2953	16.88	17.14
8	UPPER AFT PANEL	1331642-3	ALUM/2024-T851	58000	66000	1442	31.18	31.69
9	LOWER RF SHELF ASSEMBLY	1356429-1	BE/SR-200E	50000	70000	1973	19.27	24.34
10	UPPER RF SHELF ASSEMBLY	1356409-1	BE/SR-200E	50000	70000	1555	24.72	31.15
11	LOWER RIGHT FRONT SUPPORT PANEL	1331447-1	ALUM/6061-T651	35000	42000	416	66.31	71.12
12	LOWER RIGHT PANEL	1331650-1	ALUM/6061-T6	35000	42000	1973	13.19	14.21
13	UPPER RIGHT FRONT SUPPORT PANEL	1331390-1	ALUM/6061-T651	35000	42000	1256	21.29	22.89
14	UPPER RIGHT PANEL	1331651-1	ALUM/6061-T6	35000	42000	1121	23.98	25.76
15	TOP PANEL	1331648-1	ALUM/6061-T6	35000	42000	573	47.87	51.36
16	LEFT PANEL	1331640-1	ALUM/6061-T6	35000	42000	*******		
17	LOWER LEFT WARMLOAD SHIELD	1331445-1	ALUM/6061-T6	35000	42000	1552	17.04	18.33
18	LOWER RIGHT WARMLOAD SHIELD	1331405-1	ALUM/6061-T6	35000	42000	977	27.66	29.71
19	UPPER LEFT WARMLOAD SHIELD	1331647-1	ALUM/6061-T6	35000	42000	1755	14.95	16.09
20	UPPER RIGHT WARMLOAD SHIELD	1331646-1	ALUM/6061-T6	35000	42000	357	77.43	83.03
21	LOWER CARD CAGE ASSEMBLY	1331600-1	ALUM/6061-T6	35000	42000	*******		
22	LOWER CARD	1331600-1	REINF PLASTIC	24000	40000	*******		
23	UPPER CARD CAGE ASSEMBLY	1331162-1	ALUM/6061-T6	35000	42000	3415	7.20	7.78
23a	UPPER CARD CAGE ASSEMBLY	1331162-1	ALUM/6061-T4	16000	30000	3057	3.19	6.01
24	UPPER CARD	1331162-1	REINF PLASTIC	24000	40000	*******		
25	LOWER CALIBRATION SOURCE ASSY	1331380-1	ALUM/6061-T6	35000	42000	*******		
26	UPPER CALIBRATION SOURCE ASSY	1331380-2	ALUM/6061-T6	35000	42000	*******		
27	BEAM SUPPORT	1331406-1	ALUM/7075-T6	66000	75000	2479	20.30	20.61
28	LOWER REFLECTOR	1355777-1	ALUM/7075-T6	66000	75000	1155	44.71	45.38
29	POWER CONTROL/MONITOR, BRACKET	1356790-1	ALUM/6061-T6	35000	42000	*******		
30	POWER CNTL/MNTR ASSY, PWB	1356962-1	REINF PLASTIC	24000	40000	*******		
31	POWER CNTL/MNTR ASSY, STANDOFFS	1356962-1	CRES 1/4 HARD	44000	122000	3178	10.08	26.42
32	RADIATOR PANEL	1331511-1	ALUM/6061-T6	35000	42000	*******		
33	SIDEMOUNT ASSEMBLY	1331552-1	ALUM/6061-T6	35000	42000	3082	8.09	8.73
34	UPPER REFLECTOR	1355777-1	ALUM/7075-T6	66000	75000	1127	45.85	46.53

*ALSO DESIGN LOADS CASE 7 Gy=20.6 GZ=-19.6

**ABSOLUTE VALUE OF MAXIMUM PRINCIPAL STRESS OR MINIMUM PRINCIPAL STRESS.

Table X 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 XI METSAT AMSU-A1 Margins of Safety Summary, All Elements, Random Vibration 8.8 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	9554	1.93	2.14	Z BEAM
2	LOWER MOTOR MOUNT PANEL	1331414-1	ALUM/7075-T651	66000	75000	15093	2.50	2.55	X BEAM
3	UPPER MOTOR MOUNT PANEL	1331389-1	ALUM/7075-T651	66000	75000	8478	5.23	5.32	X BEAM
4	LOWER FRONT PANEL	1331401-1	ALUM/6061-T651	35000	42000	5884	3.76	4.10	X BEAM
5	LOWER AFT PANEL	1331652-1	ALUM/2024-T851	58000	66000	2323	18.97	19.29	Z BEAM
6	UPPER BASEPLATE ASSEMBLY	1331356-3	ALUM/6061-T651	35000	42000	5384	4.20	4.57	X BEAM
7	UPPER FRONT PANEL	1331352-3	ALUM/7075-T651	66000	75000	16837	2.14	2.18	X BEAM
8	UPPER AFT PANEL	1331642-3	ALUM/2024-T851	58000	66000	18035	1.57	1.61	X SHELL
9	LOWER RF SHELF ASSEMBLY	1356429-1	BE/SR-200E	50000	70000	7156	4.59	5.99	Y SHELL
10	UPPER RF SHELF ASSEMBLY	1356409-1	BE/SR-200E	50000	70000	4429	8.03	10.29	Z SHELL
11	LOWER RIGHT FRONT SUPT PANEL	1331447-1	ALUM/6061-T651	35000	42000	3896	6.19	6.70	X BEAM
12	LOWER RIGHT PANEL	1331650-1	ALUM/6061-T6	35000	42000	4214	5.64	6.12	Y SHELL
13	UPPER RIGHT FRONT SUPT PANEL	1331390-1	ALUM/6061-T651	35000	42000	6716	3.17	3.47	X BEAM
14	UPPER RIGHT PANEL	1331651-1	ALUM/6061-T6	35000	42000	3591	6.80	7.35	X SHELL
15	TOP PANEL	1331648-1	ALUM/6061-T6	35000	42000	4858	4.76	5.18	X SHELL
16	LEFT PANEL	1331640-1	ALUM/6061-T6	35000	42000	2369	10.82	11.66	X SHELL
17	LOWER LEFT WARMLOAD SHIELD	1331445-1	ALUM/6061-T6	35000	42000	5832	3.80	4.14	X BEAM
18	LOWER RIGHT WARMLOAD SHIELD	1331405-1	ALUM/6061-T6	35000	42000	6477	3.32	3.63	X BEAM
19	UPPER LEFT WARMLOAD SHIELD	1331647-1	ALUM/6061-T6	35000	42000	8969	2.12	2.34	X BEAM
20	UPPER RIGHT WARMLOAD SHIELD	1331646-1	ALUM/6061-T6	35000	42000	10715	1.61	1.80	X BEAM
21	LOWER CARD CAGE ASSEMBLY	1331600-1	ALUM/6061-T6	35000	42000	7342	2.81	3.09	Z SHELL
22	LOWER CARD	1331600-1	REINF PLASTIC	24000	40000	1929	8.95	13.81	Y SHELL
23	UPPER CARD CAGE ASSEMBLY	1331162-1	ALUM/6061-T6	35000	42000	7652	2.66	2.92	Z BEAM
23a	UPPER CARD CAGE ASSEMBLY	1331162-1	ALUM/6061-T4	16000	30000	3826	2.35	4.60	Z BEAM
24	UPPER CARD	1331162-1	REINF PLASTIC	24000	40000	1659	10.57	16.22	X SHELL
25	LOWER CALIBRATION SOURCE ASSY	1331380-1	ALUM/6061-T6	35000	42000	6451	3.34	3.65	Y SHELL
26	UPPER CALIBRATION SOURCE ASSY	1331380-2	ALUM/6061-T6	35000	42000	7876	2.56	2.81	Y SHELL
27	BEAM SUPPORT	1331406-1	ALUM/7075-T6	66000	75000	4104	11.87	12.05	Y BEAM
28	LOWER REFLECTOR	1355777-1	ALUM/6061-T6	35000	42000	8758	2.20	2.43	X SHELL
29	POWER CONTROL/MONITOR, BKT	1356790-1	ALUM/6061-T6	35000	42000	8050	2.48	2.73	X SHELL
30	POWER CNTL/MNTR ASSY, PWB	1356962-1	REINF PLASTIC	24000	40000	3189	5.02	7.96	X SHELL
31	PWR CNTL/MNTR ASSY, STANDOFFS	1356962-1	CRES 1/4 HARD	44000	122000	21709	0.62	3.01	X BEAM
32	RADIATOR PANEL	1331511-1	ALUM/6061-T6	35000	42000	6071	3.61	3.94	X SHELL
33	SIDEMOUNT ASSEMBLY	1331552-1	ALUM/6061-T6	35000	42000	10836	1.58	1.77	X SHELL
34	UPPER REFLECTOR	1355777-1	ALUM/6061-T6	35000	42000	7721	2.63	2.89	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 XII METSAT AMSU-A1 Margins of Safety Summary, All Elements, Random Vibration 8.8 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	2053	12.64	13.61	X BEAM
2	LOWER MOTOR MOUNT PANEL	1331414-1	ALUM/7075-T651	66000	75000	15093	2.50	2.55	X BEAM
3	UPPER MOTOR MOUNT PANEL	1331389-1	ALUM/7075-T651	66000	75000	8478	5.23	5.32	X BEAM
4	LOWER FRONT PANEL	1331401-1	ALUM/6061-T651	35000	42000	5884	3.76	4.10	X BEAM
5	LOWER AFT PANEL	1331652-1	ALUM/2024-T851	58000	66000	1922	23.14	23.53	X SHELL
6	UPPER BASEPLATE ASSEMBLY	1331356-3	ALUM/6061-T651	35000	42000	5384	4.20	4.57	X BEAM
7	UPPER FRONT PANEL	1331352-3	ALUM/7075-T651	66000	75000	16837	2.14	2.18	X BEAM
8	UPPER AFT PANEL	1331642-3	ALUM/2024-T851	58000	66000	18035	1.57	1.61	X SHELL
9	LOWER RF SHELF ASSEMBLY	1356429-1	BE/SR-200E	50000	70000	5685	6.04	7.80	X SHELL
10	UPPER RF SHELF ASSEMBLY	1356409-1	BE/SR-200E	50000	70000	3728	9.73	12.41	X SHELL
11	LOWER RIGHT FRONT SUPT PANEL	1331447-1	ALUM/6061-T651	35000	42000	3896	6.19	6.70	X BEAM
12	LOWER RIGHT PANEL	1331650-1	ALUM/6061-T6	35000	42000	3045	8.20	8.85	X BEAM
13	UPPER RIGHT FRONT SUPT PANEL	1331390-1	ALUM/6061-T651	35000	42000	6716	3.17	3.47	X BEAM
14	UPPER RIGHT PANEL	1331651-1	ALUM/6061-T6	35000	42000	3591	6.80	7.35	X SHELL
15	TOP PANEL	1331648-1	ALUM/6061-T6	35000	42000	4858	4.76	5.18	X SHELL
16	LEFT PANEL	1331640-1	ALUM/6061-T6	35000	42000	2369	10.82	11.66	X SHELL
17	LOWER LEFT WARMLOAD SHIELD	1331445-1	ALUM/6061-T6	35000	42000	5832	3.80	4.14	X BEAM
18	LOWER RIGHT WARMLOAD SHIELD	1331405-1	ALUM/6061-T6	35000	42000	6477	3.32	3.63	X BEAM
19	UPPER LEFT WARMLOAD SHIELD	1331647-1	ALUM/6061-T6	35000	42000	8969	2.12	2.34	X BEAM
20	UPPER RIGHT WARMLOAD SHIELD	1331646-1	ALUM/6061-T6	35000	42000	10715	1.61	1.80	X BEAM
21	LOWER CARD CAGE ASSEMBLY	1331600-1	ALUM/6061-T6	35000	42000	3665	6.64	7.19	X SHELL
22	LOWER CARD	1331600-1	REINF PLASTIC	24000	40000	901	20.31	30.71	X SHELL
23	UPPER CARD CAGE ASSEMBLY	1331162-1	ALUM/6061-T6	35000	42000	6356	3.41	3.72	X BEAM
23a	UPPER CARD CAGE ASSEMBLY	1331162-1	ALUM/6061-T4	16000	30000	2602	3.92	7.24	X SHELL
24	UPPER CARD	1331162-1	REINF PLASTIC	24000	40000	1659	10.57	16.22	X SHELL
25	LOWER CALIBRATION SOURCE ASSY	1331380-1	ALUM/6061-T6	35000	42000	6405	3.37	3.68	X SHELL
26	UPPER CALIBRATION SOURCE ASSY	1331380-2	ALUM/6061-T6	35000	42000	3039	8.21	8.87	X SHELL
27	BEAM SUPPORT	1331406-1	ALUM/7075-T6	66000	75000	2649	18.93	19.22	X BEAM
28	LOWER REFLECTOR	1355777-1	ALUM/6061-T6	35000	42000	8758	2.20	2.43	X SHELL
29	POWER CONTROL/MONITOR, BKT	1356790-1	ALUM/6061-T6	35000	42000	8050	2.48	2.73	X SHELL
30	POWER CNTL/MNTR ASSY, PWB	1356962-1	REINF PLASTIC	24000	40000	3189	5.02	7.96	X SHELL
31	PWR CNTL/MNTR ASSY, STANDOFFS	1356962-1	CRES 1/4 HARD	44000	122000	21709	0.62	3.01	X BEAM
32	RADIATOR PANEL	1331511-1	ALUM/6061-T6	35000	42000	6071	3.61	3.94	X SHELL
33	SIDEMOUNT ASSEMBLY	1331552-1	ALUM/6061-T6	35000	42000	10836	1.58	1.77	X SHELL
34	UPPER REFLECTOR	1355777-1	ALUM/6061-T6	35000	42000	7721	2.63	2.89	X SHELL

**MAXIMUM PRINCIPAL STRESS BASED ON ASSUMED IN PHASE COMPONENT STRESSES

Table XIII METSAT AMSU-A1 Margins of Safety Summary, All Elements, Random Vibration 8.8 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	4685	4.98	5.40	Y BEAM
2	LOWER MOTOR MOUNT PANEL	1331414-1	ALUM/7075-T651	66000	75000	4023	12.12	12.32	Y SHELL
3	UPPER MOTOR MOUNT PANEL	1331389-1	ALUM/7075-T651	66000	75000	2604	19.28	19.57	Y SHELL
4	LOWER FRONT PANEL	1331401-1	ALUM/6061-T651	35000	42000	3187	7.79	8.41	Y BEAM
5	LOWER AFT PANEL	1331652-1	ALUM/2024-T851	58000	66000	1470	30.56	31.07	Y SHELL
6	UPPER BASEPLATE ASSEMBLY	1331356-3	ALUM/6061-T651	35000	42000	3505	6.99	7.56	Y BEAM
7	UPPER FRONT PANEL	1331352-3	ALUM/7075-T651	66000	75000	13997	2.77	2.83	Y BEAM
8	UPPER AFT PANEL	1331642-3	ALUM/2024-T851	58000	66000	5494	7.45	7.58	Y SHELL
9	LOWER RF SHELF ASSEMBLY	1356429-1	BE/SR-200E	50000	70000	7156	4.59	5.99	Y SHELL
10	UPPER RF SHELF ASSEMBLY	1356409-1	BE/SR-200E	50000	70000	3873	9.33	11.91	Y SHELL
11	LOWER RIGHT FRONT SUPT PANEL	1331447-1	ALUM/6061-T651	35000	42000	1038	25.97	27.90	Y BEAM
12	LOWER RIGHT PANEL	1331650-1	ALUM/6061-T6	35000	42000	4214	5.64	6.12	Y SHELL
13	UPPER RIGHT FRONT SUPT PANEL	1331390-1	ALUM/6061-T651	35000	42000	4543	5.16	5.60	Y BEAM
14	UPPER RIGHT PANEL	1331651-1	ALUM/6061-T6	35000	42000	3231	7.67	8.29	Y SHELL
15	TOP PANEL	1331648-1	ALUM/6061-T6	35000	42000	1175	22.83	24.53	Y SHELL
16	LEFT PANEL	1331640-1	ALUM/6061-T6	35000	42000	2856	8.80	9.50	Y SHELL
17	LOWER LEFT WARMLOAD SHIELD	1331445-1	ALUM/6061-T6	35000	42000	2651	9.56	10.32	Y BEAM
18	LOWER RIGHT WARMLOAD SHIELD	1331405-1	ALUM/6061-T6	35000	42000	2612	9.72	10.49	Y BEAM
19	UPPER LEFT WARMLOAD SHIELD	1331647-1	ALUM/6061-T6	35000	42000	2829	8.90	9.60	Y BEAM
20	UPPER RIGHT WARMLOAD SHIELD	1331646-1	ALUM/6061-T6	35000	42000	3005	8.32	8.98	Y BEAM
21	LOWER CARD CAGE ASSEMBLY	1331600-1	ALUM/6061-T6	35000	42000	6730	3.16	3.46	Y SHELL
22	LOWER CARD	1331600-1	REINF PLASTIC	24000	40000	1929	8.95	13.81	Y SHELL
23	UPPER CARD CAGE ASSEMBLY	1331162-1	ALUM/6061-T6	35000	42000	6706	3.18	3.47	Y BEAM
23a	UPPER CARD CAGE ASSEMBLY	1331162-1	ALUM/6061-T4	16000	30000	3359	2.81	5.38	Y SHELL
24	UPPER CARD	1331162-1	REINF PLASTIC	24000	40000	330	57.18	85.58	Y SHELL
25	LOWER CALIBRATION SOURCE ASSY	1331380-1	ALUM/6061-T6	35000	42000	6451	3.34	3.65	Y SHELL
26	UPPER CALIBRATION SOURCE ASSY	1331380-2	ALUM/6061-T6	35000	42000	7876	2.56	2.81	Y SHELL
27	BEAM SUPPORT	1331406-1	ALUM/7075-T6	66000	75000	4104	11.87	12.05	Y BEAM
28	LOWER REFLECTOR	1355777-1	ALUM/7075-T6	66000	75000	10388	4.08	4.16	Y BEAM
29	POWER CONTROL/MONITOR, BKT	1356790-1	ALUM/6061-T6	35000	42000	1419	18.73	20.14	Y SHELL
30	POWER CNTL/MNTR ASSY, PWB	1356962-1	REINF PLASTIC	24000	40000	1663	10.55	16.18	Y SHELL
31	PWR CNTL/MNTR ASSY, STANDOFFS	1356962-1	CRES 1/4 HARD	44000	122000	7064	3.98	11.34	Y BEAM
32	RADIATOR PANEL	1331511-1	ALUM/6061-T6	35000	42000	1510	17.54	18.87	Y SHELL
33	SIDEMOUNT ASSEMBLY	1331552-1	ALUM/6061-T6	35000	42000	8001	2.50	2.75	Y SHELL
34	UPPER REFLECTOR	1355777-1	ALUM/6061-T6	35000	42000	4615	5.07	5.50	Y SHELL

**MAXIMUM PRINCIPAL STRESS BASED ON ASSUMED IN PHASE COMPONENT STRESSES

Table XIV METSAT AMSU-A1 Margins of Safety Summary, All Elements, Random Vibration 8.8 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	9554	1.93	2.14	Z BEAM
2	LOWER MOTOR MOUNT PANEL	1331414-1	ALUM/7075-T651	66000	75000	3271	15.14	15.38	Z BEAM
3	UPPER MOTOR MOUNT PANEL	1331389-1	ALUM/7075-T651	66000	75000	1966	25.86	26.25	Z BEAM
4	LOWER FRONT PANEL	1331401-1	ALUM/6061-T651	35000	42000	3660	6.65	7.20	Z BEAM
5	LOWER AFT PANEL	1331652-1	ALUM/2024-T851	58000	66000	2323	18.97	19.29	Z BEAM
6	UPPER BASEPLATE ASSEMBLY	1331356-3	ALUM/6061-T651	35000	42000	2549	9.98	10.77	Z BEAM
7	UPPER FRONT PANEL	1331352-3	ALUM/7075-T651	66000	75000	5846	8.03	8.16	Z BEAM
8	UPPER AFT PANEL	1331642-3	ALUM/2024-T851	58000	66000	3469	12.38	12.59	Z SHELL
9	LOWER RF SHELF ASSEMBLY	1356429-1	BE/SR-200E	50000	70000	7068	4.66	6.07	Z SHELL
10	UPPER RF SHELF ASSEMBLY	1356409-1	BE/SR-200E	50000	70000	4429	8.03	10.29	Z SHELL
11	LOWER RIGHT FRONT SUPT PANEL	1331447-1	ALUM/6061-T651	35000	42000	1209	22.16	23.81	Z BEAM
12	LOWER RIGHT PANEL	1331650-1	ALUM/6061-T6	35000	42000	3567	6.85	7.41	Z SHELL
13	UPPER RIGHT FRONT SUPT PANEL	1331390-1	ALUM/6061-T651	35000	42000	3010	8.30	8.97	Z BEAM
14	UPPER RIGHT PANEL	1331651-1	ALUM/6061-T6	35000	42000	2076	12.49	13.45	Z SHELL
15	TOP PANEL	1331648-1	ALUM/6061-T6	35000	42000	2343	10.95	11.80	Z SHELL
16	LEFT PANEL	1331640-1	ALUM/6061-T6	35000	42000	2278	11.29	12.17	Z SHELL
17	LOWER LEFT WARMLOAD SHIELD	1331445-1	ALUM/6061-T6	35000	42000	3888	6.20	6.72	Z BEAM
18	LOWER RIGHT WARMLOAD SHIELD	1331405-1	ALUM/6061-T6	35000	42000	3058	8.16	8.81	Z BEAM
19	UPPER LEFT WARMLOAD SHIELD	1331647-1	ALUM/6061-T6	35000	42000	3384	7.27	7.87	Z BEAM
20	UPPER RIGHT WARMLOAD SHIELD	1331646-1	ALUM/6061-T6	35000	42000	2046	12.69	13.66	Z BEAM
21	LOWER CARD CAGE ASSEMBLY	1331600-1	ALUM/6061-T6	35000	42000	7342	2.81	3.09	Z SHELL
22	LOWER CARD	1331600-1	REINF PLASTIC	24000	40000	665	27.87	41.96	Z SHELL
23	UPPER CARD CAGE ASSEMBLY	1331162-1	ALUM/6061-T6	35000	42000	7652	2.66	2.92	Z BEAM
23a	UPPER CARD CAGE ASSEMBLY	1331162-1	ALUM/6061-T4	16000	30000	3826	2.35	4.60	Z BEAM
24	UPPER CARD	1331162-1	REINF PLASTIC	24000	40000	363	51.89	77.71	Z SHELL
25	LOWER CALIBRATION SOURCE ASSY	1331380-1	ALUM/6061-T6	35000	42000	4817	4.81	5.23	Z SHELL
26	UPPER CALIBRATION SOURCE ASSY	1331380-2	ALUM/6061-T6	35000	42000	4348	5.44	5.90	Z SHELL
27	BEAM SUPPORT	1331406-1	ALUM/7075-T6	66000	75000	2793	17.90	18.18	Z BEAM
28	LOWER REFLECTOR	1355777-1	ALUM/7075-T6	66000	75000	7165	6.37	6.48	Z BEAM
29	POWER CONTROL/MONITOR, BKT	1356790-1	ALUM/6061-T6	35000	42000	2135	12.11	13.05	Z SHELL
30	POWER CNTL/MNTR ASSY, PWB	1356962-1	REINF PLASTIC	24000	40000	1233	14.57	22.17	Z SHELL
31	PWR CNTL/MNTR ASSY, STANDOFFS	1356962-1	CRES 1/4 HARD	44000	122000	7051	3.99	11.36	Z BEAM
32	RADIATOR PANEL	1331511-1	ALUM/6061-T6	35000	42000	1739	15.10	16.25	Z SHELL
33	SIDEMOUNT ASSEMBLY	1331552-1	ALUM/6061-T6	35000	42000	10670	1.62	1.81	Z SHELL
34	UPPER REFLECTOR	1355777-1	ALUM/6061-T6	35000	42000	3768	6.43	6.96	Z SHELL

**MAXIMUM PRINCIPAL STRESS BASED ON ASSUMED IN PHASE COMPONENT STRESSES

Table XV METSAT AMSU-A1 Rattlespace Summary

SUMMARY - RATTLESPACE OF THE LOWER CARD CAGE CIRCUIT CARDS				
CASE	GRID	GRID	LOAD	3Σ ΔX
1	4804	4844	X	0.00102
2	4803	4843	Y	0.00528
3	4808	4848	Z	0.00170
MINIMUM GAP				0.037

SUMMARY - RATTLESPACE OF THE UPPER CARD CAGE CIRCUIT CARDS				
CASE	GRID	GRID	LOAD	3Σ ΔX
1	11308	11875	X	0.00235
2	11316	11883	Y	0.00059
3	11316	11883	Z	0.00113
MINIMUM GAP				0.137

Table XVI METSAT AMSU-A1 Sidemount Mounting Bolts Margins of Safety
Gy=-20.6 Gx=-21.2

LOAD CASE	BOLT GRID	APPLIED TENSION T2 (LB)*	TENSILE FS	PRELOAD TENSION (LB)	TOTAL TENSION (LB)	TENSILE ALLOW (LB)	APPLIED SHEAR T1 (LB)	APPLIED SHEAR T3 (LB)	SHEAR FS	TOTAL SHEAR (LB)	SHEAR ALLOW (LB)	MARGIN OF SAFETY
1	7240	231	1.4	1315	1517	3200	-12	-193	1.4	271	1735	1.07
	7255	67	1.4	1315	1373	3200	170	-41	1.4	245	1735	1.29
	7446	5	1.4	1315	1319	3200	77	-11	1.4	108	1735	1.42
	7462	207	1.4	1315	1495	3200	34	106	1.4	156	1735	1.13
	7497	56	1.4	1315	1364	3200	87	35	1.4	132	1735	1.34
	7507	313	1.4	1315	1588	3200	152	123	1.4	273	1735	0.98
	7555	71	1.4	1315	1377	3200	31	-42	1.4	73	1735	1.32
	7745	25	1.4	1315	1336	3200	49	-39	1.4	88	1735	1.39
	7840	63	1.4	1315	1370	3200	171	-42	1.4	247	1735	1.29
	7933	45	1.4	1315	1354	3200	69	-13	1.4	99	1735	1.36
	8313	408	1.4	1315	1671	3200	429	144	1.4	634	1735	0.68
	9576	439	1.4	1315	1699	3200	257	-56	1.4	369	1735	0.83
	9834	462	1.4	1315	1719	3200	488	21	1.4	684	1735	0.61
	10271	424	1.4	1315	1685	3200	54	190	1.4	277	1735	0.87
	10703	328	1.4	1315	1601	3200	182	-91	1.4	284	1735	0.96
	10748	53	1.4	1315	1361	3200	36	-92	1.4	138	1735	1.34

*ALL TENSILE LOADS MADE POSITIVE TO ACCOUNT FOR LOAD CASES 1 AND 6 w/ Kb/Kb+Km = .623845

Table XVII METSAT AMSU-A1 Sidemount Mounting Bolts Margins of Safety
Gy=-20.6 Gx=21.2

LOAD CASE	BOLT GRID	APPLIED TENSION T2 (LB)*	TENSILE FS	PRELOAD TENSION (LB)	TOTAL TENSION (LB)	TENSILE ALLOW (LB)	APPLIED SHEAR T1 (LB)	APPLIED SHEAR T3 (LB)	SHEAR FS	TOTAL SHEAR (LB)	SHEAR ALLOW (LB)	MARGIN OF SAFETY
2	7240	432	1.4	1315	1693	3200	22	258	1.4	362	1735	0.84
	7255	194	1.4	1315	1485	3200	-226	-15	1.4	317	1735	1.09
	7446	9	1.4	1315	1323	3200	-185	-2	1.4	259	1735	1.36
	7462	56	1.4	1315	1364	3200	-159	-134	1.4	291	1735	1.28
	7497	26	1.4	1315	1338	3200	-142	-40	1.4	207	1735	1.36
	7507	245	1.4	1315	1529	3200	-129	-77	1.4	210	1735	1.08
	7555	509	1.4	1315	1760	3200	-24	50	1.4	77	1735	0.82
	7745	89	1.4	1315	1392	3200	-54	-107	1.4	168	1735	1.29
	7840	607	1.4	1315	1845	3200	72	121	1.4	198	1735	0.73
	7933	23	1.4	1315	1335	3200	-74	8	1.4	105	1735	1.39
	8313	900	1.4	1315	2101	3200	-421	57	1.4	595	1735	0.43
	9576	115	1.4	1315	1415	3200	-193	36	1.4	275	1735	1.21
	9834	177	1.4	1315	1469	3200	-390	9	1.4	546	1735	0.92
	10271	22	1.4	1315	1334	3200	-243	-129	1.4	385	1735	1.25
	10703	19	1.4	1315	1332	3200	-124	-32	1.4	179	1735	1.39
	10748	82	1.4	1315	1386	3200	-11	-10	1.4	21	1735	1.31

*ALL TENSILE LOADS MADE POSITIVE TO ACCOUNT FOR LOAD CASES 2 AND 5 w/ Kb/Kb+Km = .623845

Table XVIII METSAT AMSU-A1 Sidemount Mounting Bolts Margins of Safety
Gy=-20.6 Gz=-19.6

LOAD CASE	BOLT GRID	APPLIED TENSION T2 (LB)*	TENSILE FS	PRELOAD TENSION (LB)	TOTAL TENSION (LB)	TENSILE ALLOW (LB)	APPLIED SHEAR T1 (LB)	APPLIED SHEAR T3 (LB)	SHEAR FS	TOTAL SHEAR (LB)	SHEAR ALLOW (LB)	MARGIN OF SAFETY
3	7240	425	1.4	1315	1686	3200	150	308	1.4	480	1735	0.78
	7255	369	1.4	1315	1637	3200	-171	130	1.4	301	1735	0.92
	7446	56	1.4	1315	1364	3200	1	82	1.4	114	1735	1.34
	7462	497	1.4	1315	1749	3200	-165	278	1.4	453	1735	0.74
	7497	93	1.4	1315	1396	3200	0	75	1.4	105	1735	1.29
	7507	322	1.4	1315	1596	3200	112	155	1.4	268	1735	0.98
	7555	230	1.4	1315	1516	3200	15	90	1.4	128	1735	1.11
	7745	144	1.4	1315	1441	3200	-34	79	1.4	121	1735	1.22
	7840	281	1.4	1315	1560	3200	62	273	1.4	392	1735	0.96
	7933	24	1.4	1315	1336	3200	-26	10	1.4	38	1735	1.39
	8313	107	1.4	1315	1408	3200	-53	135	1.4	203	1735	1.25
	9576	172	1.4	1315	1466	3200	-101	105	1.4	204	1735	1.17
	9834	185	1.4	1315	1477	3200	146	17	1.4	206	1735	1.15
	10271	218	1.4	1315	1505	3200	-28	236	1.4	332	1735	1.06
	10703	1	1.4	1315	1316	3200	-1	46	1.4	64	1735	1.43
	10748	105	1.4	1315	1407	3200	-28	82	1.4	122	1735	1.27

*ALL TENSILE LOADS MADE POSITIVE TO ACCOUNT FOR LOAD CASES 3 AND 8 w/ Kb/Kb+Km = .623845

Table XIX METSAT AMSU-A1 Sidemount Mounting Bolts Margins of Safety
Gy=-20.6 Gz=19.6

LOAD CASE	BOLT GRID	APPLIED TENSION T2 (LB)*	TENSILE FS	PRELOAD TENSION (LB)	TOTAL TENSION (LB)	TENSILE ALLOW (LB)	APPLIED SHEAR T1 (LB)	APPLIED SHEAR T3 (LB)	SHEAR FS	TOTAL SHEAR (LB)	SHEAR ALLOW (LB)	MARGIN OF SAFETY
4	7240	223	1.4	1315	1510	3200	-140	-244	1.4	393	1735	1.02
	7255	242	1.4	1315	1526	3200	116	-186	1.4	307	1735	1.05
	7446	41	1.4	1315	1351	3200	-109	-95	1.4	202	1735	1.34
	7462	346	1.4	1315	1617	3200	41	-307	1.4	433	1735	0.87
	7497	63	1.4	1315	1370	3200	-55	-80	1.4	136	1735	1.33
	7507	254	1.4	1315	1537	3200	-90	-110	1.4	198	1735	1.07
	7555	209	1.4	1315	1497	3200	-7	-83	1.4	117	1735	1.13
	7745	31	1.4	1315	1342	3200	30	-225	1.4	317	1735	1.29
	7840	389	1.4	1315	1655	3200	182	-193	1.4	372	1735	0.87
	7933	43	1.4	1315	1353	3200	21	-14	1.4	35	1735	1.37
	8313	1415	1.4	1315	2551	3200	61	66	1.4	126	1735	0.25
	9576	726	1.4	1315	1949	3200	165	-125	1.4	290	1735	0.63
	9834	100	1.4	1315	1402	3200	-48	13	1.4	70	1735	1.28
	10271	228	1.4	1315	1514	3200	-160	-174	1.4	332	1735	1.05
	10703	310	1.4	1315	1585	3200	59	-168	1.4	250	1735	0.99
	10748	240	1.4	1315	1524	3200	53	-184	1.4	268	1735	1.06

*ALL TENSILE LOADS MADE POSITIVE TO ACCOUNT FOR LOAD CASES 4 AND 7 w/ Kb/Kb+Km = .623845

Table XX METSAT AMSU-A1 Sidemount Shear Pins
Shear Tearout Margins of Safety

LOAD CASE	BOLT GRID	COMP	APPLIED SHEAR T1 (LB)	APPLIED SHEAR T3 (LB)	TOTAL SHEAR (LB)	SHEAR TEAROUT (PSI)	FS	SHEAR Fsu (PSI)	MS
1	7855	SIDEMT	1796	43	1796	14721	1.4	27000	0.31
2	7855	SIDEMT	-1672	-43	1673	13710	1.4	27000	0.41
3	7855	SIDEMT	13	1913	1913	15681	1.4	27000	0.23
4	7855	SIDEMT	111	-1913	1916	15707	1.4	27000	0.23

*ALL SHEAR LOAD REACTED AT SHEAR PINS

LOAD CASE	BOLT GRID	COMP	APPLIED LOAD T1 (LB)	APPLIED LOAD T3 (LB)	TOTAL LOAD (LB)	BEARING STRESS (PSI)	FS	ALLOW Fcy/Ftu (PSI)	MS
1	7855	SIDEMT	1796	43	1796	15281	1.25	35000	0.83
	7855	SIDEMT	1796	43	1796	15281	1.4	42000	0.96
2	7855	SIDEMT	-1672	-43	1673	14232	1.25	35000	0.97
	7855	SIDEMT	-1672	-43	1673	14232	1.4	42000	1.11
3	7855	SIDEMT	13	1913	1913	16278	1.25	35000	0.72
	7855	SIDEMT	13	1913	1913	16278	1.4	42000	0.84
4	7855	SIDEMT	111	-1913	1916	16304	1.25	35000	0.72
	7855	SIDEMT	111	-1913	1916	16304	1.4	42000	0.84

*ALL SHEAR LOAD REACTED AT SHEAR PINS

Table XXI METSAT AMSU-A1 Sidemount Mounting Bolts Margins of Safety
Gy=20.6 Gx=21.2 (Shear at Pins Only)

LOAD CASE	BOLT GRID	APPLIED TENSION T2 (LB)*	TENSILE FS	PRELOAD TENSION (LB)	TOTAL TENSION (LB)	TENSILE ALLOW (LB)	MARGIN OF SAFETY
1	7240	99	1.4	1315	1401	3200	1.28
	7255	38	1.4	1315	1348	3200	1.37
	7446	6	1.4	1315	1320	3200	1.42
	7462	226	1.4	1315	1512	3200	1.12
	7497	63	1.4	1315	1370	3200	1.34
	7507	252	1.4	1315	1535	3200	1.09
	7555	167	1.4	1315	1461	3200	1.19
	7745	14	1.4	1315	1327	3200	1.41
	7840	124	1.4	1315	1424	3200	1.25
	7933	57	1.4	1315	1365	3200	1.34
	8313	368	1.4	1315	1636	3200	0.96
	9576	438	1.4	1315	1697	3200	0.89
	9834	294	1.4	1315	1572	3200	1.04
	10271	644	1.4	1315	1877	3200	0.70
	10703	438	1.4	1315	1698	3200	0.89
	10748	90	1.4	1315	1393	3200	1.30

*ALL TENSILE LOADS MADE POSITIVE TO ACCOUNT FOR LOAD CASES 1 AND 6 w/ Kb/Kb+Km = .623845
*ALL SHEAR LOAD REACTED AT SHEAR PINS

Table XXII METSAT AMSU-A1 Sidemount Mounting Bolts Margins of Safety
Gy=-20.6 Gx=-21.2 (Shear at Pins Only)

LOAD CASE	BOLT GRID	APPLIED TENSION T2 (LB)*	TENSILE FS	PRELOAD TENSION (LB)	TOTAL TENSION (LB)	TENSILE ALLOW (LB)	MARGIN OF SAFETY
2	7240	238	1.4	1315	1523	3200	1.10
	7255	174	1.4	1315	1467	3200	1.18
	7446	9	1.4	1315	1323	3200	1.42
	7462	28	1.4	1315	1340	3200	1.39
	7497	18	1.4	1315	1330	3200	1.41
	7507	141	1.4	1315	1438	3200	1.23
	7555	620	1.4	1315	1857	3200	0.72
	7745	69	1.4	1315	1375	3200	1.33
	7840	768	1.4	1315	1986	3200	0.61
	7933	11	1.4	1315	1325	3200	1.42
	8313	1048	1.4	1315	2230	3200	0.44
	9576	119	1.4	1315	1419	3200	1.25
	9834	8	1.4	1315	1322	3200	1.42
	10271	172	1.4	1315	1465	3200	1.18
	10703	227	1.4	1315	1513	3200	1.11
	10748	2	1.4	1315	1317	3200	1.43

*ALL TENSILE LOADS MADE POSITIVE TO ACCOUNT FOR LOAD CASES 2 AND 5 w/ Kb/Kb+Km = .623845
*ALL SHEAR LOAD REACTED AT SHEAR PINS

Table XXIII METSAT AMSU-A1 Sidemount Mounting Bolts Margins of Safety
Gy=-20.6 Gz=-19.6 (Shear at Pins Only)

LOAD CASE	BOLT GRID	APPLIED TENSION T2 (LB)*	TENSILE FS	PRELOAD TENSION (LB)	TOTAL TENSION (LB)	TENSILE ALLOW (LB)	MARGIN OF SAFETY
3	7240	270	1.4	1315	1551	3200	1.06
	7255	391	1.4	1315	1657	3200	0.93
	7446	54	1.4	1315	1362	3200	1.35
	7462	462	1.4	1315	1719	3200	0.86
	7497	95	1.4	1315	1398	3200	1.29
	7507	301	1.4	1315	1578	3200	1.03
	7555	337	1.4	1315	1610	3200	0.99
	7745	234	1.4	1315	1520	3200	1.11
	7840	368	1.4	1315	1636	3200	0.96
	7933	61	1.4	1315	1368	3200	1.34
	8313	334	1.4	1315	1607	3200	0.99
	9576	53	1.4	1315	1361	3200	1.35
	9834	237	1.4	1315	1522	3200	1.10
	10271	322	1.4	1315	1596	3200	1.00
	10703	145	1.4	1315	1441	3200	1.22
	10748	143	1.4	1315	1440	3200	1.22

*ALL TENSILE LOADS MADE POSITIVE TO ACCOUNT FOR LOAD CASES 3 AND 8 w/ Kb/Kb+Km = .623845
*ALL SHEAR LOAD REACTED AT SHEAR PINS

Table XXIV METSAT AMSU-A1 Sidemount Mounting Bolts Margins of Safety
Gy=-20.6 Gz=-19.6 (Shear at Pins Only)

LOAD CASE	BOLT GRID	APPLIED TENSION T2 (LB)*	TENSILE FS	PRELOAD TENSION (LB)	TOTAL TENSION (LB)	TENSILE ALLOW (LB)	MARGIN OF SAFETY
4	7240	131	1.4	1315	1429	3200	1.24
	7255	256	1.4	1315	1538	3200	1.08
	7446	39	1.4	1315	1349	3200	1.37
	7462	265	1.4	1315	1546	3200	1.07
	7497	51	1.4	1315	1359	3200	1.35
	7507	190	1.4	1315	1481	3200	1.16
	7555	116	1.4	1315	1416	3200	1.26
	7745	152	1.4	1315	1447	3200	1.21
	7840	276	1.4	1315	1556	3200	1.06
	7933	15	1.4	1315	1328	3200	1.41
	8313	1749	1.4	1315	2843	3200	0.13
	9576	610	1.4	1315	1848	3200	0.73
	9834	64	1.4	1315	1371	3200	1.33
	10271	150	1.4	1315	1446	3200	1.21
	10703	356	1.4	1315	1626	3200	0.97
	10748	235	1.4	1315	1520	3200	1.11

*ALL TENSILE LOADS MADE POSITIVE TO ACCOUNT FOR LOAD CASES 4 AND 7 w/ Kb/Kb+Km = .623845
*ALL SHEAR LOAD REACTED AT SHEAR PINS

Table XXV METSAT AMSU-A1 Sidemount Mounting Bolts Member Compression Margins of Safety

LOAD CASE	MEMBER 1	MEMBER 2	APPLIED LOAD (LB)	BEARING AREA (IN2)	BEARING STRESS (PSI)	FS	ALLOW Ftu (PSI)	MS
PRELOAD	BOLT	WASHER	1315	0.036	36053	1.40	160000	2.17
	WASHER	.435 ISO	1315	0.112	11781	1.40	60000	2.64
	.435 ISO	BASEPL	1315	0.083	15928	1.25	35000	0.76
	.435 ISO	BASEPL	1315	0.083	15928	1.40	42000	0.88
	BASEPL	.590 ISO	1315	0.156	8433	1.25	35000	2.32
	BASEPL	.590 ISO	1315	0.156	8433	1.40	42000	2.56
	.590 ISO	SPCCR	1315	0.157	8377	1.40	60000	4.12

METSAT AMSU-A1 SIDEMOUNT MOUNTING BOLTS THREAD SHEAR MARGINS OF SAFETY

LOAD CASE	INT/EXT THREAD	GRID	PRELOAD	APPLIED LOAD LB	APPLIED LOAD FS	JOINT STIFF FACTOR	TOTAL LOAD LB	SHEAR AREA SQ IN	THREAD SHEAR PSI	ALLOW Fsu PSI	MARGIN OF SAFETY
1	EXTERNL .190-32UNF A-286 SCR	10271	1315	644	1.4	0.623845	1877.247	0.05065	37063	96000	1.59
2	EXTERNL .190-32UNF A-286 SCR	8313	1315	1048	1.4	0.623845	2229.953	0.05065	44027	96000	1.18
3	EXTERNL .190-32UNF A-286 SCR	7462	1315	462	1.4	0.623845	1718.722	0.05065	33933	96000	1.83
4	EXTERNL .190-32UNF A-286 SCR	8313	1315	1749	1.4	0.623845	2842.675	0.05065	56124	96000	0.71

*ALL SHEAR LOAD REACTED AT SHEAR PINS

Table XXVI METSAT AMSU-A1 Sidemount Mounting Bolts Shear Tearout Margins of Safety (Shear at Pins Only)

METSAT AMSU-A1 SIDEMOUNT MOUNTING BOLTS SHEAR TEAROUT MARGINS OF SAFETY*

LOAD CASE	BOLT GRID	COMP	APPLIED SHEAR T1 (LB)	APPLIED SHEAR T3 (LB)	TOTAL SHEAR (LB)	SHEAR TEAROUT (PSI)	FS	SHEAR Fsu (PSI)	MS
1	9834	SIDEMT	488	21	488	5991	1.4	27000	2.22
2	8313	SIDEMT	-421	57	425	5213	1.4	27000	2.70
3	7240	SIDEMT	150	308	343	4206	1.4	27000	3.59
4	7462	SIDEMT	41	-307	309	3795	1.4	27000	4.08

*W/SHEAR AT PINS AND BOLTS

METSAT AMSU-A1 SIDEMOUNT MOUNTING BOLTS BEARING MARGINS OF SAFETY*

LOAD CASE	BOLT GRID	COMP	APPLIED LOAD T1 (LB)	APPLIED LOAD T3 (LB)	TOTAL LOAD (LB)	BEARING STRESS (PSI)	FS	ALLOW Fcy/Ftu (PSI)	MS
1		SIDEMT	488	21	488	3310	1.25	35000	7.46
		SIDEMT	488	21	488	3310	1.4	42000	8.06
		.590 ISO	488	21	488	3310	1.4	35000	6.55
2		SIDEMT	-421	57	425	2880	1.25	35000	8.72
		SIDEMT	-421	57	425	2880	1.4	35000	7.68
		.590 ISO	-421	57	425	2880	1.4	35000	7.68
3		SIDEMT	150	308	343	2324	1.25	35000	11.05
		SIDEMT	150	308	343	2324	1.4	35000	9.76
		.590 ISO	150	308	343	2324	1.4	35000	9.76
4		SIDEMT	41	-307	309	2097	1.25	35000	12.35
		SIDEMT	41	-307	309	2097	1.4	35000	10.92
		.590 ISO	41	-307	309	2097	1.4	35000	10.92

*W/SHEAR AT PINS AND SCREWS

Table XXVII METSAT AMSU-A1 Panel Flange Bending Stress Summary
Random Vibration 8.8 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	5.482	0.006	0.016	0.563	0.312	0.313	0.040	10.994	5.512	1.725	0.016	19412	66000	1.25	1.72
														75000	1.4	1.76
1470	Z	10.273	0.066	0.060	0.750	0.312	0.313	0.040	20.868	10.595	3.316	0.060	37311	66000	1.25	0.42
														75000	1.4	0.44
1538	Z	17.053	0.093	0.139	0.563	0.312	0.313	0.050	34.598	17.545	5.492	0.139	39549	66000	1.25	0.34
														75000	1.4	0.35
1550	Z	5.383	0.041	0.034	0.563	0.312	0.313	0.040	10.941	5.558	1.740	0.034	19573	66000	1.25	1.70
														75000	1.4	1.74

* 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	3.050	0.177	1.411	0.469	0.312	0.313	0.040	8.768	5.718	1.790	1.411	20239	66000	1.25	1.61
														75000	1.4	1.65
1439	X	2.421	0.186	3.114	0.360	0.312	0.313	0.040	9.005	6.584	2.061	3.114	23418	66000	1.25	1.25
														75000	1.4	1.29
1439	Y	2.788	0.159	1.887	0.360	0.312	0.313	0.040	8.242	5.454	1.707	1.887	19348	66000	1.25	1.73
														75000	1.4	1.77
1441	Y	2.857	0.022	0.214	0.219	0.312	0.313	0.040	5.925	3.068	0.960	0.214	10818	66000	1.25	3.88
														75000	1.4	3.95

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	2.869	0.138	0.312	0.551	0.312	0.313	0.040	6.719	3.850	1.205	0.312	13580	66000	1.25	2.89
														75000	1.4	2.94

Table XXVIII METSAT AMSU-A1 Panel Flange Bending Stress Summary
Random Vibration 8.8 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	11.772	0.049	0.033	0.435	0.312	0.313	0.065	23.709	11.937	3.736	0.033	15919	35000	1.25	0.76
														42000	1.4	0.88
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	5.226	0.039	0.075	0.563	0.313	0.312	0.065	10.729	5.503	1.717	0.075	7318	35000	1.25	2.83
														42000	1.4	3.10

Table XXIX METSAT AMSU-A1 Panel Flange Bending Stress Summary
Random Vibration 8.8 grms, Lower Right Panel

LOWER RIGHT PANEL

LOWER FLANGE

FEM ELEM. NO.	LOAD CASE	FORCE Fx (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
595	Z	7.848	0.025	0.041	0.666	0.312	0.25	0.100	17.851	10.003	2.501	0.041	4503	35000	1.25	5.22
														42000	1.4	5.66
575	Z	8.114	0.073	0.091	0.649	0.312	0.25	0.100	18.769	10.655	2.664	0.091	4797	35000	1.25	4.84
														42000	1.4	5.25

Table XXX METSAT AMSU-A1 Panel Flange Bending Stress Summary
Random Vibration 8.8 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	4.888	0.032	0.099	0.219	0.312	0.313	0.070	9.932	5.044	1.579	0.099	5804	58000	1.25	7.00
														66000	1.4	7.12

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	6.999	0.110	0.151	0.597	0.312	0.313	0.125	14.615	7.616	2.384	0.151	2750	58000	1.25	15.87
														66000	1.4	16.14
340	Z	12.940	0.126	0.074	0.597	0.312	0.313	0.125	26.382	13.442	4.207	0.074	4849	58000	1.25	8.57
														66000	1.4	8.72

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	18.607	0.132	0.452	0.338	0.312	0.313	0.070	38.064	19.457	6.090	0.452	22391	58000	1.25	1.07
														66000	1.4	1.11
339	X	19.353	0.071	0.152	0.353	0.312	0.313	0.070	39.042	19.689	6.163	0.152	22645	58000	1.25	1.05
														66000	1.4	1.08

Table XXXI METSAT AMSU-A1 Panel Flange Bending Stress Summary
Random Vibration 8.8 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	6.416	0.030	0.104	0.638	0.312	0.438	0.050	11.206	4.790	2.098	0.104	15113	66000	1.25	2.49
														75000	1.4	2.54
2272	X	7.184	0.031	0.055	0.584	0.312	0.438	0.050	12.445	5.261	2.305	0.055	16596	66000	1.25	2.18
														75000	1.4	2.23
2279	Z	7.999	0.033	0.114	0.563	0.312	0.438	0.050	13.919	5.920	2.593	0.114	18675	66000	1.25	1.83
														75000	1.4	1.87

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	8.301	0.036	0.087	0.424	0.312	0.438	0.050	14.380	6.079	2.663	0.087	19177	66000	1.25	1.75
														75000	1.4	1.79
2280	X	7.031	0.054	0.095	0.298	0.312	0.438	0.050	12.227	5.196	2.276	0.095	16392	66000	1.25	2.22
														75000	1.4	2.27

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	5.773	0.086	0.150	0.380	0.312	0.438	0.050	10.212	4.439	1.944	0.150	14007	66000	1.25	2.77
														75000	1.4	2.82

Table XXXII METSAT AMSU-A1 Panel Flange Bending Stress Summary
Random Vibration 8.8 grms, Lower Motor Mount Panel

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	17.191	0.262	0.179	0.754	0.312	0.438	0.050	30.343	13.152	5.761	0.179	41487	66000	1.25	0.27
														75000	1.4	0.29
2450	X	12.236	0.151	0.116	0.503	0.312	0.438	0.050	21.430	9.194	4.027	0.116	29001	66000	1.25	0.82
														75000	1.4	0.85

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	20.384	0.314	0.722	0.290	0.312	0.438	0.050	36.099	15.715	6.883	0.722	49602	66000	1.25	0.06
														75000	1.4	0.08

Table XXXIII METSAT AMSU-A1 Panel Flange Bending Stress Summary
Random Vibration 8.8 grms, Lower Front Panel

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	15.174	0.193	0.145	0.497	0.313	0.312	0.090	31.246	16.072	5.015	0.145	11148	35000	1.25	1.51
														42000	1.4	1.69
1261	Y	14.007	0.131	0.130	0.754	0.313	0.312	0.090	28.793	14.786	4.613	0.130	10256	35000	1.25	1.73
														42000	1.4	1.93
1261	Z	18.308	0.236	0.140	0.754	0.313	0.312	0.090	37.769	19.461	6.072	0.140	13498	35000	1.25	1.07
														42000	1.4	1.22
1289	Z	15.906	0.149	0.116	0.754	0.313	0.312	0.090	32.621	16.715	5.215	0.116	11593	35000	1.25	1.42
														42000	1.4	1.59
1333	X	9.999	0.039	1.183	0.666	0.313	0.312	0.090	22.678	12.679	3.956	1.183	8830	35000	1.25	2.17
														42000	1.4	2.40

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	4.373	0.073	1.409	0.296	0.313	0.312	0.040	10.331	5.958	1.859	1.409	21017	35000	1.25	0.33
														42000	1.4	0.43
1338	X	4.083	0.137	0.514	0.312	0.313	0.312	0.040	9.132	5.049	1.575	0.514	17761	35000	1.25	0.58
														42000	1.4	0.69

Table XXXIII METSAT AMSU-A1 Panel Flange Bending Stress Summary
Random Vibration 8.8 grms, Lower Front Panel (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	11.806	0.012	0.022	0.368	0.313	0.312	0.060	23.714	11.908	3.715	0.022	18578	35000	1.25	0.51
														42000	1.4	0.61
1240	X	12.986	0.035	0.038	0.368	0.313	0.312	0.060	26.171	13.185	4.114	0.038	20570	35000	1.25	0.36
														42000	1.4	0.46

Table XXXIV METSAT AMSU-A1 Panel Flange Bending Stress Summary
Random Vibration 8.8 grms, Upper Aft Panel

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
UPPER AFT PANEL																
LOWER FLANGE																
5778	X	16.015	9.308	4.722	0.306	0.562	0.188	0.110	121.09	105.07	19.753	4.722	29514	58000	1.25	0.57
														66000	1.4	0.60
5781	X	12.473	9.596	5.073	0.354	0.562	0.188	0.110	110.35	97.88	18.402	5.073	27513	58000	1.25	0.69
														66000	1.4	0.71
5785	X	15.262	9.746	5.202	0.306	0.562	0.188	0.110	121.19	105.93	19.915	5.202	29768	58000	1.25	0.56
														66000	1.4	0.58
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	6.431	0.261	0.242	0.245	0.562	0.188	0.060	27.359	20.928	3.935	0.242	19685	58000	1.25	1.36
														66000	1.4	1.39
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
6963	X	8.303	0.505	0.086	0.655	0.562	0.188	0.060	36.109	27.806	5.228	0.086	26142	58000	1.25	0.77
														66000	1.4	0.80
6856	X	1.406	3.552	12.510	0.362	0.562	0.188	0.145	48.591	47.185	8.871	12.510	7853	58000	1.25	4.91
W/LOCAL THICKNESS														66000	1.4	5.00

Table XXXIV METSAT AMSU-A1 Panel Flange Bending Stress Summary
Random Vibration 8.8 grms, Upper Aft Panel (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	13.944	9.470	13.208	0.267	0.562	0.188	0.145	124.76	110.81	20.833	13.208	18109	58000	1.25	1.56
W/LOCAL THICKNESS														66000	1.4	1.60
6944	Z	16.833	2.997	1.658	0.267	0.562	0.188	0.145	85.449	68.616	12.900	1.658	11078	58000	1.25	3.19
W/LOCAL THICKNESS														66000	1.4	3.26
6945	X	26.137	6.928	4.990	0.468	0.562	0.188	0.145	153.54	127.41	23.952	4.990	20609	58000	1.25	1.25
W/LOCAL THICKNESS														66000	1.4	1.29
6946	X	53.813	9.059	2.067	0.312	0.562	0.188	0.145	266.30	212.48	39.947	2.067	34242	58000	1.25	0.36
W/LOCAL THICKNESS														66000	1.4	0.38
6925	X	17.269	0.649	0.166	0.382	0.562	0.188	0.075	72.68	55.41	10.418	0.166	33343	58000	1.25	0.39
														66000	1.4	0.41
6926	Z	11.986	0.237	0.105	0.362	0.562	0.188	0.075	49.28	37.29	7.011	0.105	22440	58000	1.25	1.07
														66000	1.4	1.10

Table XXXV METSAT AMSU-A1 Panel Flange Bending Stress Summary
Random Vibration 8.8 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	11.633	0.028	0.283	0.395	0.312	0.188	0.060	31.682	20.049	3.769	0.283	18861	35000	1.25	0.48
														42000	1.4	0.59

Table XXXVI METSAT AMSU-A1 Panel Flange Bending Stress Summary
Random Vibration 8.8 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	3.326	0.034	0.067	0.566	0.312	0.313	0.045	6.871	3.545	1.110	0.067	9868	35000	1.25	1.84
														42000	1.4	2.04
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	4.940	0.057	0.031	0.870	0.312	0.313	0.045	10.132	5.192	1.625	0.031	14449	35000	1.25	0.94
														42000	1.4	1.08

Table XXXVII METSAT AMSU-A1 Panel Flange Attachment Screws Stress Summary
Random Vibration 8.8 grms, Upper Front Panel

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
UPPER FRONT PANEL														
LOWER FLANGE - BOLT STRESSES (NAS1352N06-6)														
1538	Z	34.598	0.139	7	10.575	52.268	0.210	156.81	0.630	1458	1.4	875	1.4	5.6
RIGHT FLANGE - BOLT STRESSES (NAS1352N06-6)														
1439	X	9.005	3.114	8	11.500	12.945	4.476	38.83	13.4291	1458	1.4	875	1.4	24
UPPER FLANGE - BOLT STRESSES (NAS1352N06-6)														
1491	Z	6.719	0.312	9	10.447	7.799	0.362	23.40	1.086	1458	1.4	875	1.4	43

Table XXXVIII METSAT AMSU-A1 Panel Flange Attachment Screws Stress Summary
Random Vibration 8.8 grms, Upper Right Front Support Panel

UPPER RIGHT FRONT SUPPORT PANEL														
AFT 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
2241	X	23.709	0.033	3	6.200	48.998	0.068	146.99	0.205	1458	1.4	875	1.4	6.1
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
2230	X	10.729	0.075	3	6.500	23.246	0.163	69.74	0.488	1458	1.4	875	1.4	14

Table XXXIX METSAT AMSU-A1 Panel Flange Attachment Screws Stress Summary
Random Vibration 8.8 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	18.769	0.091	15	19.290	24.136	0.117	72.41	0.351	1458	1.4	875	1.4	13

Table XL METSAT AMSU-A1 Panel Flange Attachment Screws Stress Summary
Random Vibration 8.8 grms, Lower Aft Panel

LOWER AFT PANEL

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
429	X	9.932	0.099	7	8.770	12.443	0.124	37.33	0.372	1458	1.4	875	1.4	27

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
340	Z	26.382	0.074	8	10.563	34.835	0.098	104.50	0.293	1458	1.4	875	1.4	9.0

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
429	X	38.064	0.452	6	8.498	53.911	0.640	161.73	1.921	1458	1.4	875	1.4	5.4
339	X	39.042	0.152	6	8.498	55.297	0.215	165.89	0.646	1458	1.4	875	1.4	5.3

Table XLI METSAT AMSU-A1 Panel Flange Attachment Screws Stress Summary
Random Vibration 8.8 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	12.445	0.055	6	10.563	21.910	0.097	65.73	0.290	1458	1.4	875	1.4	15
2279	Z	13.919	0.114	6	10.563	24.504	0.201	73.51	0.602	1458	1.4	875	1.4	13

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	14.380	0.087	3	6.245	29.935	0.181	89.81	0.543	1458	1.4	875	1.4	11

Table XLII METSAT AMSU-A1 Panel Flange Attachment Screws Stress Summary
Random Vibration 8.8 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	30.343	0.179	6	10.562	53.414	0.315	160.24	0.945	1458	1.4	875	1.4	5.5

Table XLIII METSAT AMSU-A1 Panel Flange Attachment Screws Stress Summary
Random Vibration 8.8 grms, Lower Front Panel

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
LOWER FRONT PANEL														
LOWER FLANGE - BOLT STRESSES (NAS1352N06-6)														
1261	Z	37.769	0.140	8	10.563	49.870	0.185	149.61	0.555	1458	1.4	875	1.4	6.0
RIGHT FLANGE - BOLT STRESSES (NAS1352N06-6)														
1333	Z	10.331	1.409	8	9.440	12.190	1.663	36.57	4.988	1458	1.4	875	1.4	27
UPPER FLANGE - BOLT STRESSES (NAS1352N06-6)														
1240	X	26.171	0.038	7	10.288	38.463	0.056	115.39	0.168	1458	1.4	875	1.4	8.0

Table XLIV METSAT AMSU-A1 Panel Flange Attachment Screws Stress Summary
Random Vibration 8.8 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	121.086	4.722	9	11.700	157.412	6.139	472.24	18.416	1458	1.4	875	1.4	1.2
5781	X	110.354	5.073	9	11.700	143.460	6.595	430.38	19.785	1458	1.4	875	1.4	1.4
5785	X	121.193	5.202	9	11.700	157.551	6.763	472.65	20.288	1458	1.4	875	1.4	1.2

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	27.359	0.242	7	9.800	38.303	0.339	114.91	1.016	1458	1.4	875	1.4	8.1

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
6856	X	48.591	12.510	8	11.600	70.457	18.140	211.37	54.419	1458	1.4	875	1.4	3.7

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	124.758	13.208	8	11.600	180.899	19.152							
6945	X	153.543	4.990	8	11.600	222.637	7.236	789.67	29.384	1458	1.4	875	1.4	0.32
6946	X	266.296	2.067	8	11.600	386.129	2.997							

Table XLV METSAT AMSU-A1 Panel Flange Attachment Screws Stress Summary
Random Vibration 8.8 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	31.682	0.283	7	8.783	39.752	0.355	119.26	1.065	1458	1.4	875	7.7302	7.7

Table XLVI METSAT AMSU-A1 Panel Flange Attachment Screws Stress Summary
Random Vibration 8.8 grms, Lower Right Front Support Panel

LOWER RIGHT FRONT SUPPORT 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
2201	X	6.871	0.067	3	6.500	14.887	0.145	44.66	0.436	1458	1.4	875	22.1246	22

AFT 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
2204	X	10.132	0.031	3	3.450	11.652	0.036	34.96	0.107	1458	1.4	875	28.7745	29

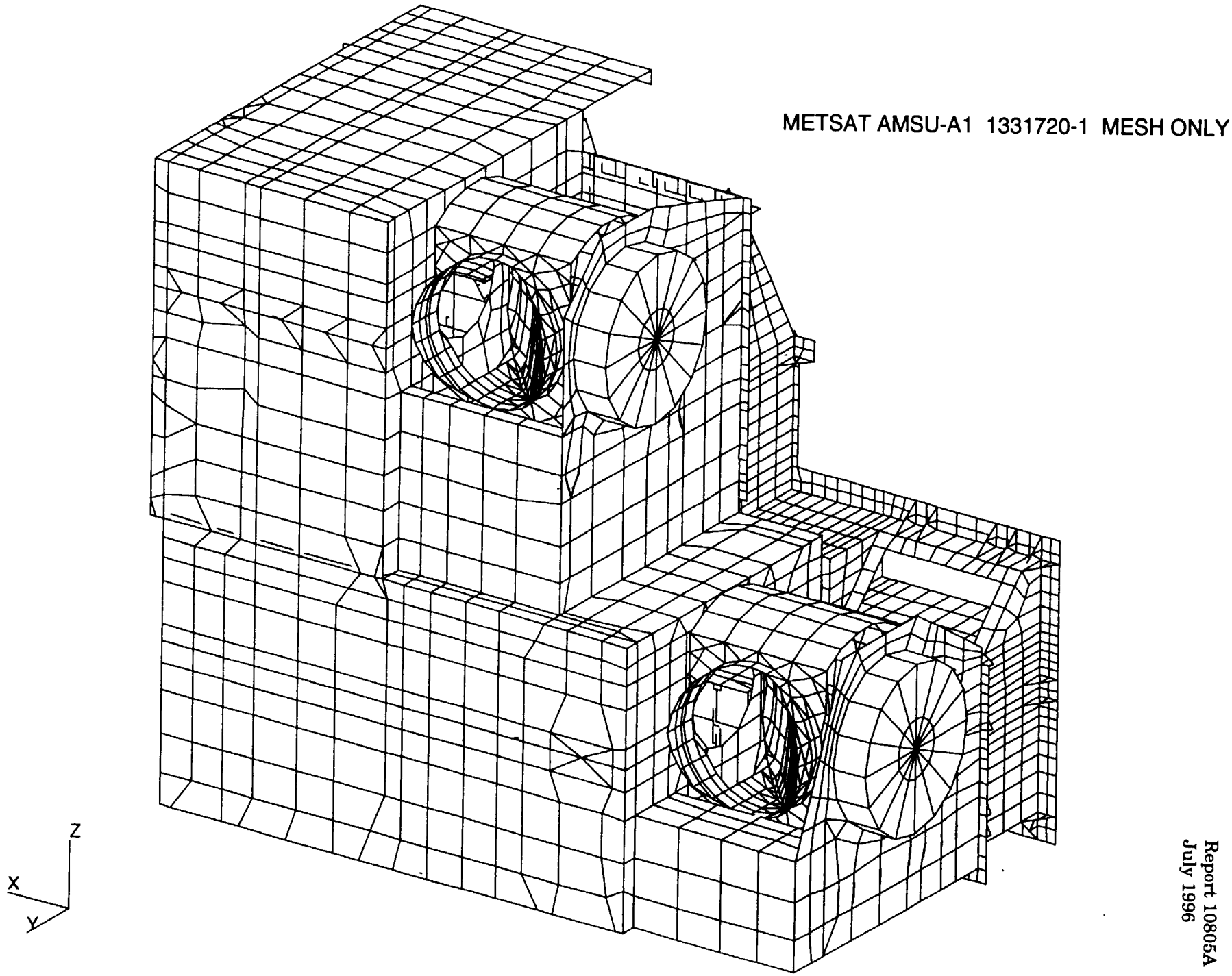


Figure 1 METSAT AMSU-A1 1331720-1 Mesh. View 1

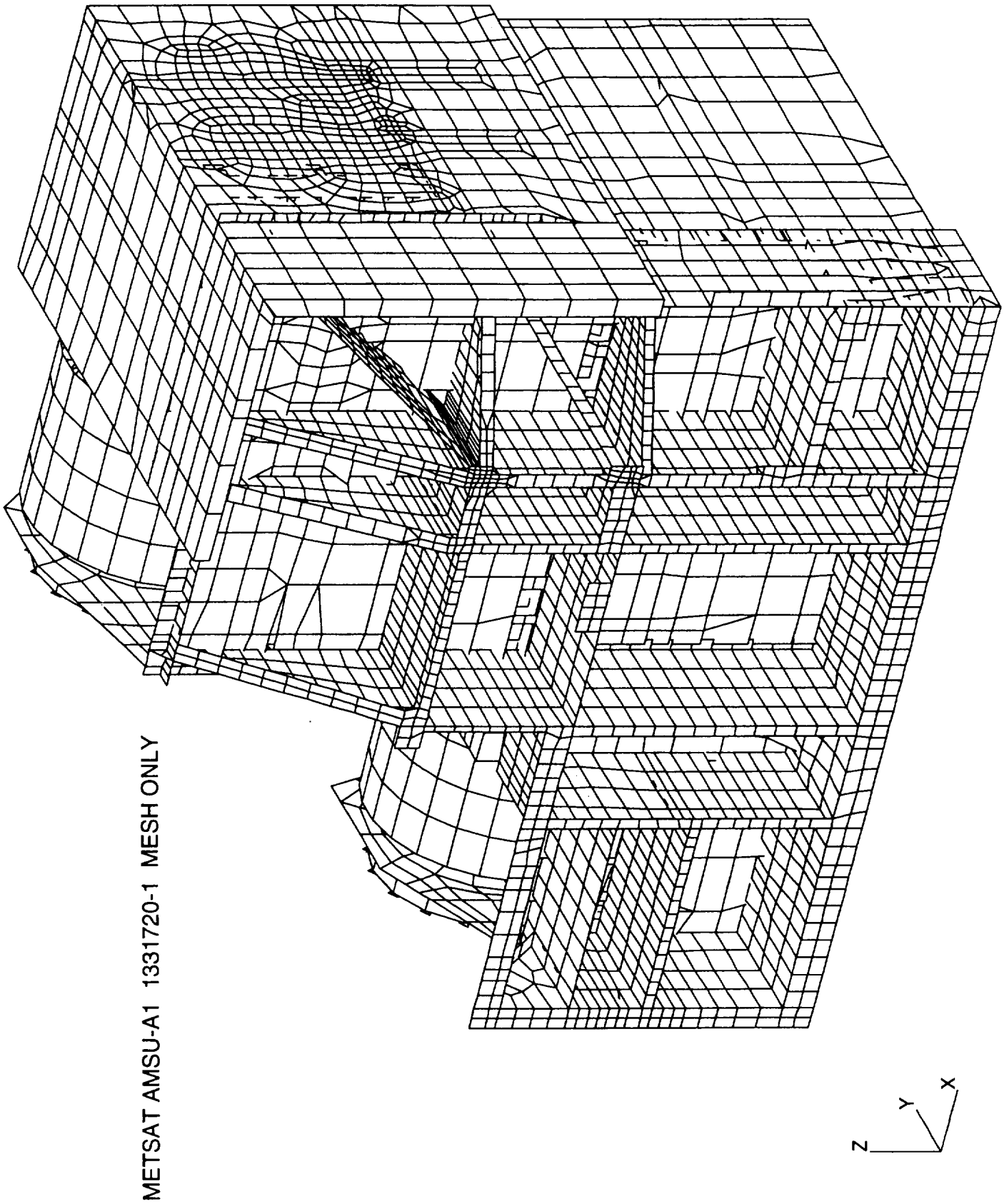


Figure 2 METSAT AMSU-A1 1331720-1 Mesh, View 2

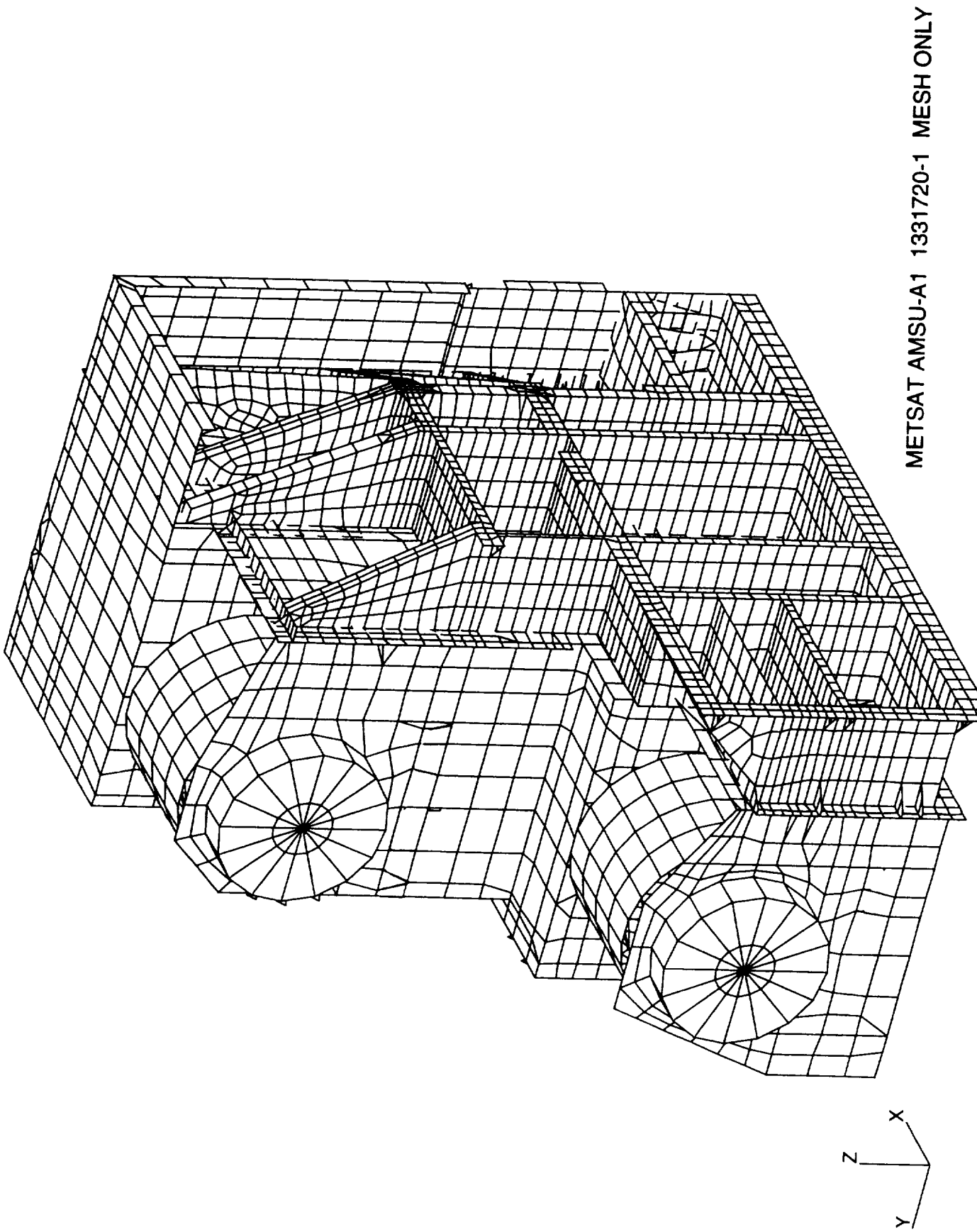


Figure 3 METSAT AMSU-A1 1331720-1 Mesh, View 3

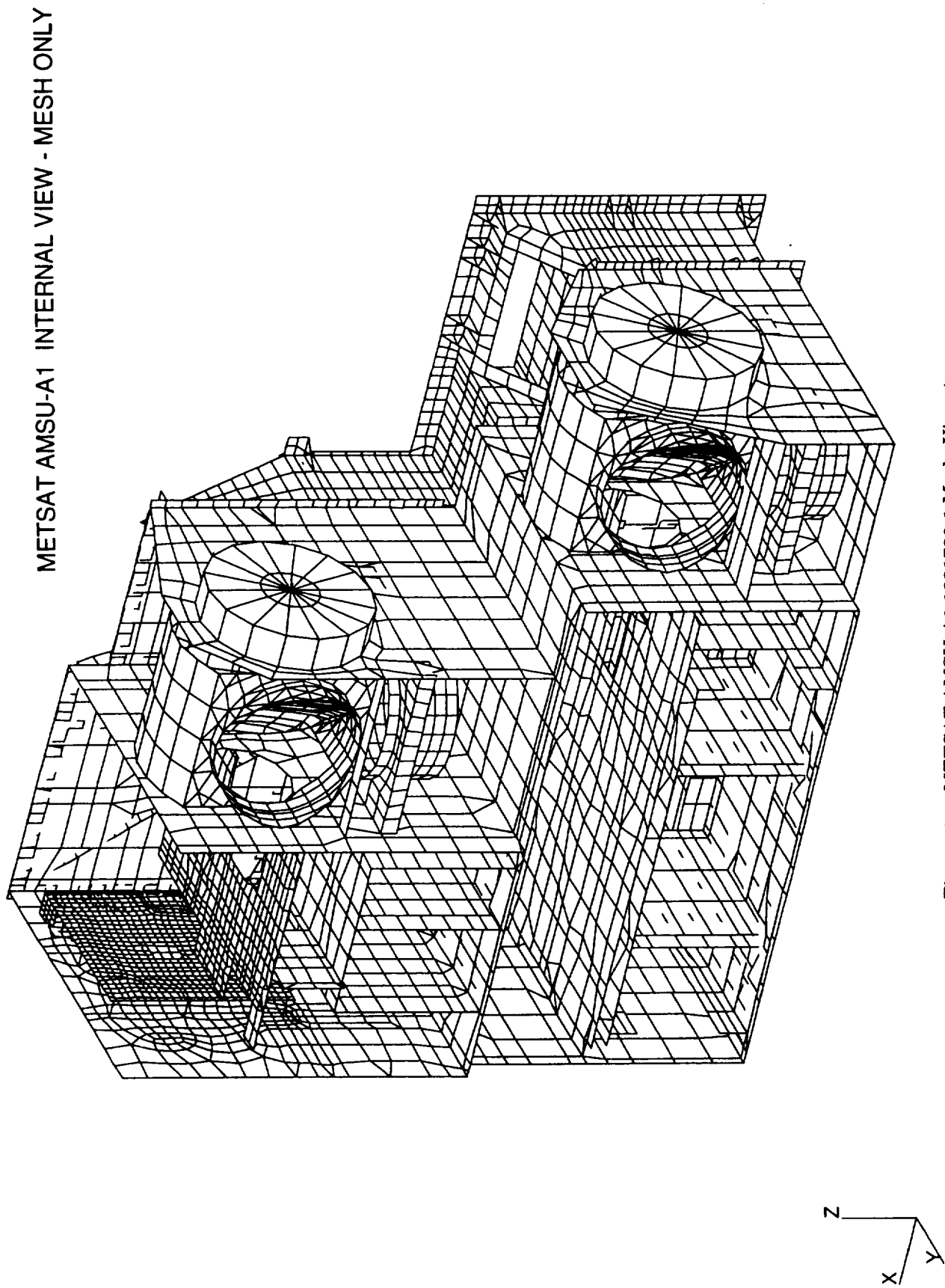


Figure 4 METSAT AMSU-A1 1331720-1 Mesh, View 4

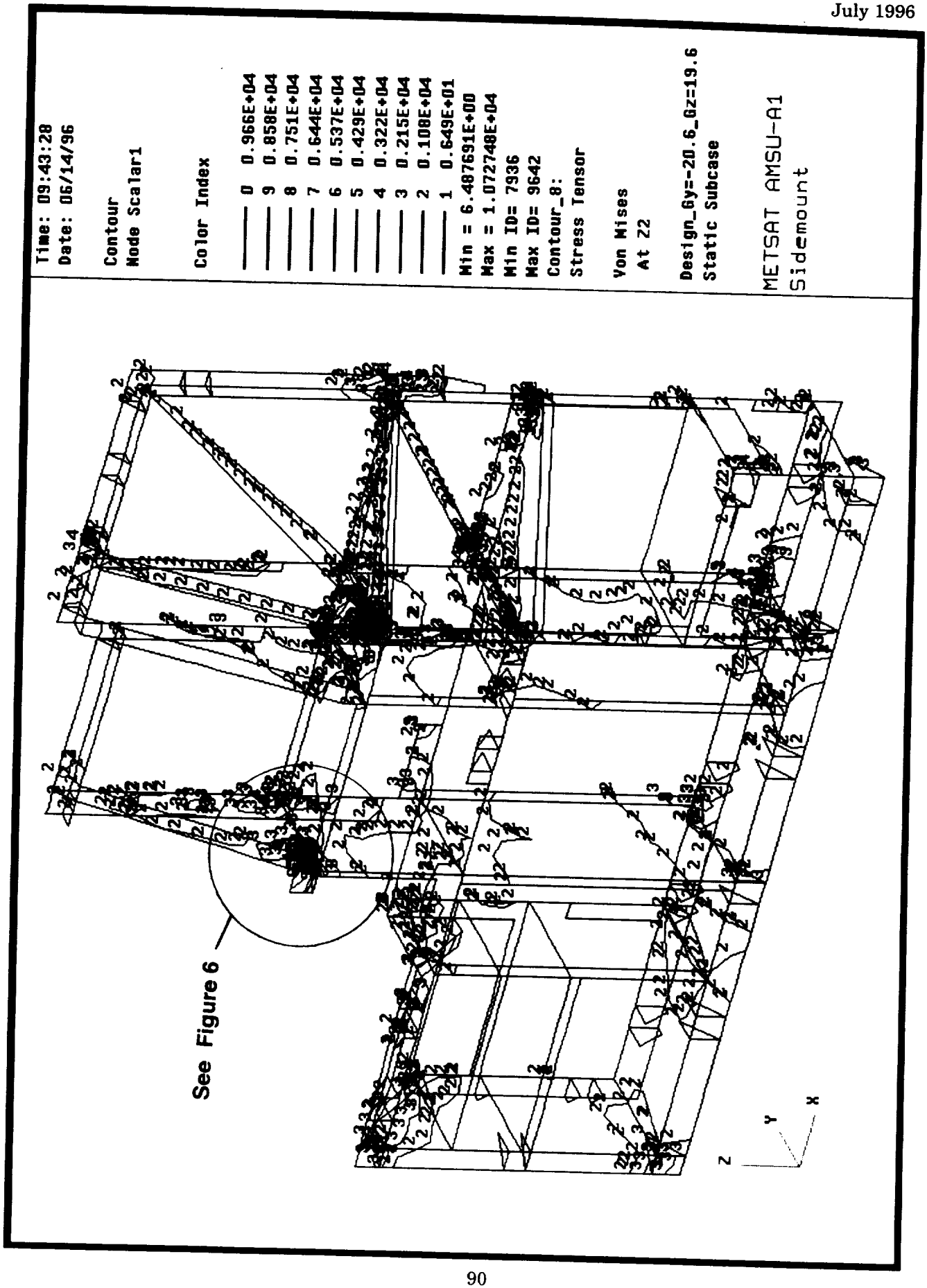


Figure 5 METSAT AMSU-A1 Sidemount, Maximum Stress

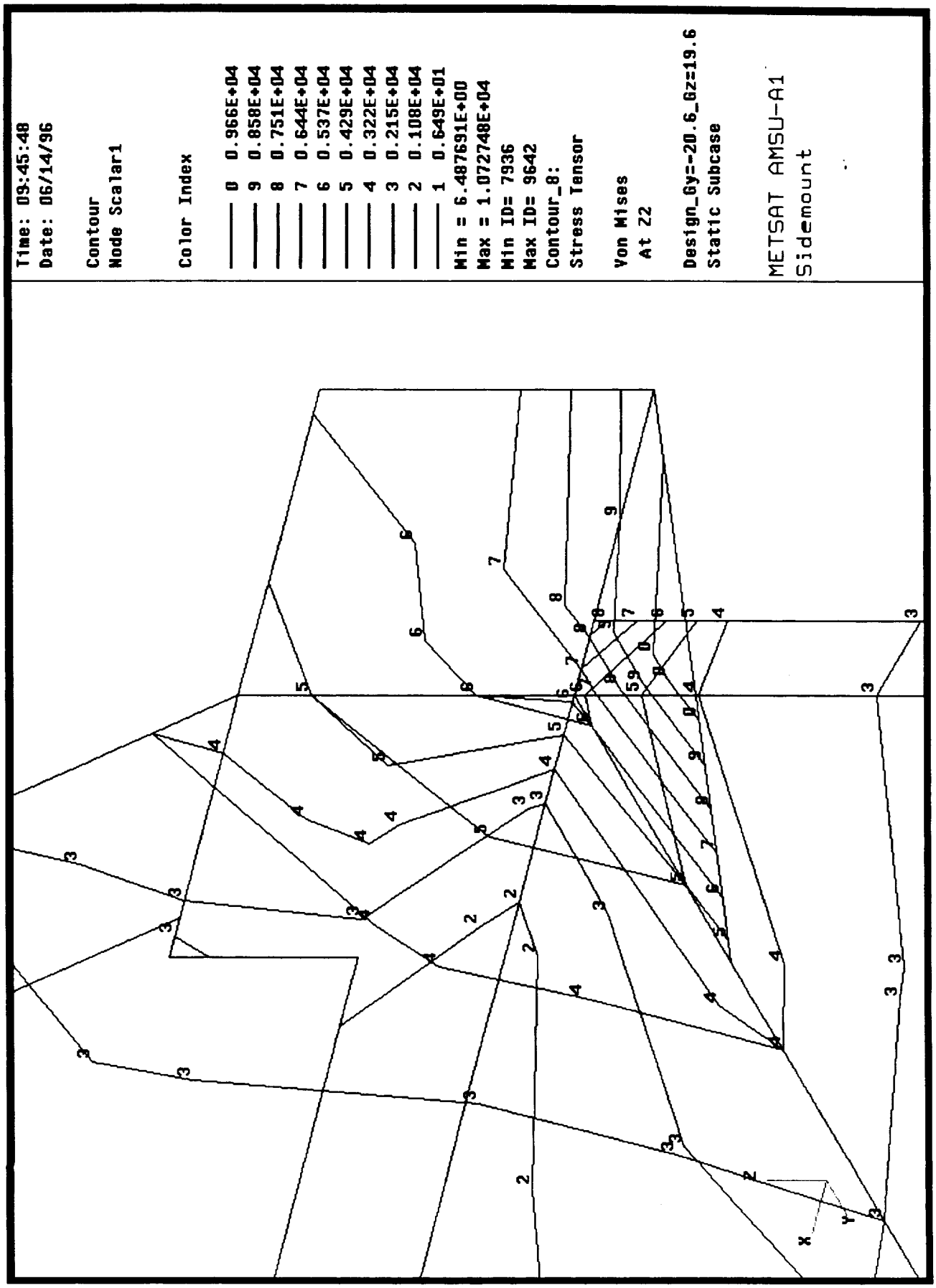


Figure 6 METSAT AMSU-A1 Sidemount, Maximum Stress, Enlarged View

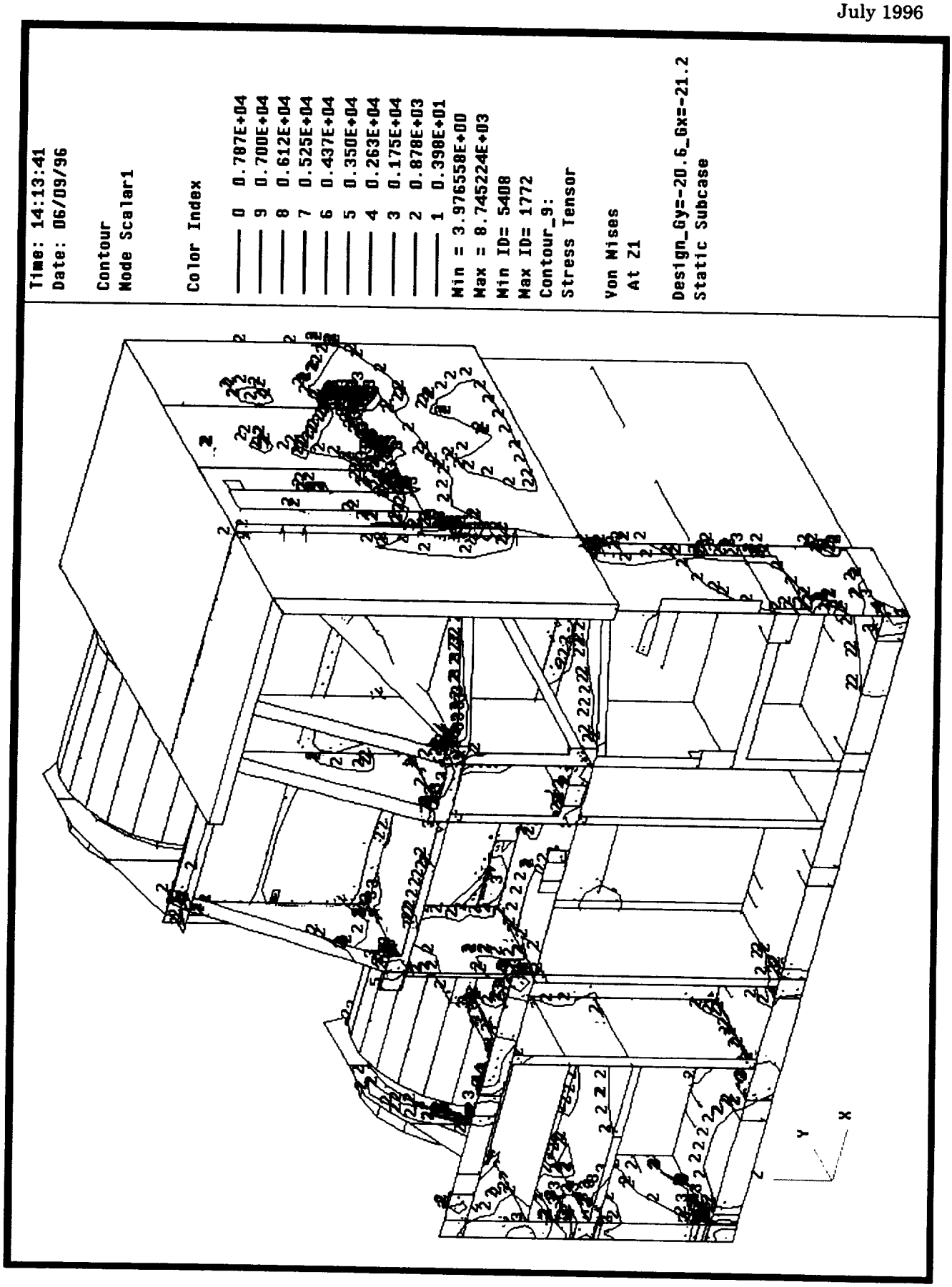


Figure 7 METSAT AMSU-A1 Shell Stresses, Case 1

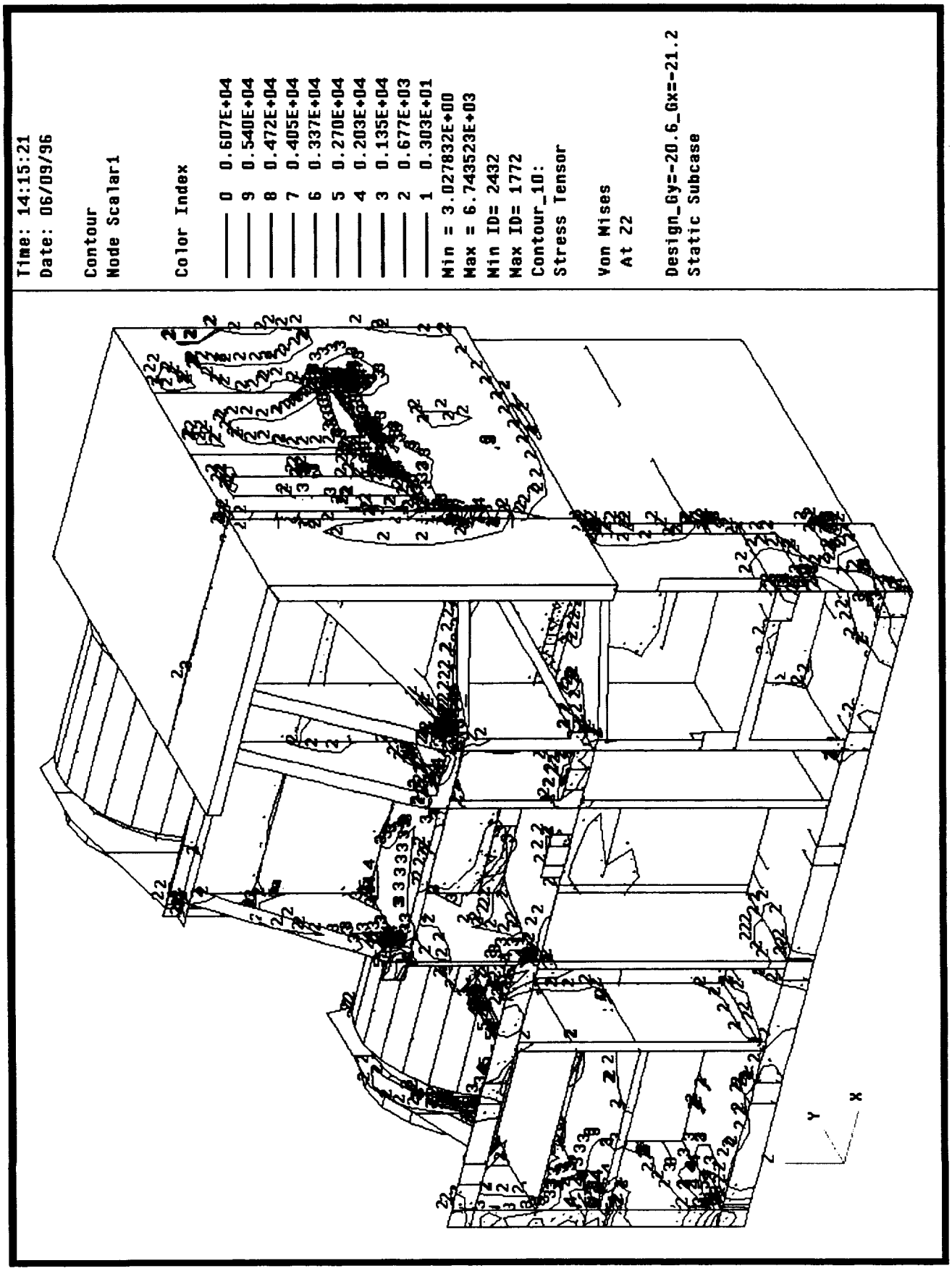


Figure 8 METSAT AMSU-A1 Shell Stresses, Case 1

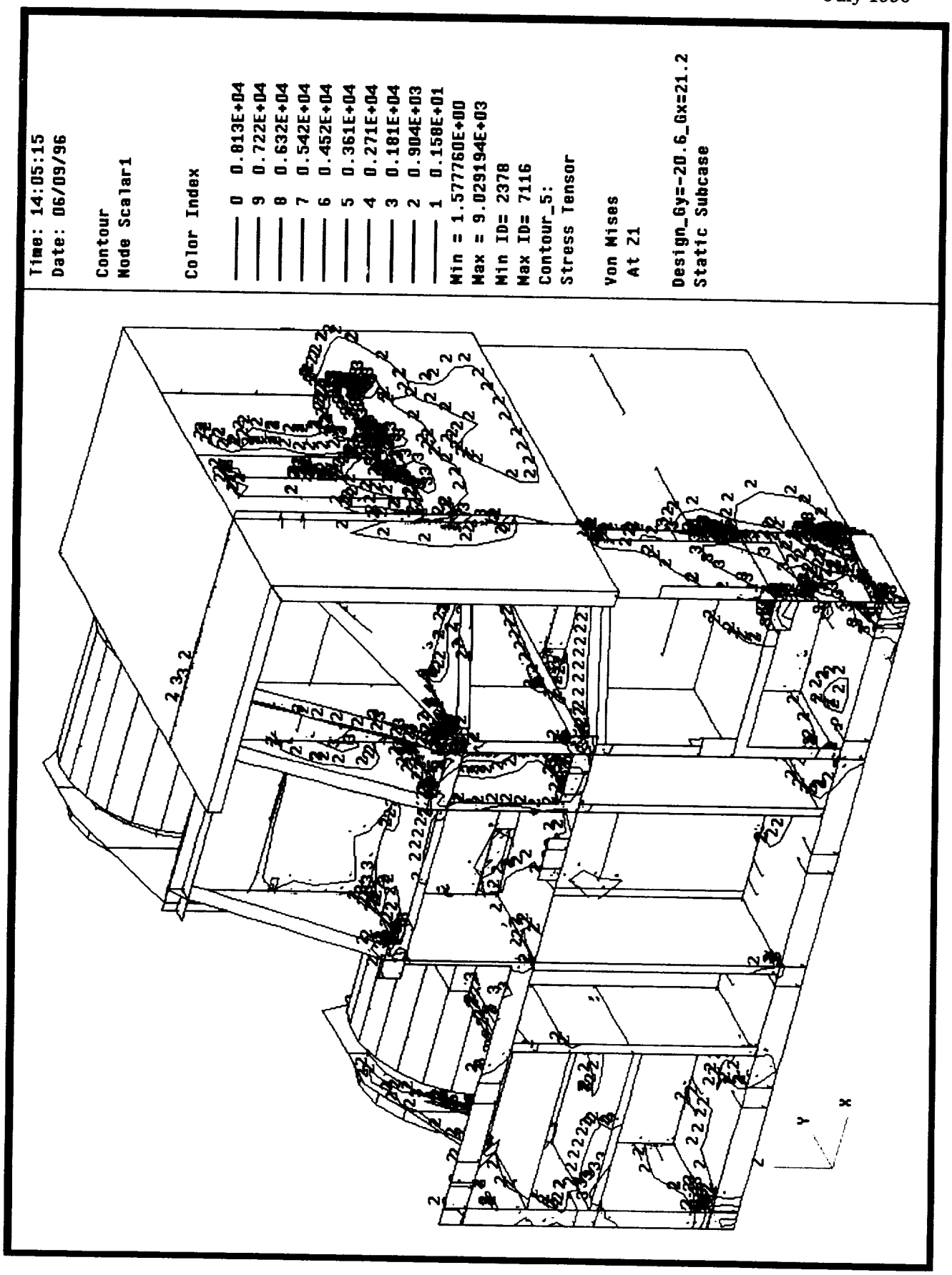


Figure 9 METSAT AMSU-A1 Shell Stresses, Case 2

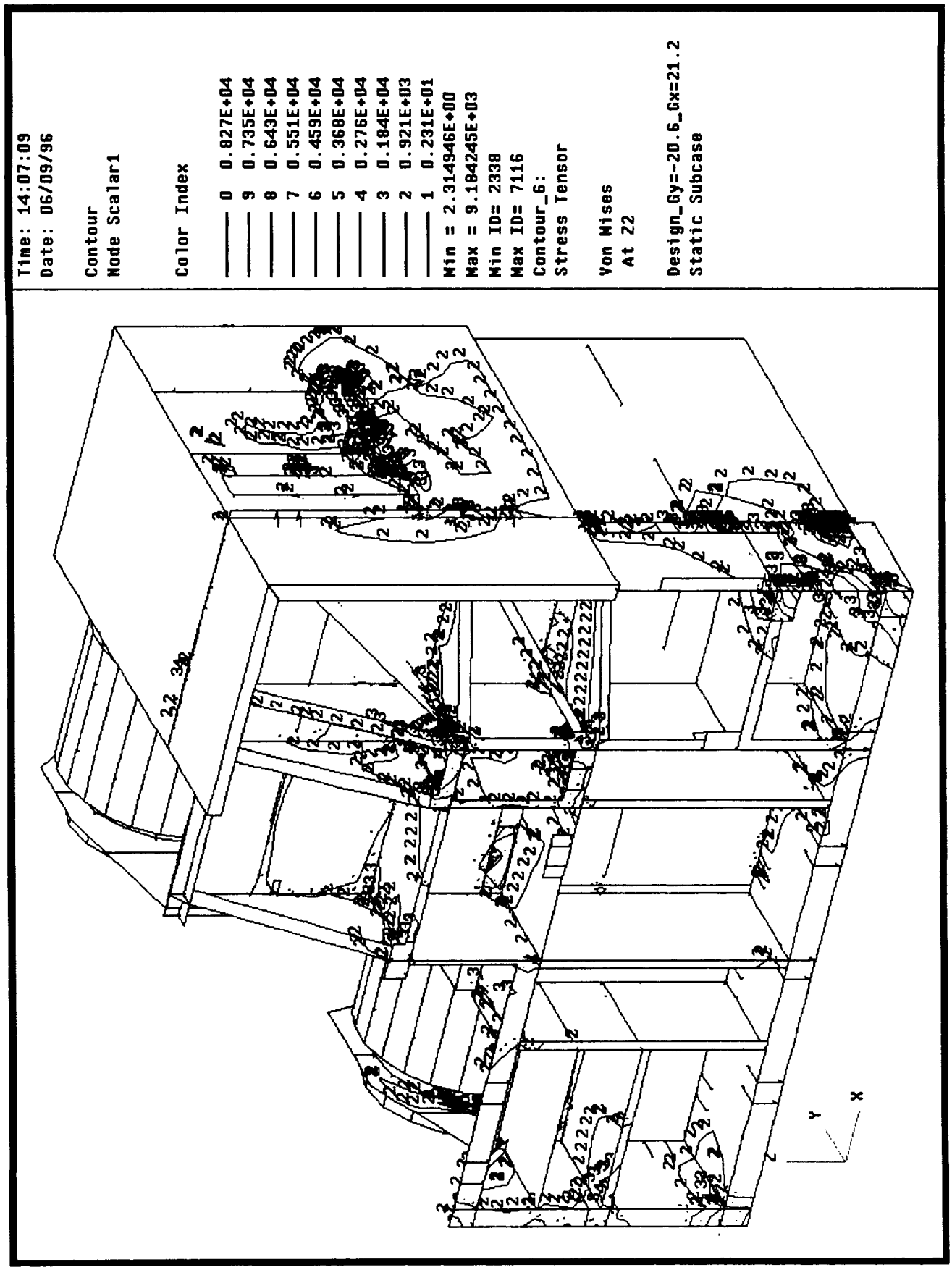


Figure 10 METSAT AMSU-A1 Shell Stresses, Case 2

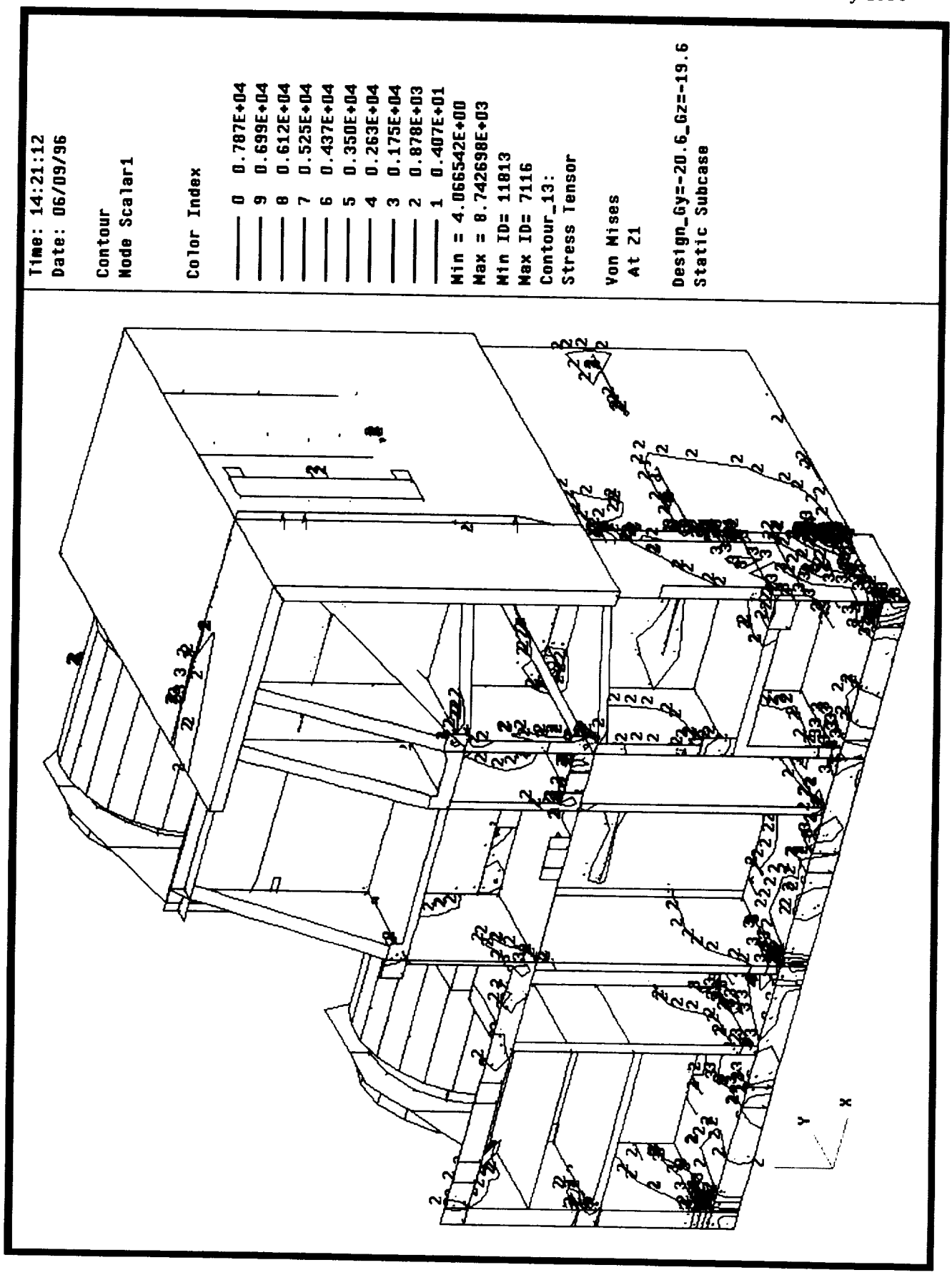


Figure 11 METSAT AMSU-A1 Shell Stresses, Case 3

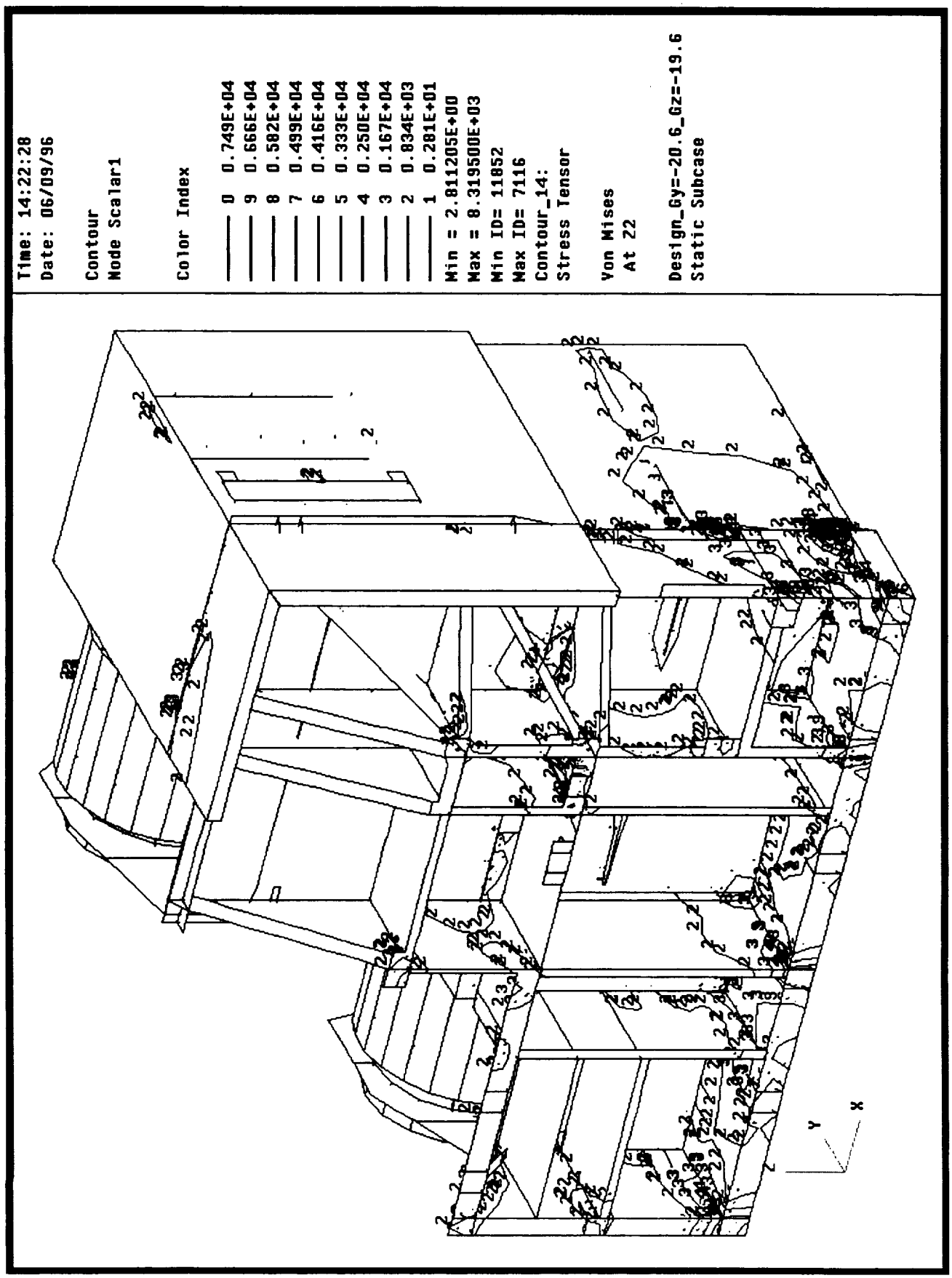


Figure 12 METSAT AMSU-A1 Shell Stresses, Case 3

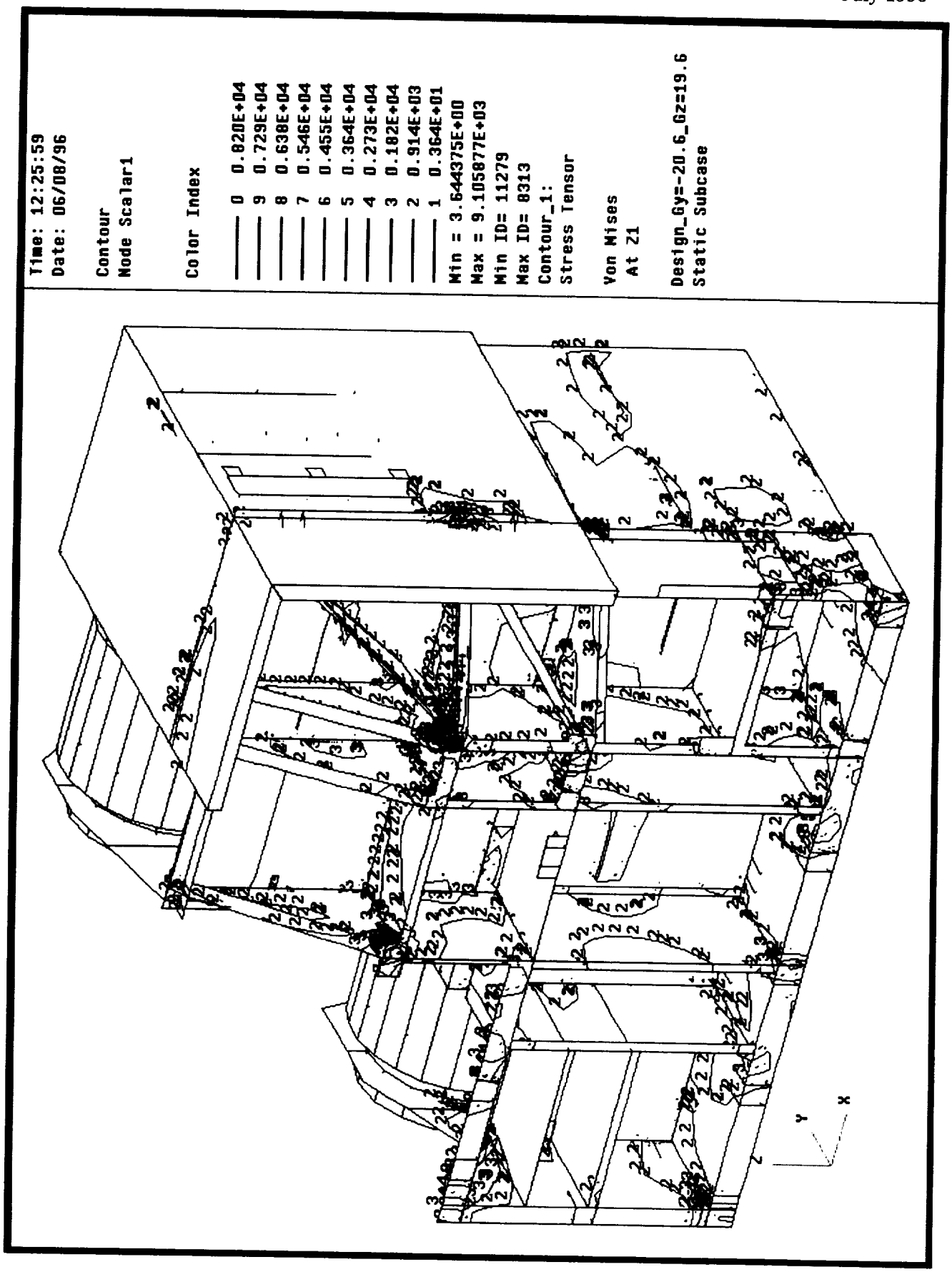


Figure 13 METSAT AMSU-A1 Shell Stresses, Case 4

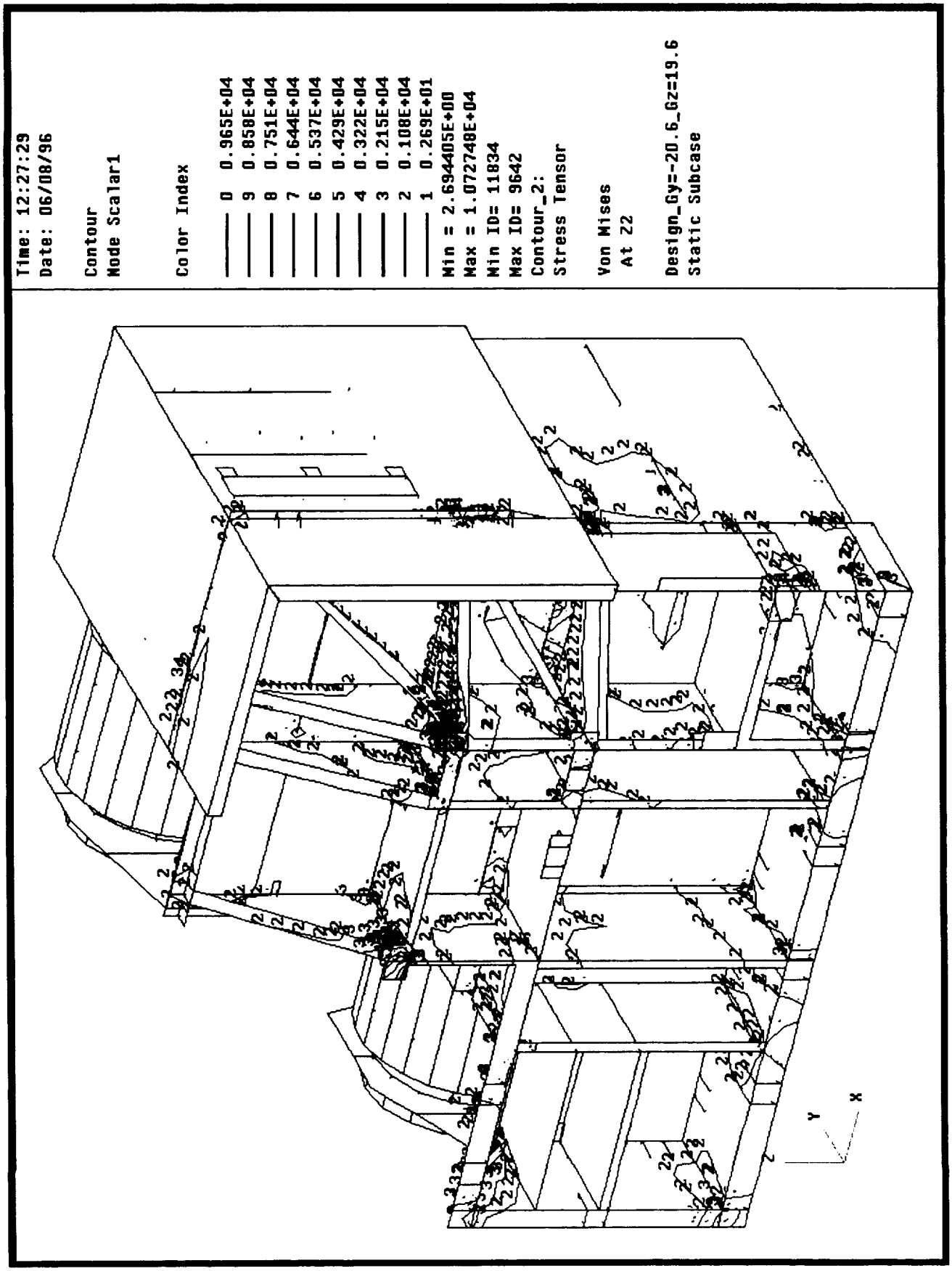


Figure 14 METSAT AMSU-A1 Shell Stresses, Case 4

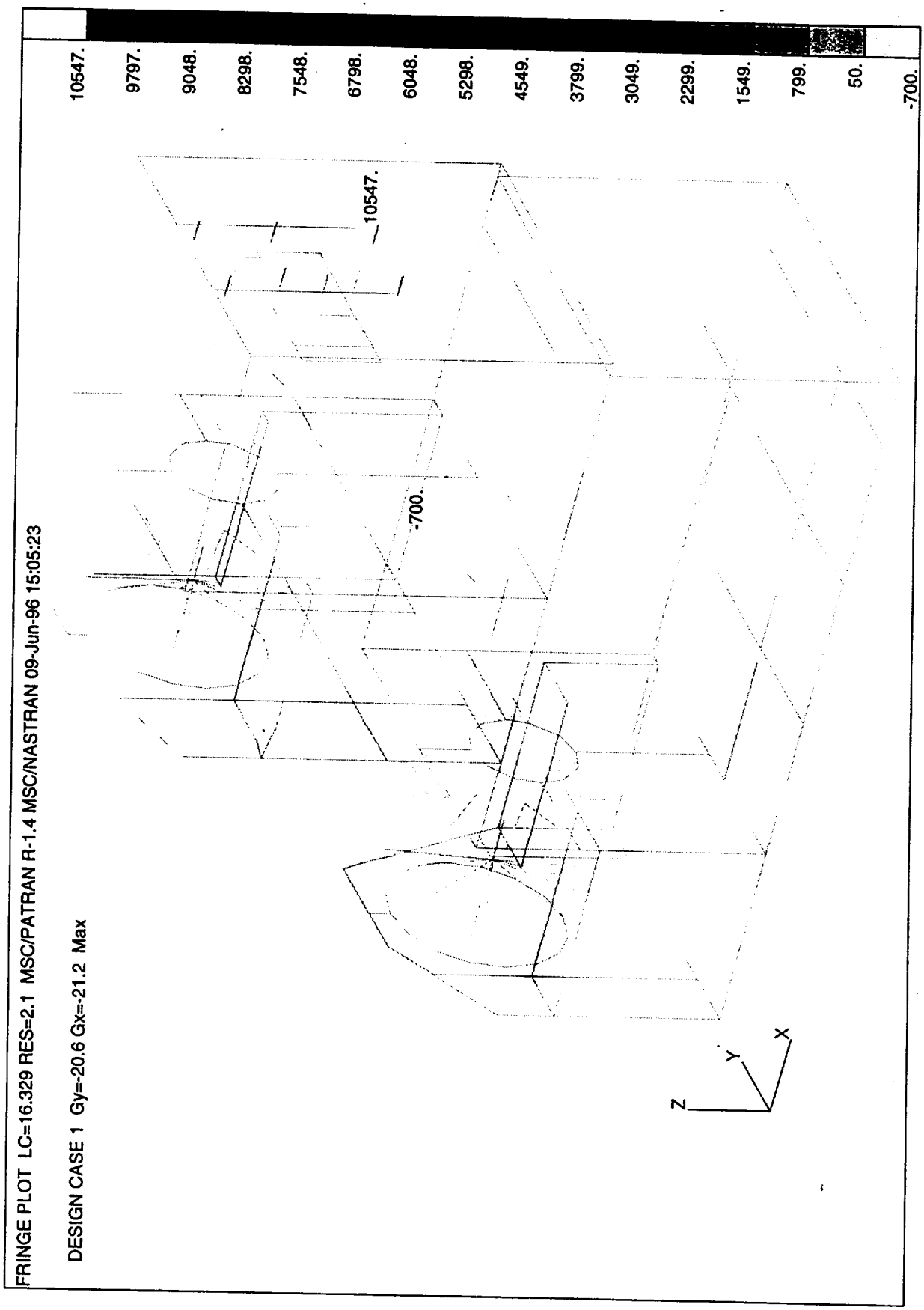


Figure 15 METSAT AMSU-A1 Beam Stresses, Case 1

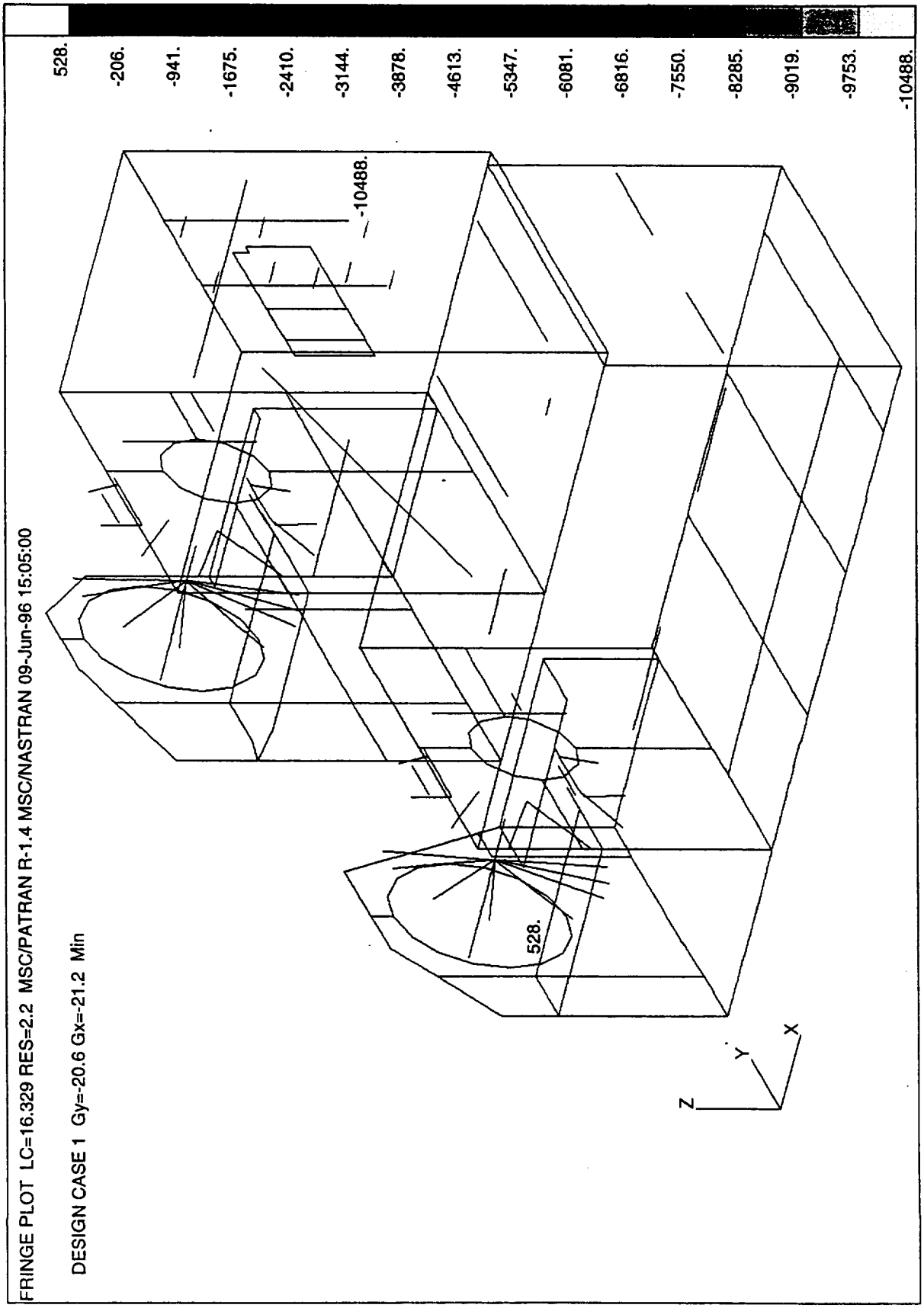


Figure 16 METSAT AMSU-A1 Beam Stresses, Case 1

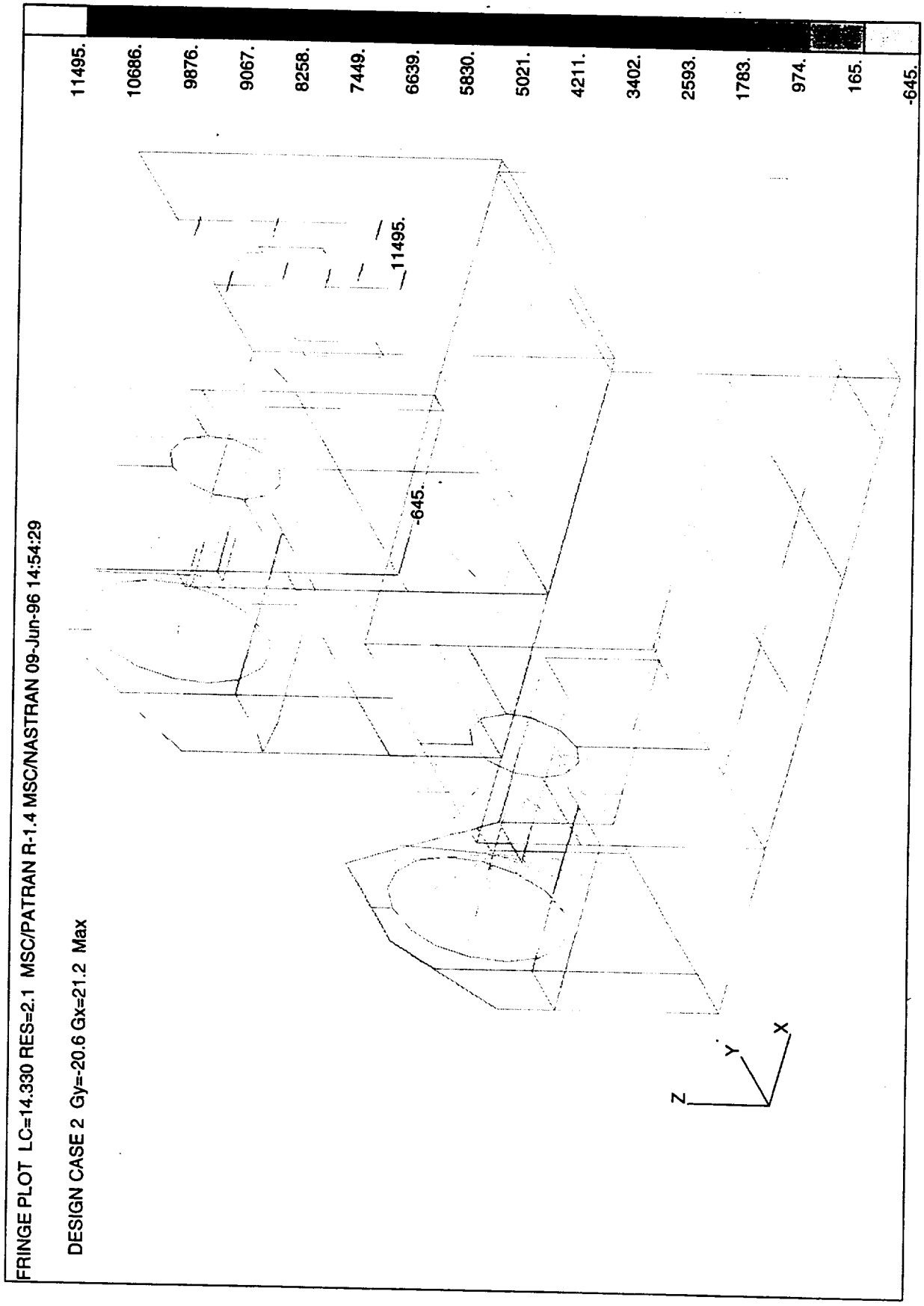


Figure 17 METSAT AMSU-A1 Beam Stresses, Case 2

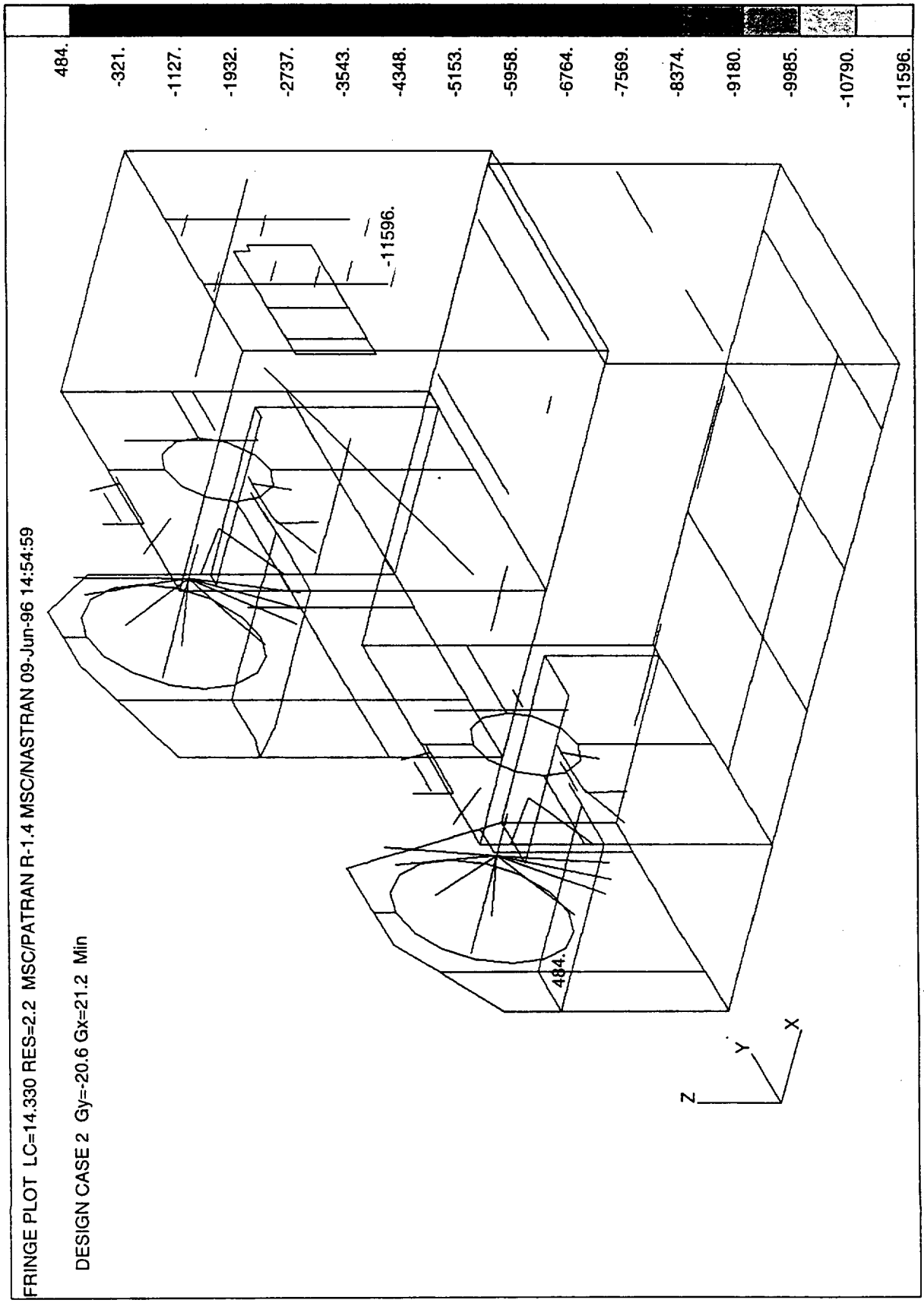


Figure 18 METSAT AMSU-A1 Beam Stresses, Case 2

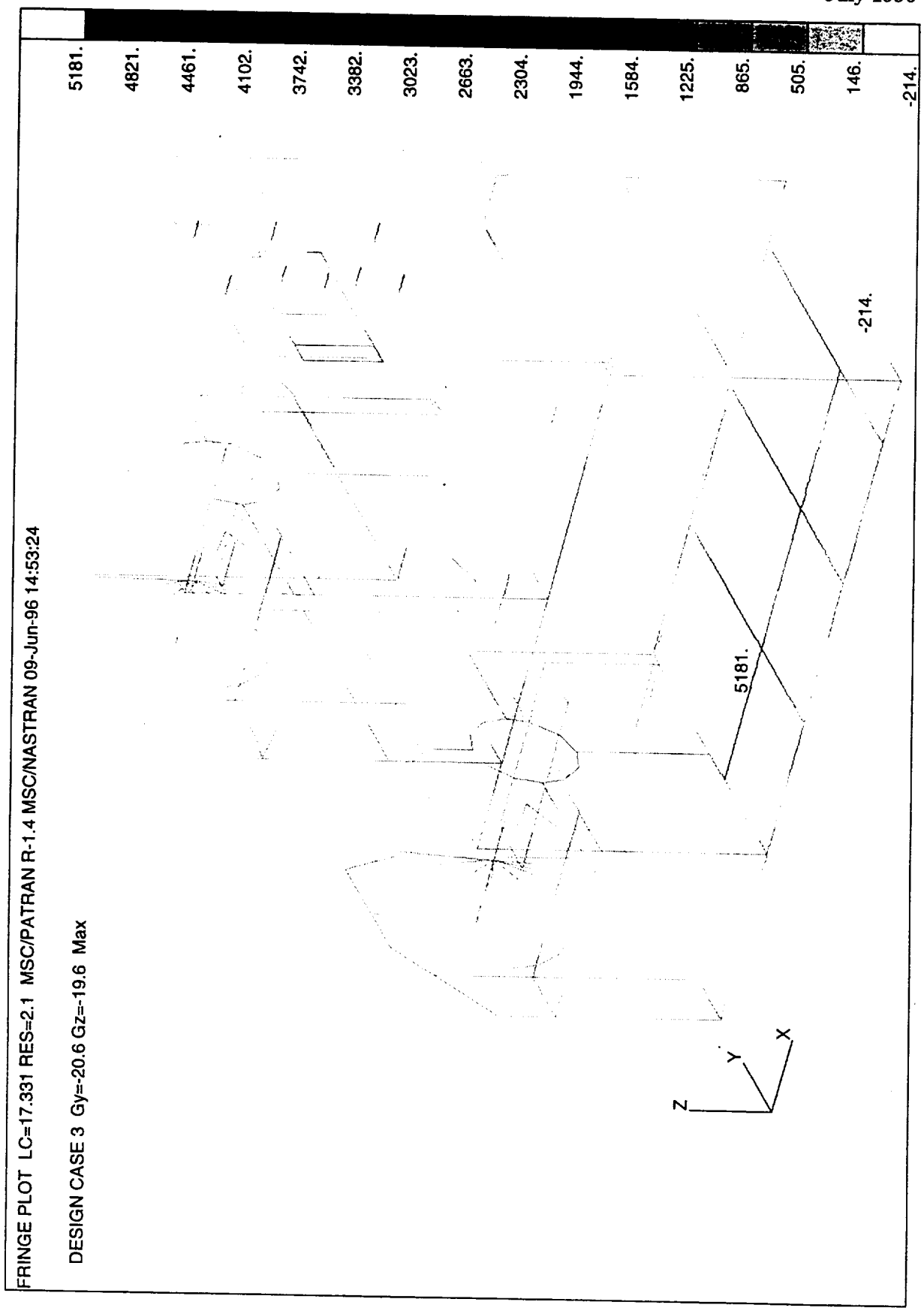


Figure 19 METSAT AMSU-A1 Beam Stresses, Case 3

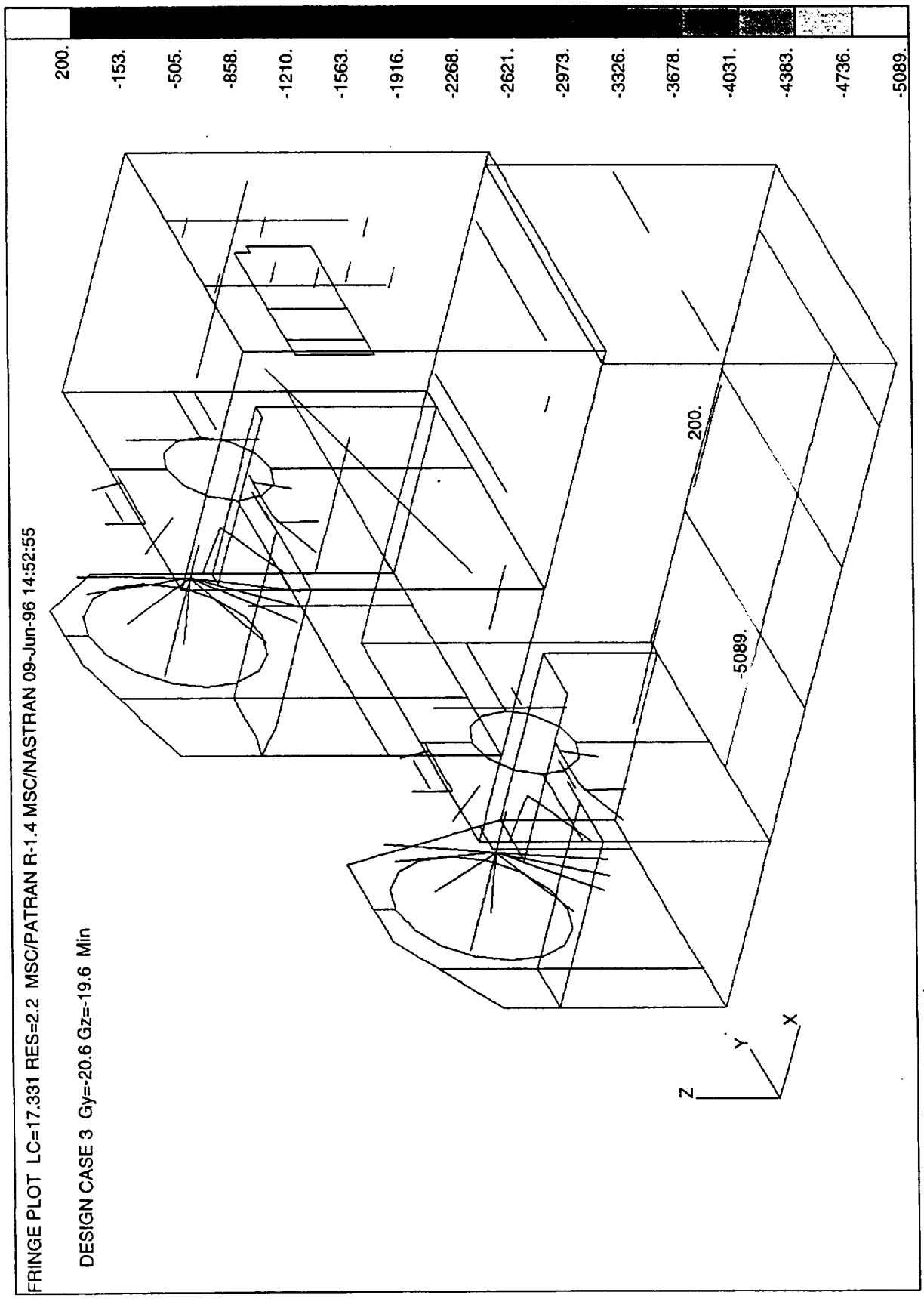


Figure 20 METSAT AMSU-A1 Beam Stresses, Case 3

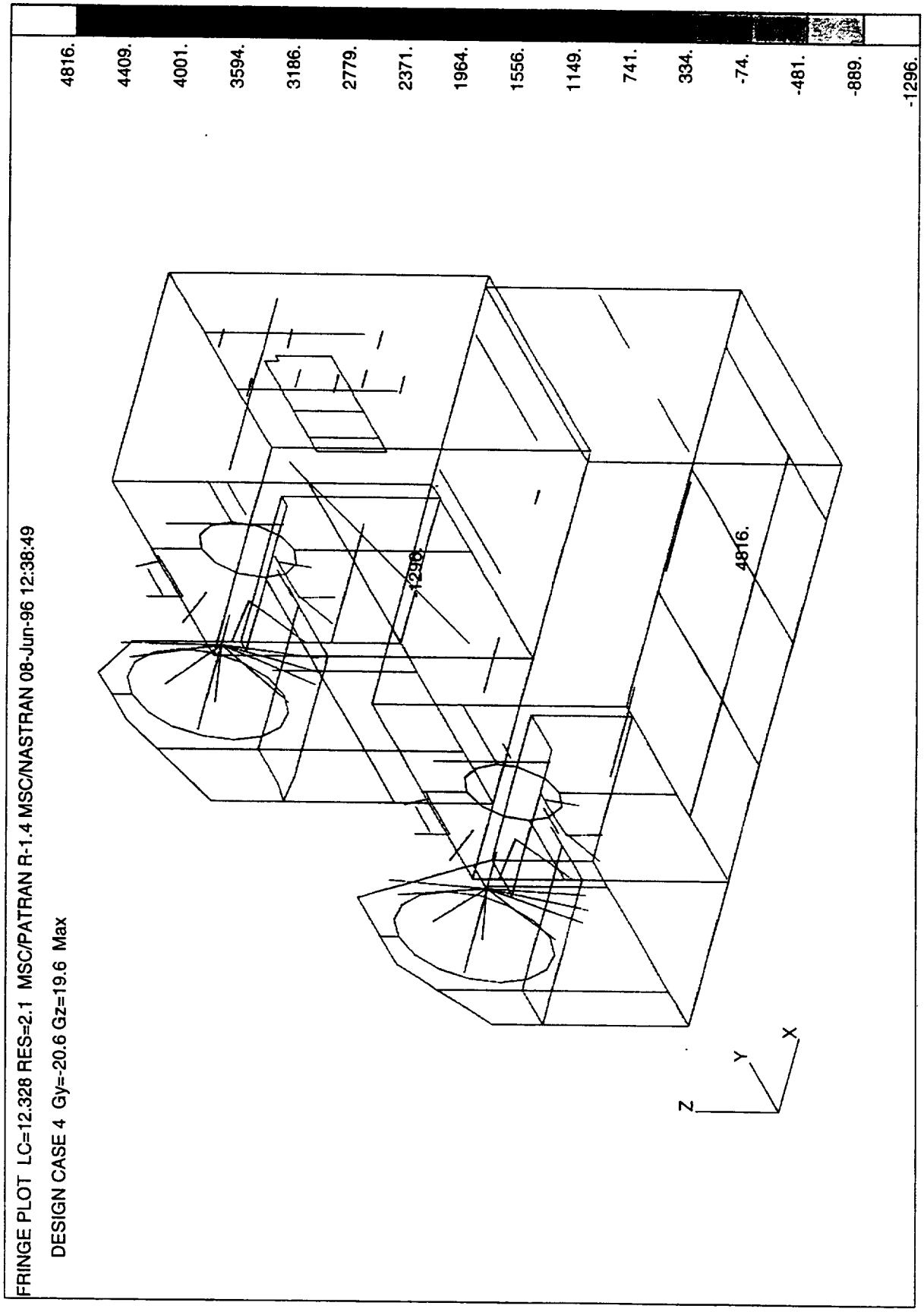


Figure 21 METSAT AMSU-A1 Beam Stresses, Case 4

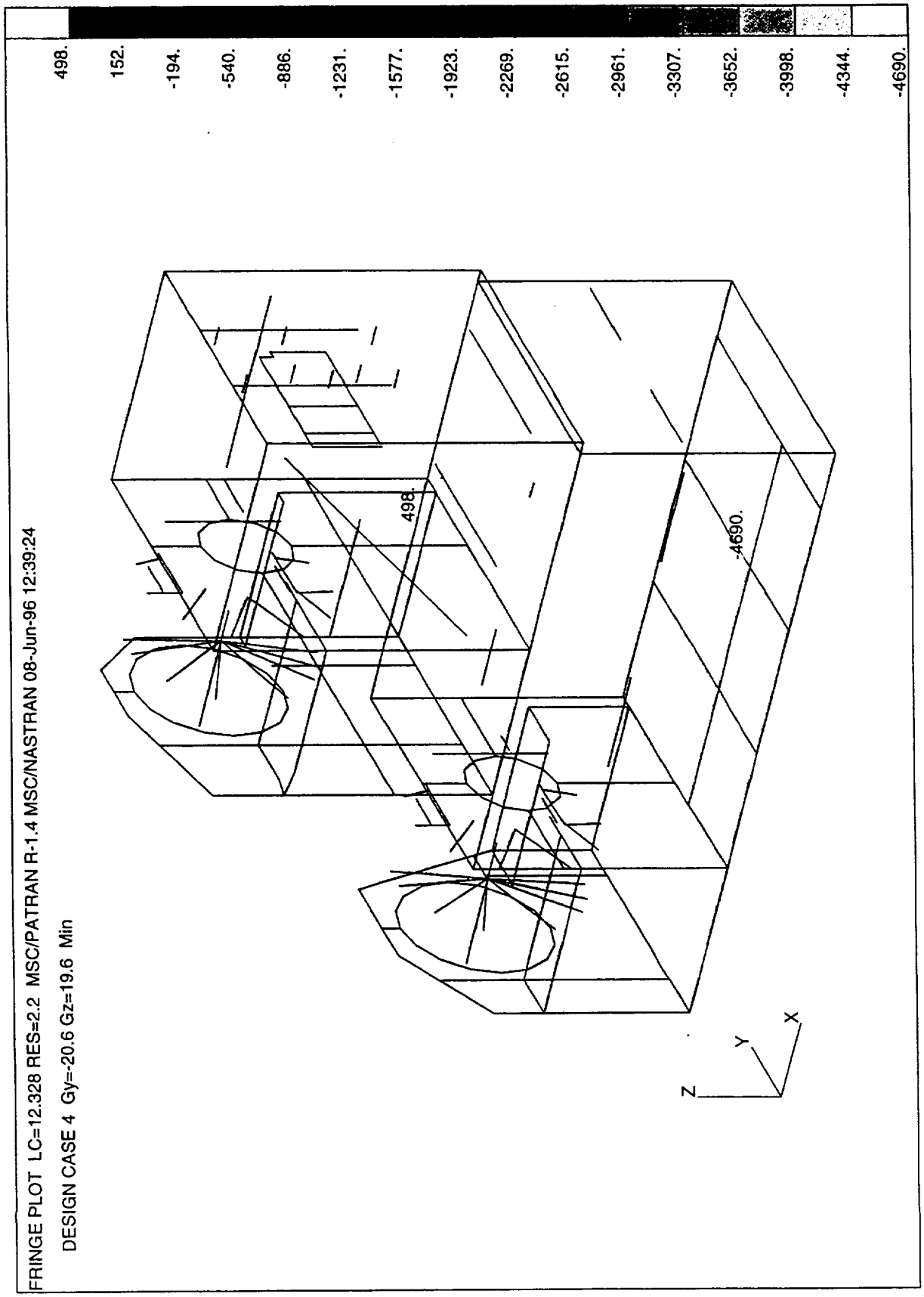


Figure 22 METSAT AMSU-A1 Beam Stresses, Case 4

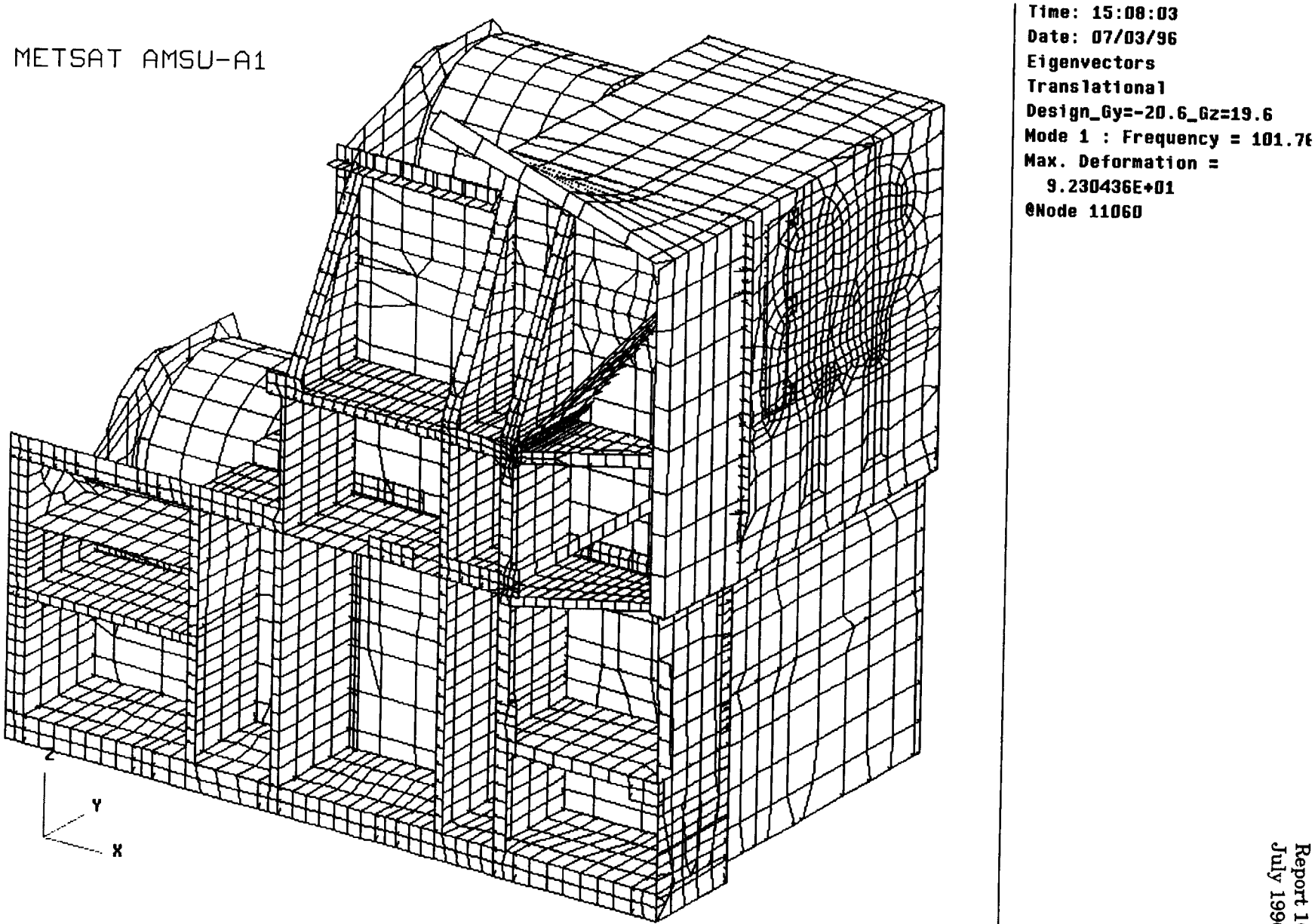


Figure 23 METSAT AMSU-A1 Mode 1, 101.8 Hz

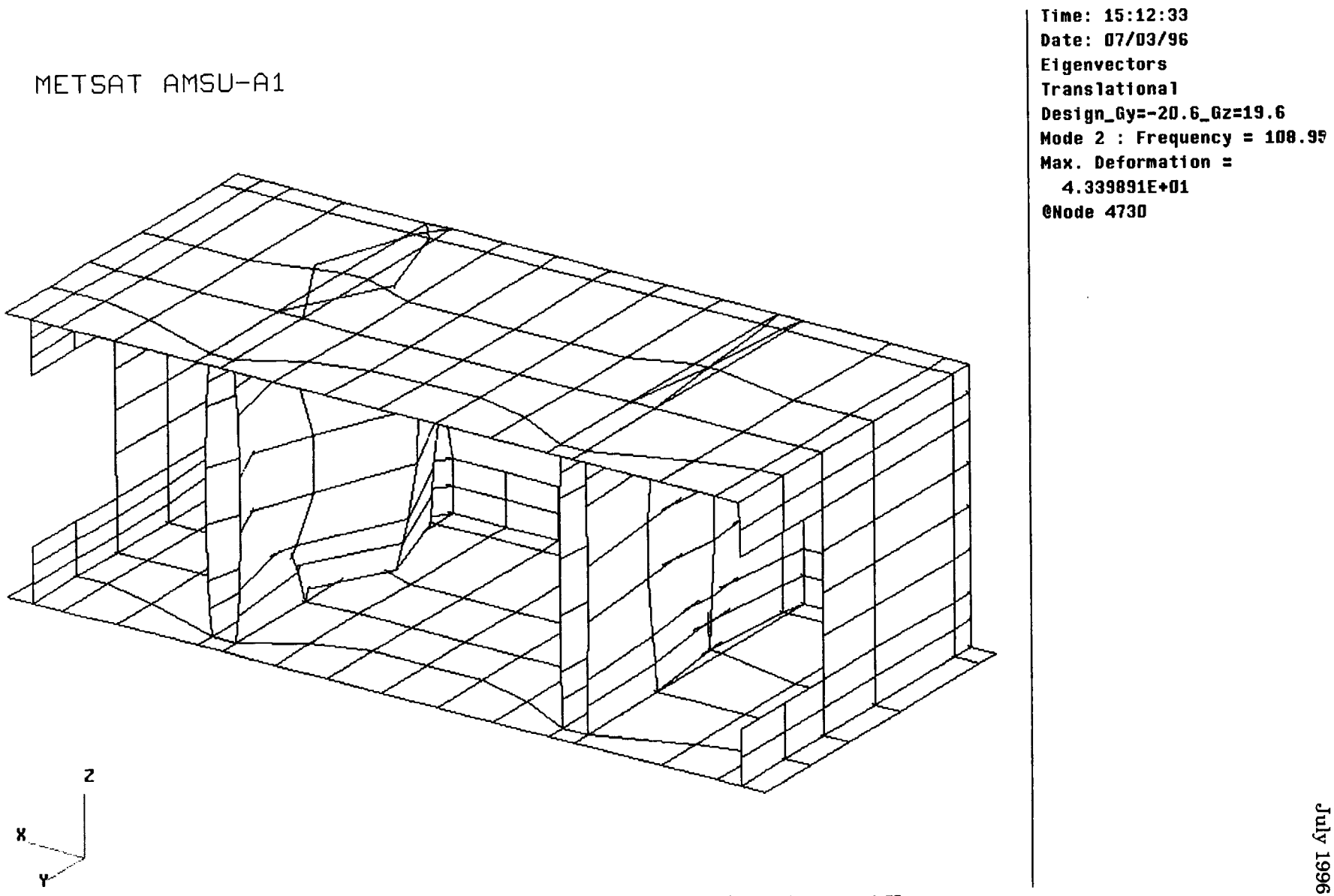


Figure 24 METSAT AMSU-A1 Mode 2, 109.0 Hz

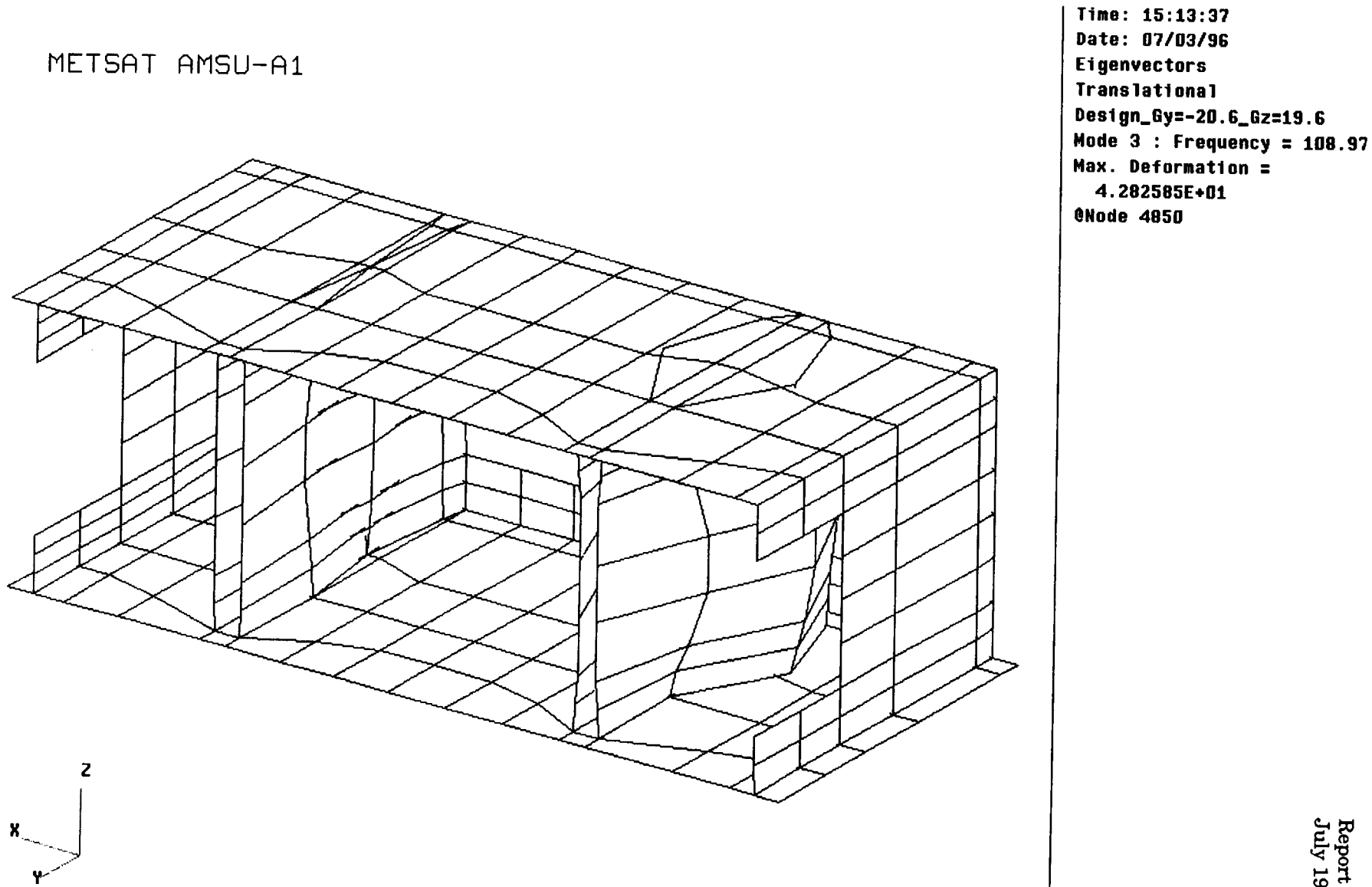
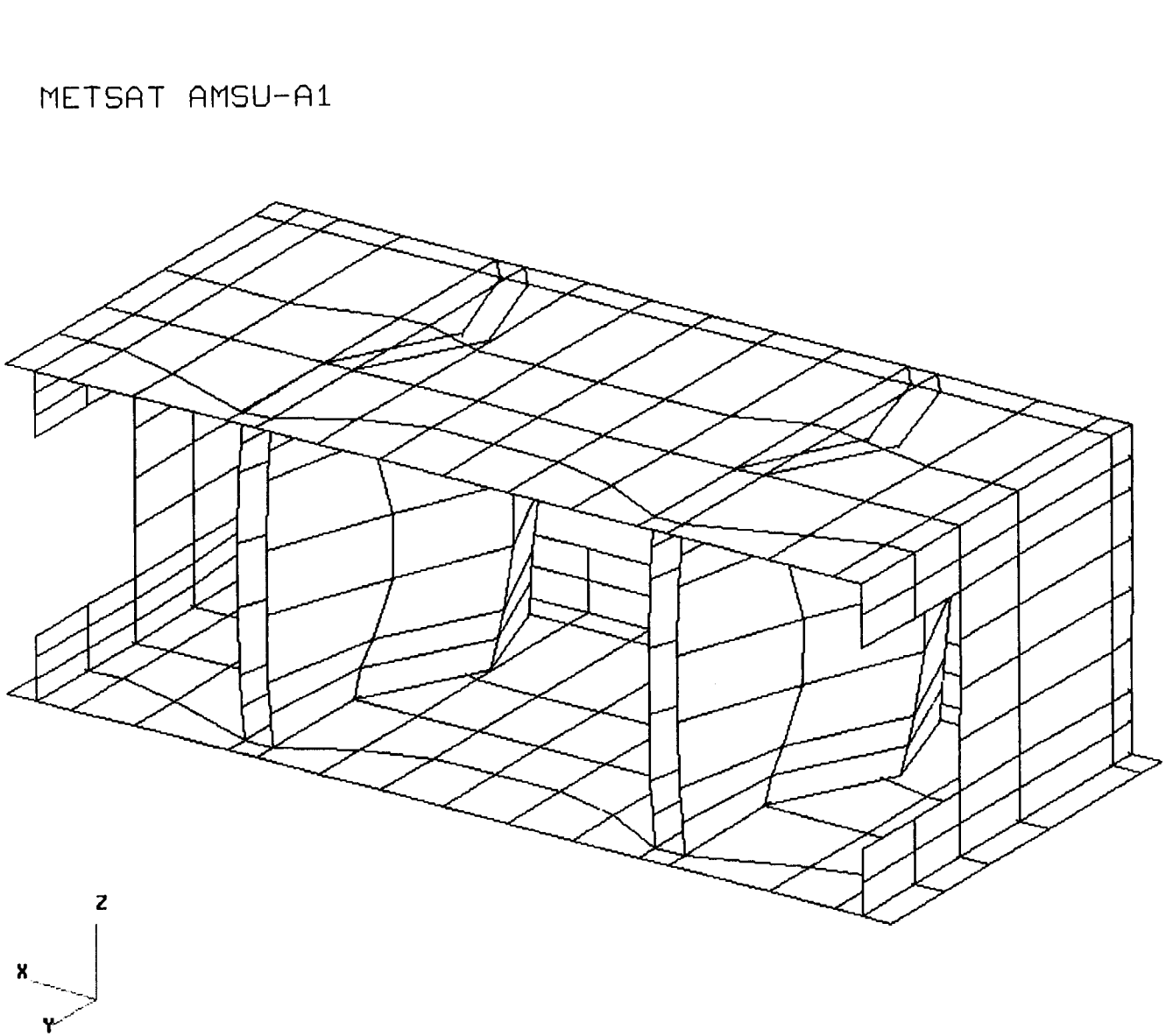


Figure 25 METSAT AMSU-A1 Mode 3, 109.0 Hz



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Eigenvectors
Translational
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Mode 4 : Frequency = 109.49
Max. Deformation =
3.202608E+01
@Node 4770

Figure 26 METSAT AMSU-A1 Mode 4, 109.5 Hz

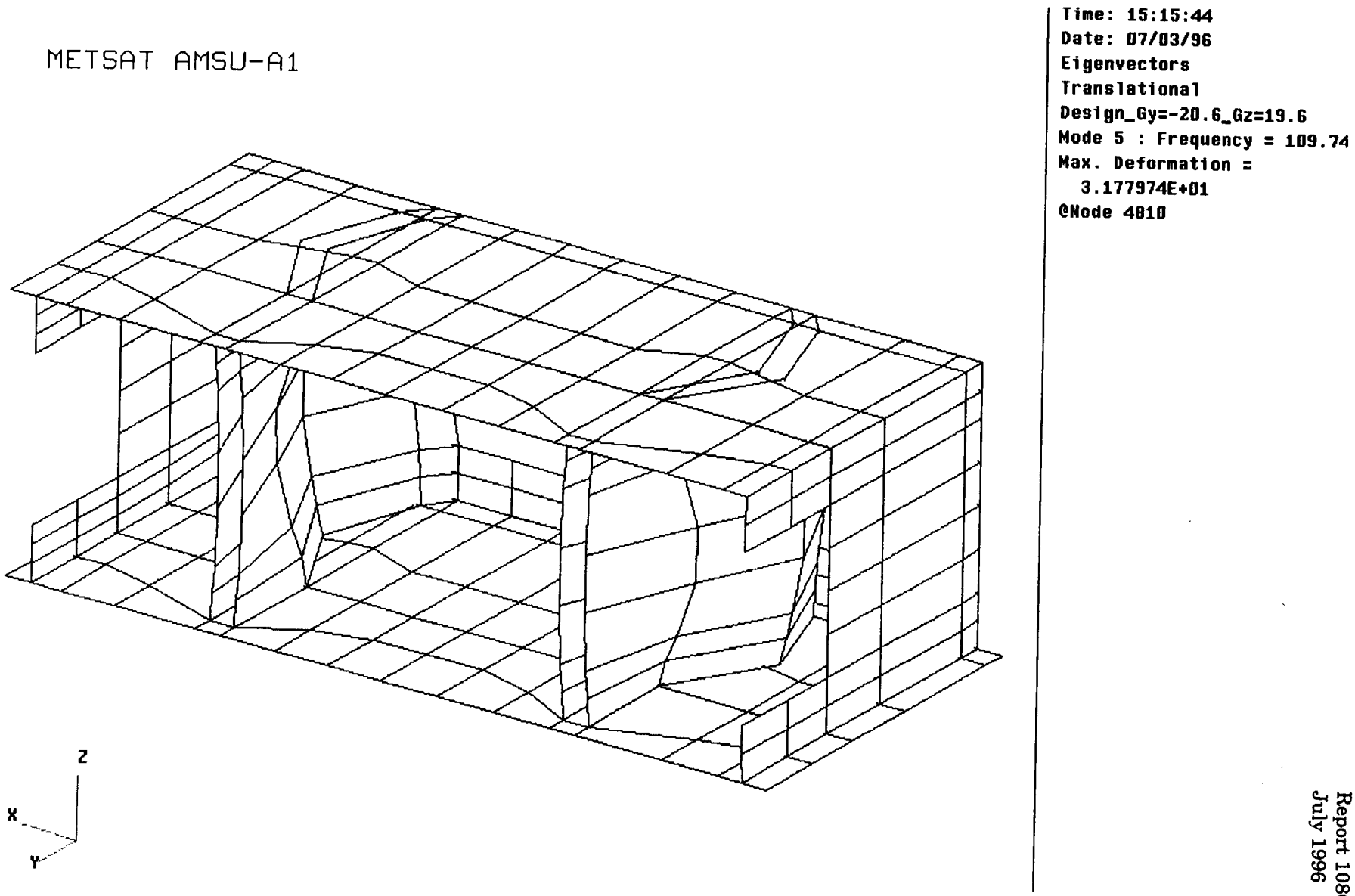

Figure 27 METSAT AMSU-A1 Mode 5, 109.7 Hz

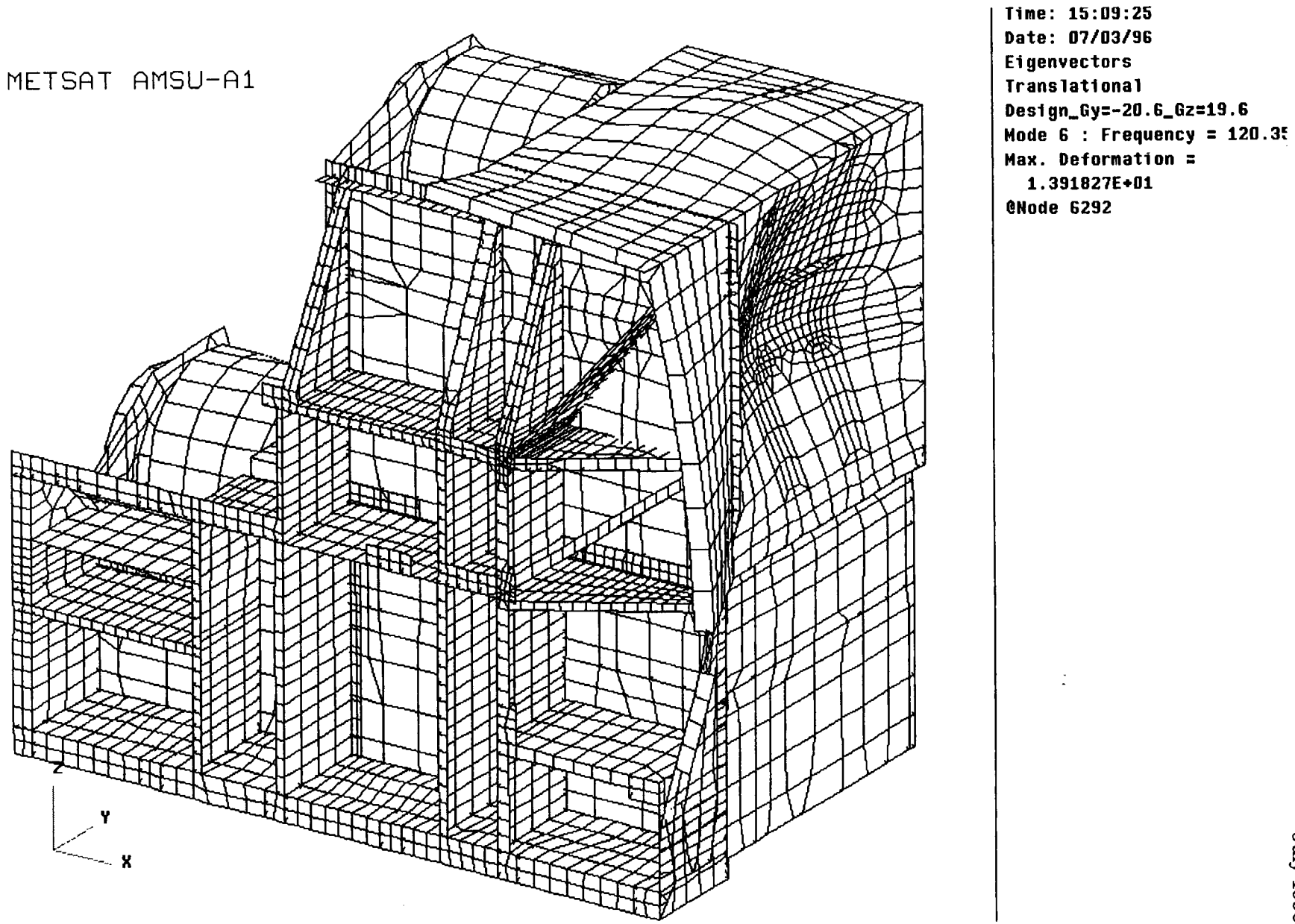

Figure 28 METSAT AMSU-A1 Mode 6, 120.4 Hz

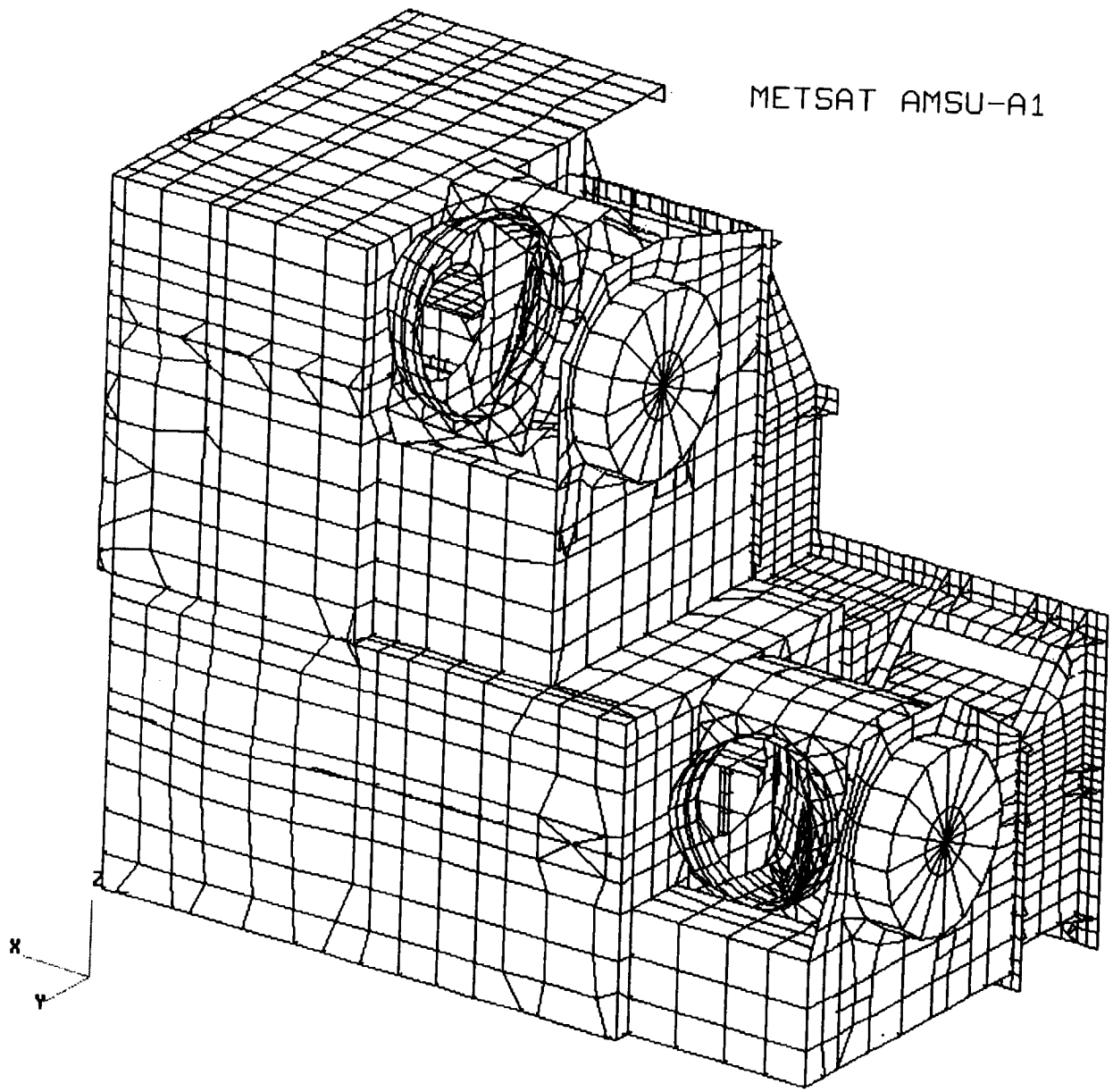

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Figure 29 METSAT AMSU-A1 Mode 7, 121.4 Hz

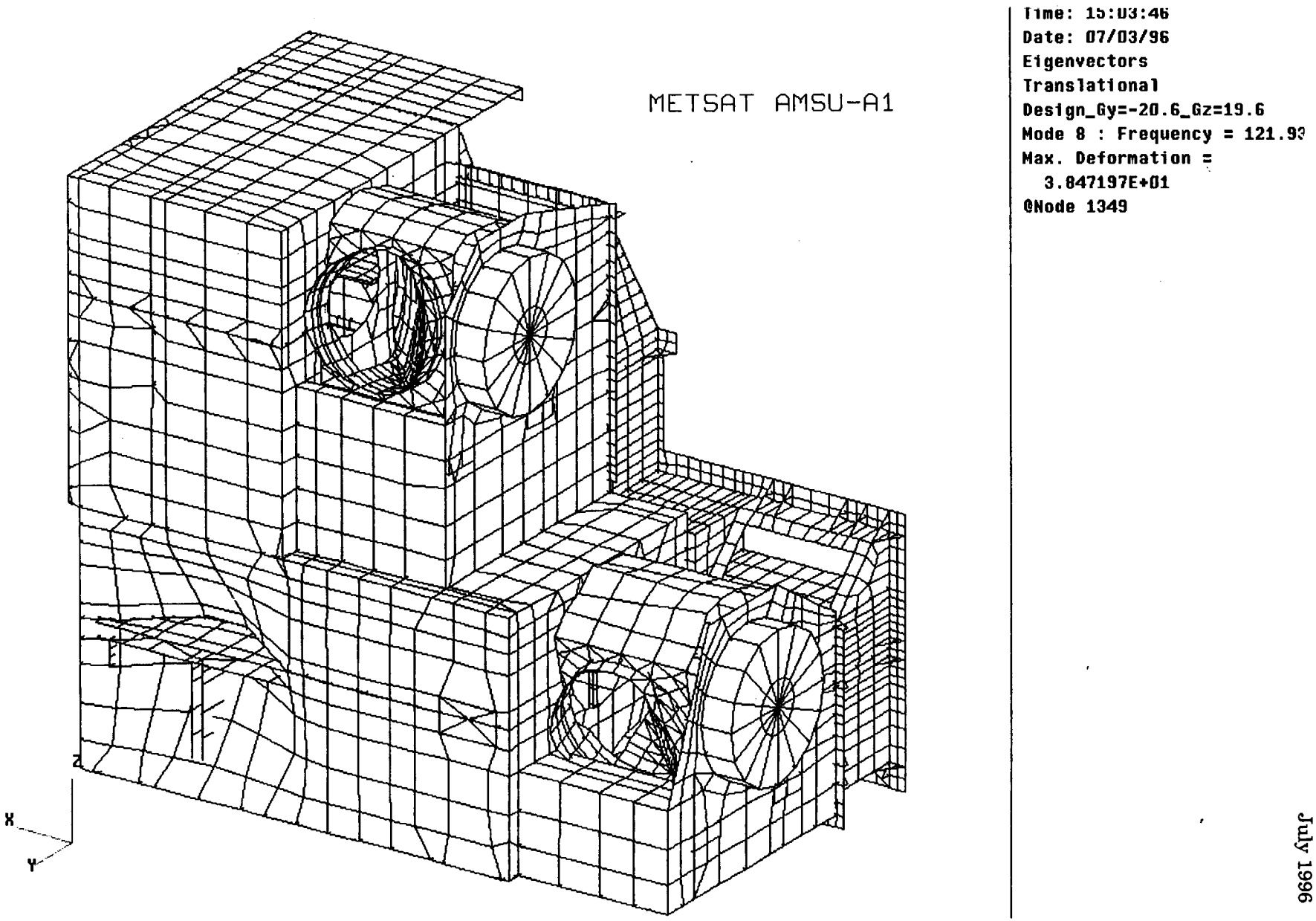


Figure 30 METSAT AMSU-A1 Mode 8, 121.9 Hz

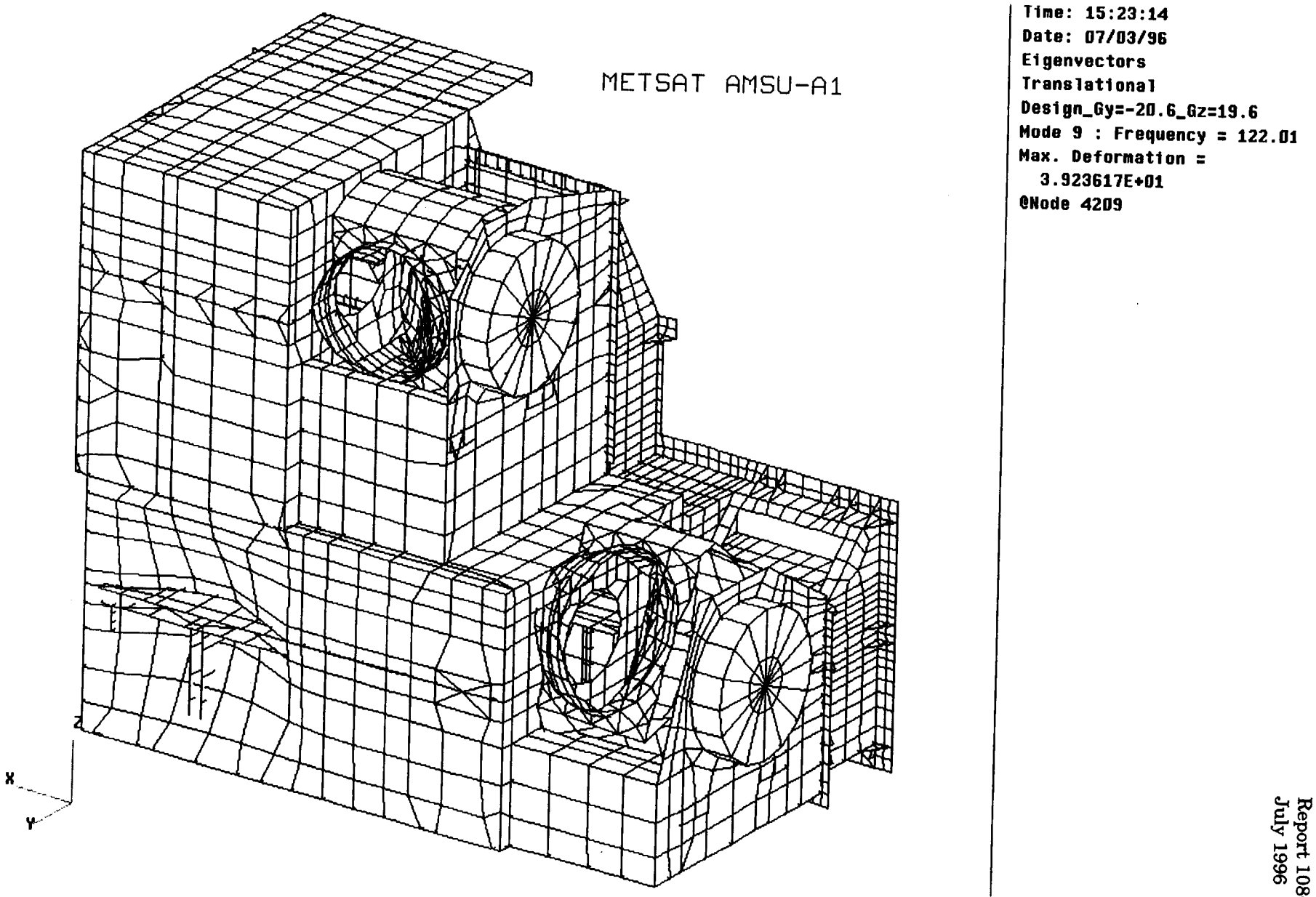
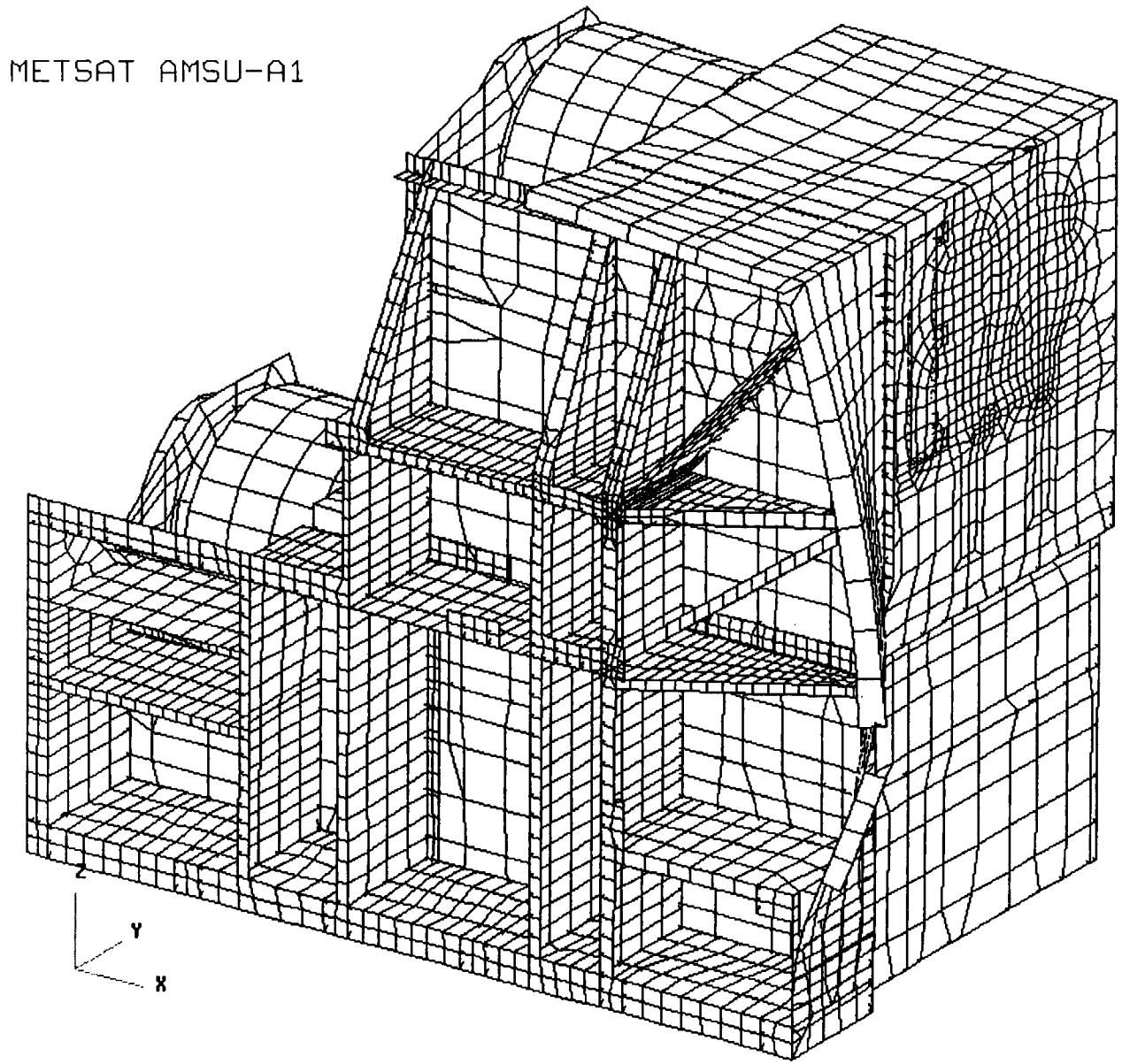


Figure 31 METSAT AMSU-A1 Mode 9, 122.0 Hz



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Translational
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@Node 11179

Figure 32 METSAT AMSU-A1 Mode 10, 130.8 Hz

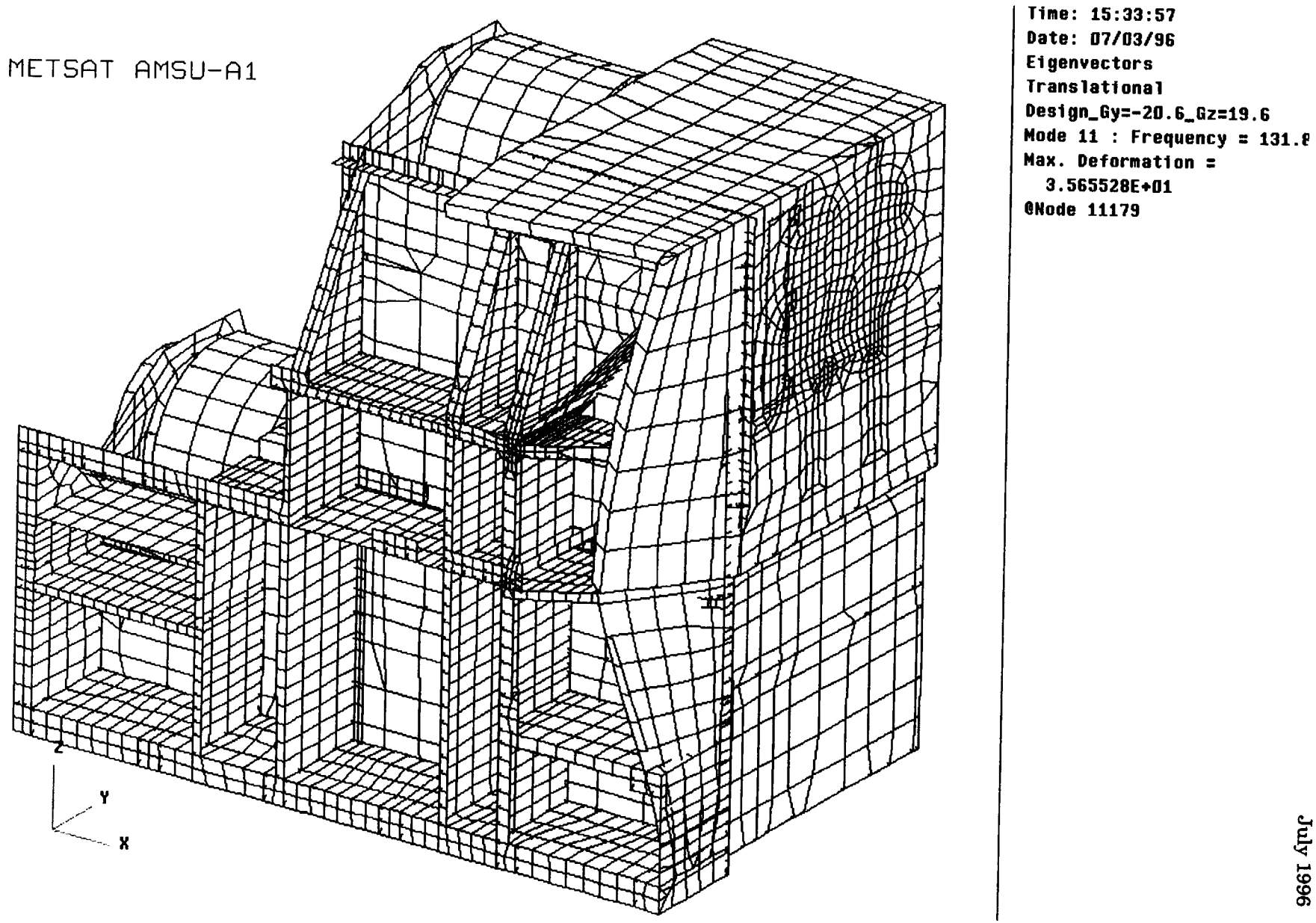


Figure 33 METSAT AMSU-A1 Mode 11, 131.8 Hz

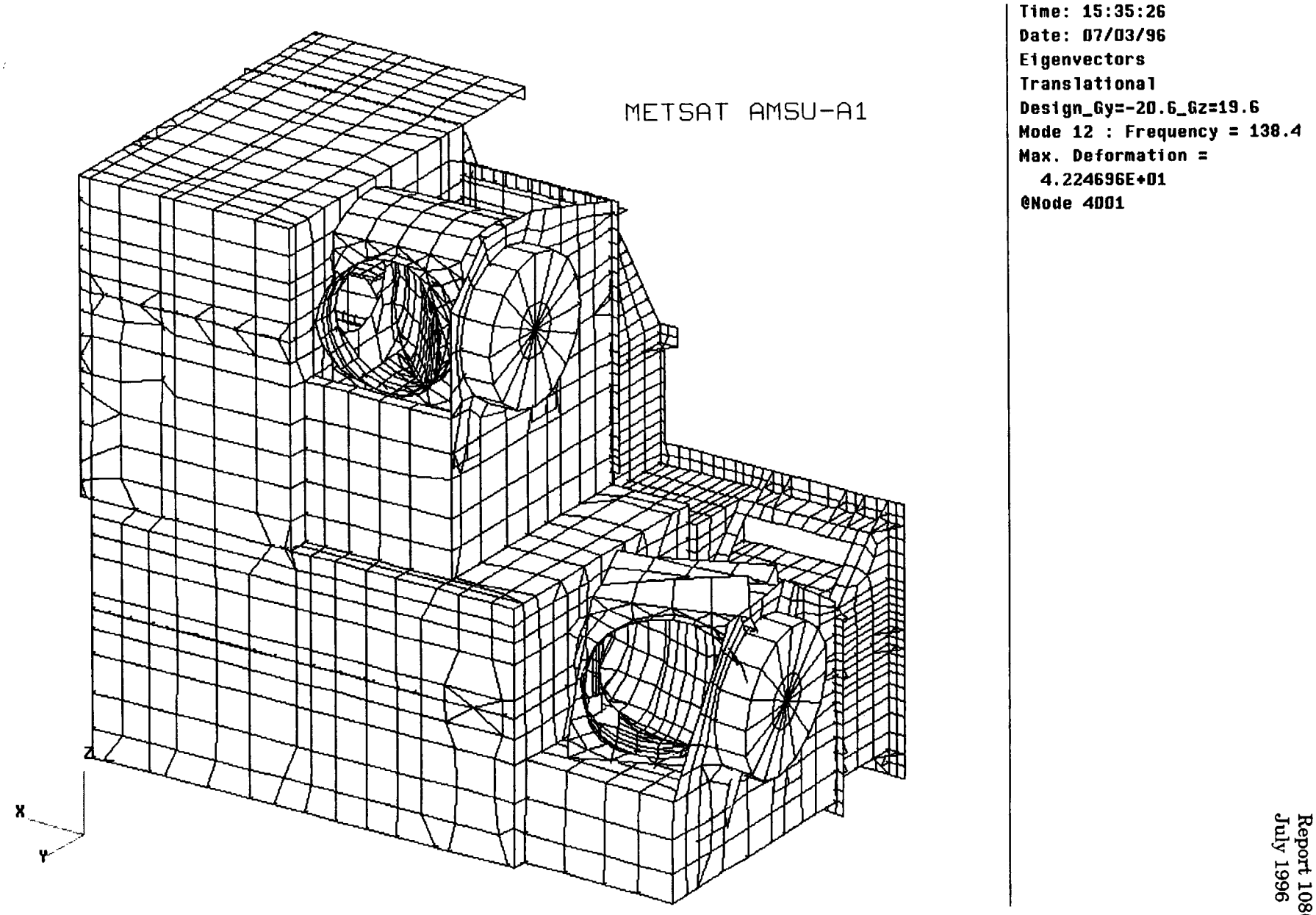


Figure 34 METSAT AMSU-A1 Mode 12, 138.4 Hz

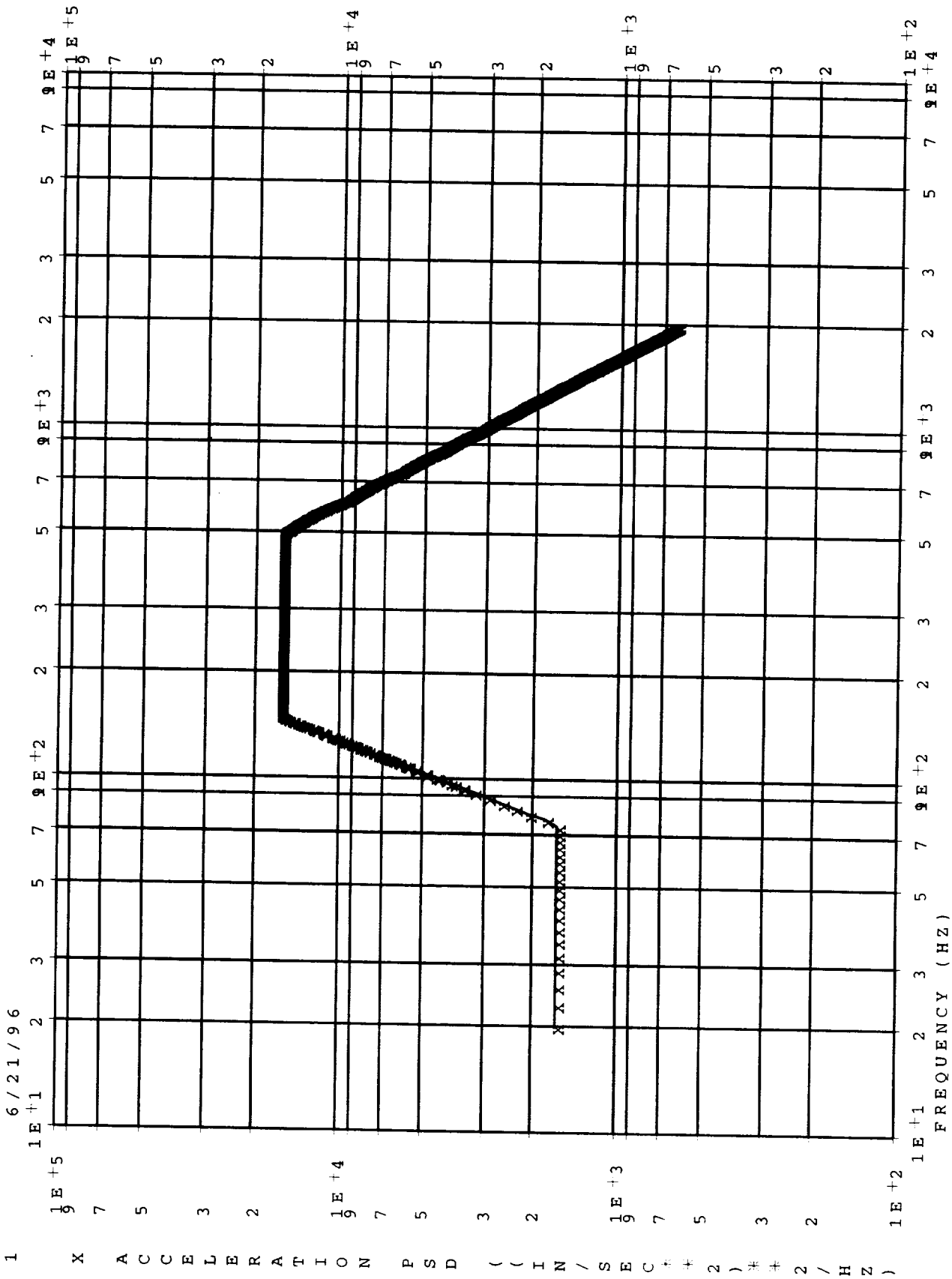
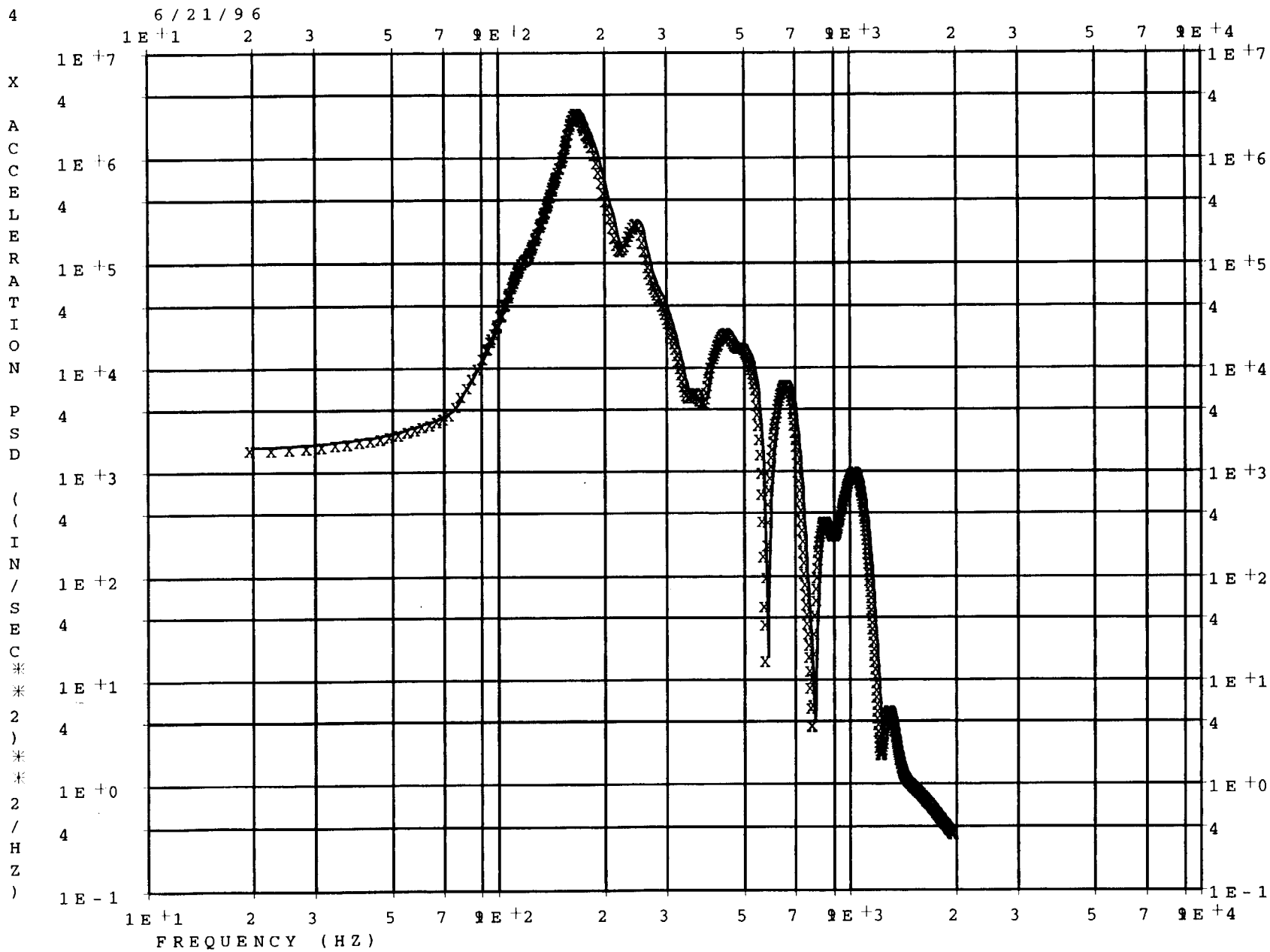


Figure 35 METSAT AMSU-A1 Input Random Vibration Input



METSAT RANDOM VIBRATION QUAL LEVEL (8.8 GRMS) X-DIRECTION
METSAT AMSU-A1 PSD INPUT 0-2000 HZ

Figure 36 METSAT AMSU-A1 Random Vibration PSD Curve Response, Upper Motor Mount Panel X-Load X-Response, 28.11 grms

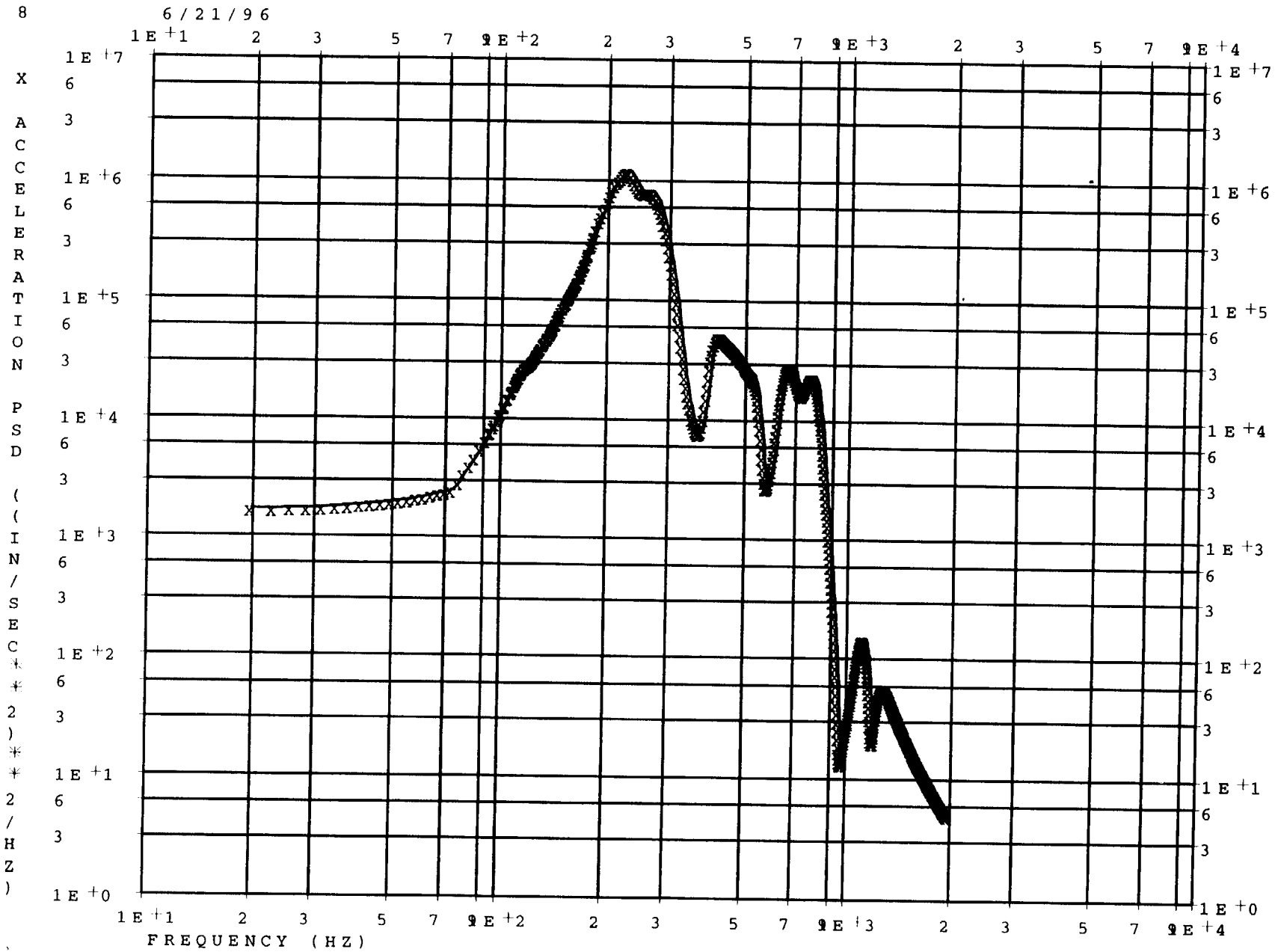
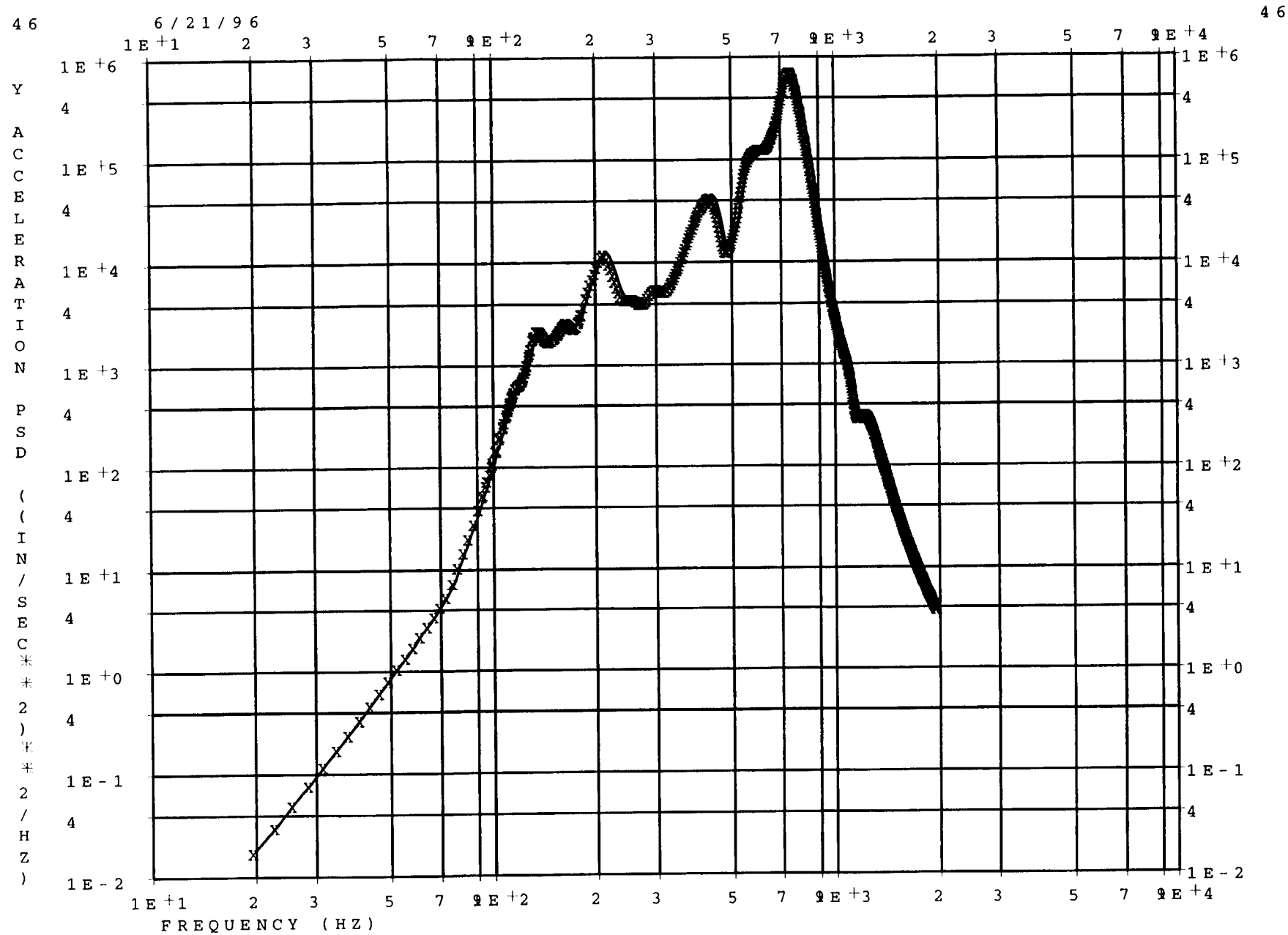
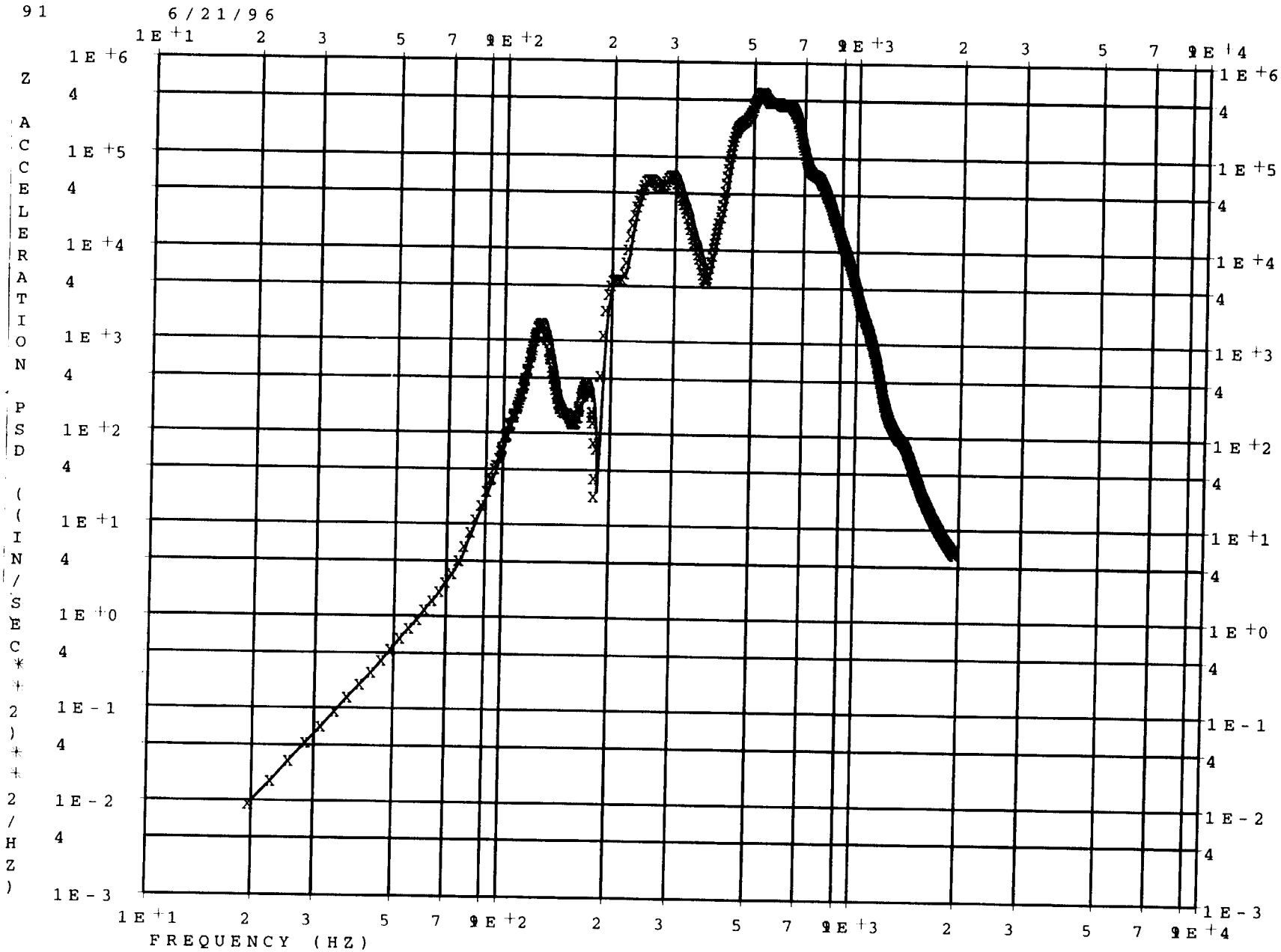


Figure 37 METSAT AMSU-A1 Random Vibration PSD Curve Response,



METSAT RANDOM VIBRATION QUAL LEVEL (8.8 GRMS) X-DIRECTION
METSAT AMSU-A1 PSD INPUT 0-2000 HZ

Figure 38 METSAT AMSU-A1 Random Vibration PSD Curve Response, Lower Right Front Support X-Load Y-Response, 26.48 grms



METSAT RANDOM VIBRATION QUAL LEVEL (8.8 GRMS) X-DIRECTION
METSAT AMSU-A1 PSD INPUT 0-2000 HZ

Figure 39 METSAT AMSU-A1 Random Vibration PSD Curve Response,

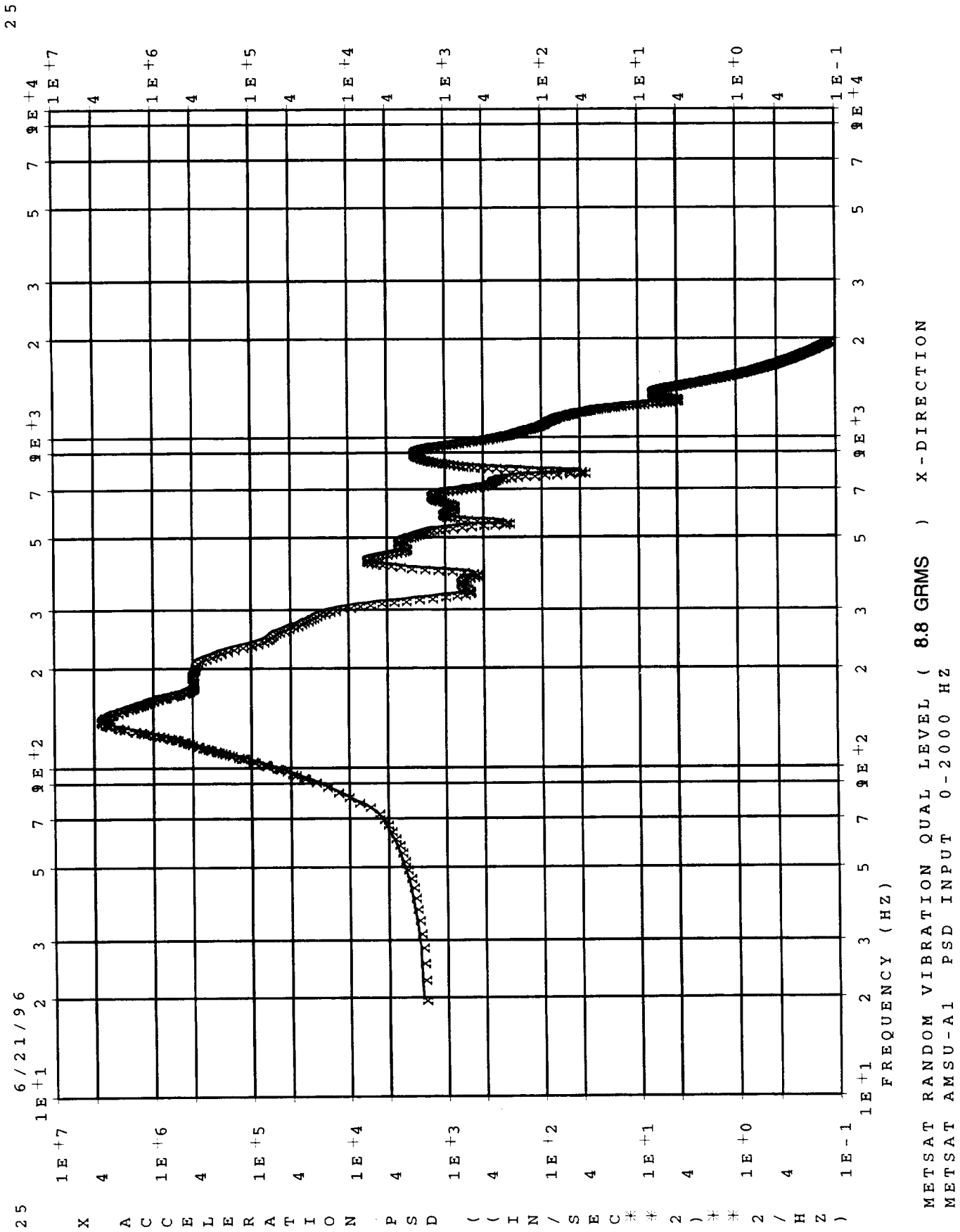


Figure 40 METSAT AMSU-A1 Random Vibration PSD Curve Response, Upper Card Cage Card X-Load X-Response, 29.14 grms

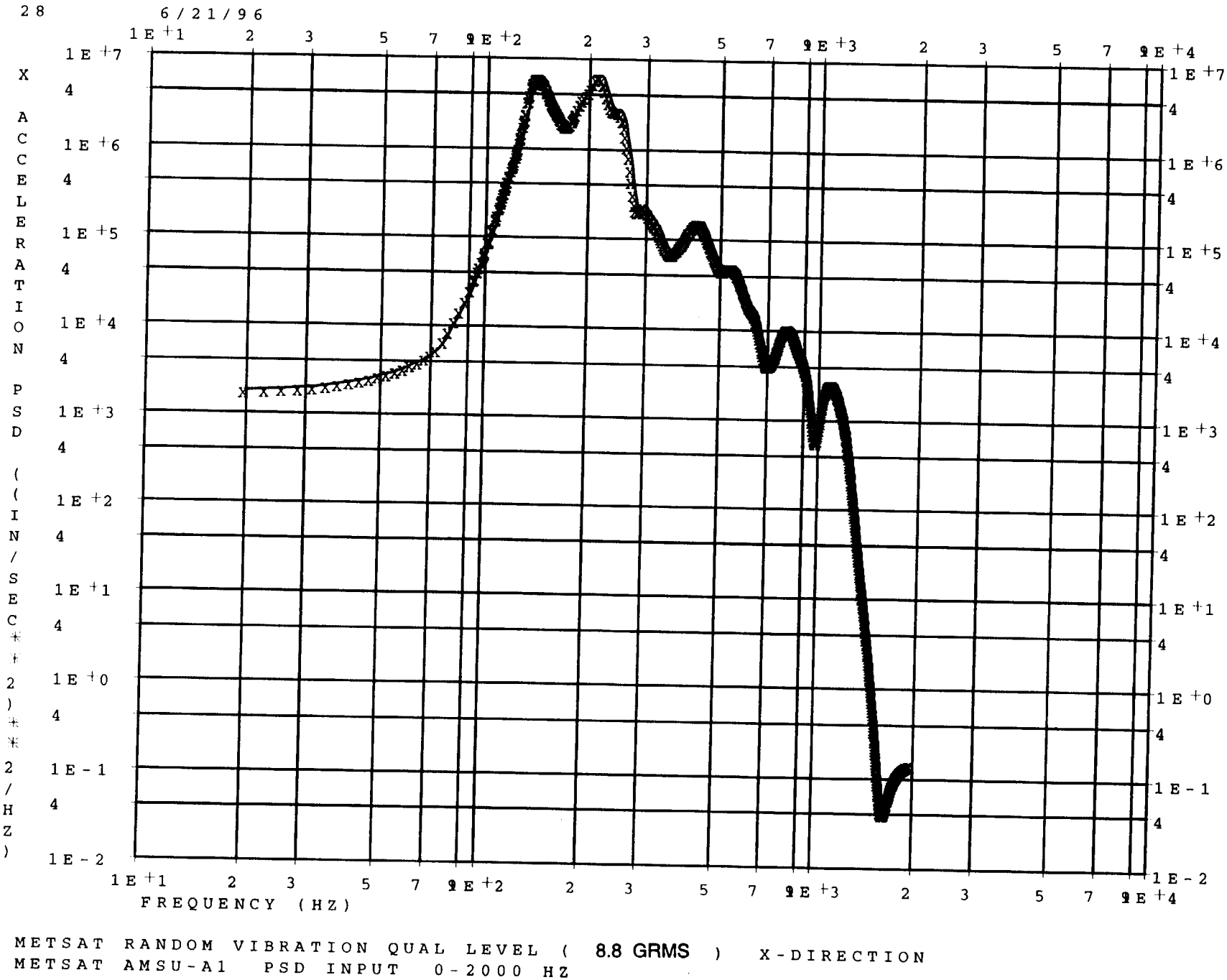


Figure 41 METSAT AMSU-A1 Random Vibration PSD Curve Response, Lower Reflector X-Load X-Response, 61.42 grms

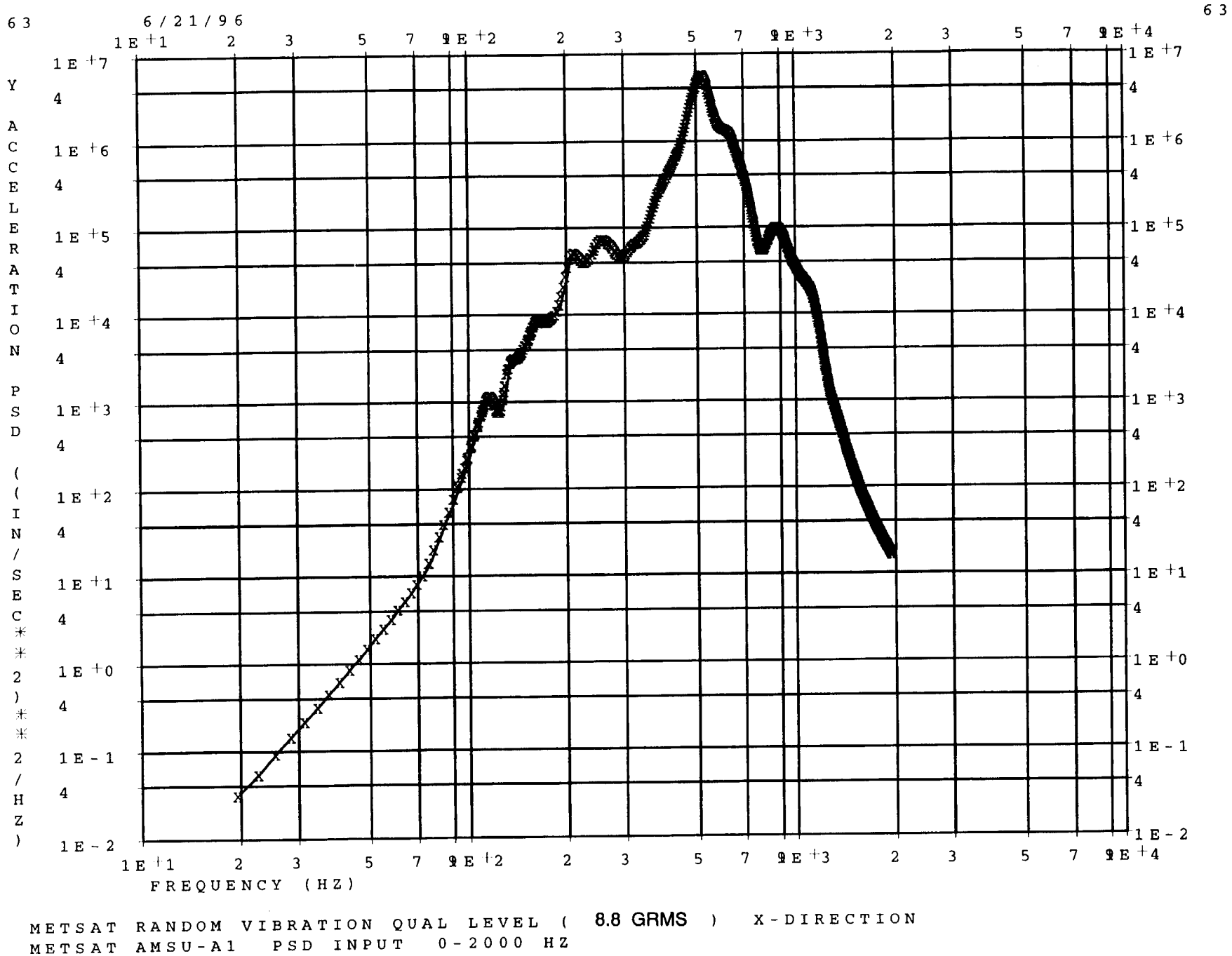
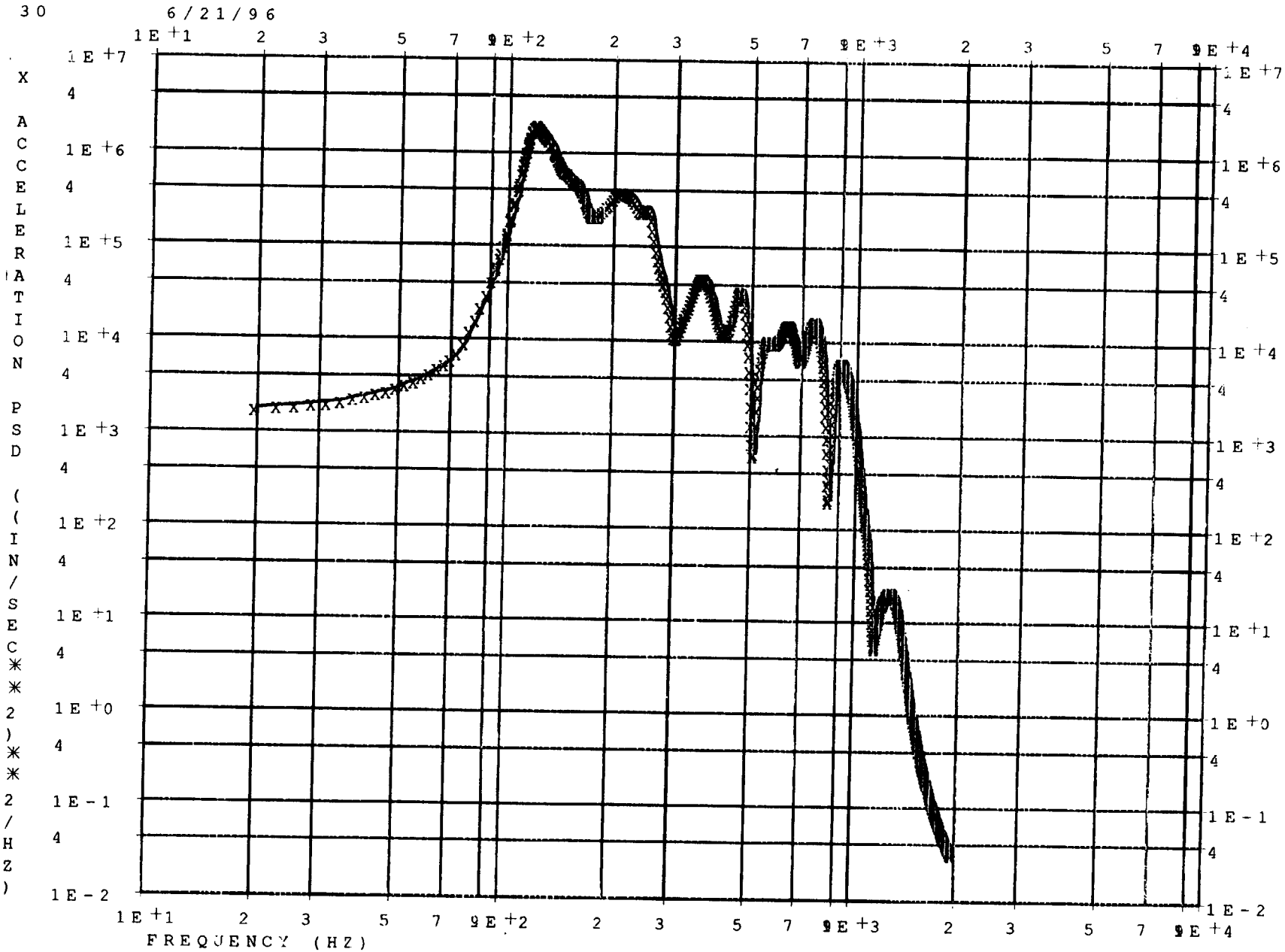
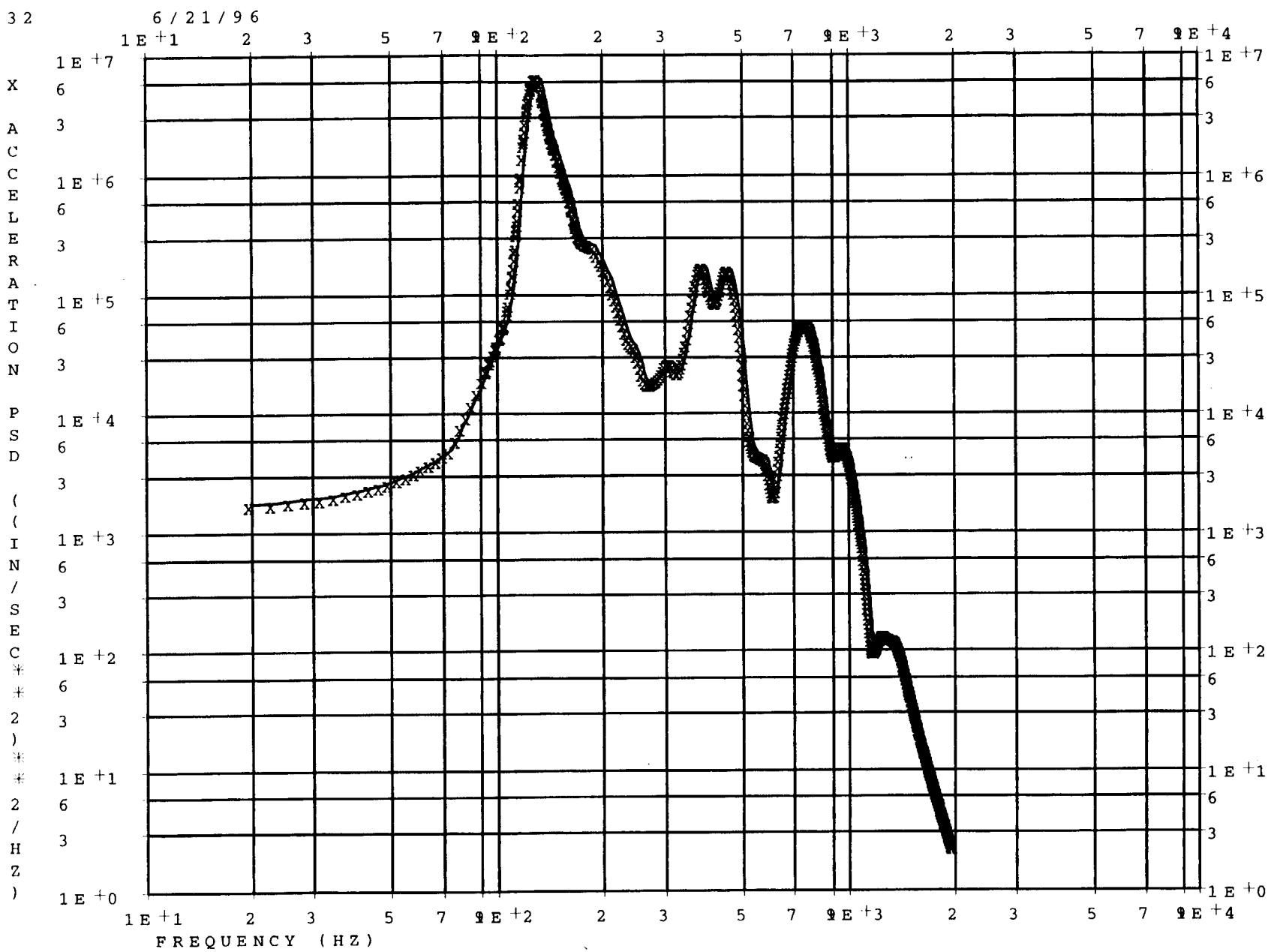


Figure 42 METSAT AMSU-A1 Random Vibration PSD Curve Response, Power Control/Monitor Bracket X-Load Y-Response, 68.91 grms



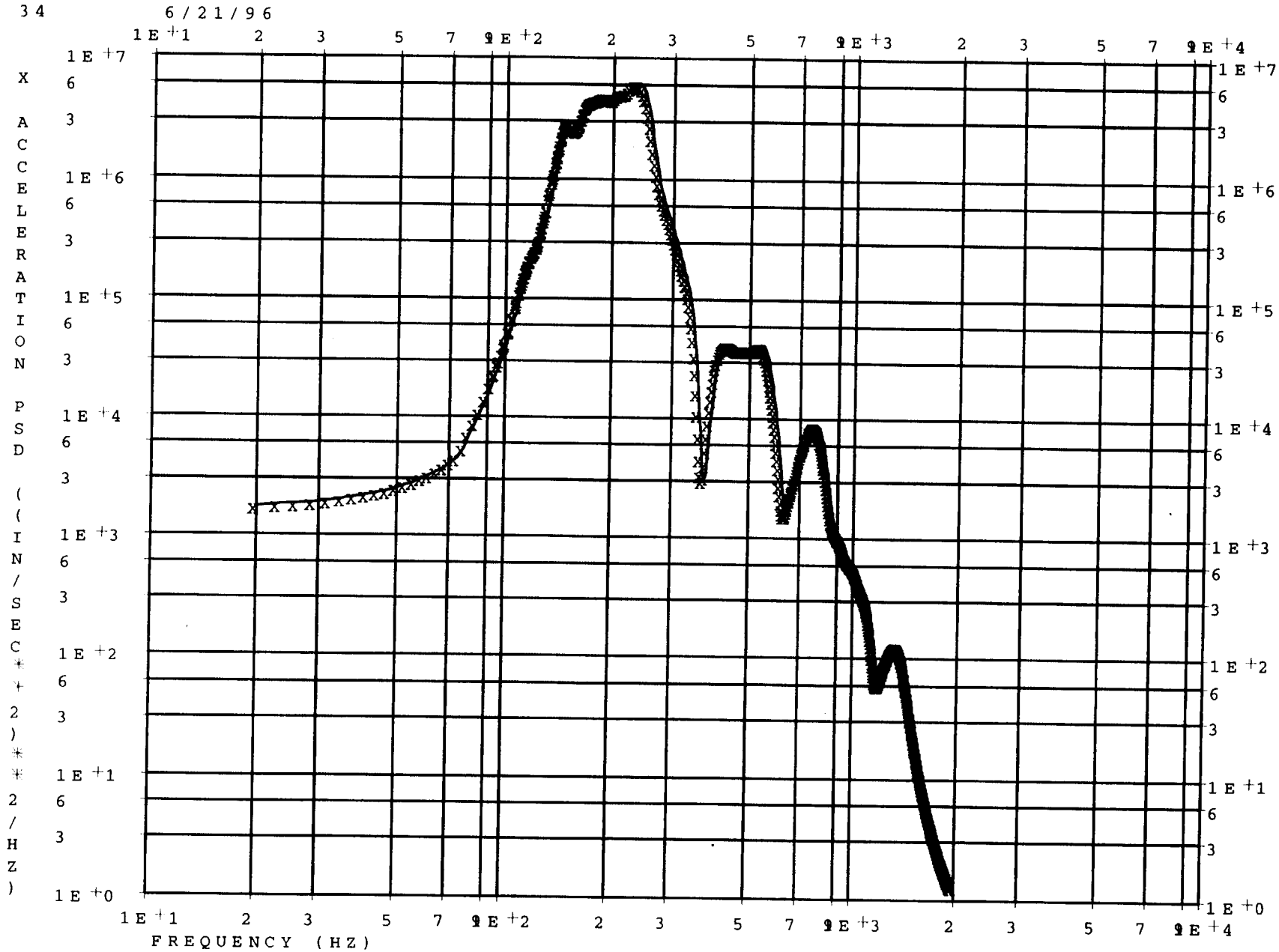
METSAT RANDOM VIBRATION QUAL LEVEL (8.8 GRMS) X-DIRECTION
METSAT AMSU-A1 PSD INPUT 0-2000 HZ

Figure 43 METSAT AMSU-A1 Random Vibration PSD Curve Response, Power Control/Monitor PWB X-Load X-Response, 25.95 grms



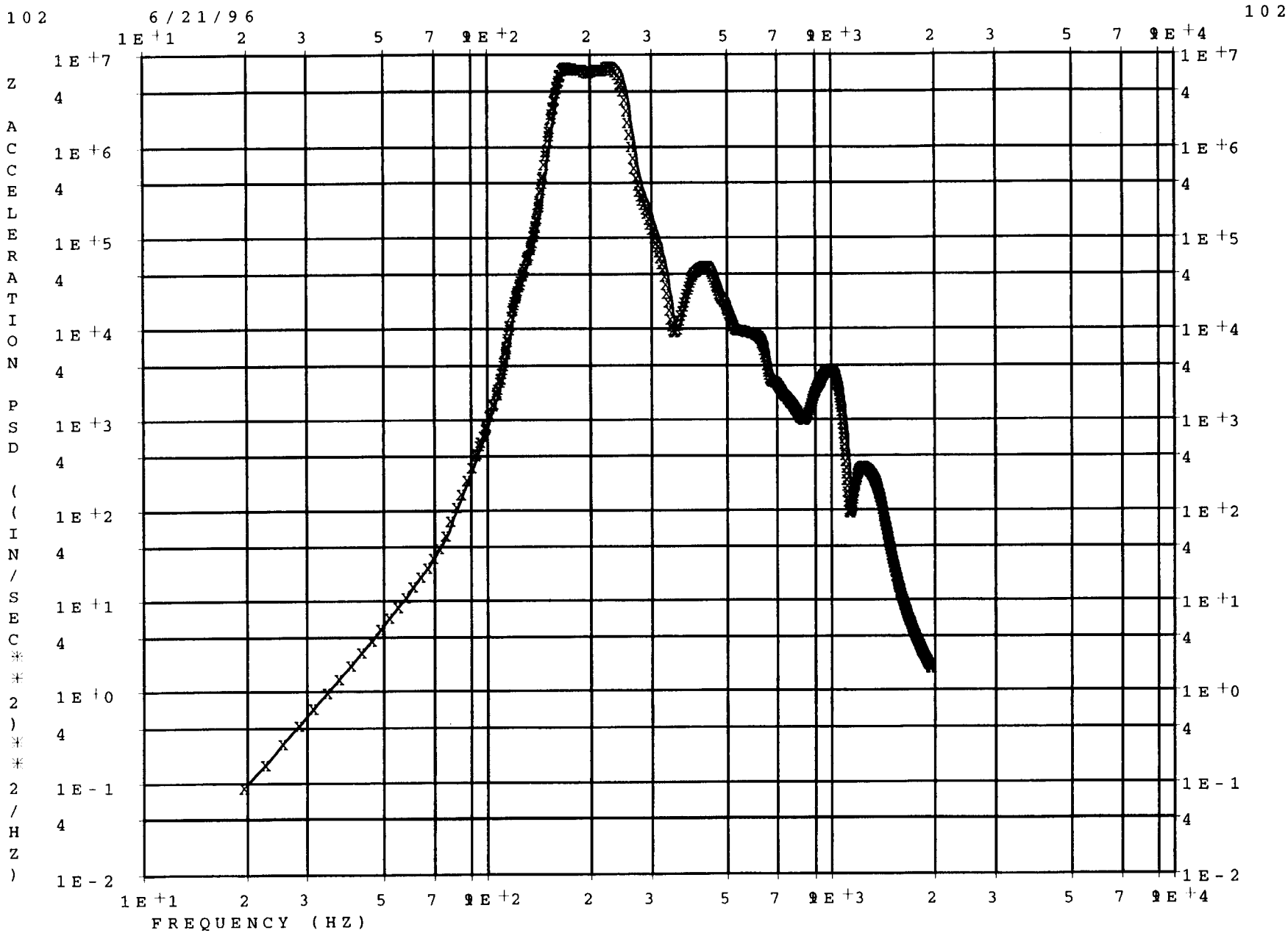
METSAT RANDOM VIBRATION QUAL LEVEL (8.8 GRMS) X-DIRECTION
METSAT AMSU-A1 PSD INPUT 0-2000 HZ

Figure 44 METSAT AMSU-A1 Random Vibration PSD Curve Response, Radiator Panel X-Load X-Response, 35.45 grms



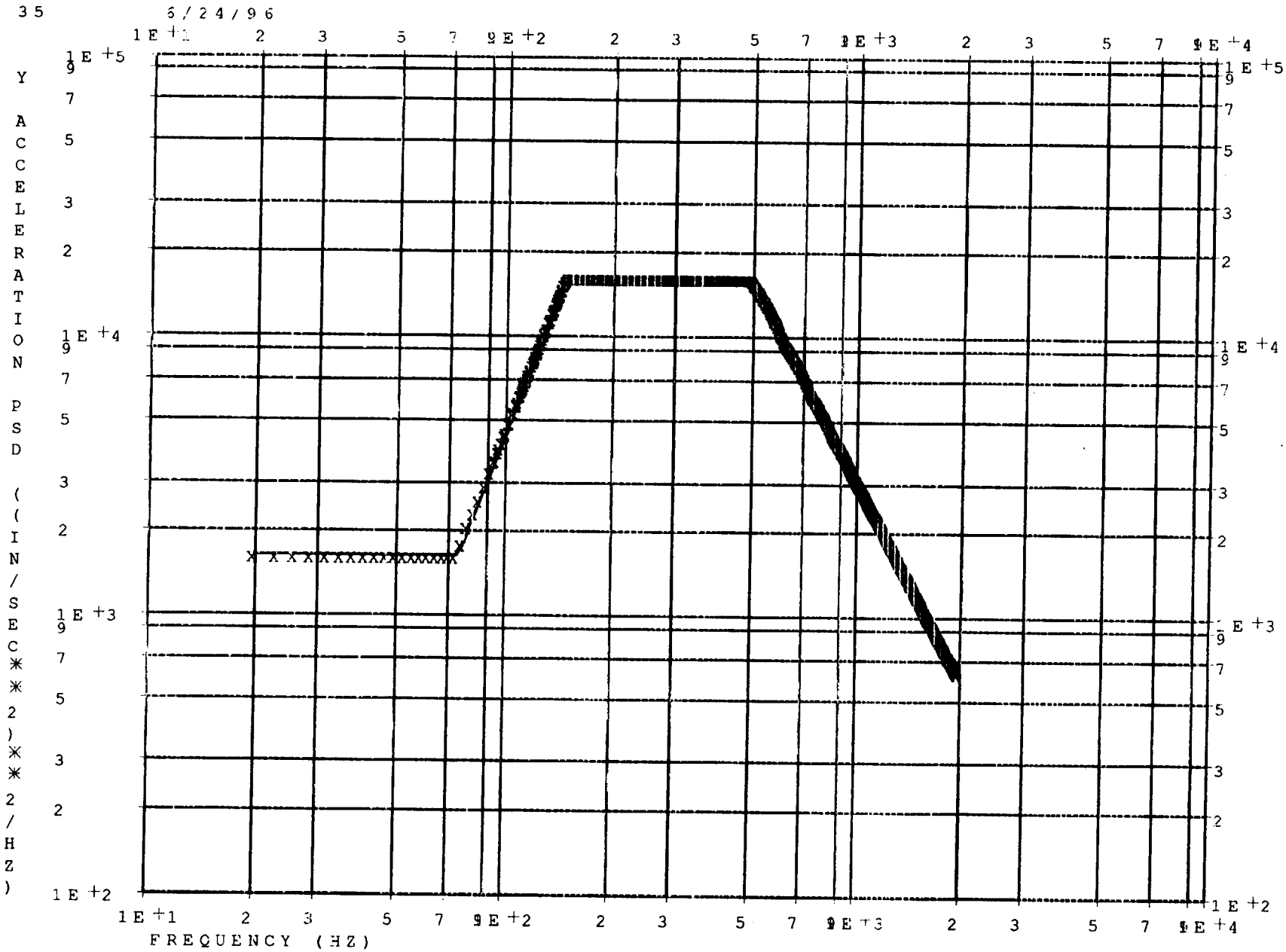
METSAT RANDOM VIBRATION QUAL LEVEL (8.8 GRMS) X-DIRECTION
METSAT AMSU-A1 PSD INPUT 0-2000 HZ

Figure 45 METSAT AMSU-A1 Random Vibration PSD Curve Response, Upper Reflector X-Load X-Response, 63.59 grms



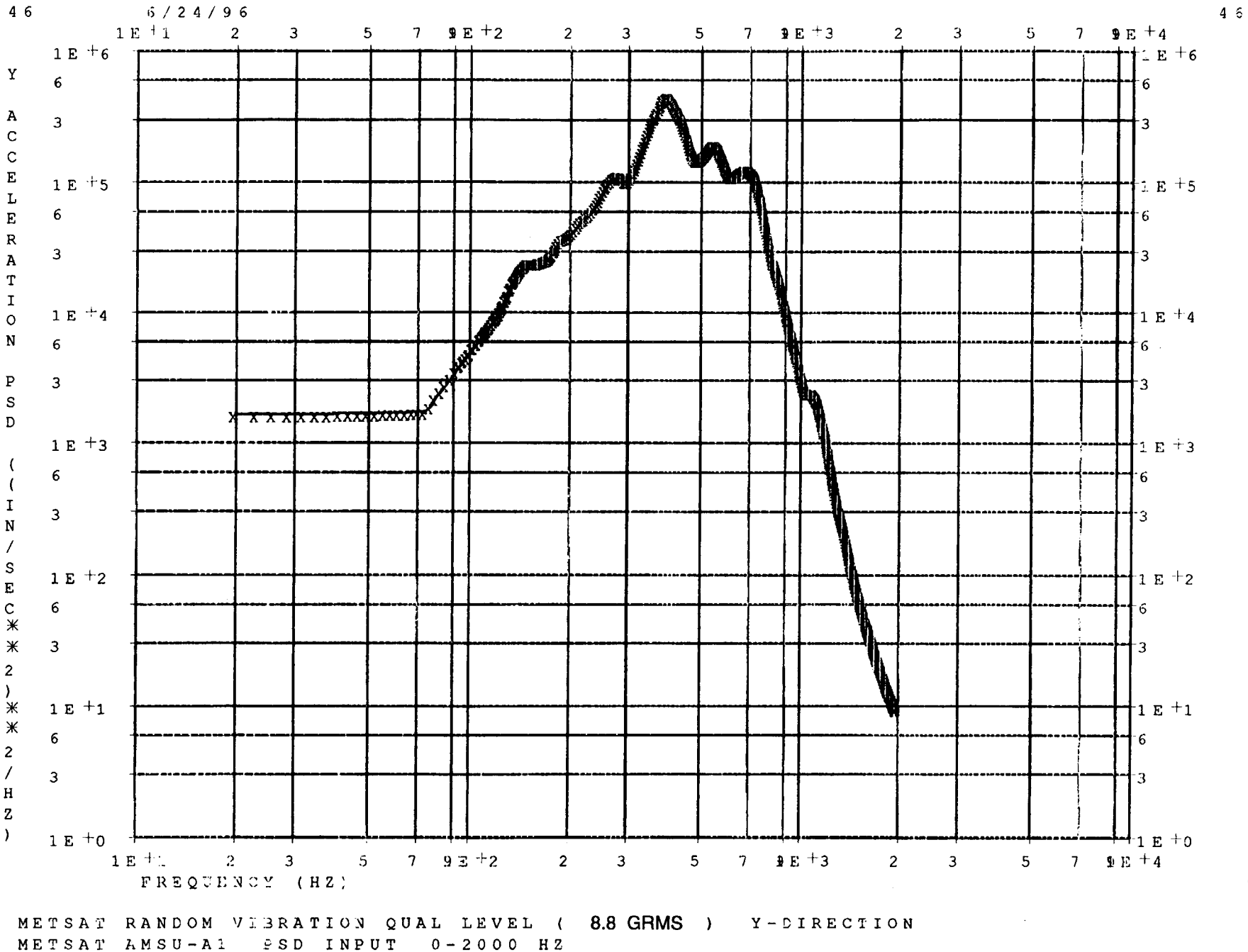
METSAT RANDOM VIBRATION QUAL LEVEL (8.8 GRMS) X-DIRECTION
METSAT AMSU-A1 PSD INPUT 0-2000 HZ

Figure 46 METSAT AMSU-A1 Random Vibration PSD Curve Response, Upper Reflector X-Load Z-Response, 70.96 grms



METSAT RANDOM VIBRATION QUAL LEVEL (8.8 GRMS) Y-DIRECTION
METSAT AMSU-A1 PSD INPUT 0-2000 HZ

Figure 47 METSAT AMSU-A1 Input Random Vibration PSD Curve
8.84 grms, Y Direction



METSAT RANDOM VIBRATION QUAL LEVEL (8.8 GRMS) Y-DIRECTION
METSAT AMSU-A1 PSD INPUT 0-2000 HZ

Figure 48 METSAT AMSU-A1 Random Vibration PSD Curve Response, Lower Right Front Support Y-Load Y-Response, 26.60 grms

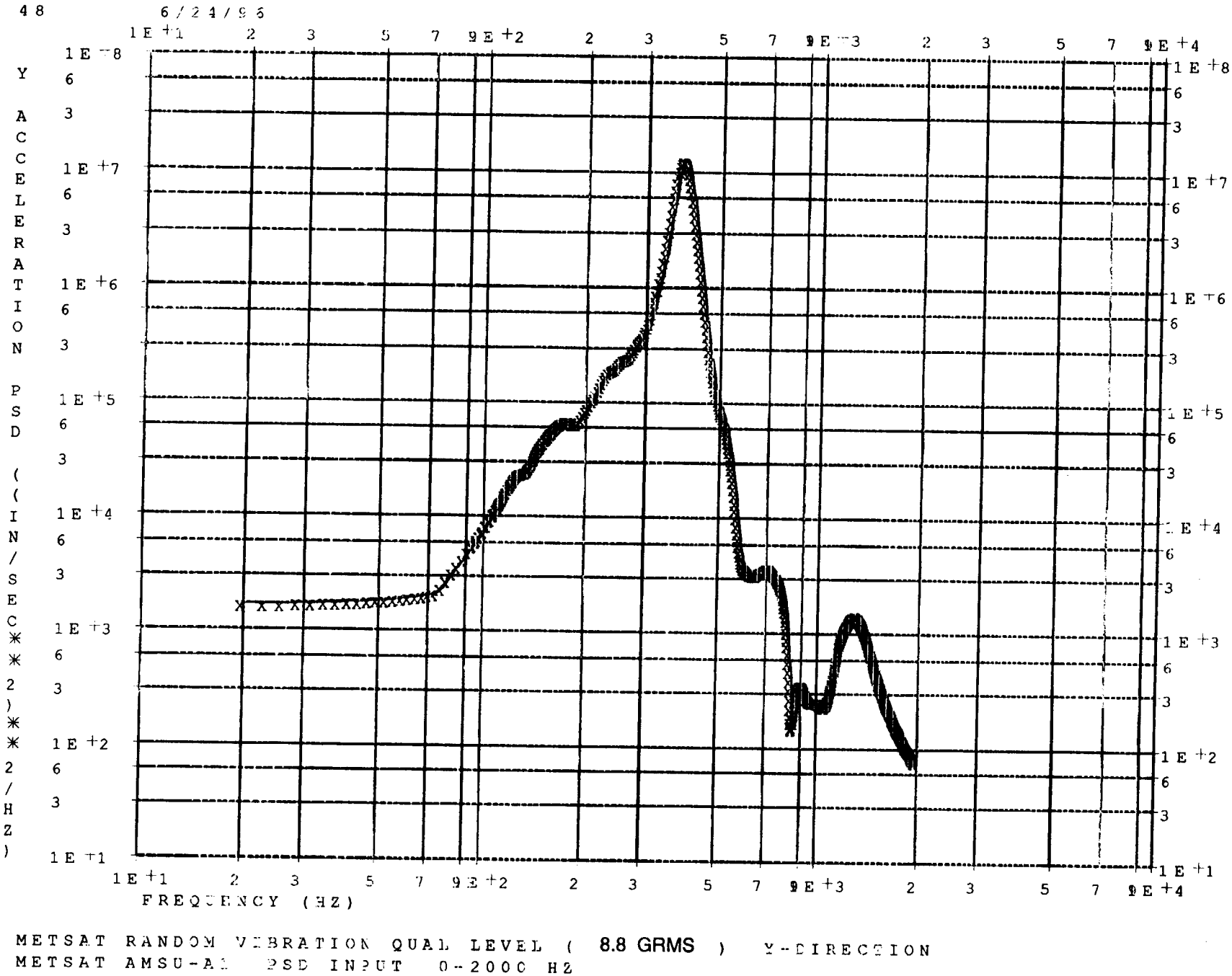
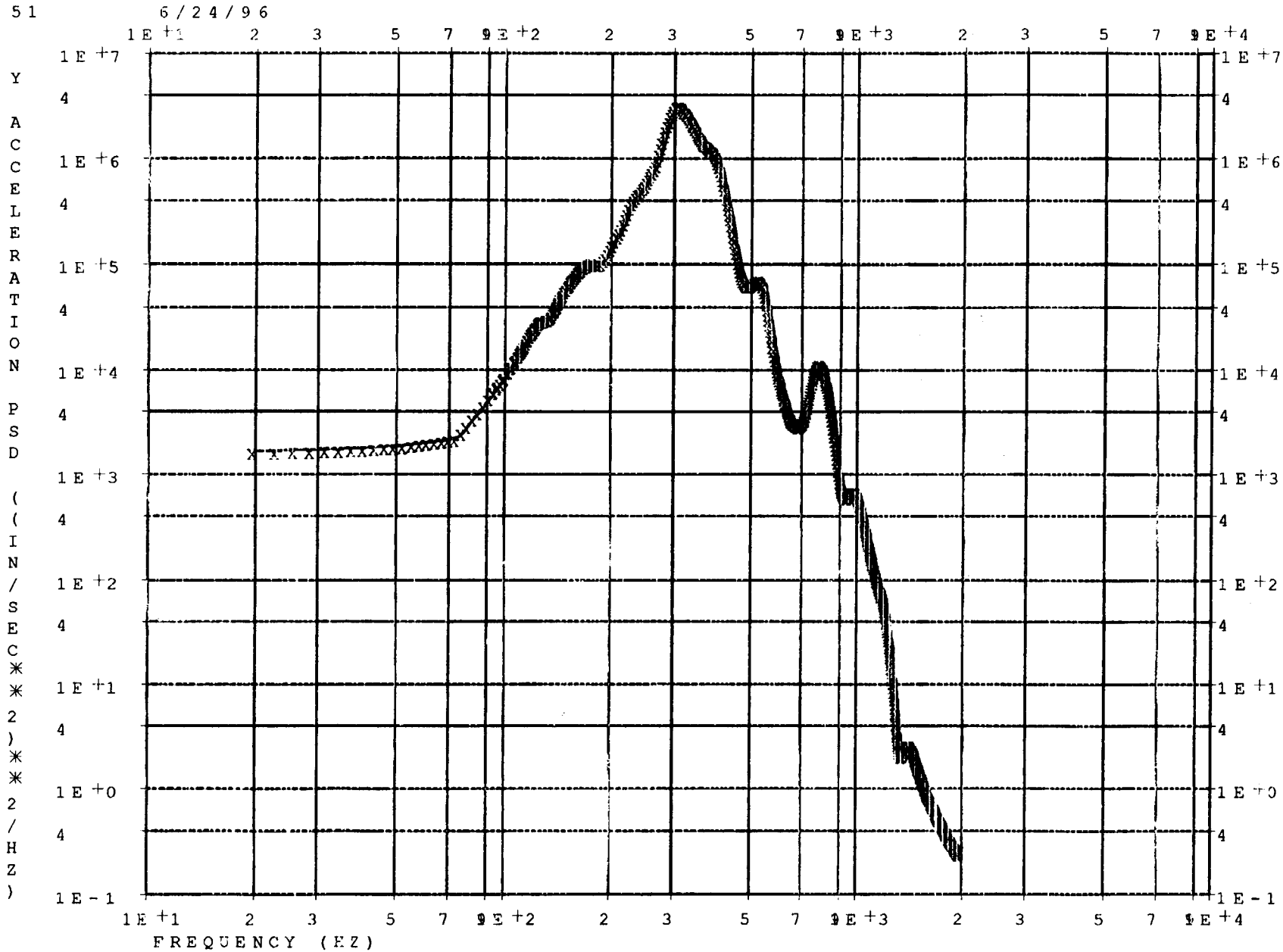
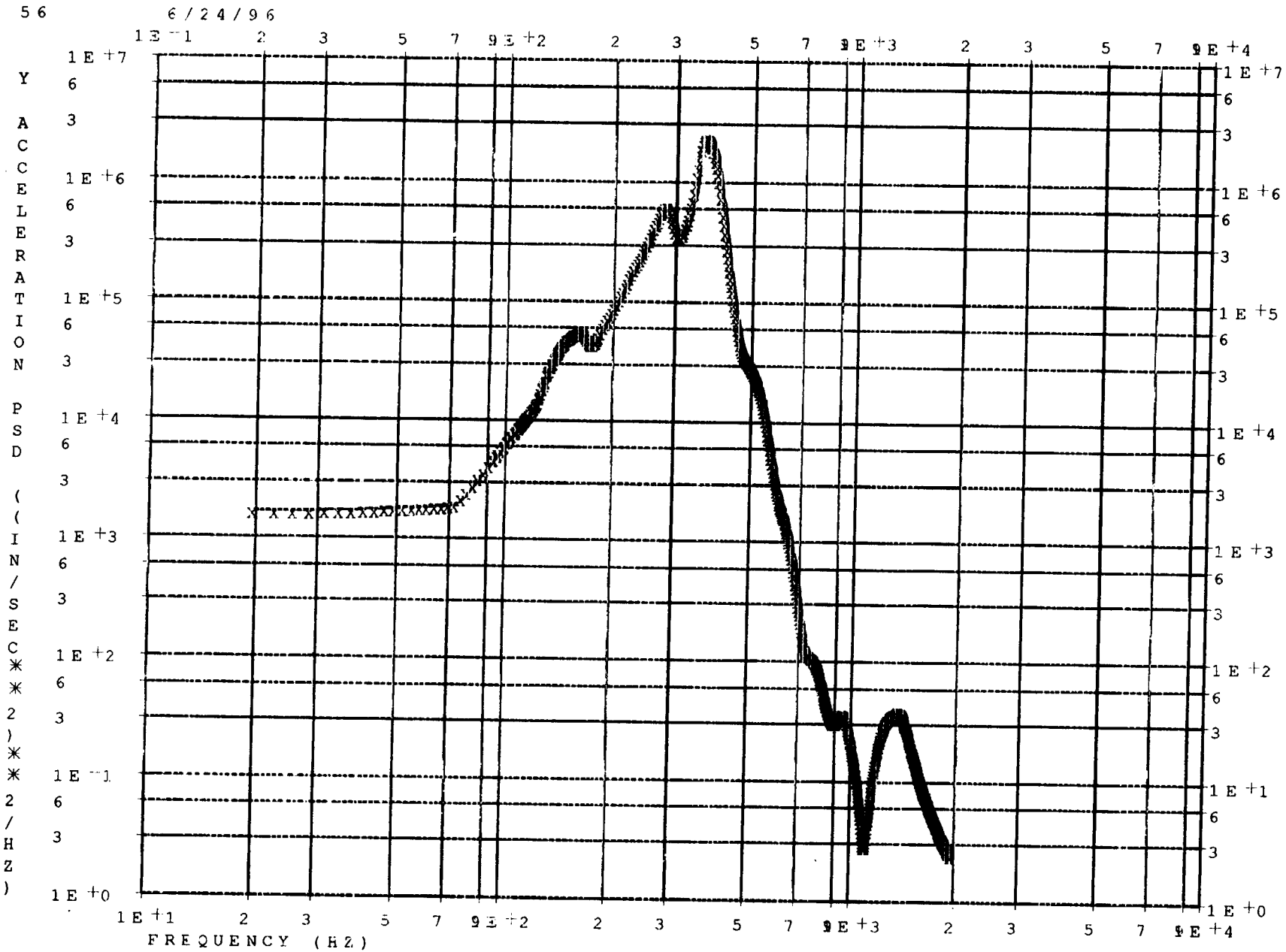


Figure 49 METSAT AMSU-A1 Random Vibration PSD Curve Response, Upper Right Front Support Y-Load Y-Response, 70.66 grms



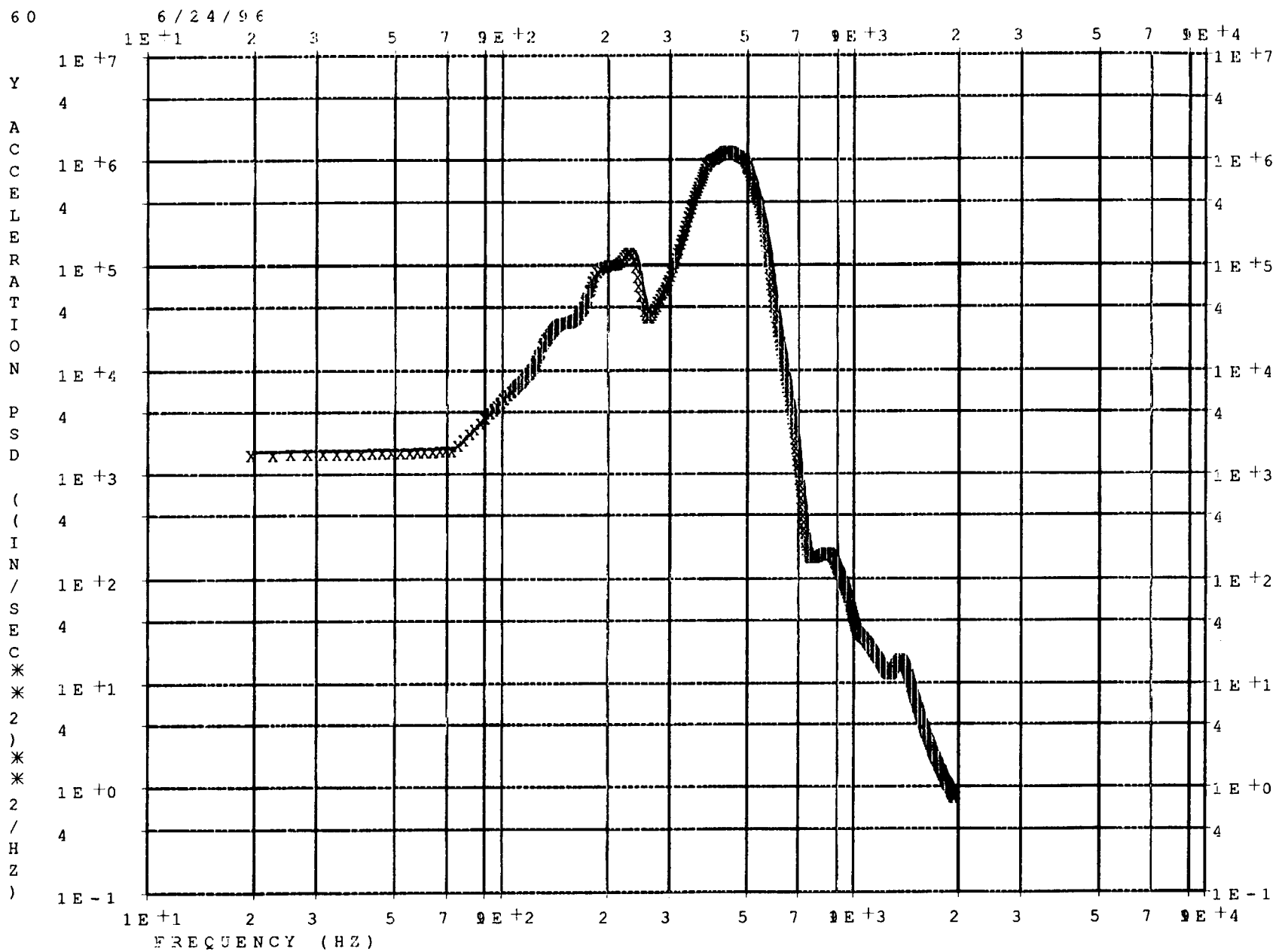
METSAT RANDOM VIBRATION QUAL LEVEL (8.8 GRMS) Y-DIRECTION
METSAT AMSU-A1 PSD INPUT 0-2000 HZ

Figure 50 METSAT AMSU-A1 Random Vibration PSD Curve Response, Left Panel Y-Load Y-Response, 47.60 grms



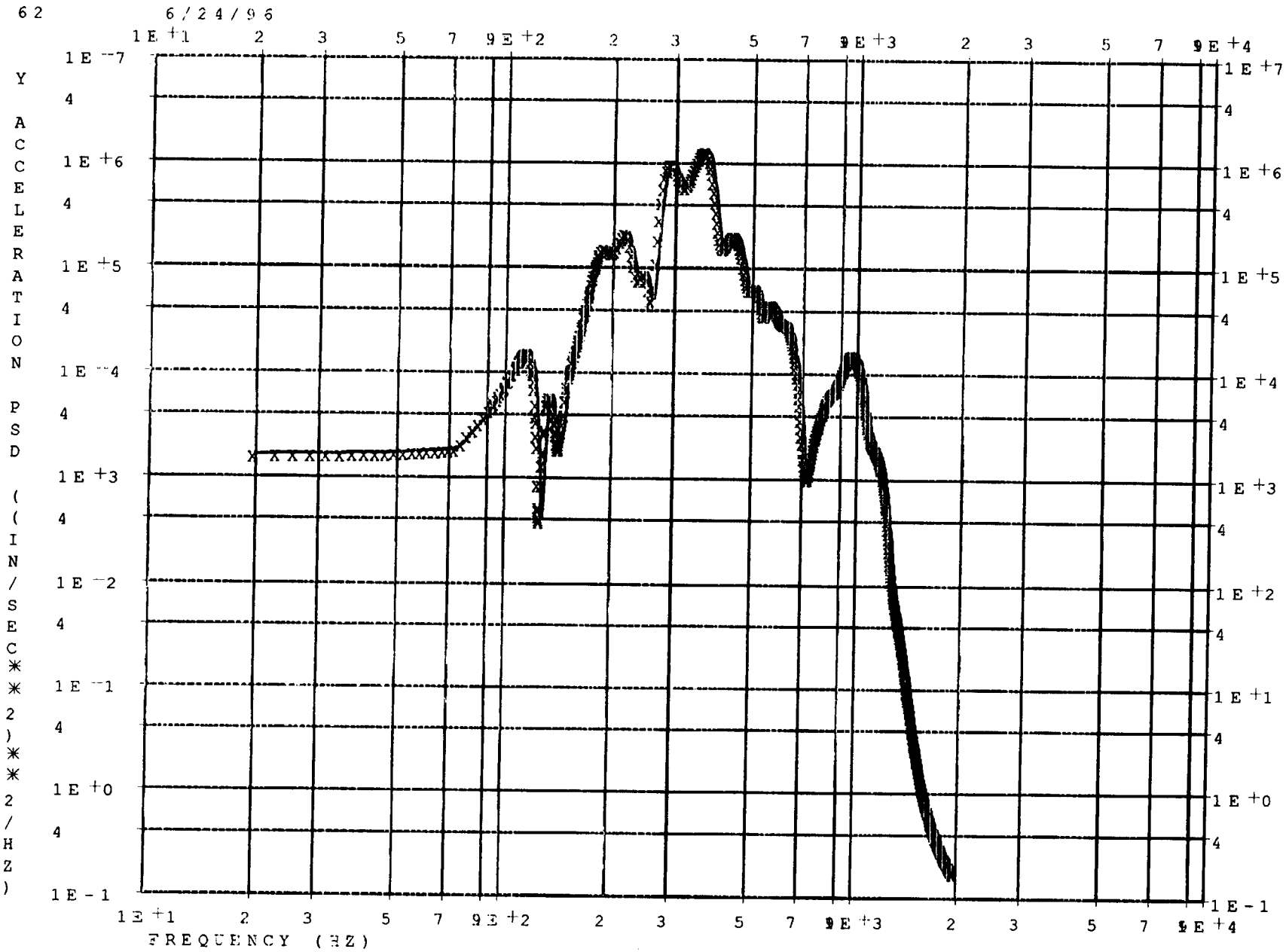
METSAT RANDOM VIBRATION QUAL LEVEL (8.8 GRMS) Y-DIRECTION
METSAT AMSU-A1 PSD INPUT 0-2000 HZ

Figure 51 METSAT AMSU-A1 Random Vibration PSD Curve Response, Lower Card Cage Y-Load Y-Response, 35.25 grms



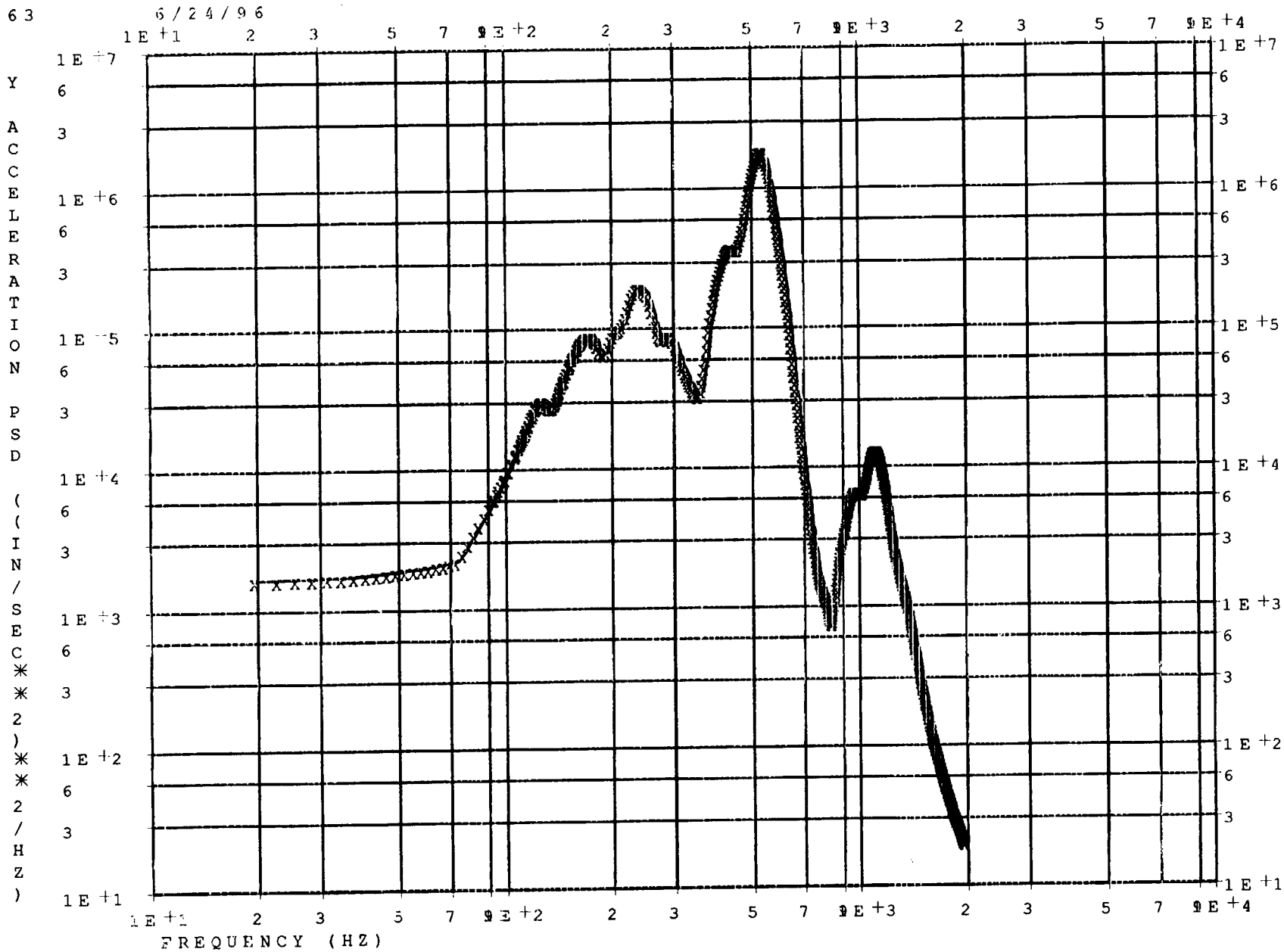
METSAT RANDOM VIBRATION QUAL LEVEL (8.8 GRMS) Y-DIRECTION
METSAT AMSU-A1 PSD INPUT 0-2000 HZ

Figure 52 METSAT AMSU-A1 Random Vibration PSD Curve Response, Lower Warmload Y-Load Y-Response, 38.52 grms



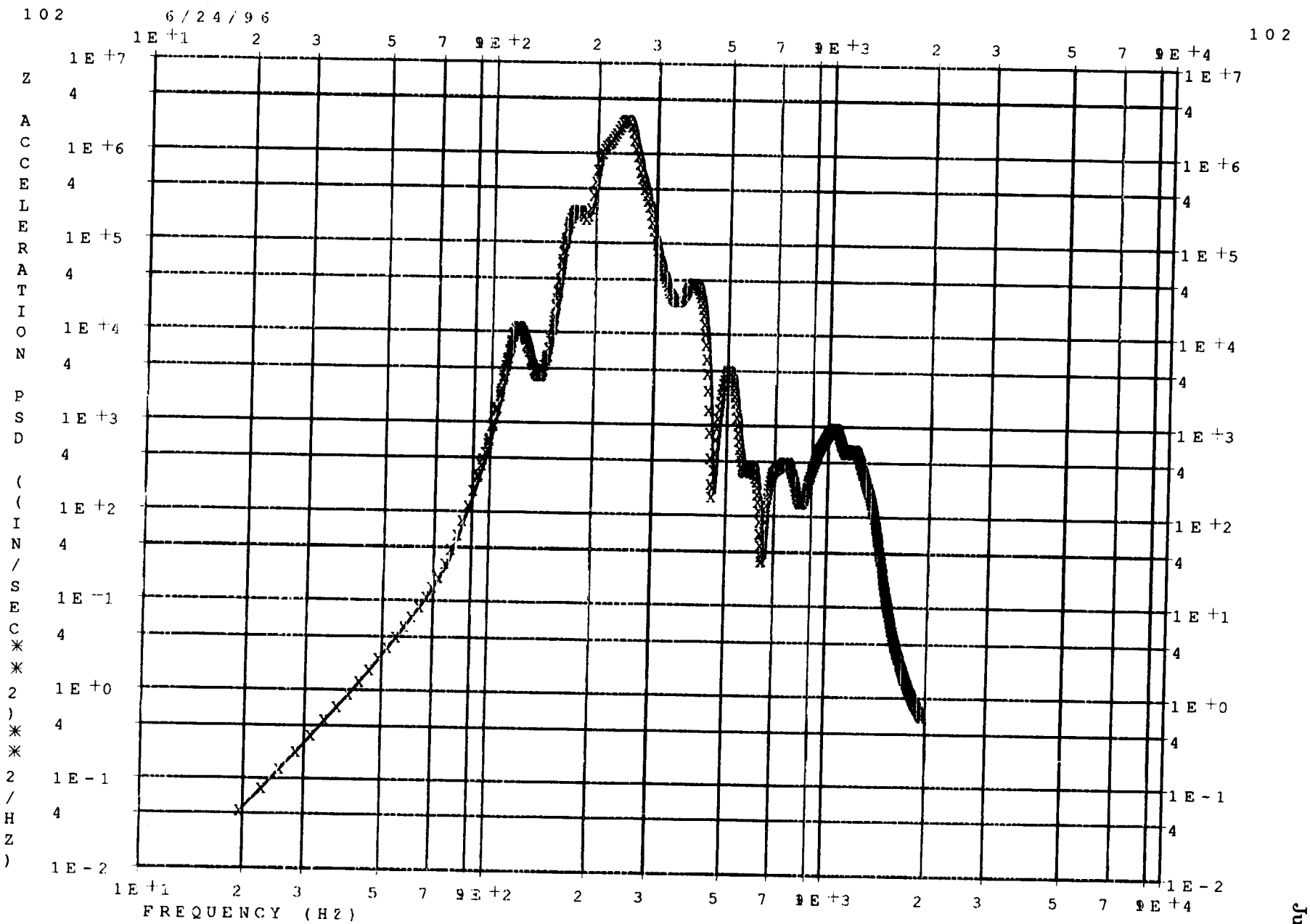
METSAT RANDOM VIBRATION QUAL LEVEL (8.8 GRMS) Y-DIRECTION
METSAT AMSU-A1 PSD INPUT 0-2000 HZ

Figure 53 METSAT AMSU-A1 Random Vibration PSD Curve Response, Lower Reflector Y-Load Y-Response, 31.81 grms



METSAT RANDOM VIBRATION QUAL LEVEL (8.8 GRMS) Y-DIRECTION
METSAT AMSU-A1 PSD INPUT 0-2000 HZ

Figure 54 METSAT AMSU-A1 Random Vibration PSD Curve Response, Power Control/Monitor Bracket Y-Load Y-Response, 38.23 grms



METSAT RANDOM VIBRATION QUAL LEVEL (8.8 GRMS) Y-DIRECTION
METSAT AMSU-A1 PSD INPUT 0-2000 HZ

Figure 55 METSAT AMSU-A1 Random Vibration PSD Curve Response, Upper Reflector Y-Load Z-Response, 26.60 grms

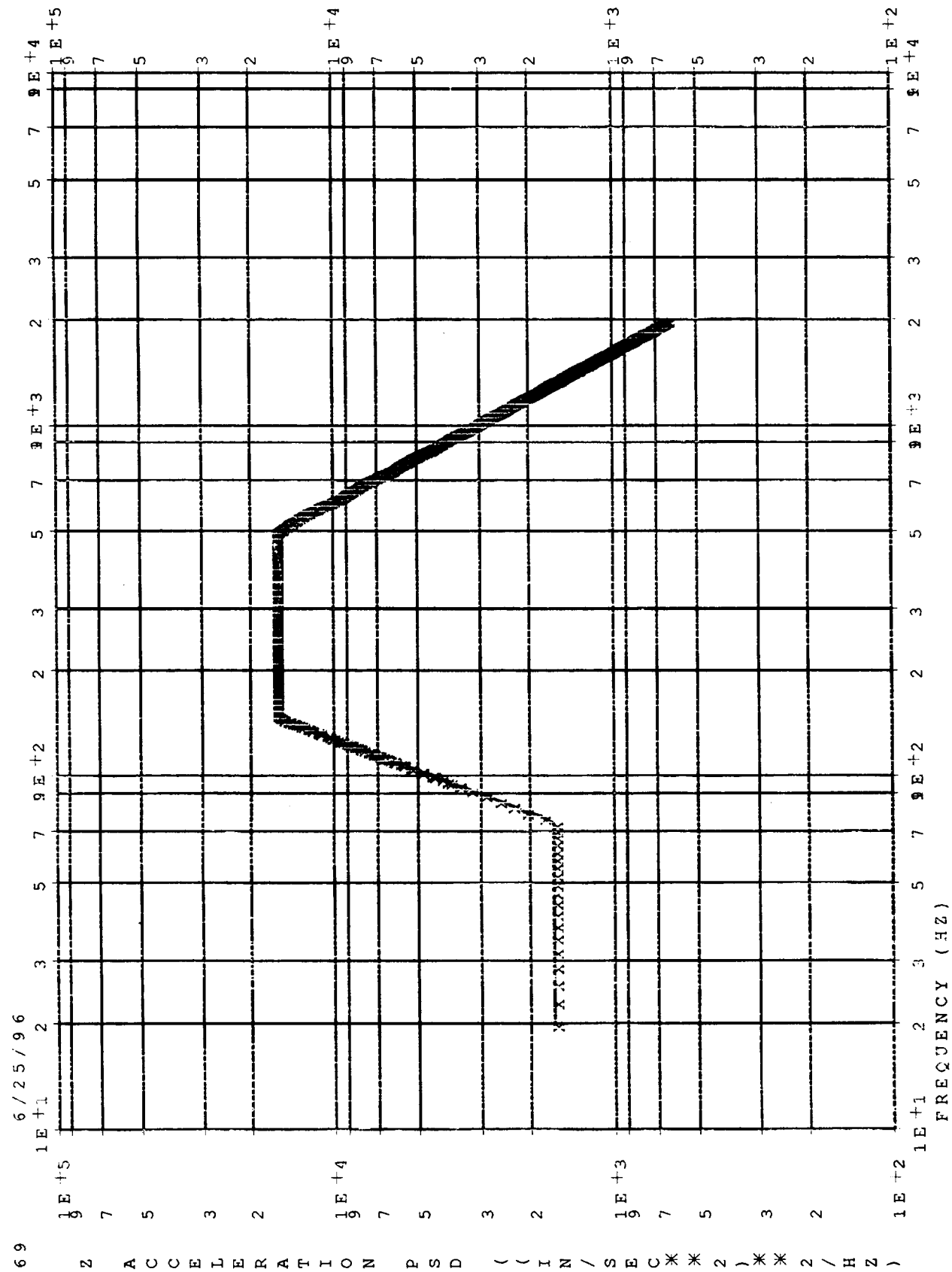
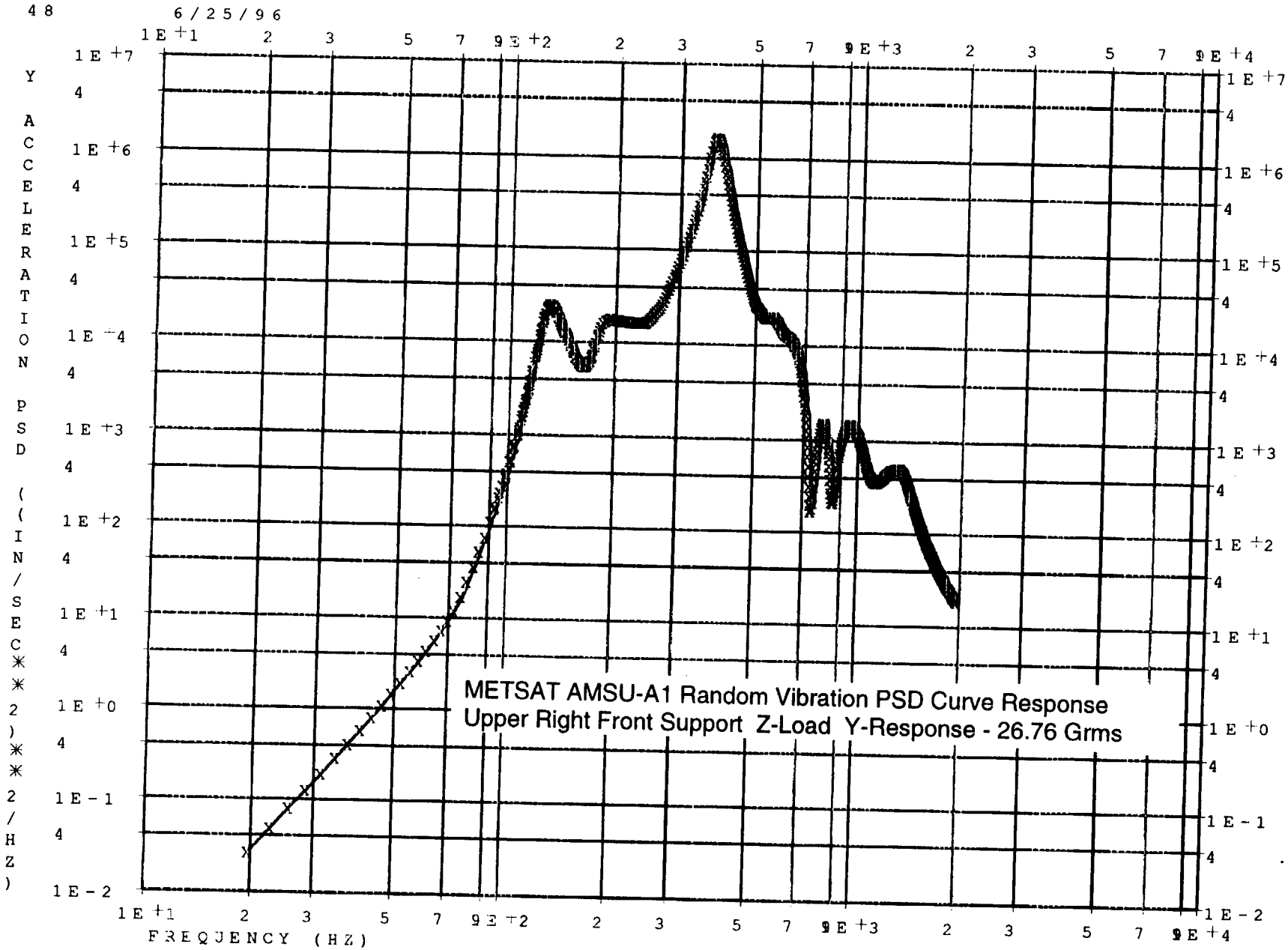


Figure 56 METSAT AMSU-A1 Input Random Vibration PSD Curve
8.84 grms, Z Direction



METSAT RANDOM VIBRATION QUAL LEVEL (8.8 GRMS) Z-DIRECTION
METSAT AMSU-A1 PSD INPUT 0-2000 HZ

Figure 57 METSAT AMSU-A1 Random Vibration PSD Curve Response, Upper Right Front Support Z-Load Y-Response, 26.76 grms

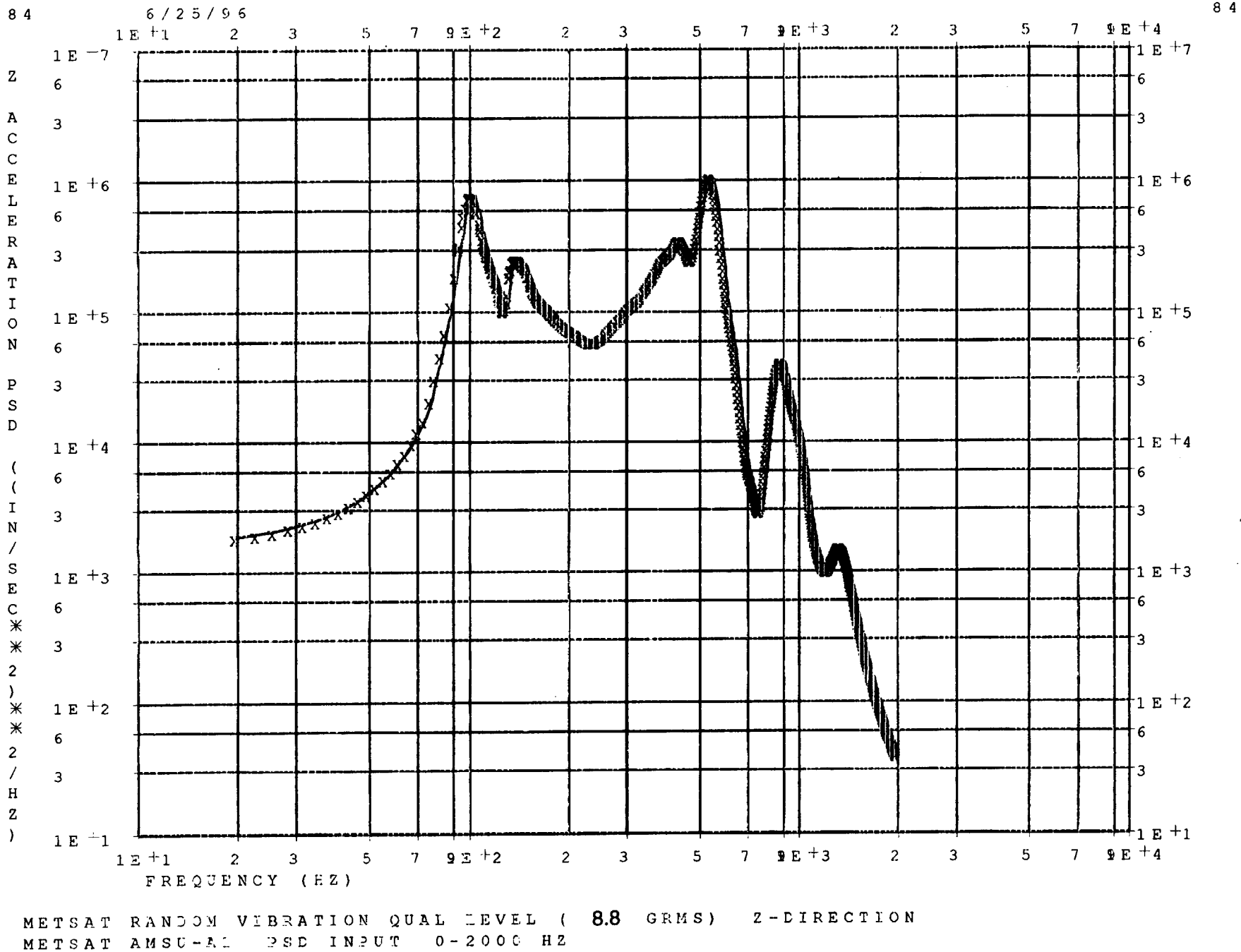


Figure 58 METSAT AMSU-A1 Random Vibration PSD Curve Response, Top Panel Z-Load Z-Response, 32.98 grms

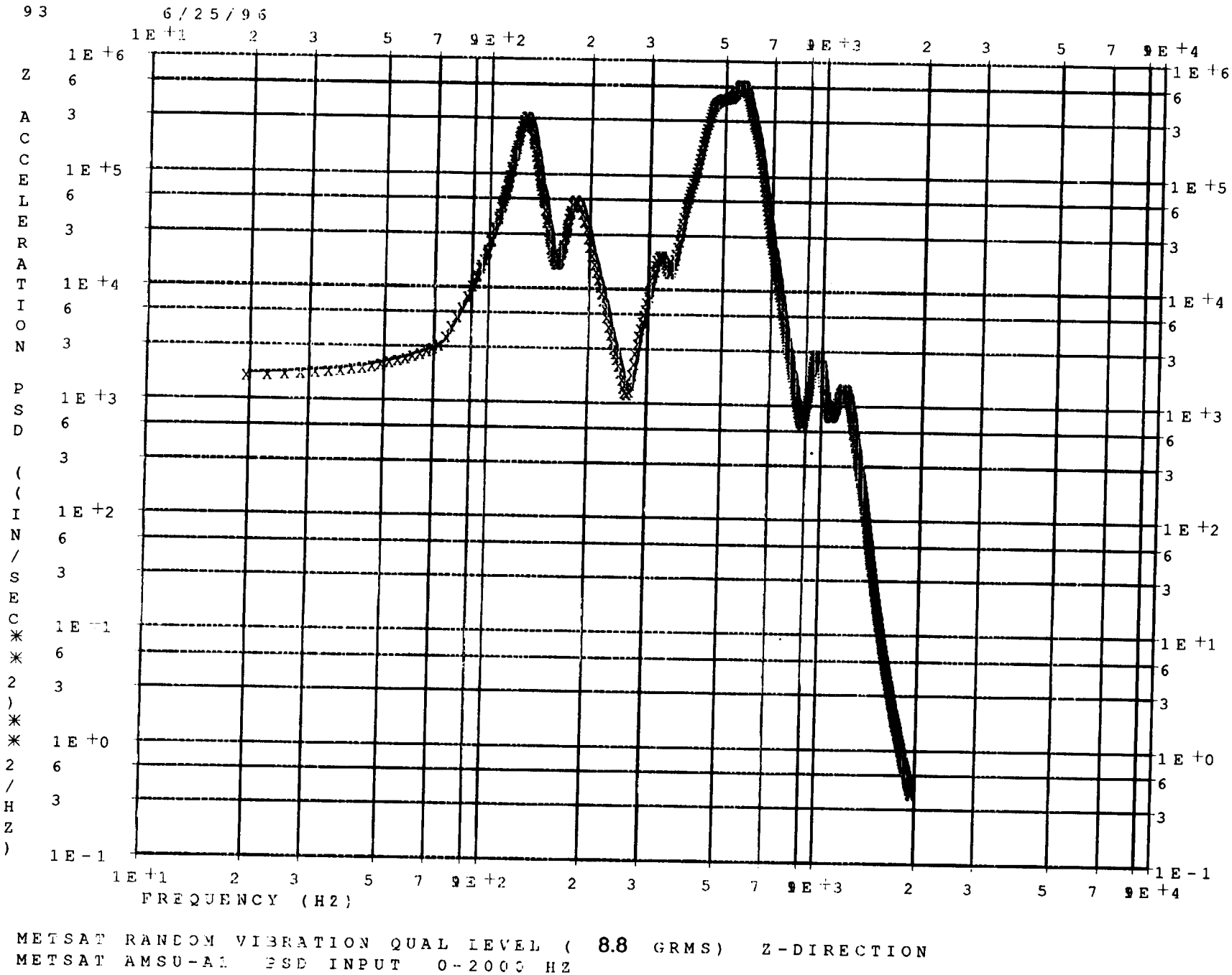


Figure 59 METSAT AMSU-A1 Random Vibration PSD Curve Response, Upper Card Cage Card Z-Load Z-Response, 28.25 grms

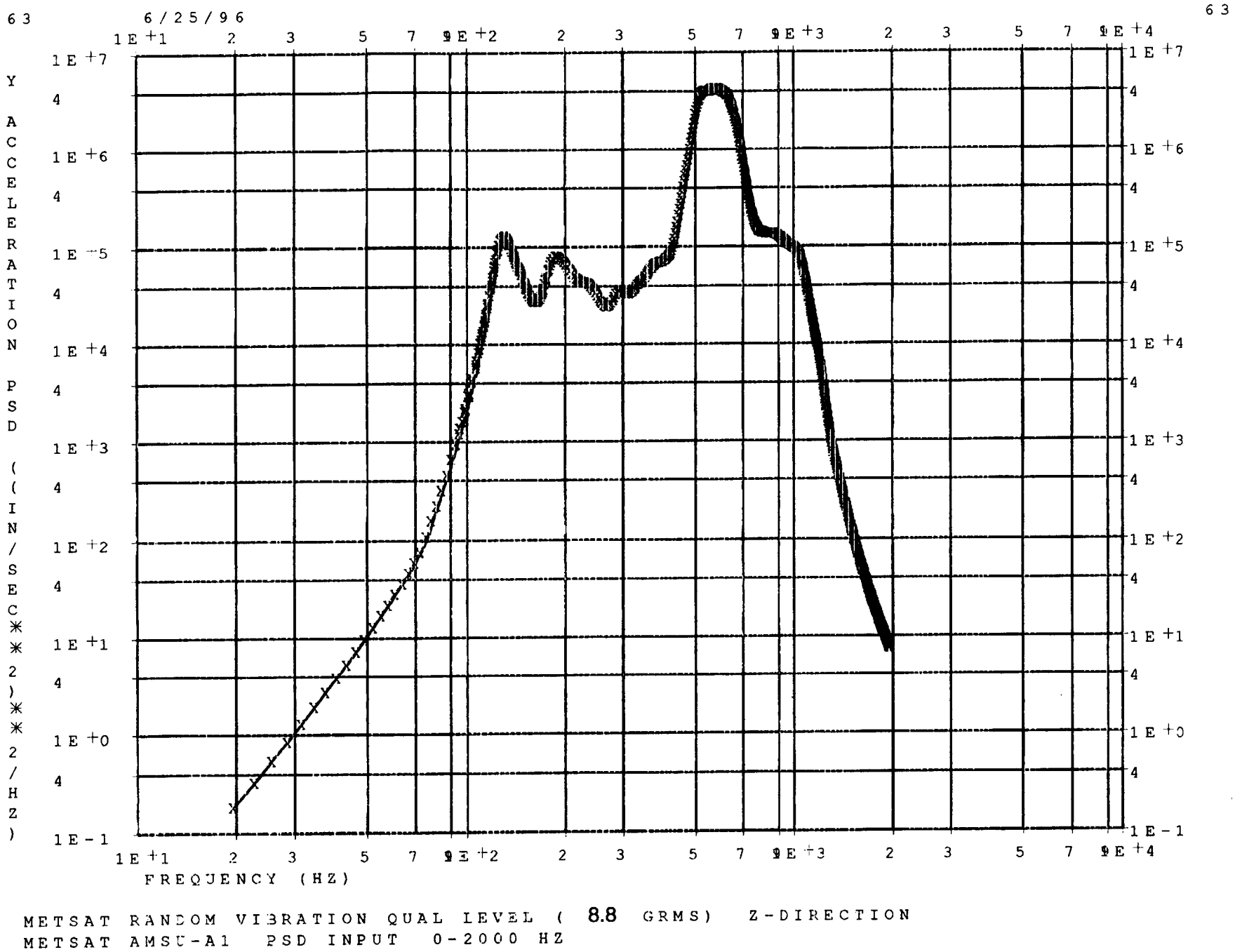


Figure 60 METSAT AMSU-A1 Random Vibration PSD Curve Response
Power Control/Monitor Bracket Z-Load Y-Response - 75.97 grms

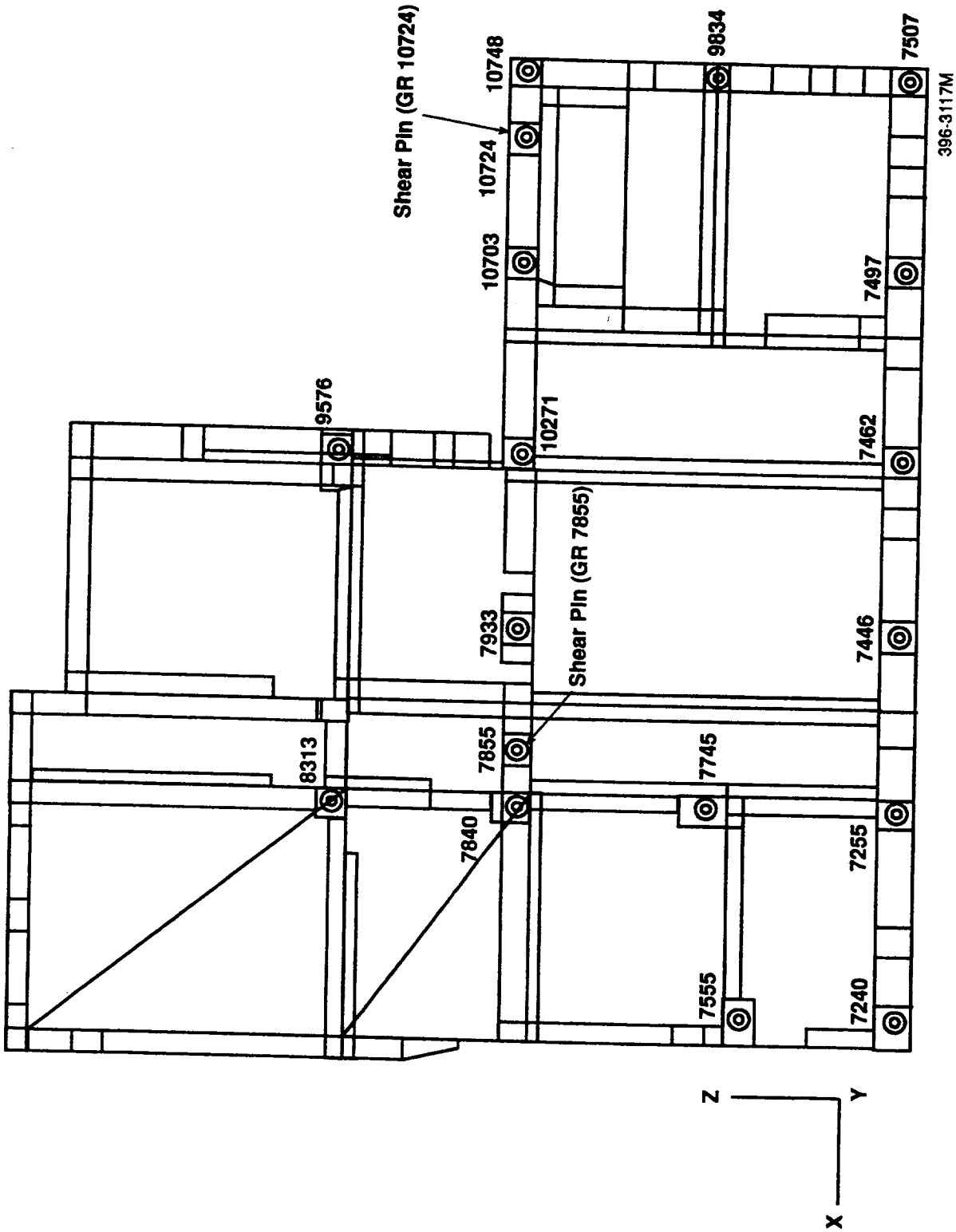


Figure 61 METSAT AMSU-A1 1331552-1 Sidemount Mounting Bolt Grids

Appendix A

NASTRAN FINITE ELEMENT MODEL

Appendix A

NASTRAN FINITE ELEMENT MODEL

The NASTRAN finite element model of the METSAT AMSU-A1 Module is shown as an assembly in Figures A-1 through 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 10738A.

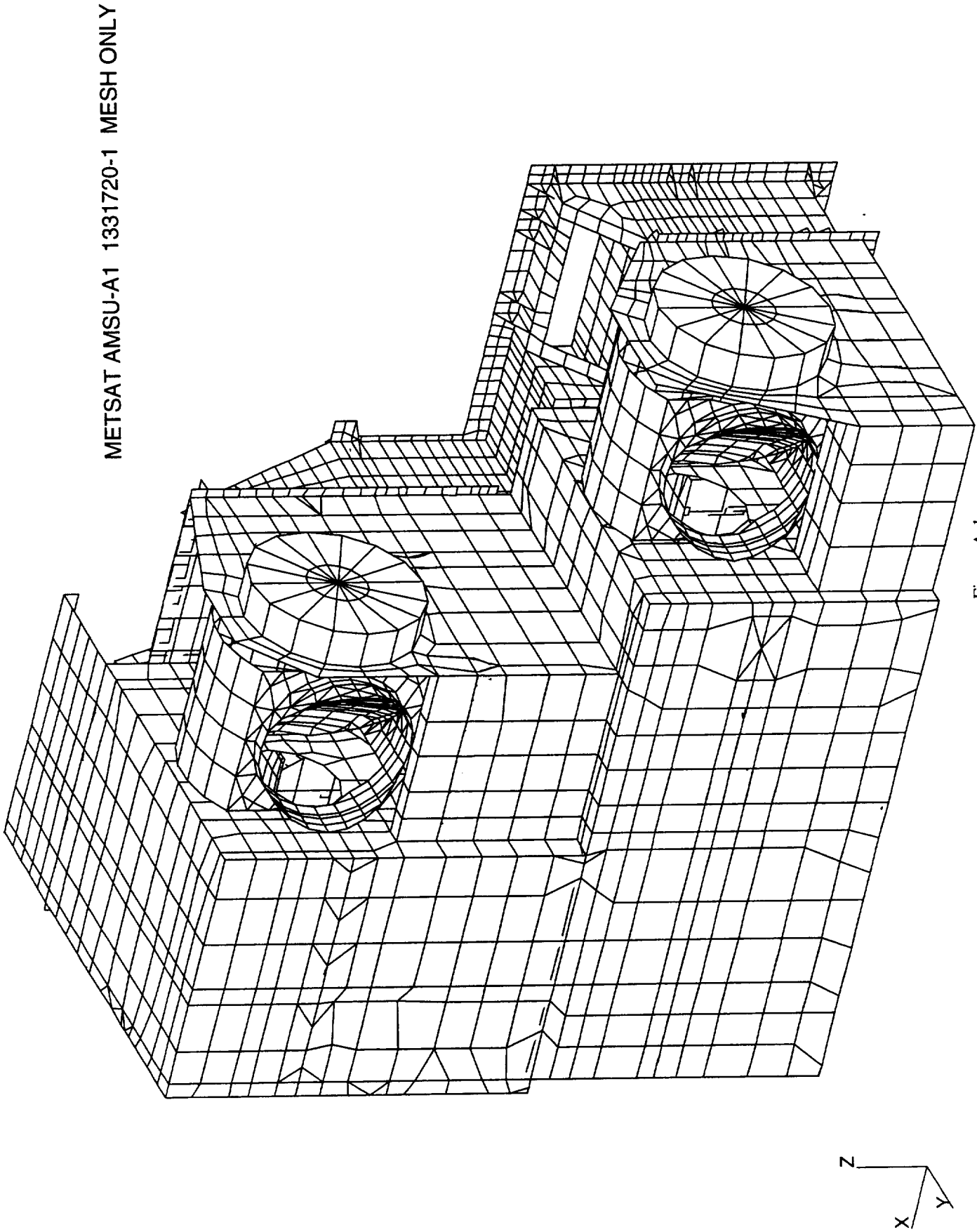


Figure A-1

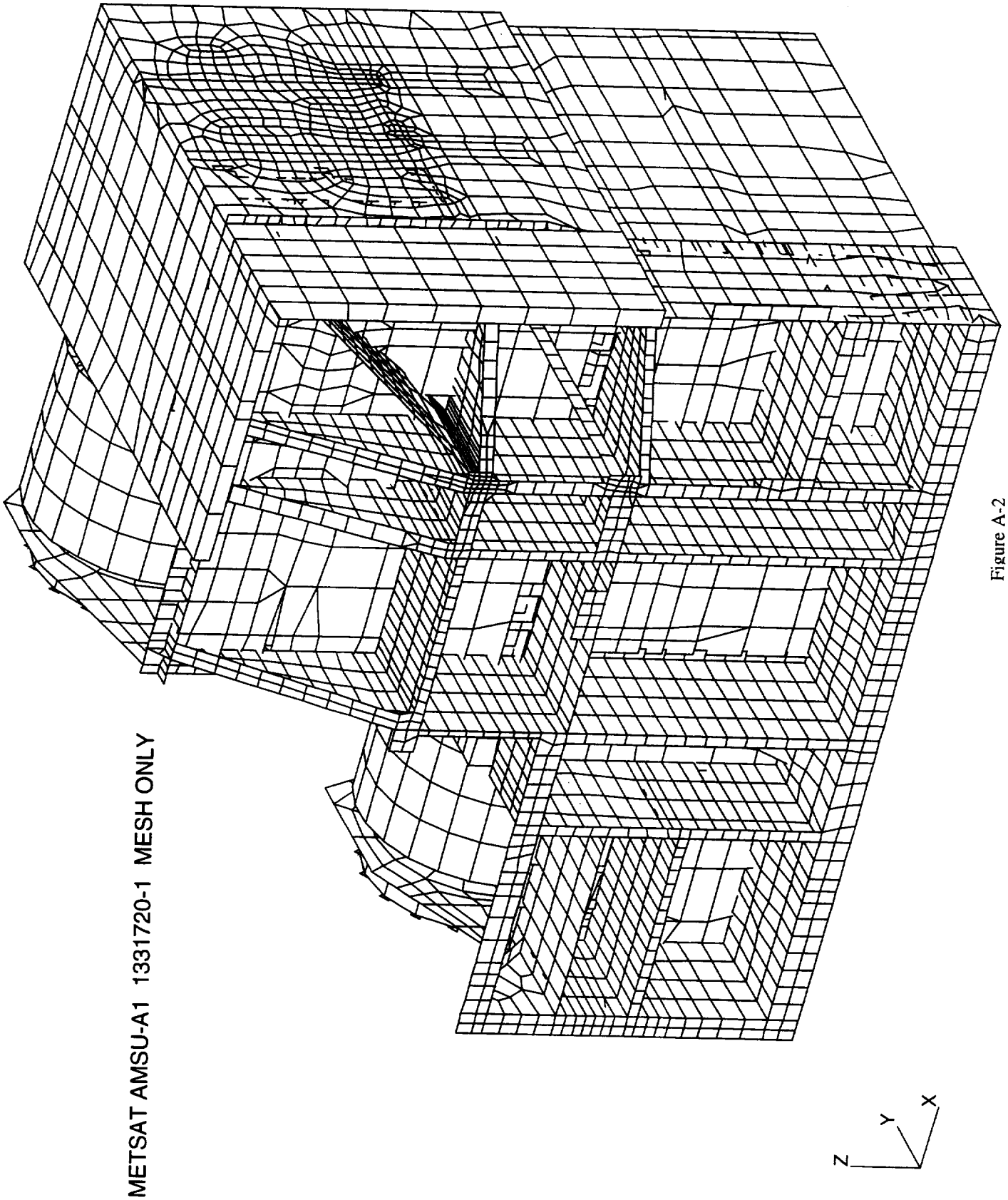


Figure A-2

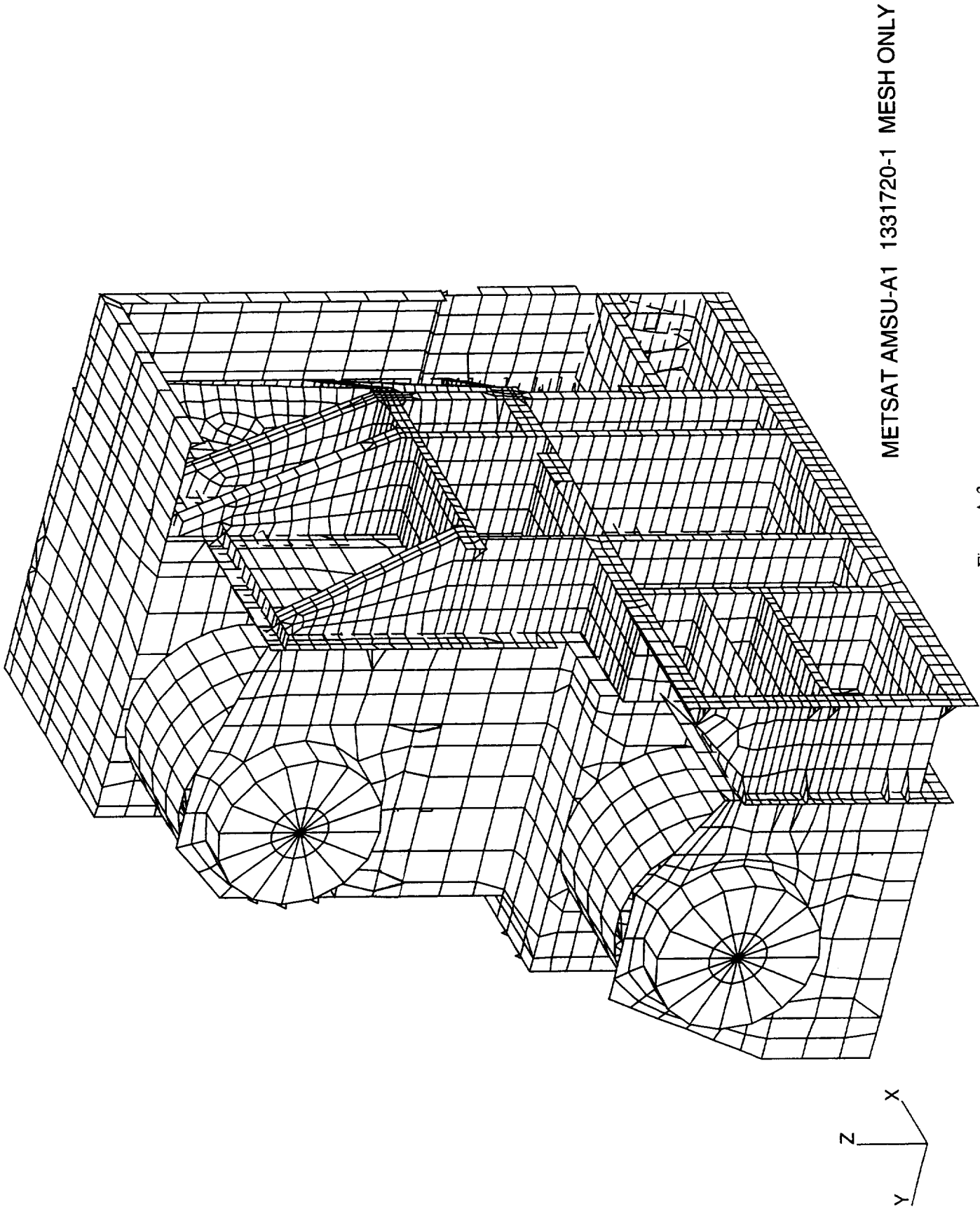


Figure A-3

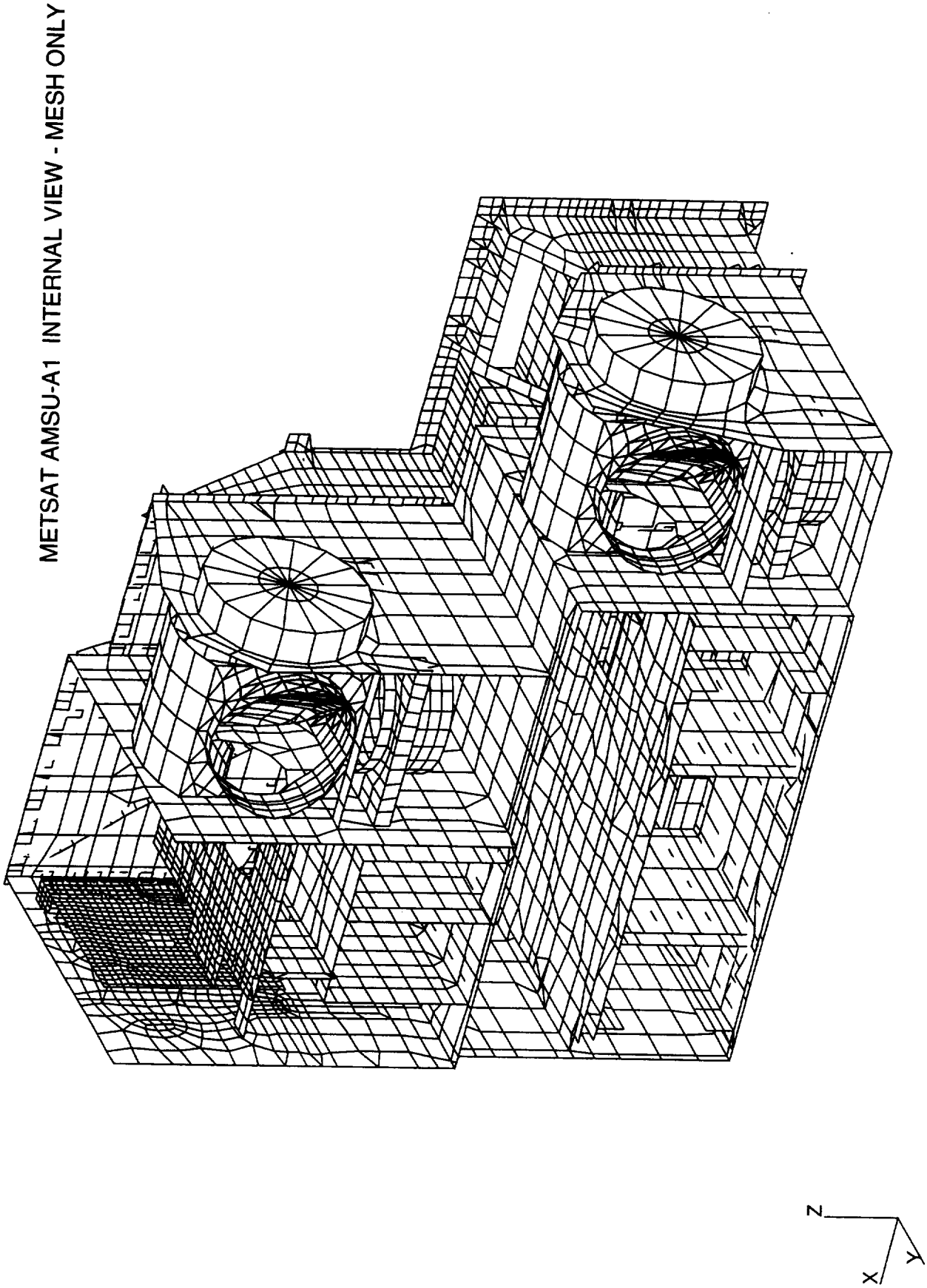


Figure A-4

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 which results from this multiplication can be thought of as the internal forces which 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 1.0E-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 1.0E-5."

Thus terms of the KFFRN matrix need be less than 1.0E-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 1.0E-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,,,,/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
```

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 COORD 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 0 <0,.156,0>
 30      $
 31      $       1331404 LOWER BASEPLATE CONCEPT (METSAT)
 32      $
 33      $       1331552 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 .062) 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	28	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  4.438663E+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  3.992640E-01 -8.962552E-01 *
```

KFFR

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	7288 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	-1.08866E-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	11978 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	12979 T3	-1.27185E-02	12980 T3	-1.70832E-02
13016 T3	-1.08438E-02	7861 T1	3.95770E-02	7861 R3	1.33432E-02	7844 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	1.46524E-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	13003 T3	2.97717E-02
12921 T3	-1.11552E-02	12926 T3	1.55581E-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	-1.85837E-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	10508 T1	2.10348E-02	10580 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	-1.21681E-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	-1.87614E-02	9222 R3	1.43540E-02	12812 T3	-2.09189E-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	-1.51186E-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	-1.42288E-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	-3.87163E-02	2231 T2	1.52732E-02	8139 R1	1.80068E-02
8140 T2	4.18293E-02	5522 T2	-2.15883E-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	-1.27398E-02	12623 T1	1.60772E-02	12623 T2	-2.62618E-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	2.85386E-02	12911 T2	1.40718E-02	12911 T3	-1.03628E-02
13005 T3	-4.86314E-02	13006 T3	2.82980E-02	13006 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	-5.47403E-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	12968 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	1.28469E-02
12650 T2	-1.37819E-02	12650 R3	2.67161E-02	12569 T2	2.13829E-02	12569 R3	1.95174E-02	12495 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

KFFR

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	3.67681E-02
10661	T2	-1.04599E-01	10661	R1	-3.54153E-02	10706	R3	-7.46095E-02	10665	T2	-1.03434E-01	10665	R1	-2.80014E-02
10665	R3	3.75712E-02	10666	T2	1.03435E-01	10666	R1	3.44705E-02	12753	T2	3.90570E-02	12771	T2	-1.95286E-02
12771	R1	1.55282E-02	10713	T2	2.16411E-02	10717	T2	-2.16411E-02	12754	T2	4.05787E-02	12772	T2	-1.93901E-02
12772	R1	1.19933E-02	12772	R3	-1.06700E-02	10714	T2	-2.16411E-02	10718	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	12218	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	8.86483E-02
10676	T2	1.79895E-01	10676	R1	6.63246E-02	12758	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	12278	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	-2.51215E-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	1.21815E-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	-5.33418E-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	-4.39428E-02	10686	T2	1.32609E-01	10686	R3	4.18619E-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	-3.26150E-01	1395	T3	1.05597E-02	1395	R2	9.19131E-02
5587	T1	-4.06381E-01	5587	R2	6.23101E-02	1385	T1	-1.52768E-01	1385	T2	-7.44387E-02	1385	T3	2.06480E-02
1335	R1	-1.11527E-02	1385	R2	4.23375E-02	5588	T1	-2.50413E-01	5588	R2	3.83925E-02	1375	T1	-1.06256E-01
1375	T2	-7.44384E-02	1375	R1	-1.11527E-02	1375	R2	1.93812E-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	1.65946E-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	1529	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	1.00082E-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	-4.83586E-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	12960	T3	-3.44250E-02	12977	T3	6.20527E-02
12978	T3	-4.17435E-02	12978	R1	-1.35293E-02	12979	T3	1.73157E-02	12980	T3	2.34321E-02	12904	R1	-1.98935E-02
12619	T3	2.21495E-02	12620	T3	1.50663E-02	12620	R1	1.57460E-02	12621	T3	-1.07686E-02	12621	R1	1.93962E-02
12974	T3	1.58784E-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	-1.53875E-02	12617	T3	-1.76908E-02	12615	T3	-1.74684E-02
12615	R1	1.19341E-02	12614	T3	2.58868E-02	12614	R1	1.39568E-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
12958	T3	2.40507E-02	12958	R1	1.62624E-02	12962	T3	-2.62713E-02	12962	R1	1.13483E-02	12961	T3	1.68647E-02
12967	R2	1.14330E-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	8324	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	3.08456E-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	1.66548E-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	12753	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	1.07028E-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	12278	T2	-3.05091E-02
12278	R3	-1.00305E-02	12272	T2	3.97721E-02	12252	T2	-1.98860E-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	1.08997E-02	12425	T2	-1.40010E-02	12384	T2	-1.20458E-02	12423	T2	1.57585E-02	12720	T2	1.01166E-02

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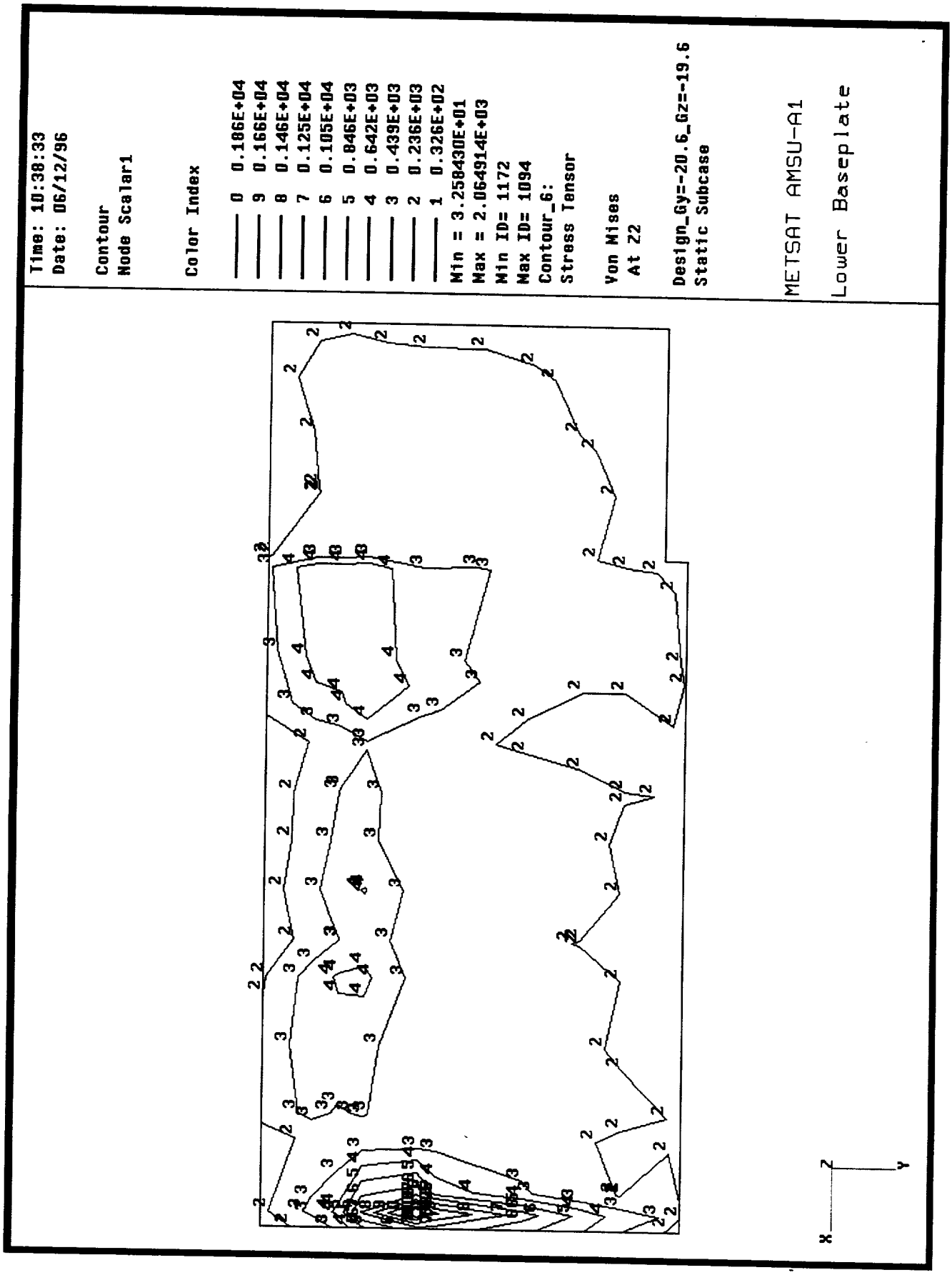
POINT		VALUE	POINT		VALUE	POINT		VALUE	POINT		VALUE	POINT		VALUE
12725	T2	1.16646E-02	12735	T2	-1.47590E-02	12745	T2	1.00117E-02	12749	T2	-1.23361E-02	8552	T2	-1.49986E-02
8185	T3	-7.66028E-02	8185	R2	-1.69037E-02	8164	T3	4.53143E-02	8169	T3	3.12885E-02	8727	T3	-2.37850E-02
8722	T3	2.37850E-02	8710	T3	1.32164E-02	8707	T3	-1.32164E-02	8830	T3	-2.47215E-02	8829	R2	-1.39349E-02
8828	T3	2.47216E-02	3672	T3	-2.46220E-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	-1.18242E-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	2968	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
2964	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	-1.18551E-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	3.56289E-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	2.98297E-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	-3.15561E-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

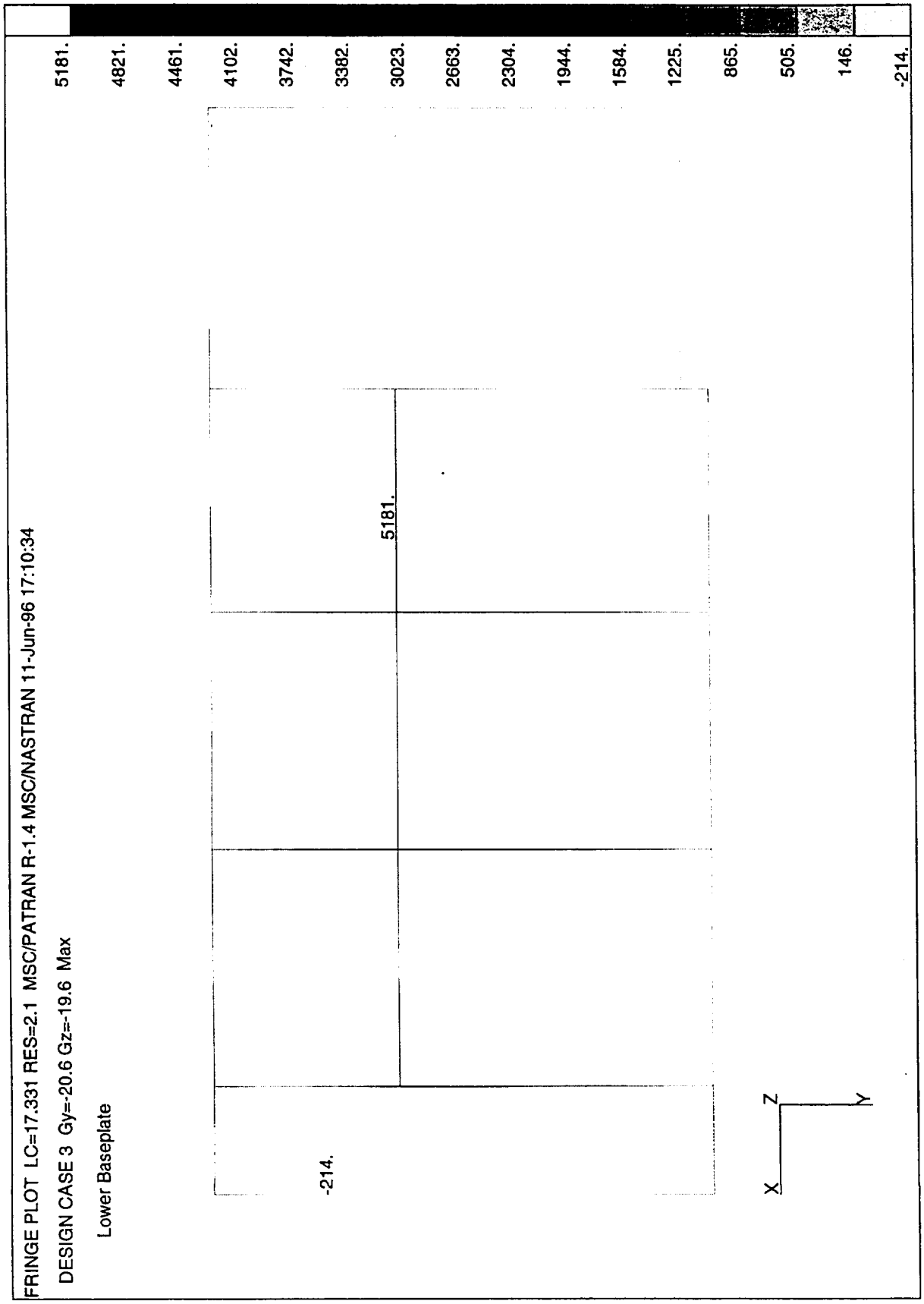
POINT	KFFRN VALUE	POINT	VALUE	POINT	VALUE	POINT	VALUE	POINT	VALUE
COLUMN	1 (4003-T1).								
COLUMN	2 (4003-T2).								
COLUMN	3 (4003-T3).								
COLUMN	4 (4003-R1).								
COLUMN	5 (4003-R2).								
COLUMN	6 (4003-R3).								

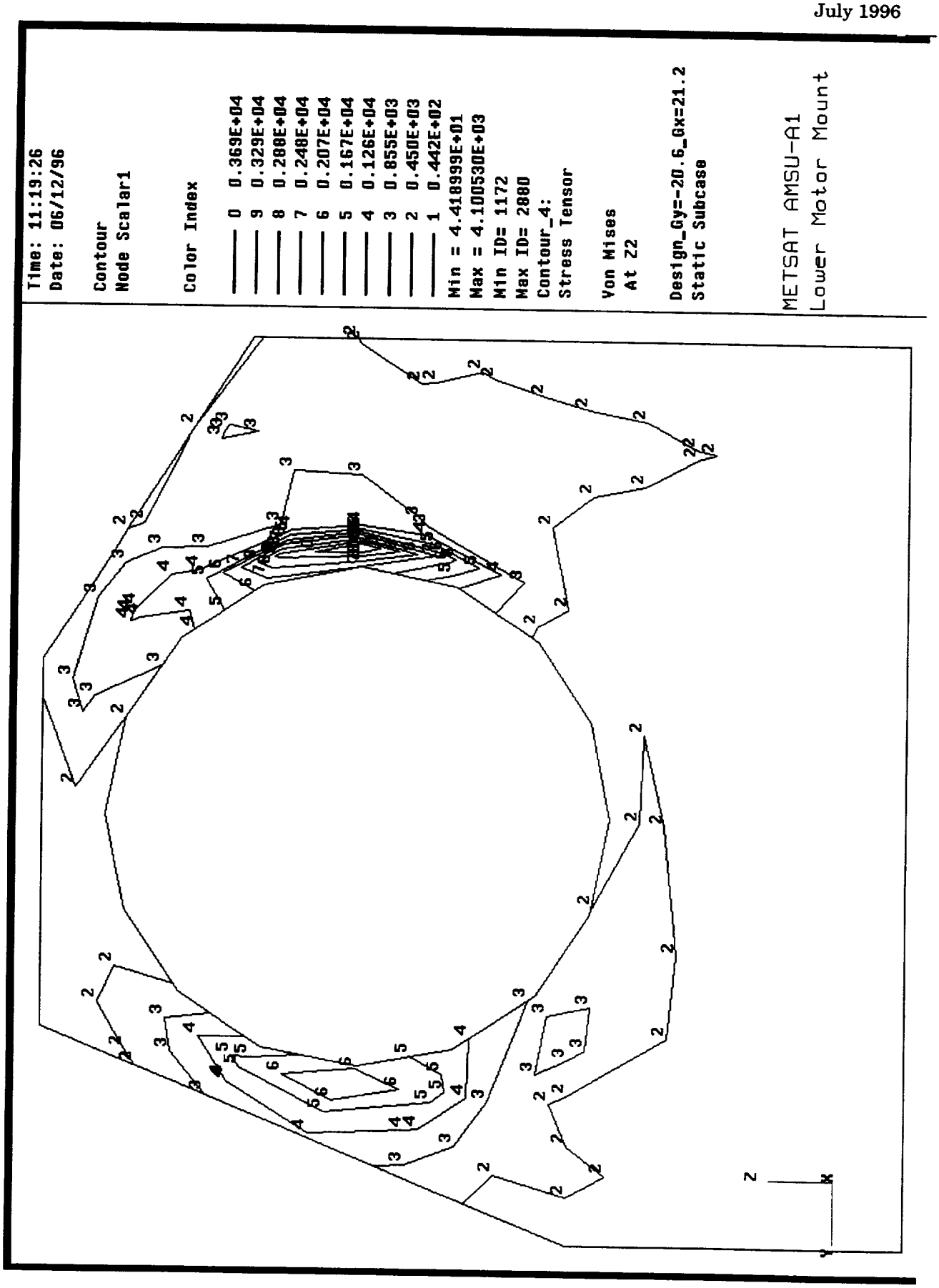
Appendix C

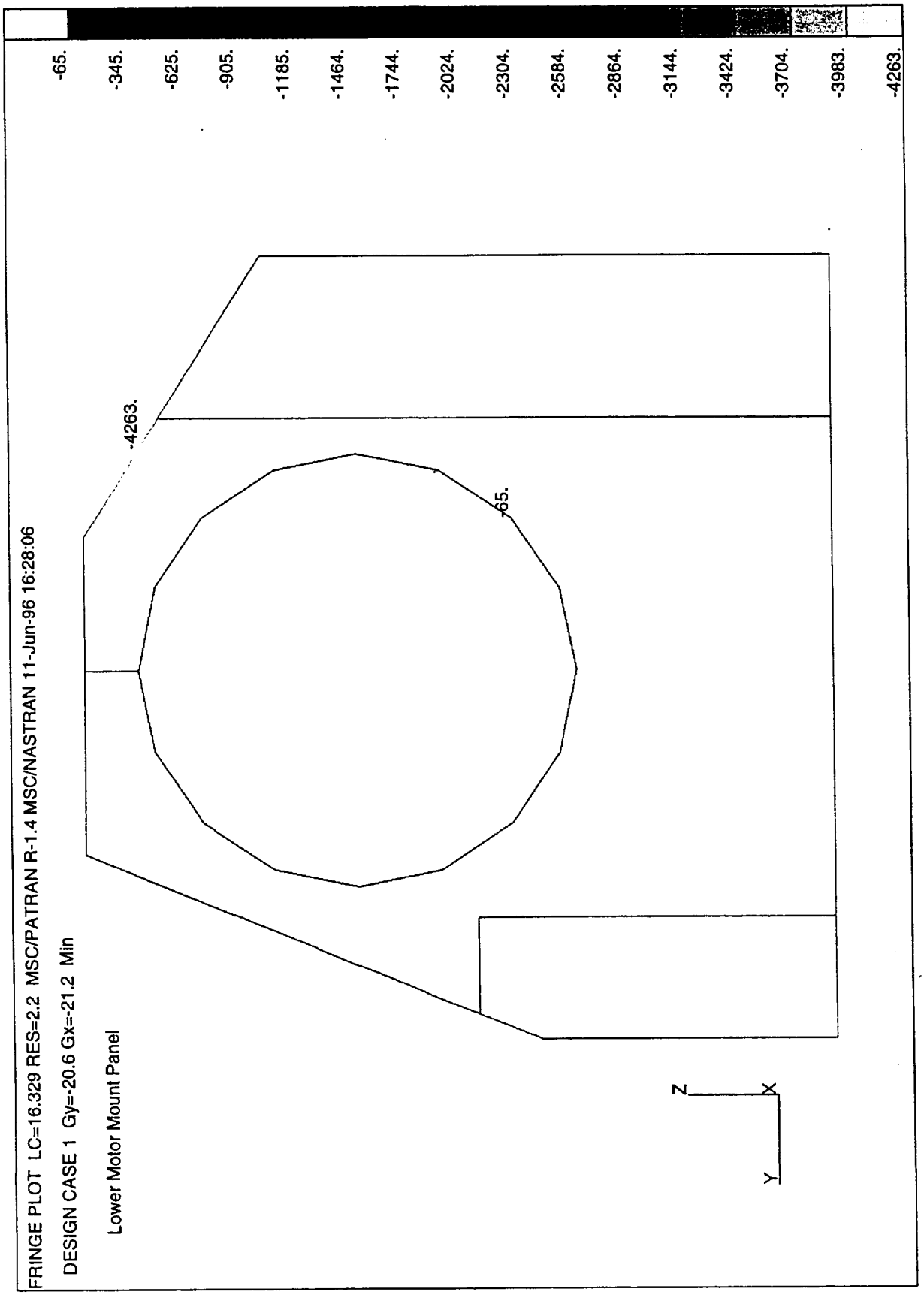
DESIGN LOAD CASES 1 THROUGH 8

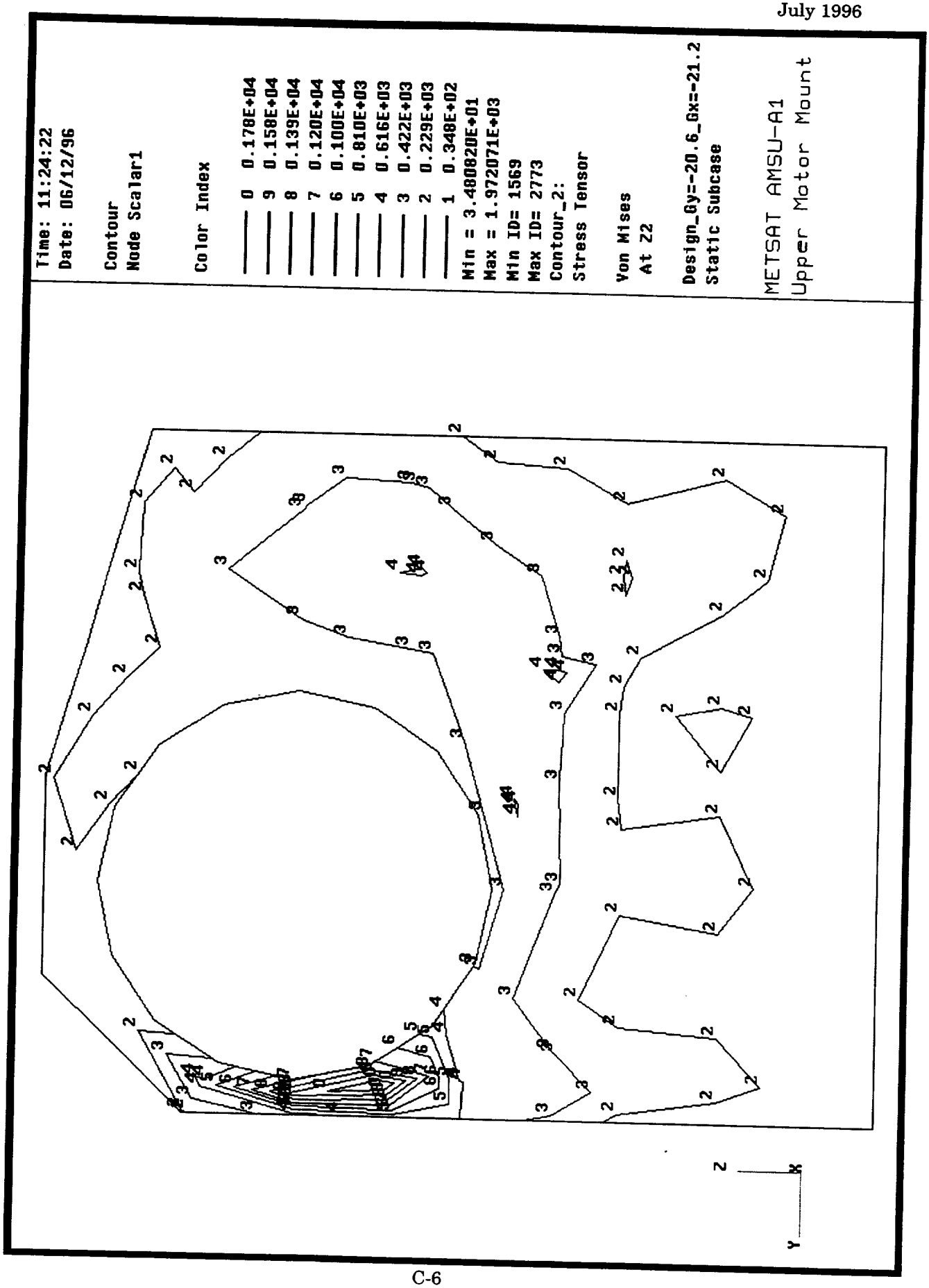
MAXIMUM CONTOUR & STRESS PLOTS

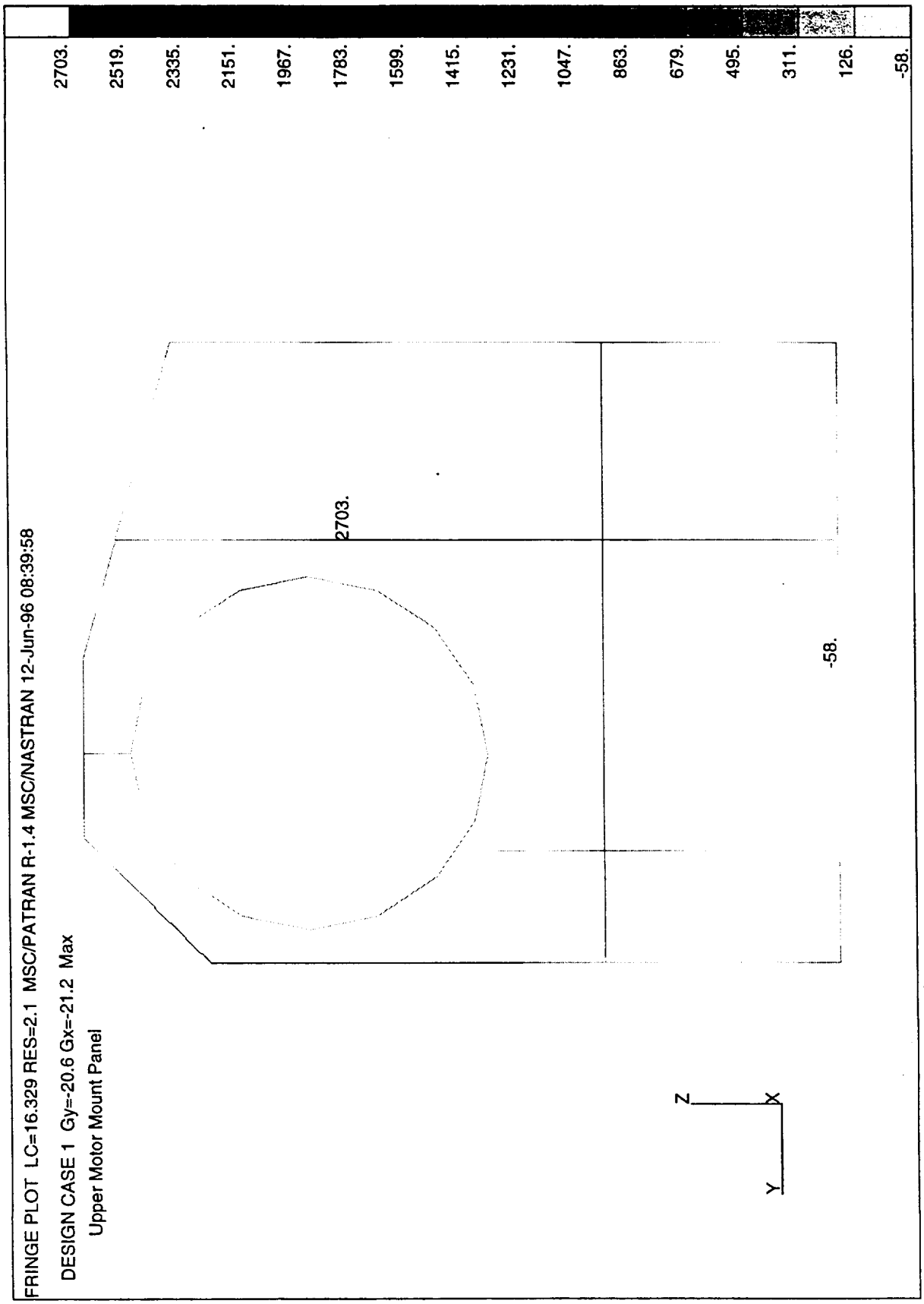

Time: 10:38:33
Date: 06/12/96
Contour
Node Scalar1
Color Index
0 0.186E+04
9 0.166E+04
8 0.146E+04
7 0.125E+04
6 0.105E+04
5 0.846E+03
4 0.642E+03
3 0.439E+03
2 0.236E+03
1 0.326E+02
Min = 3.258430E+01
Max = 2.064914E+03
Min ID= 1172
Max ID= 1094
Contour_6:
Stress Tensor
Von Mises
At Z2
Design_Gy=-20.6_Gz=-19.6
Static Subcase
METSAT AMSU-A1
Lower Baseplate
Z
Y
X

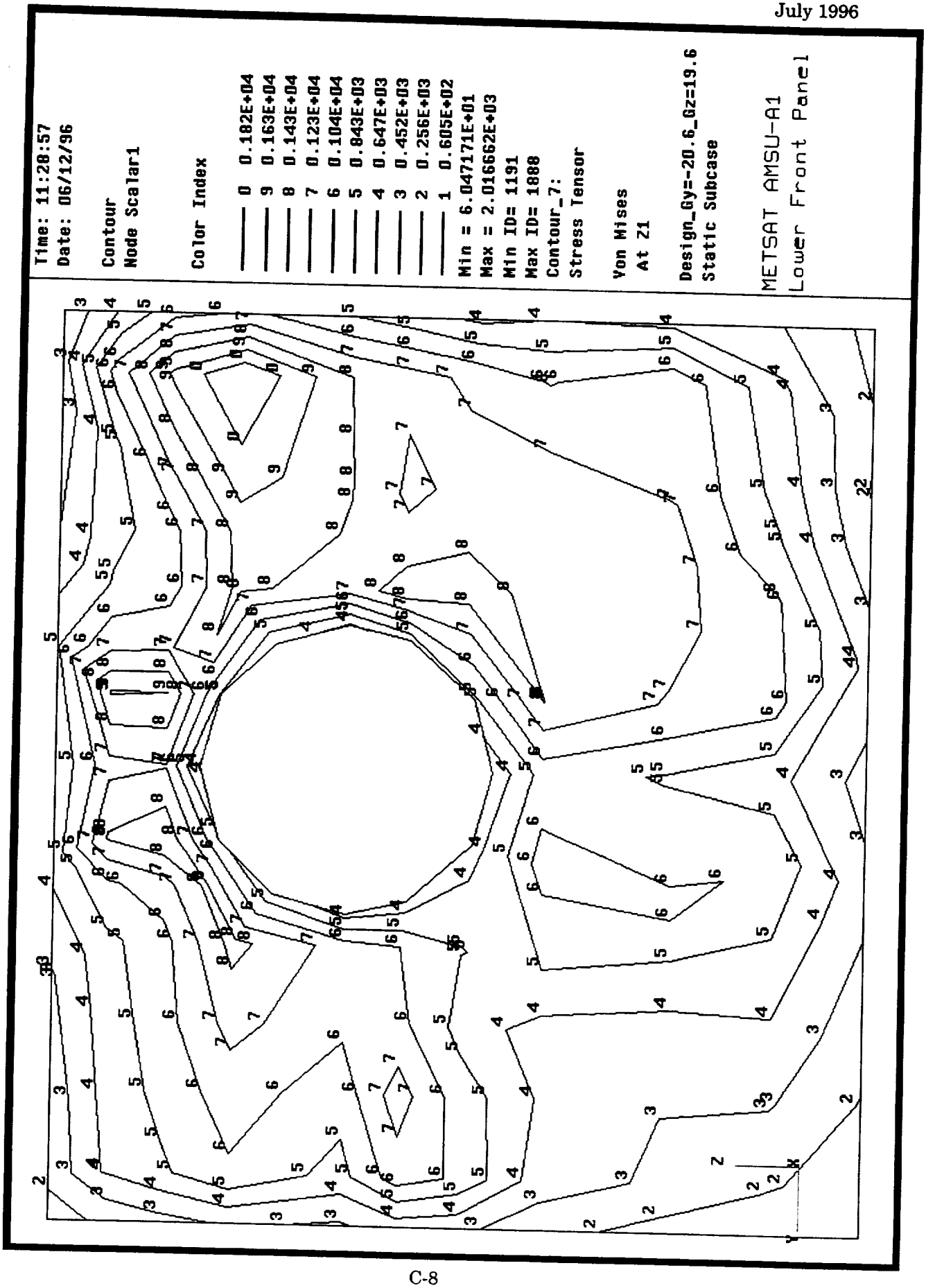

FRINGE PLOT LC=17.331 RES=2.1 MSC/PATRAN R-1.4 MSC/NASTRAN 11-Jun-96 17:10:34
DESIGN CASE 3 Gy=-20.6 Gz=-19.6 Max
Lower Baseplate
5181.
4821.
4461.
4102.
3742.
3382.
3023.
2663.
2304.
1944.
1584.
1225.
865.
505.
146.
-214.
5181.
-214.
X
Z
Y

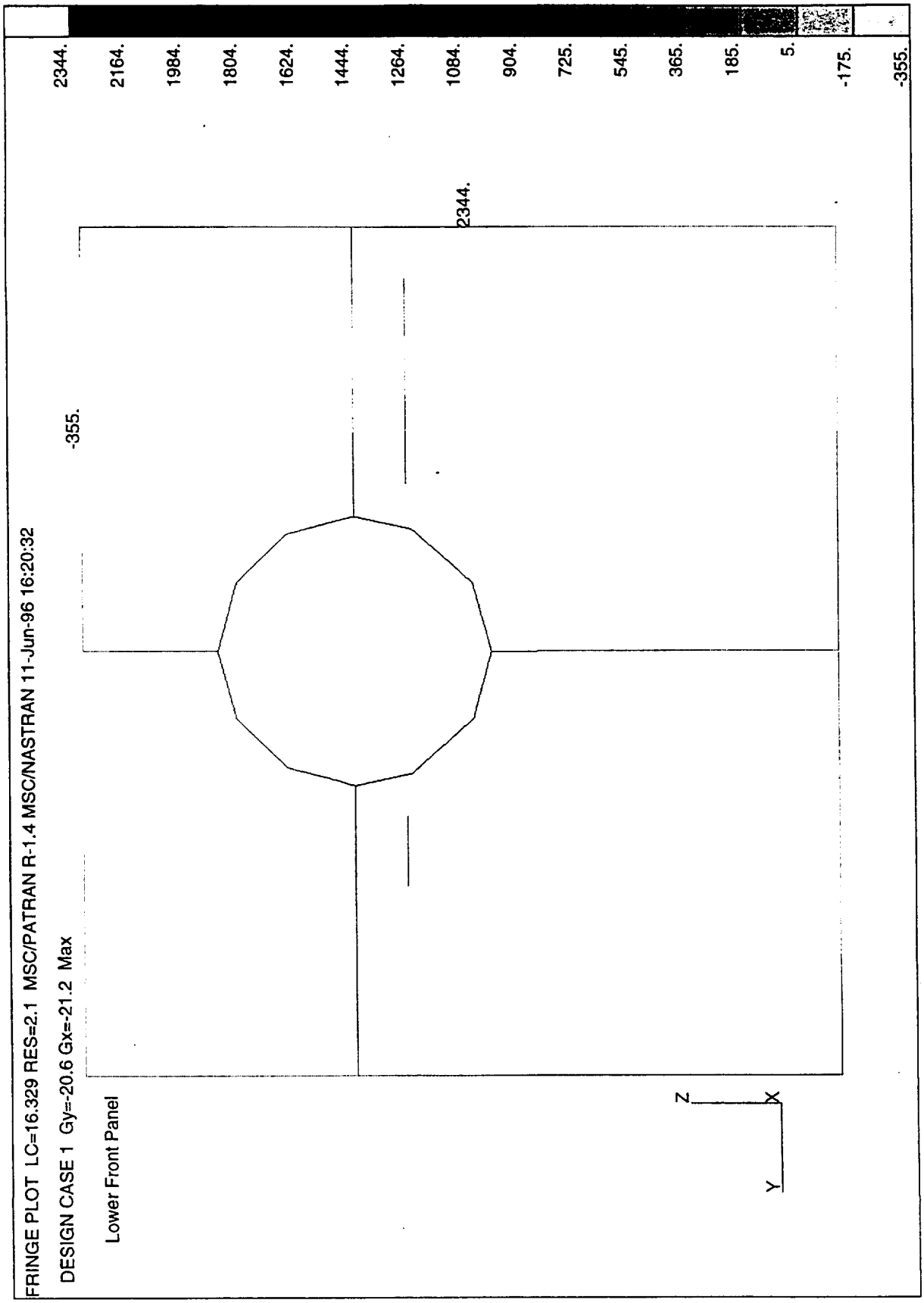

Time: 11:19:26
Date: 06/12/96
Contour
Node Scalar1
Color Index
0 0.369E+04
9 0.329E+04
8 0.288E+04
7 0.248E+04
6 0.207E+04
5 0.167E+04
4 0.126E+04
3 0.855E+03
2 0.450E+03
1 0.442E+02
Min = 4.418999E+01
Max = 4.100530E+03
Min ID= 1172
Max ID= 2880
Contour_4:
Stress Tensor
Von Mises
At Z2
Design_Gy=-20.6_Gx=21.2
Static Subcase
METSAT AMSU-A1
Lower Motor Mount
Z
X
Y

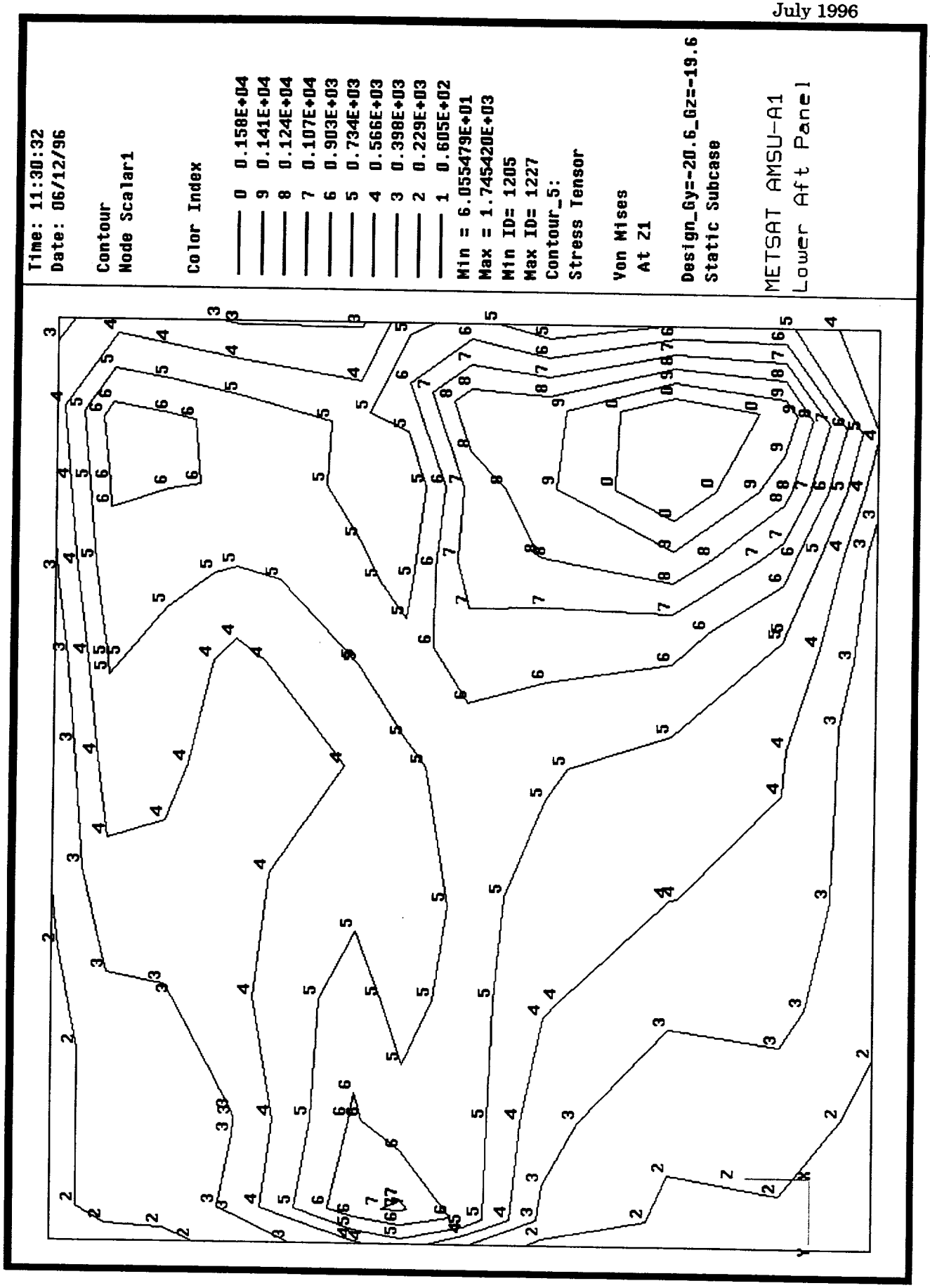

FRINGE PLOT LC=16.329 RES=2.2 MSC/PATRAN R-1.4 MSC/NASTRAN 11-Jun-96 16:28:06
DESIGN CASE 1 Gy=-20.6 Gx=-21.2 Min
Lower Motor Mount Panel
-65.
-345.
-625.
-905.
-1185.
-1464.
-1744.
-2024.
-2304.
-2584.
-2864.
-3144.
-3424.
-3704.
-3983.
-4263.
-4263.
-65.
Z
X
Y

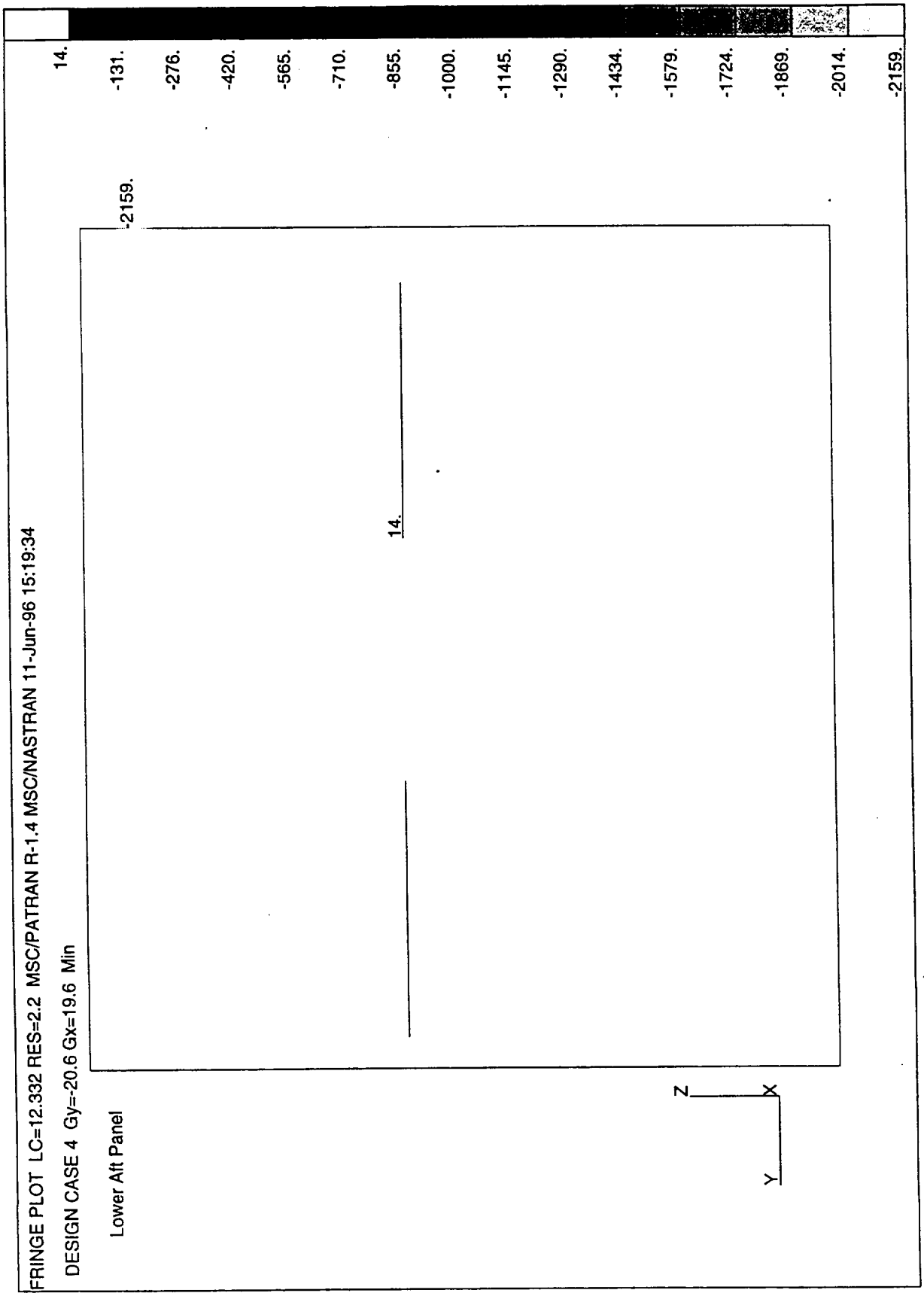

Time: 11:24:22
Date: 06/12/96
Contour
Node Scalar1
Color Index
0 0.178E+04
9 0.158E+04
8 0.139E+04
7 0.120E+04
6 0.100E+04
5 0.810E+03
4 0.616E+03
3 0.422E+03
2 0.229E+03
1 0.348E+02
Min = 3.480820E+01
Max = 1.972071E+03
Min ID= 1569
Max ID= 2773
Contour_2:
Stress Tensor
Von Mises
At Z2
Design_Gy=-20.6_Gx=-21.2
Static Subcase
METSAT AMSU-A1
Upper Motor Mount
Z
X
Y

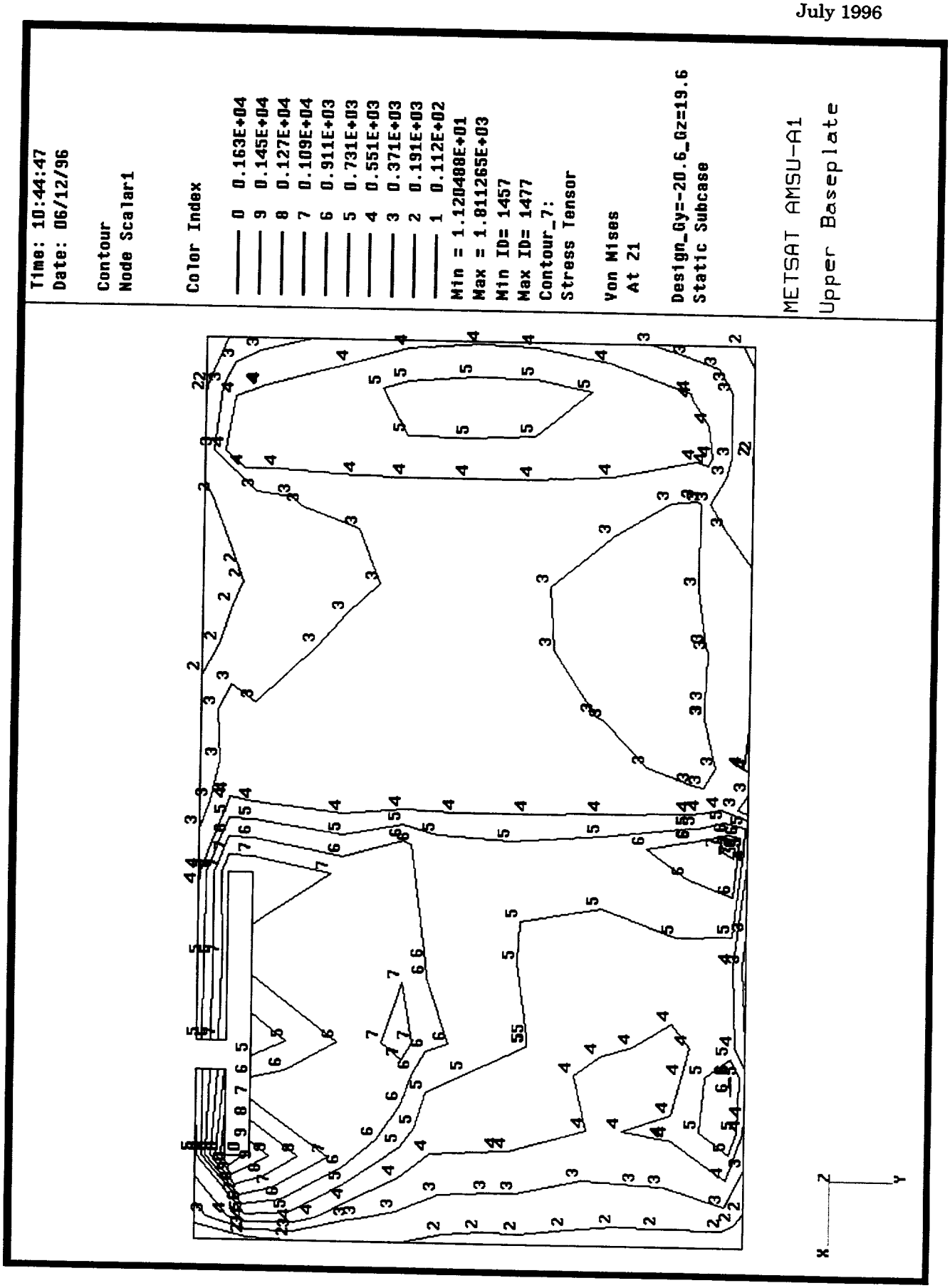

FRINGE PLOT LC=16.329 RES=2.1 MSC/PATRAN R-1.4 MSC/NASTRAN 12-Jun-96 08:39:58
DESIGN CASE 1 Gy=-20.6 Gx=-21.2 Max
Upper Motor Mount Panel
2703.
2519.
2335.
2151.
1967.
1783.
1599.
1415.
1231.
1047.
863.
679.
495.
311.
126.
-58.
2703.
-58.
Z
X
Y

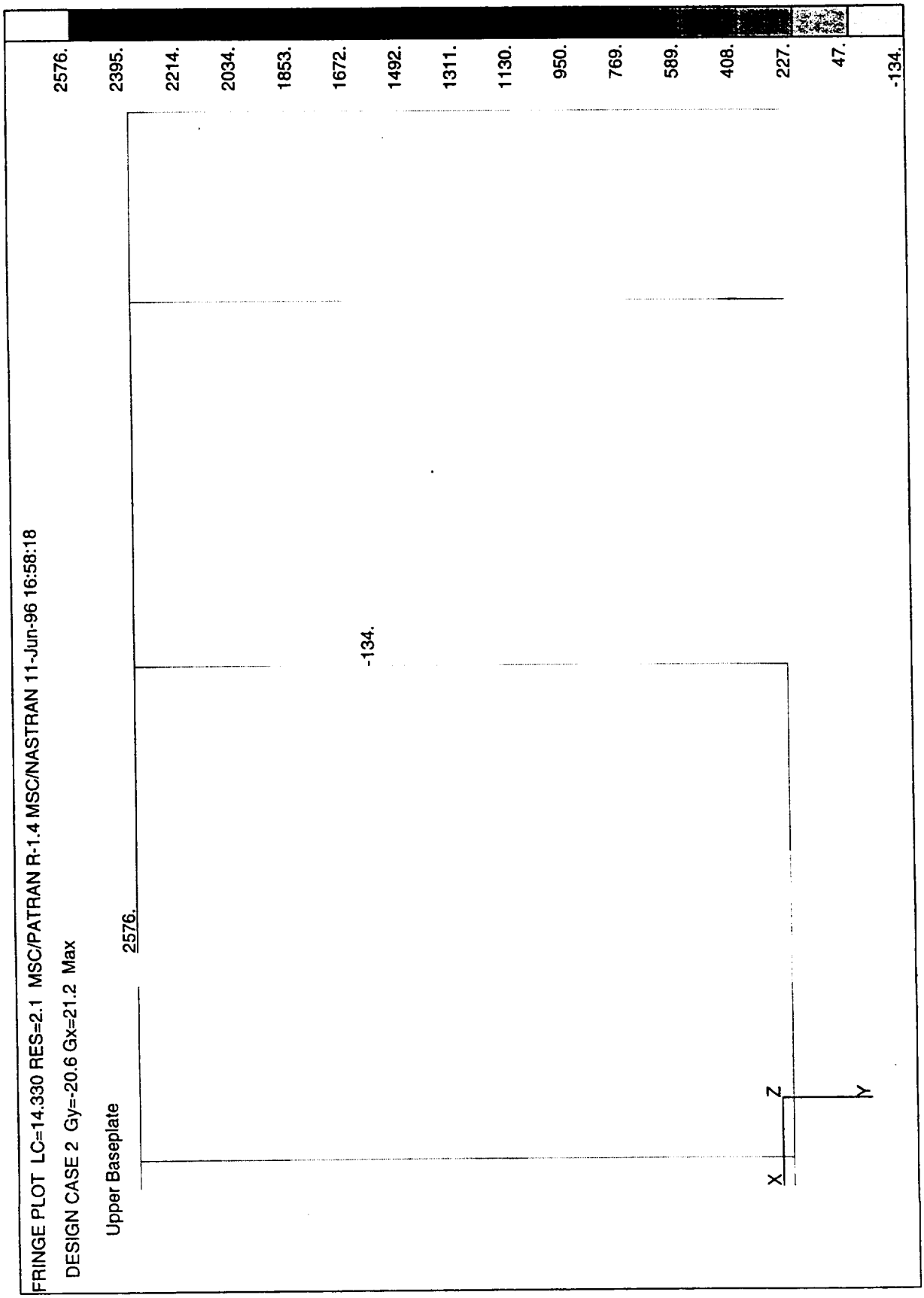

Time: 11:28:57
Date: 06/12/96
Contour
Node Scalar1
Color Index
0 0.182E+04
9 0.163E+04
8 0.143E+04
7 0.123E+04
6 0.104E+04
5 0.843E+03
4 0.647E+03
3 0.452E+03
2 0.256E+03
1 0.605E+02
Min = 6.047171E+01
Max = 2.016662E+03
Min ID= 1191
Max ID= 1888
Contour_7:
Stress Tensor
Von Mises
At Z1
Design_Gy=-20.6_Gz=19.6
Static Subcase
METSAT AMSU-A1
Lower Front Panel

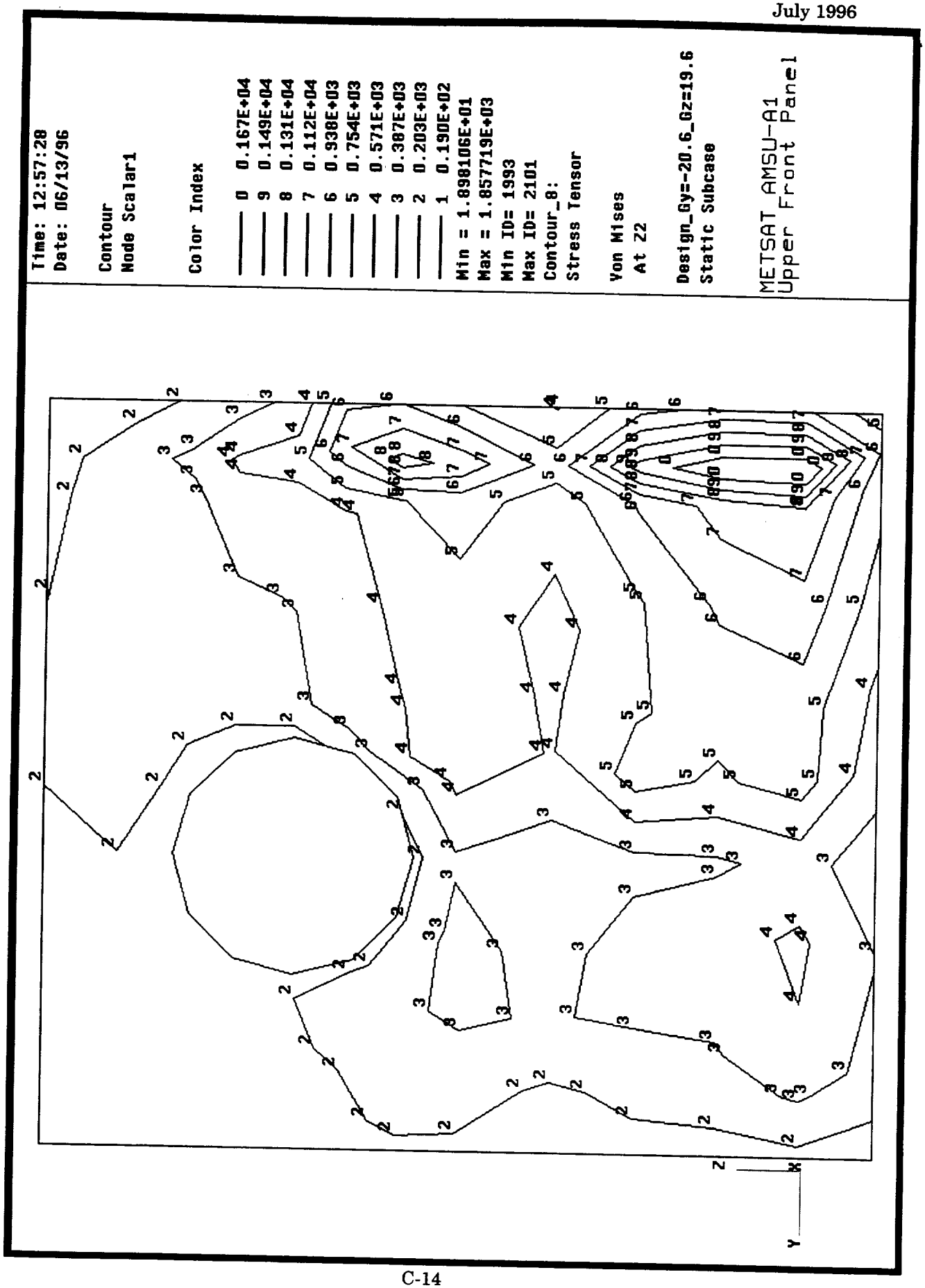

FRINGE PLOT LC=16.329 RES=2.1 MSC/PATRAN R-1.4 MSC/NASTRAN 11-Jun-96 16:20:32
DESIGN CASE 1 Gy=-20.6 Gx=-21.2 Max
Lower Front Panel
2344.
2164.
1984.
1804.
1624.
1444.
1264.
1084.
904.
725.
545.
365.
185.
5.
-175.
-355.
2344.
-355.
Z
X
Y

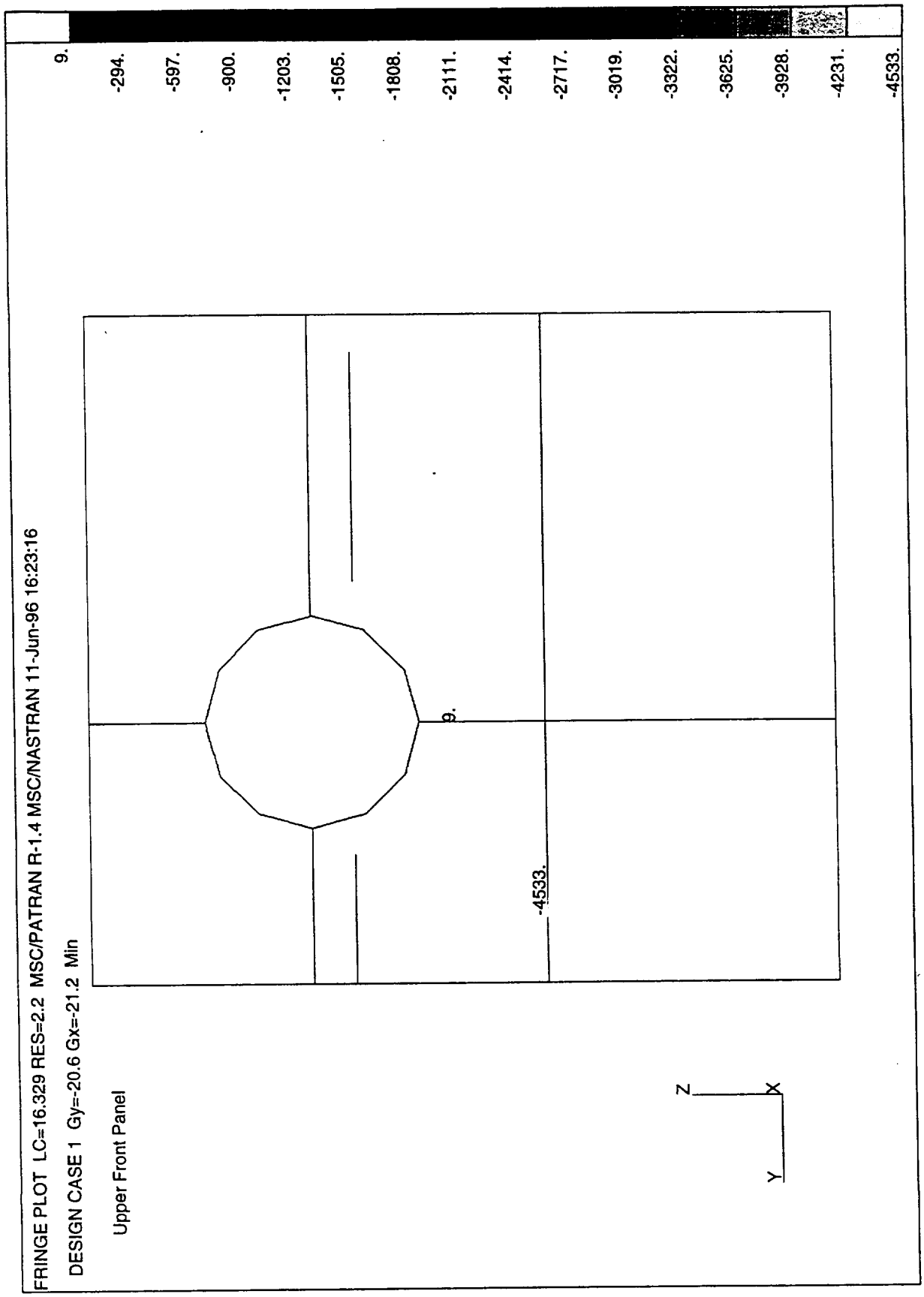

Time: 11:30:32
Date: 06/12/96
Contour
Node Scalar1
Color Index
0 0.158E+04
9 0.141E+04
8 0.124E+04
7 0.107E+04
6 0.903E+03
5 0.734E+03
4 0.566E+03
3 0.398E+03
2 0.229E+03
1 0.605E+02
Min = 6.055479E+01
Max = 1.745420E+03
Min ID= 1205
Max ID= 1227
Contour_5:
Stress Tensor
Von Mises
At Z1
Design_Gy=-20.6_Gz=-19.6
Static Subcase
METSAT AMSU-A1
Lower Aft Panel

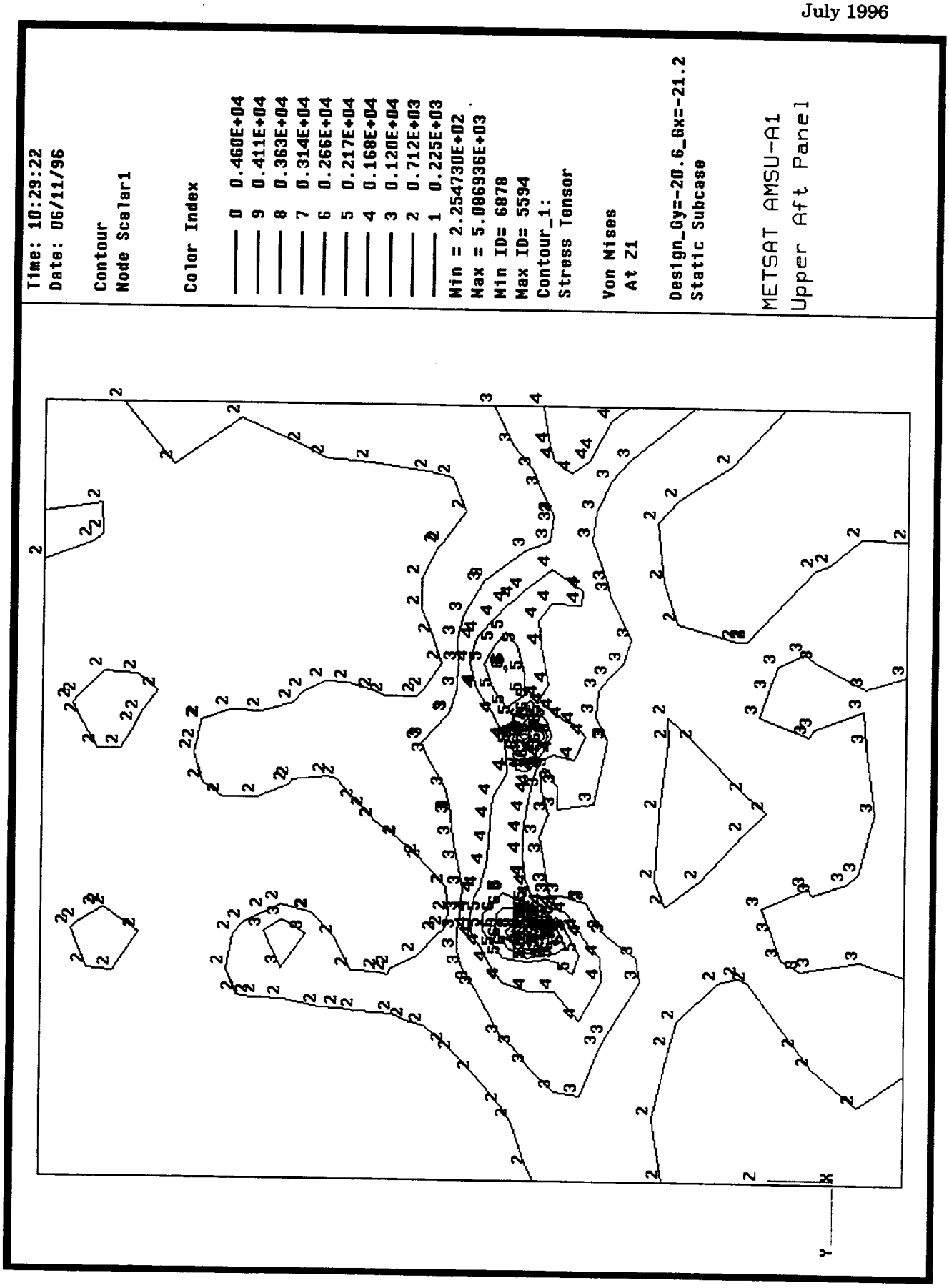

FRINGE PLOT LC=12.332 RES=2.2 MSC/PATRAN R-1.4 MSC/NASTRAN 11-Jun-96 15:19:34
DESIGN CASE 4 Gy=-20.6 Gx=19.6 Min
Lower Aft Panel
14.
-131.
-276.
-420.
-565.
-710.
-855.
-1000.
-1145.
-1290.
-1434.
-1579.
-1724.
-1869.
-2014.
-2159.
-2159.
14.
Z
X
Y

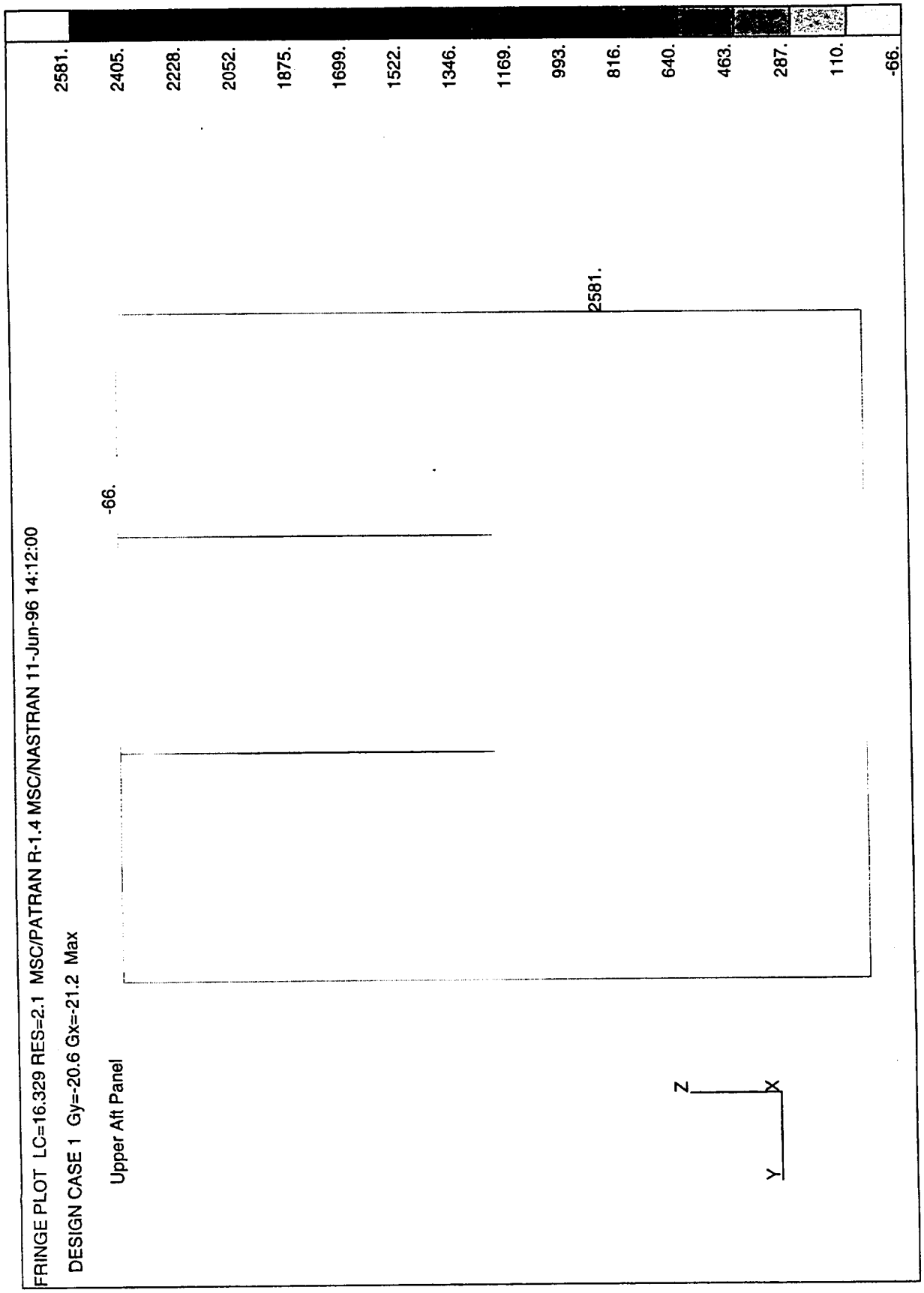

Time: 10:44:47
Date: 06/12/96
Contour
Node Scalar1
Color Index
0 0.163E+04
9 0.145E+04
8 0.127E+04
7 0.109E+04
6 0.911E+03
5 0.731E+03
4 0.551E+03
3 0.371E+03
2 0.191E+03
1 0.112E+02
Min = 1.120488E+01
Max = 1.811265E+03
Min ID= 1457
Max ID= 1477
Contour_7:
Stress Tensor
Von Mises
At Z1
Design_Gy=-20.6_Gz=19.6
Static Subcase
METSAT AMSU-A1
Upper Baseplate
Z
Y
X

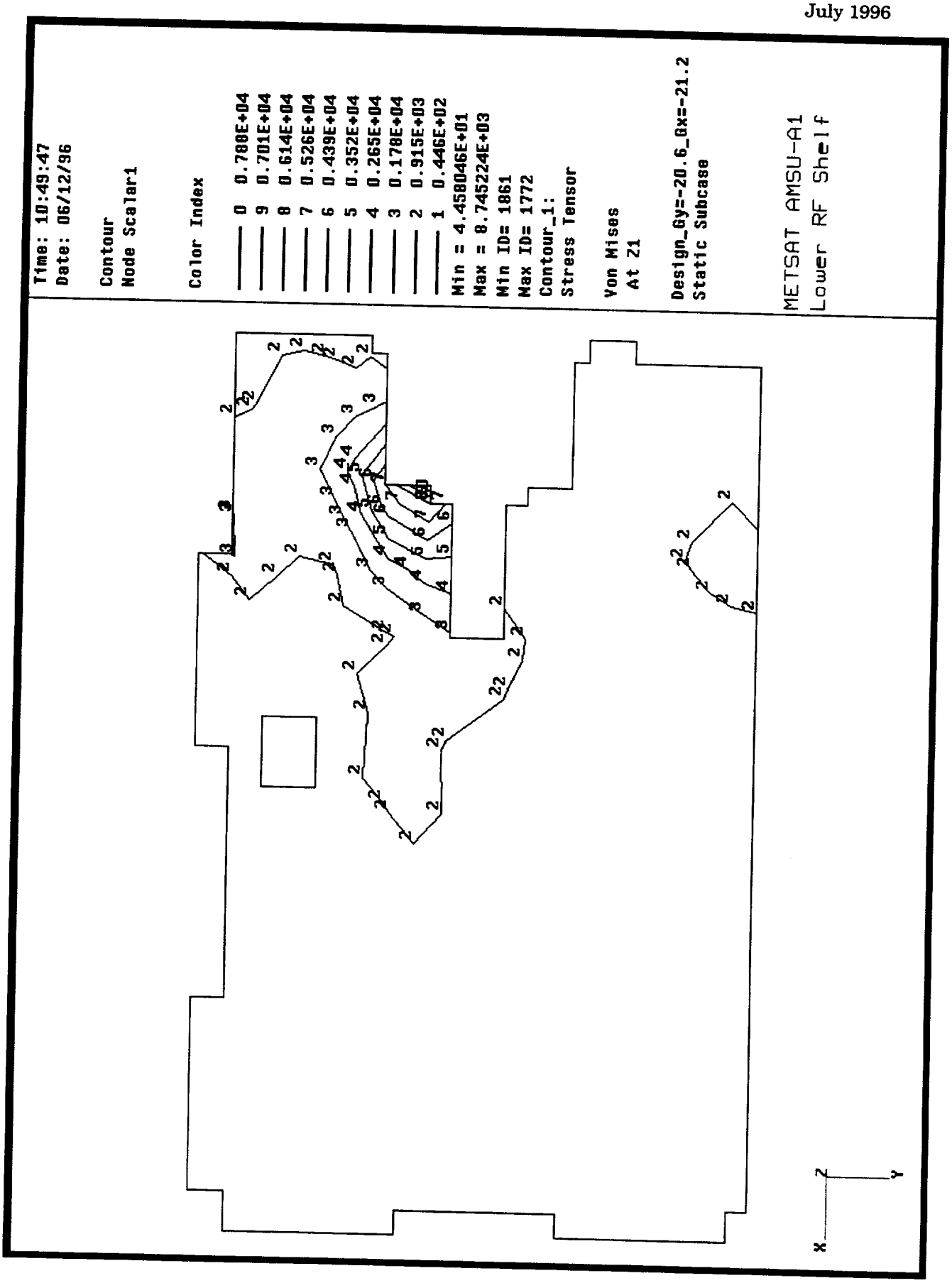

FRINGE PLOT LC=14.330 RES=2.1 MSC/PATRAN R-1.4 MSC/NASTRAN 11-Jun-96 16:58:18
DESIGN CASE 2 Gy=-20.6 Gx=21.2 Max
Upper Baseplate
2576.
-134.
2576.
2395.
2214.
2034.
1853.
1672.
1492.
1311.
1130.
950.
769.
589.
408.
227.
47.
-134.
X
Z
Y

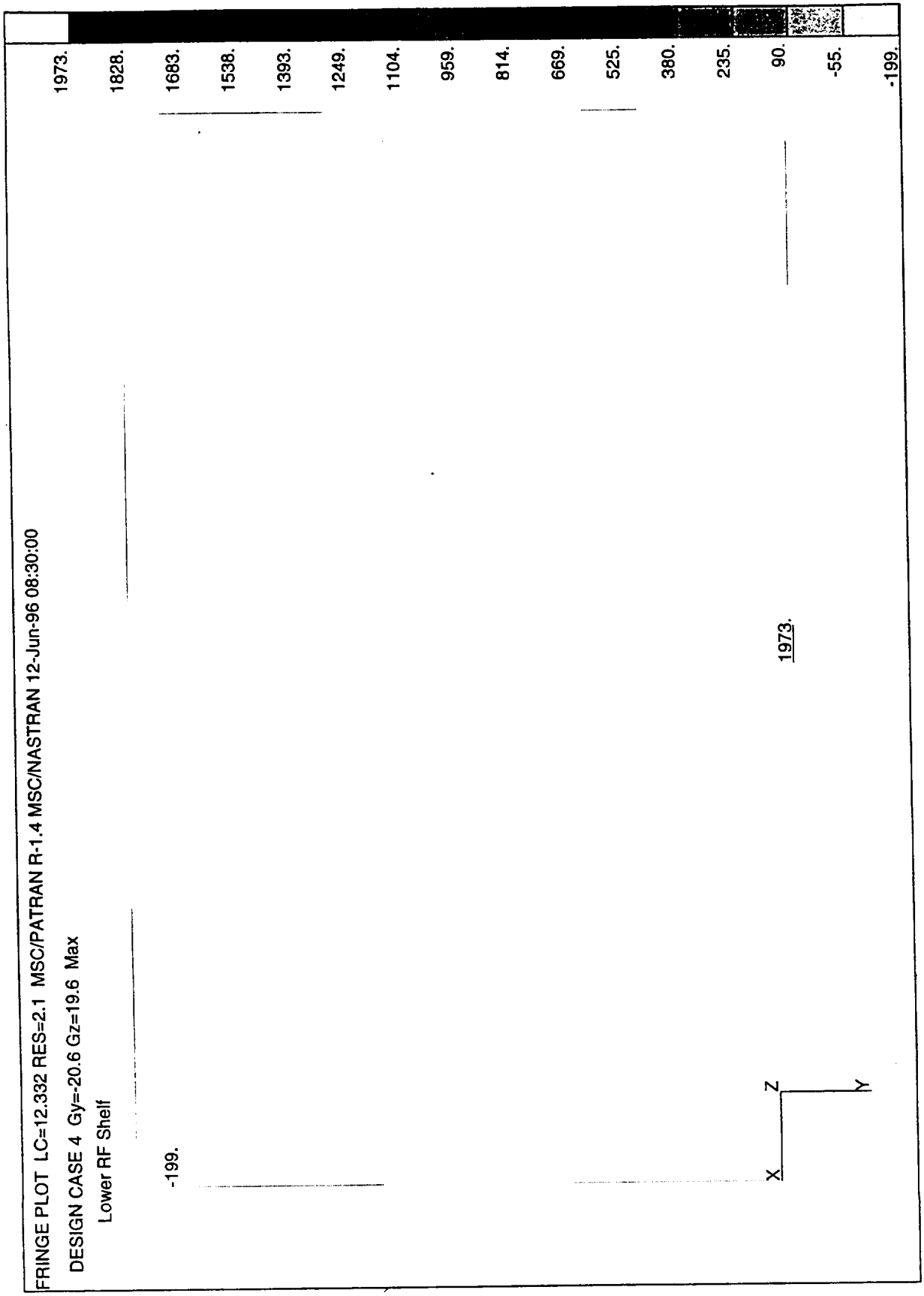

Time: 12:57:28
Date: 06/13/96
Contour
Node Scalar1
Color Index
0 0.167E+04
9 0.149E+04
8 0.131E+04
7 0.112E+04
6 0.938E+03
5 0.754E+03
4 0.571E+03
3 0.387E+03
2 0.203E+03
1 0.190E+02
Min = 1.898106E+01
Max = 1.857719E+03
Min ID= 1993
Max ID= 2101
Contour_8:
Stress Tensor
Von Mises
At Z2
Design_Gy=-20.6_Gz=19.6
Static Subcase
METSAT AMSU-A1
Upper Front Panel
Z
X
Y

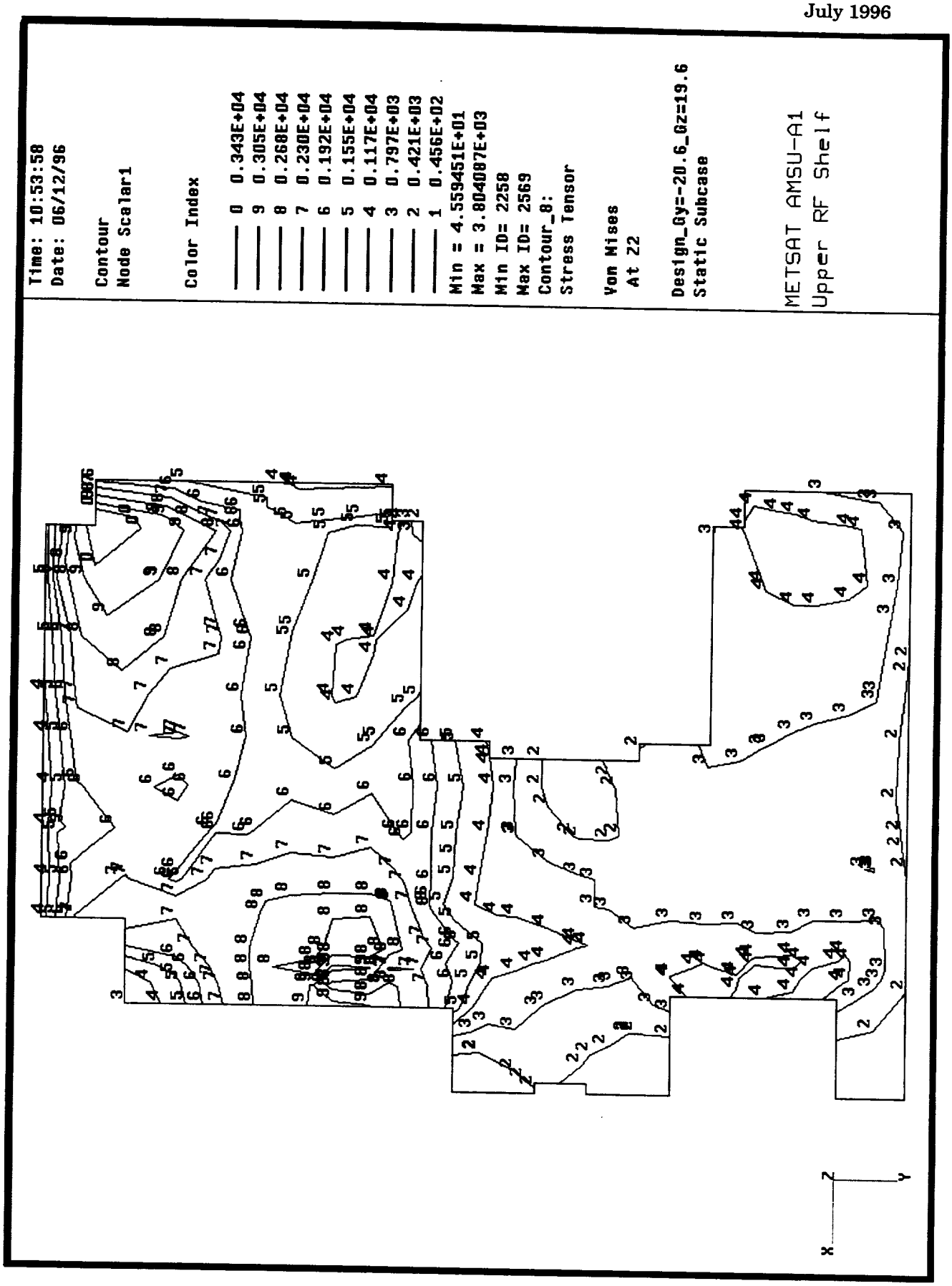

FRINGE PLOT LC=16.329 RES=2.2 MSC/PATRAN R-1.4 MSC/NASTRAN 11-Jun-96 16:23:16
DESIGN CASE 1 Gy=-20.6 Gx=-21.2 Min
Upper Front Panel
9.
-294.
-597.
-900.
-1203.
-1505.
-1808.
-2111.
-2414.
-2717.
-3019.
-3322.
-3625.
-3928.
-4231.
-4533.
9.
-4533.
Z
X
Y

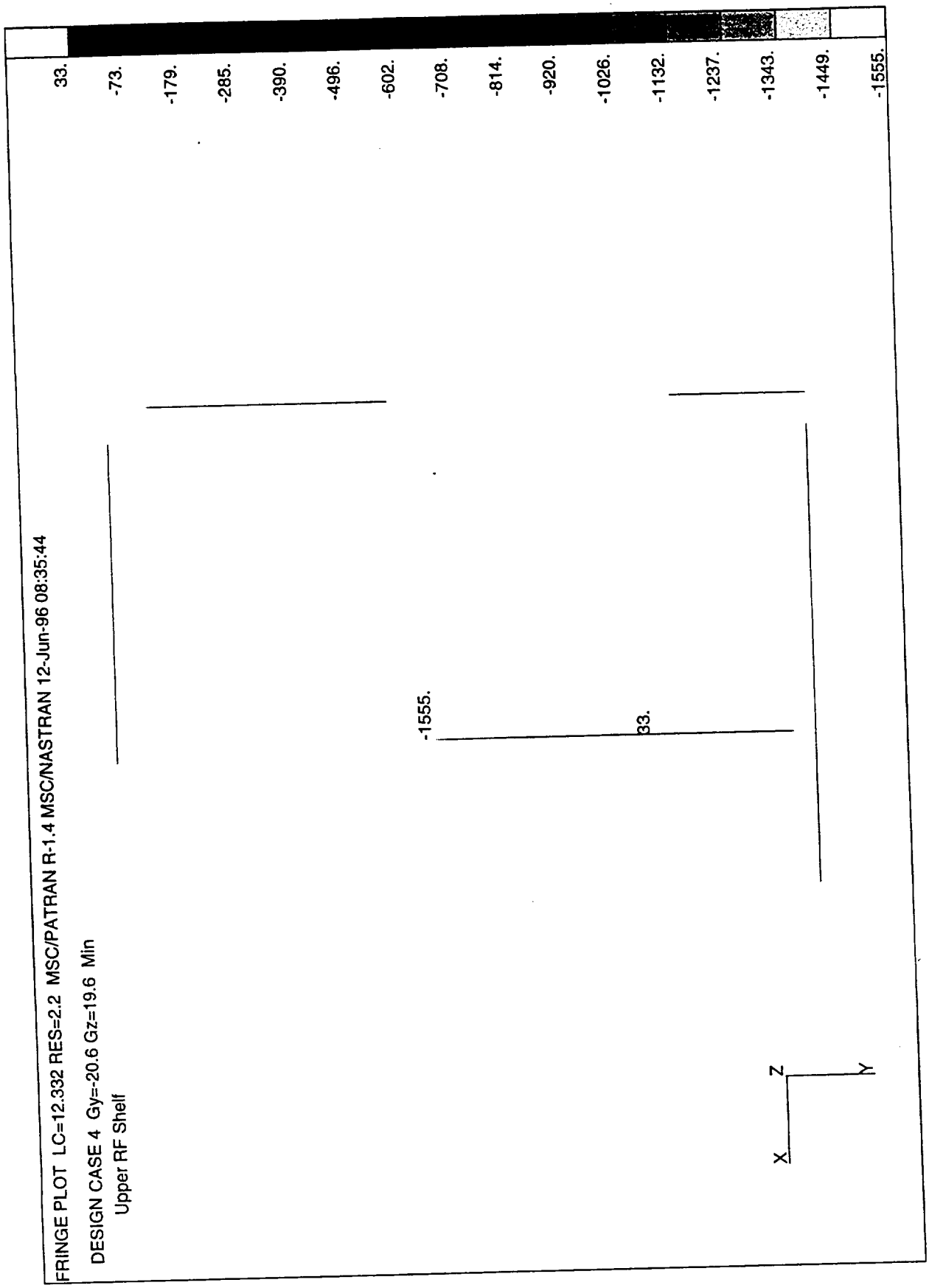

Time: 10:29:22
Date: 06/11/96
Contour
Node Scalar1
Color Index
0 0.460E+04
9 0.411E+04
8 0.363E+04
7 0.314E+04
6 0.266E+04
5 0.217E+04
4 0.168E+04
3 0.120E+04
2 0.712E+03
1 0.225E+03
Min = 2.254730E+02
Max = 5.086936E+03
Min ID= 6878
Max ID= 5594
Contour_1:
Stress Tensor
Von Mises
At Z1
Design_Gy=-20.6_Gx=-21.2
Static Subcase
METSAT AMSU-A1
Upper Aft Panel
Y
X

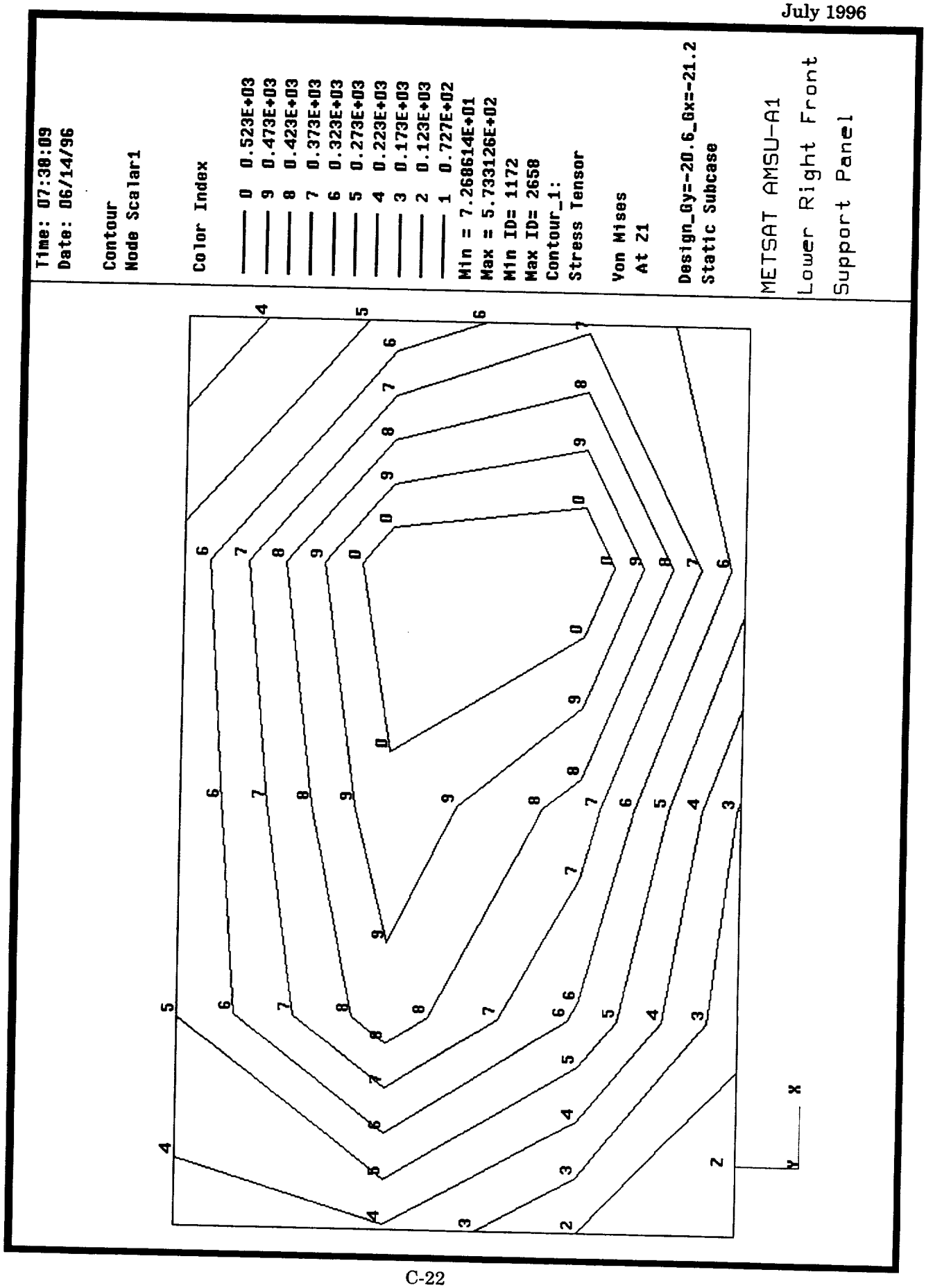

FRINGE PLOT LC=16.329 RES=2.1 MSC/PATRAN R-1.4 MSC/NASTRAN 11-Jun-96 14:12:00
DESIGN CASE 1 Gy=-20.6 Gx=-21.2 Max
Upper Aft Panel
2581.
2405.
2228.
2052.
1875.
1699.
1522.
1346.
1169.
993.
816.
640.
463.
287.
110.
-66.
2581.
-66.
Z
X
Y

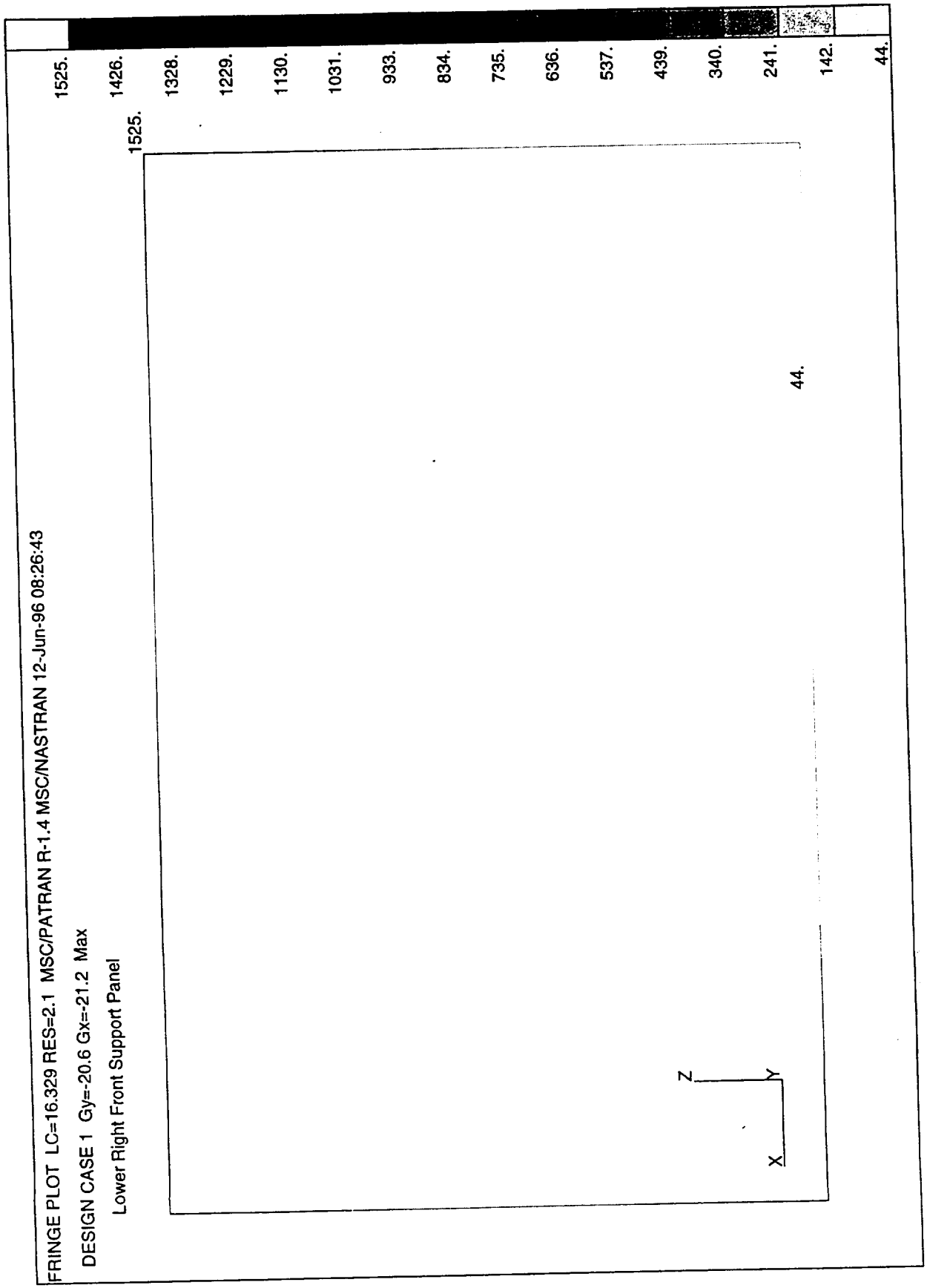

Time: 10:49:47
Date: 06/12/96
Contour
Node Scalar1
Color Index
0 0.788E+04
9 0.701E+04
8 0.614E+04
7 0.526E+04
6 0.439E+04
5 0.352E+04
4 0.265E+04
3 0.178E+04
2 0.915E+03
1 0.446E+02
Min = 4.458046E+01
Max = 8.745224E+03
Min ID= 1861
Max ID= 1772
Contour_1:
Stress Tensor
Von Mises
At Z1
Design_Gy=-20.6_Gx=-21.2
Static Subcase
METSAT AMSU-A1
Lower RF Shelf
X
Z
Y

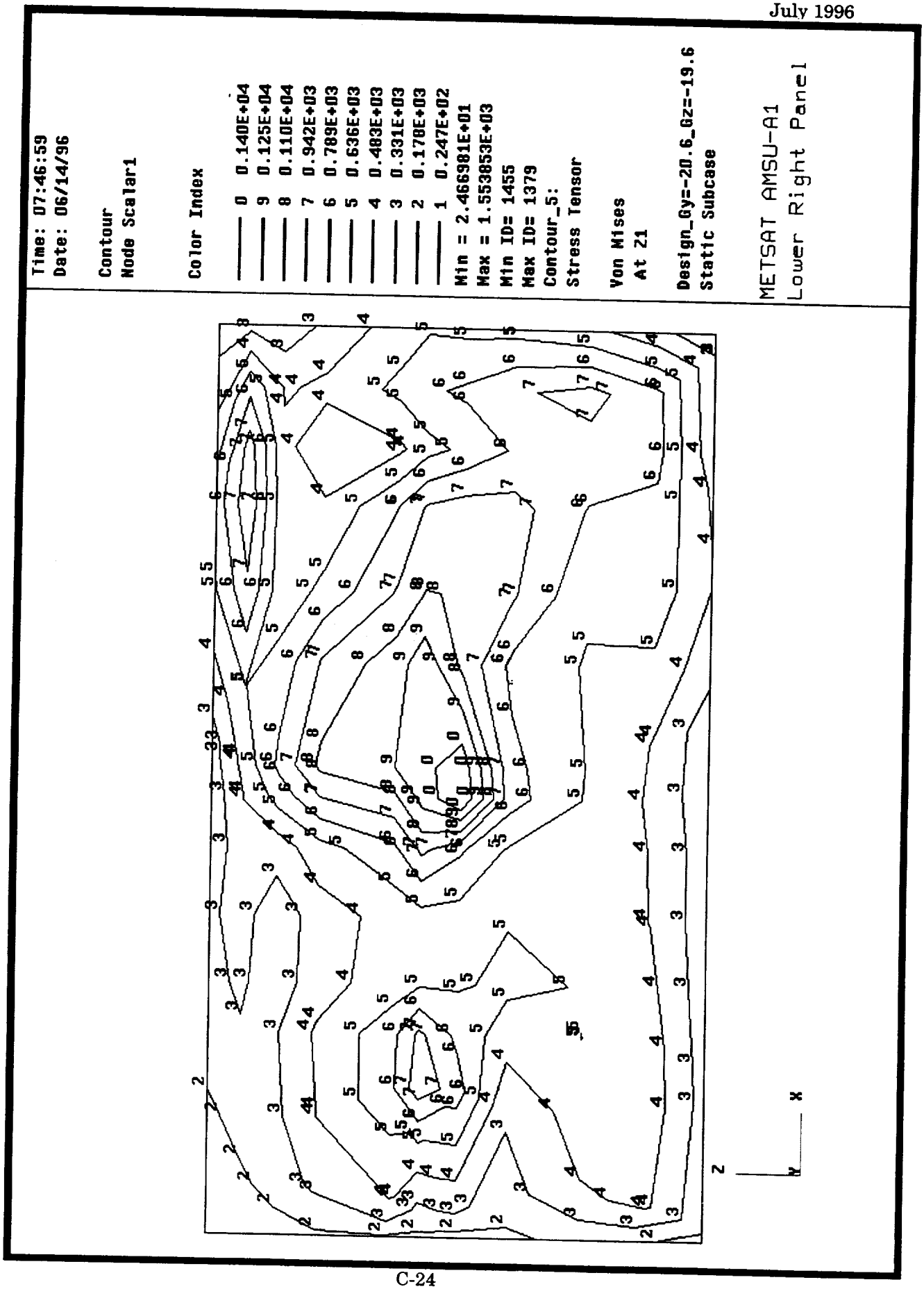

FRINGE PLOT LC=12.332 RES=2.1 MSC/PATRAN R-1.4 MSC/NASTRAN 12-Jun-96 08:30:00
DESIGN CASE 4 Gy=-20.6 Gz=19.6 Max
Lower RF Shelf
-199.
1973.
1828.
1683.
1538.
1393.
1249.
1104.
959.
814.
669.
525.
380.
235.
90.
-55.
-199.
1973.
X
Z
Y

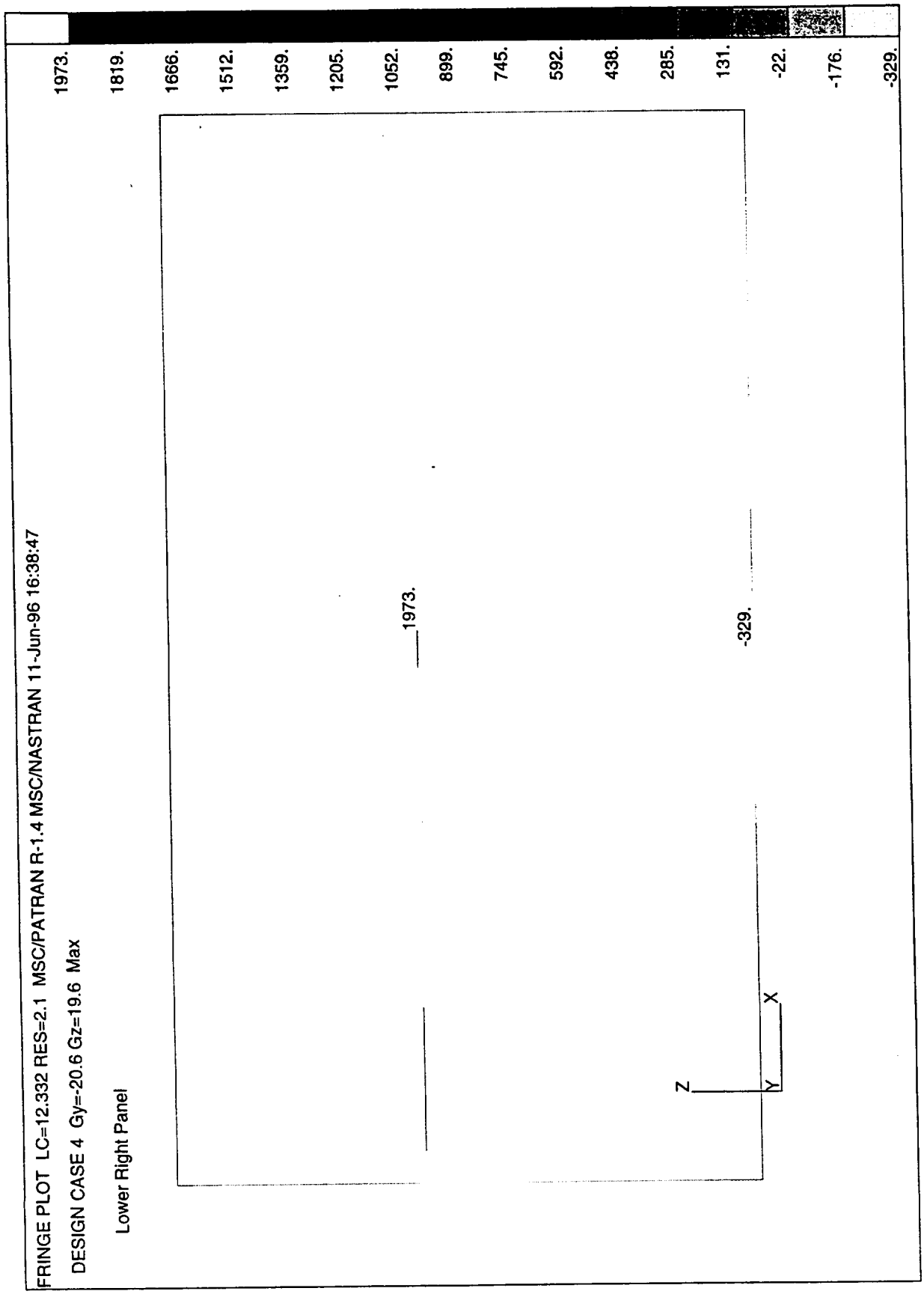

Time: 10:53:58
Date: 06/12/96
Contour
Node Scalar1
Color Index
0 0.343E+04
9 0.305E+04
8 0.268E+04
7 0.230E+04
6 0.192E+04
5 0.155E+04
4 0.117E+04
3 0.797E+03
2 0.421E+03
1 0.456E+02
Min = 4.559451E+01
Max = 3.804087E+03
Min ID= 2258
Max ID= 2569
Contour_8:
Stress Tensor
Von Mises
At Z2
Design_Gy=-20.6_Gz=19.6
Static Subcase
METSAT AMSU-A1
Upper RF Shelf
X
Y
Z

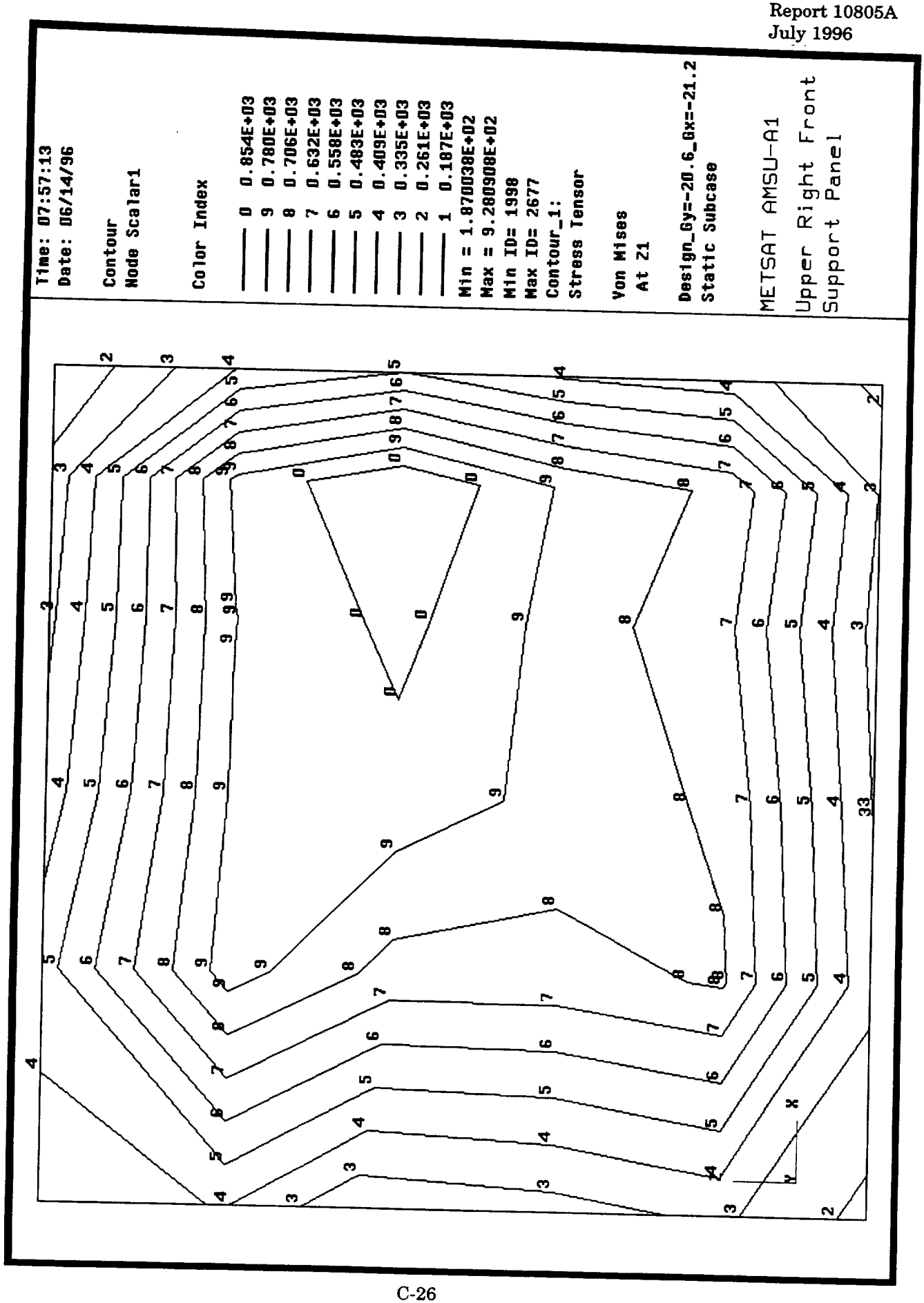

FRINGE PLOT LC=12.332 RES=2.2 MSC/PATRAN R-1.4 MSC/NASTRAN 12-Jun-96 08:35:44
DESIGN CASE 4 Gy=-20.6 Gz=19.6 Min
Upper RF Shelf
33.
-73.
-179.
-285.
-390.
-496.
-602.
-708.
-814.
-920.
-1026.
-1132.
-1237.
-1343.
-1449.
-1555.
-1555.
33.
X
Z
Y

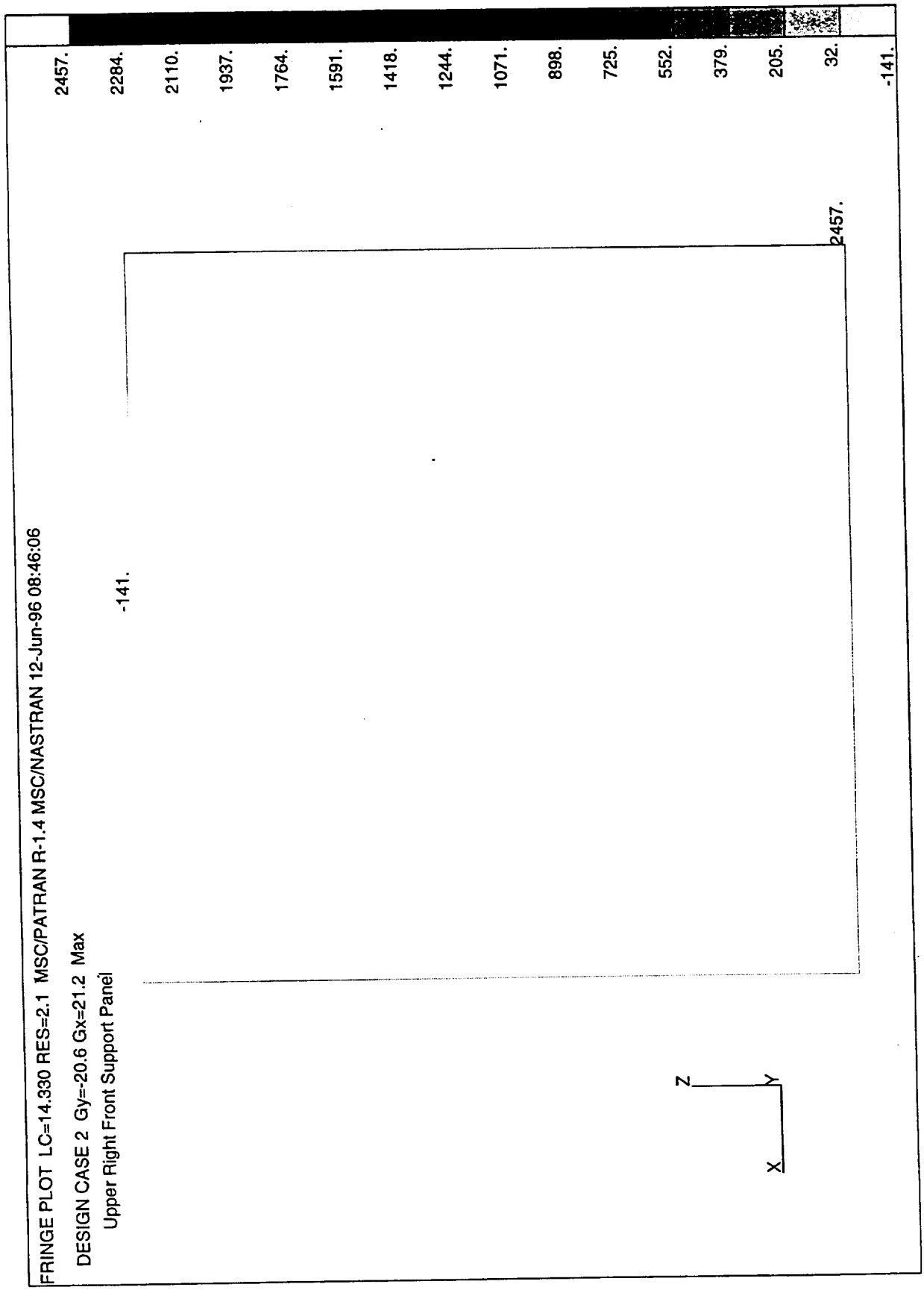

Time: 07:38:09
Date: 06/14/96
Contour
Node Scalar1
Color Index
0 0.523E+03
9 0.473E+03
8 0.423E+03
7 0.373E+03
6 0.323E+03
5 0.273E+03
4 0.223E+03
3 0.173E+03
2 0.123E+03
1 0.727E+02
Min = 7.268614E+01
Max = 5.733126E+02
Min ID= 1172
Max ID= 2658
Contour_1:
Stress Tensor
Von Mises
At Z1
Design_Gy=-20.6_Gx=-21.2
Static Subcase
METSAT AMSU-A1
Lower Right Front
Support Panel
x
y
z

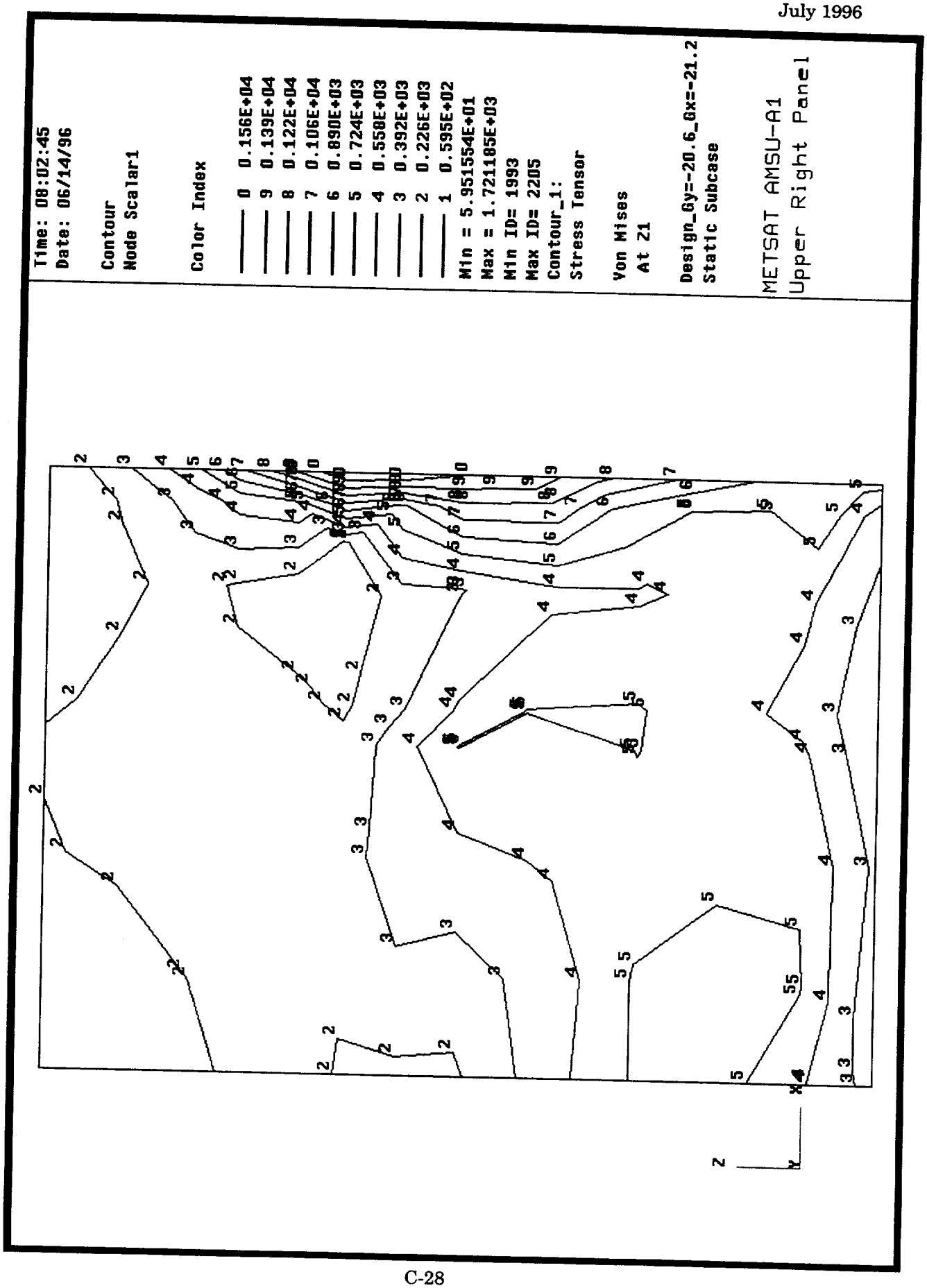

FRINGE PLOT LC=16.329 RES=2.1 MSC/PATRAN R-1.4 MSC/NASTRAN 12-Jun-96 08:26:43
DESIGN CASE 1 Gy=-20.6 Gx=-21.2 Max
Lower Right Front Support Panel
1525.
1426.
1328.
1229.
1130.
1031.
933.
834.
735.
636.
537.
439.
340.
241.
142.
44.
1525.
44.
Z
Y
X

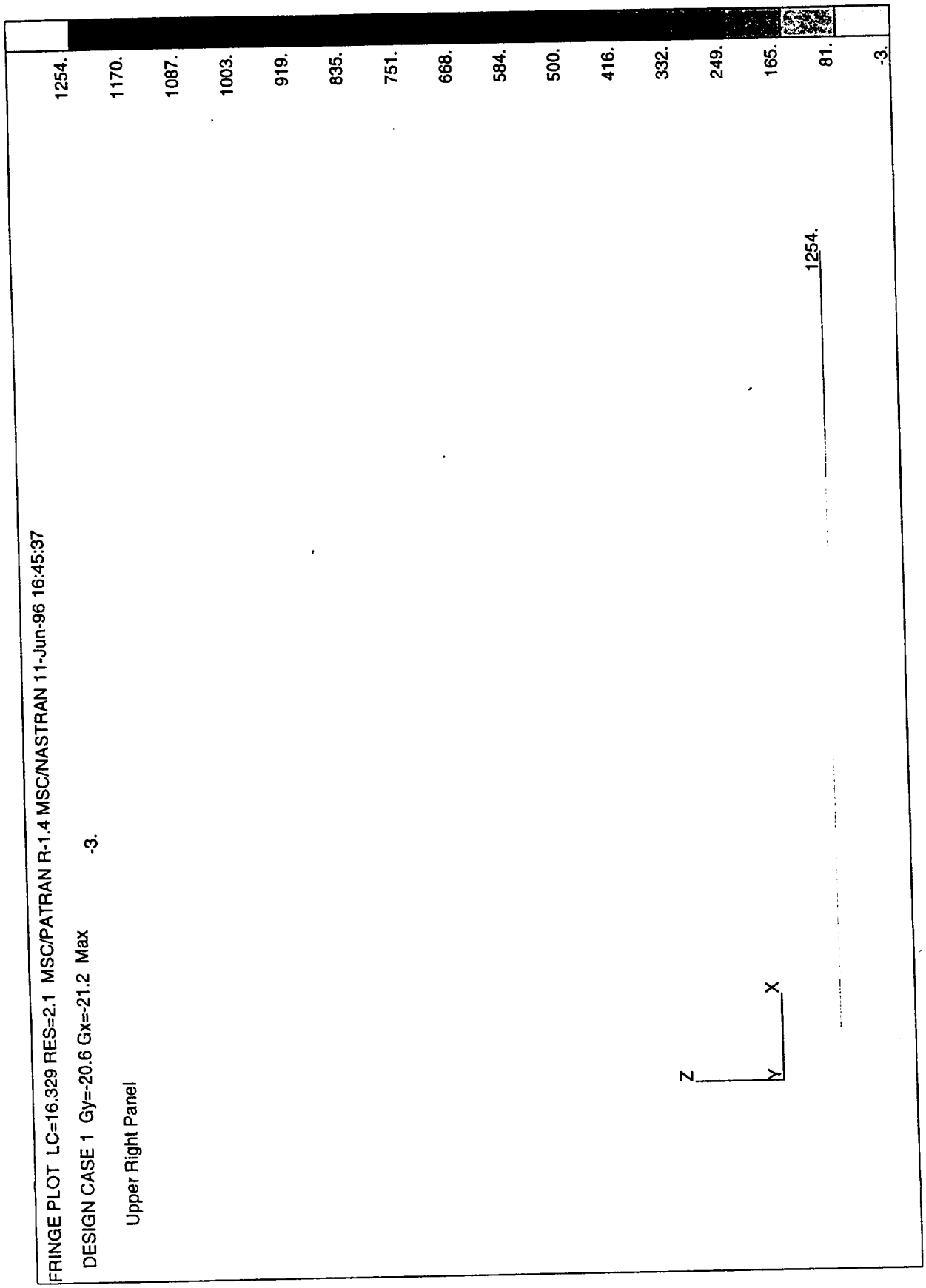

Time: 07:46:59
Date: 06/14/96
Contour
Node Scalar1
Color Index
0 0.140E+04
9 0.125E+04
8 0.110E+04
7 0.942E+03
6 0.789E+03
5 0.636E+03
4 0.483E+03
3 0.331E+03
2 0.178E+03
1 0.247E+02
Min = 2.466981E+01
Max = 1.553853E+03
Min ID= 1455
Max ID= 1379
Contour_5:
Stress Tensor
Von Mises
At Z1
Design_Gy=-20.6_Gz=-19.6
Static Subcase
METSAT AMSU-A1
Lower Right Panel
Z
Y
X

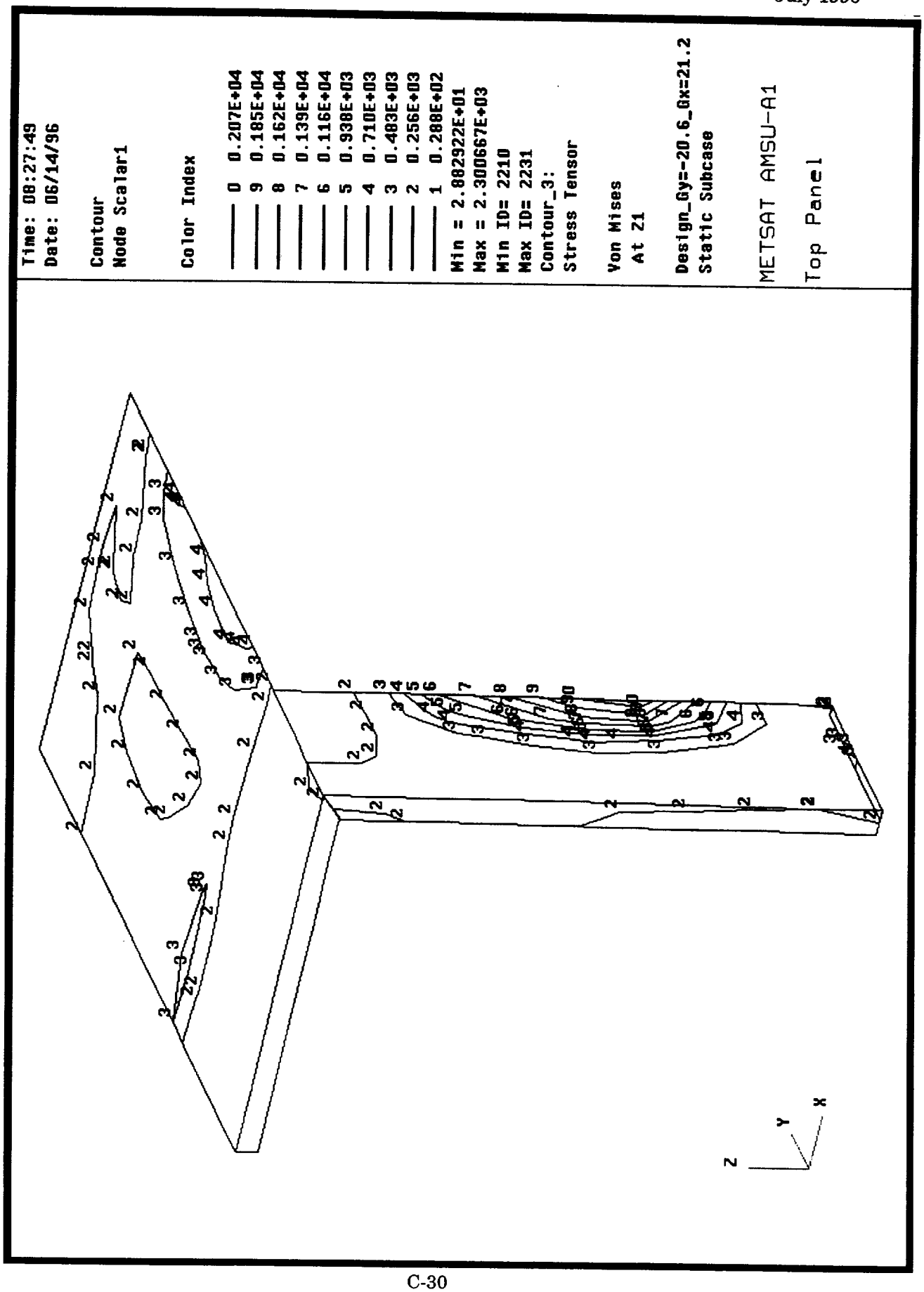

FRINGE PLOT LC=12.332 RES=2.1 MSC/PATRAN R-1.4 MSC/NASTRAN 11-Jun-96 16:38:47
DESIGN CASE 4 Gy=-20.6 Gz=19.6 Max
Lower Right Panel
1973.
1819.
1666.
1512.
1359.
1205.
1052.
899.
745.
592.
438.
285.
131.
-22.
-176.
-329.
1973.
-329.
Z
Y
X

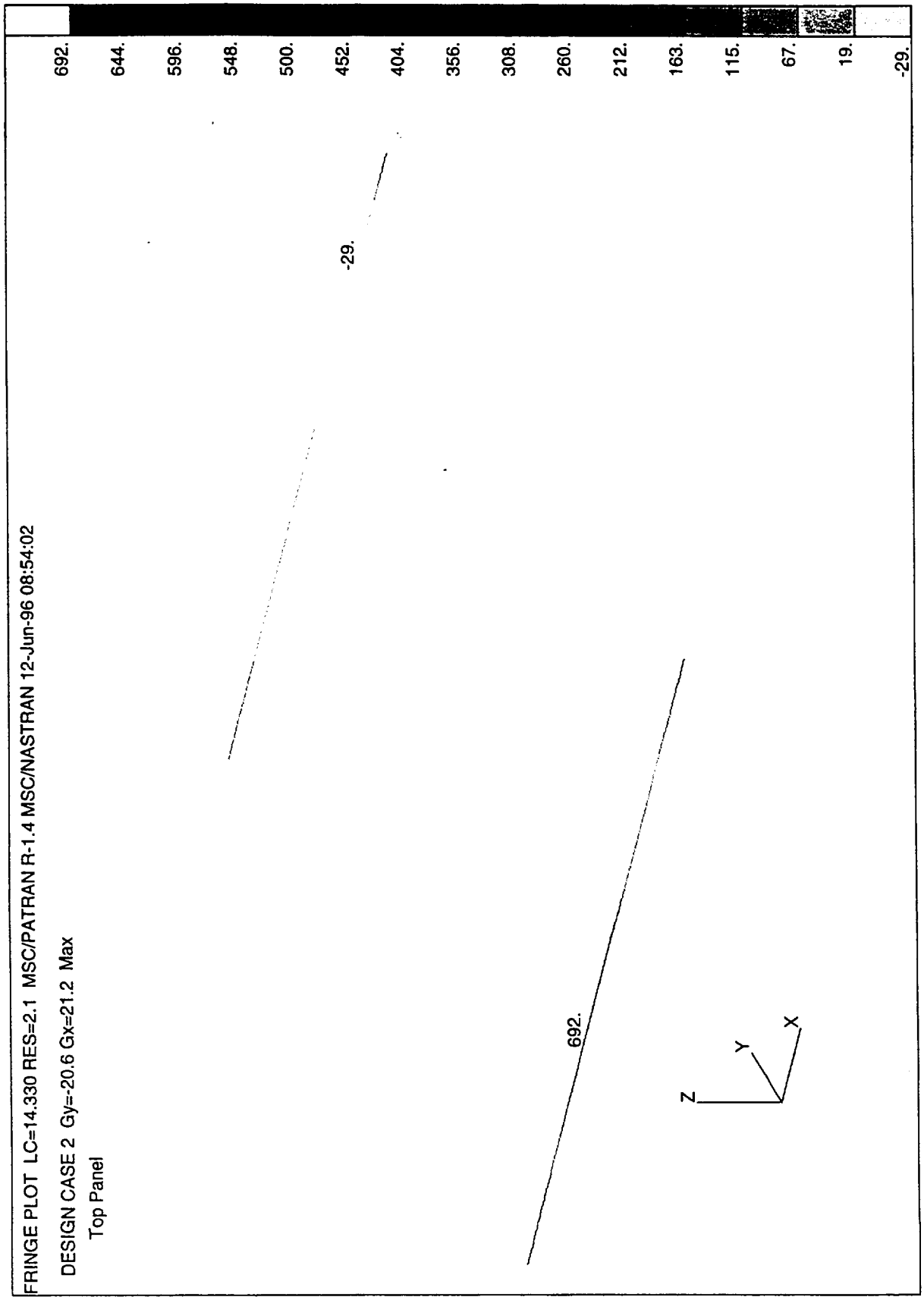

Time: 07:57:13
Date: 06/14/96
Contour
Node Scalar1
Color Index
0 0.854E+03
9 0.780E+03
8 0.706E+03
7 0.632E+03
6 0.558E+03
5 0.483E+03
4 0.409E+03
3 0.335E+03
2 0.261E+03
1 0.187E+03
Min = 1.870038E+02
Max = 9.280908E+02
Min ID= 1998
Max ID= 2677
Contour_1:
Stress Tensor
Von Mises
At Z1
Design_Gy=-20.6_Gx=-21.2
Static Subcase
METSAT AMSU-A1
Upper Right Front
Support Panel
X
Y

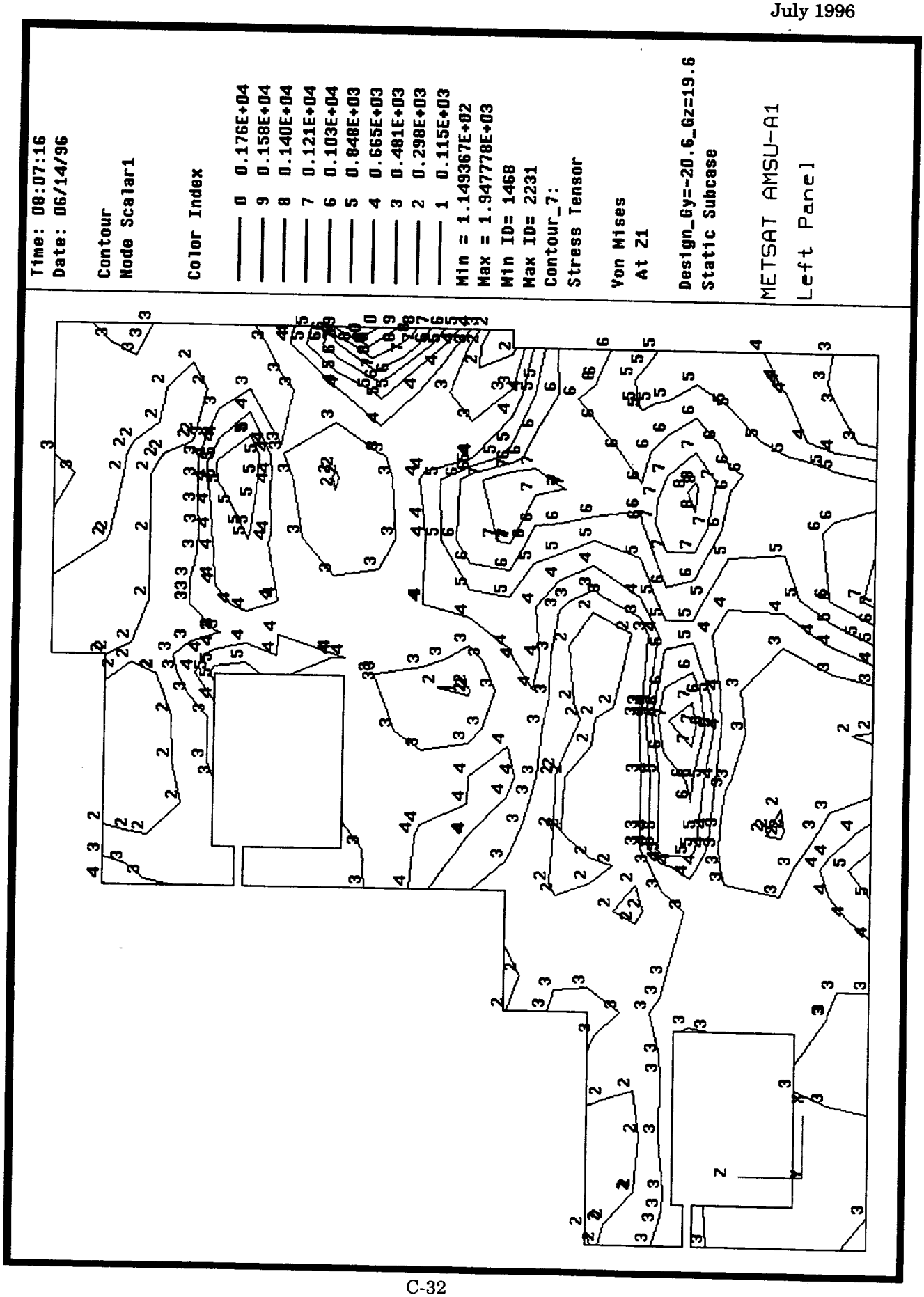

FRINGE PLOT LC=14.330 RES=2.1 MSC/PATRAN R-1.4 MSC/NASTRAN 12-Jun-96 08:46:06
DESIGN CASE 2 Gy=-20.6 Gx=21.2 Max
Upper Right Front Support Panel
2457.
2284.
2110.
1937.
1764.
1591.
1418.
1244.
1071.
898.
725.
552.
379.
205.
32.
-141.
-141.
2457.
Z
Y
X

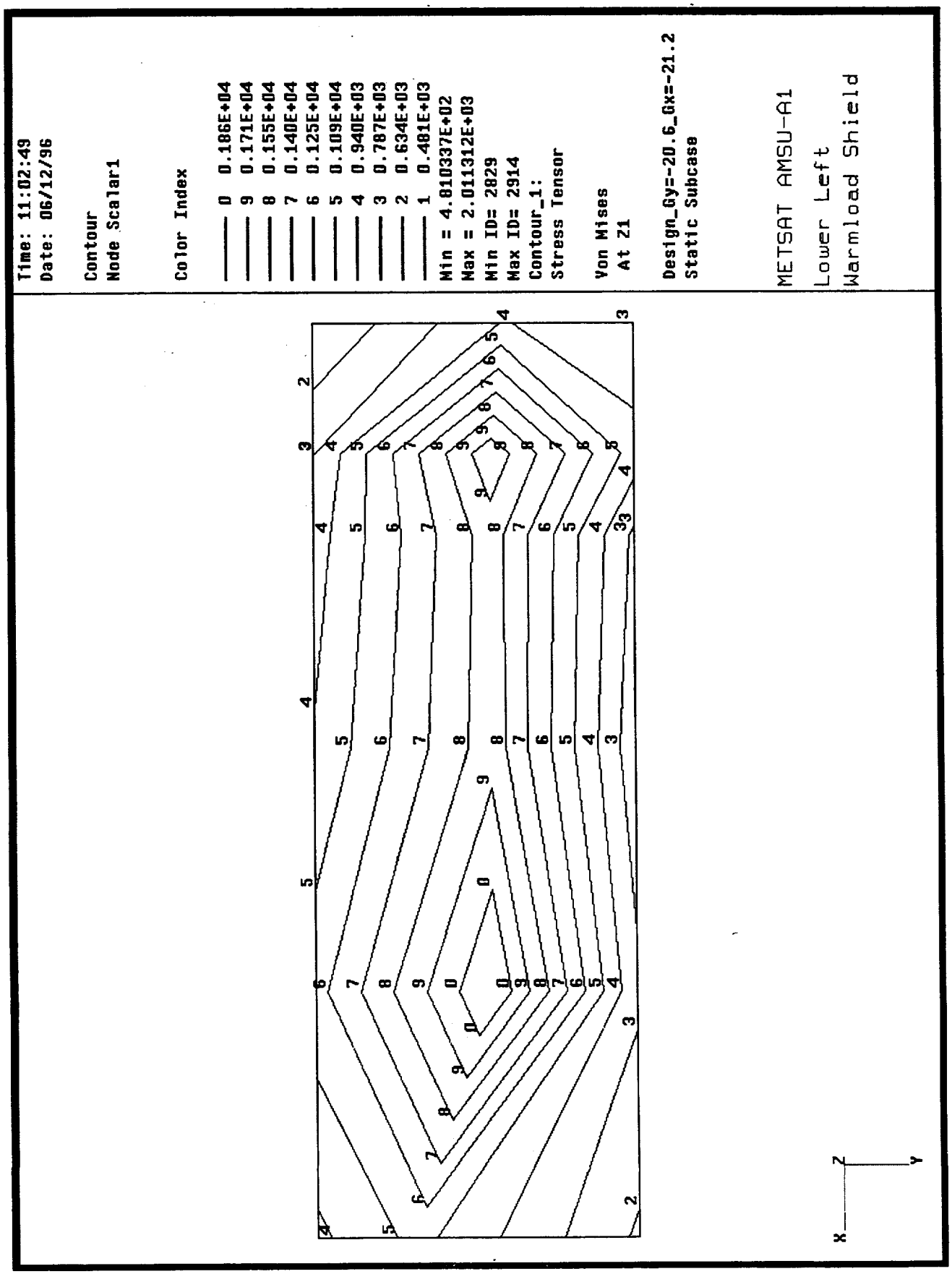

Time: 08:02:45
Date: 06/14/96
Contour
Node Scalar1
Color Index
0 0.156E+04
9 0.139E+04
8 0.122E+04
7 0.106E+04
6 0.890E+03
5 0.724E+03
4 0.558E+03
3 0.392E+03
2 0.226E+03
1 0.595E+02
Min = 5.951554E+01
Max = 1.721185E+03
Min ID= 1993
Max ID= 2205
Contour_1:
Stress Tensor
Von Mises
At Z1
Design_Gy=-20.6_Gx=-21.2
Static Subcase
METSAT AMSU-A1
Upper Right Panel

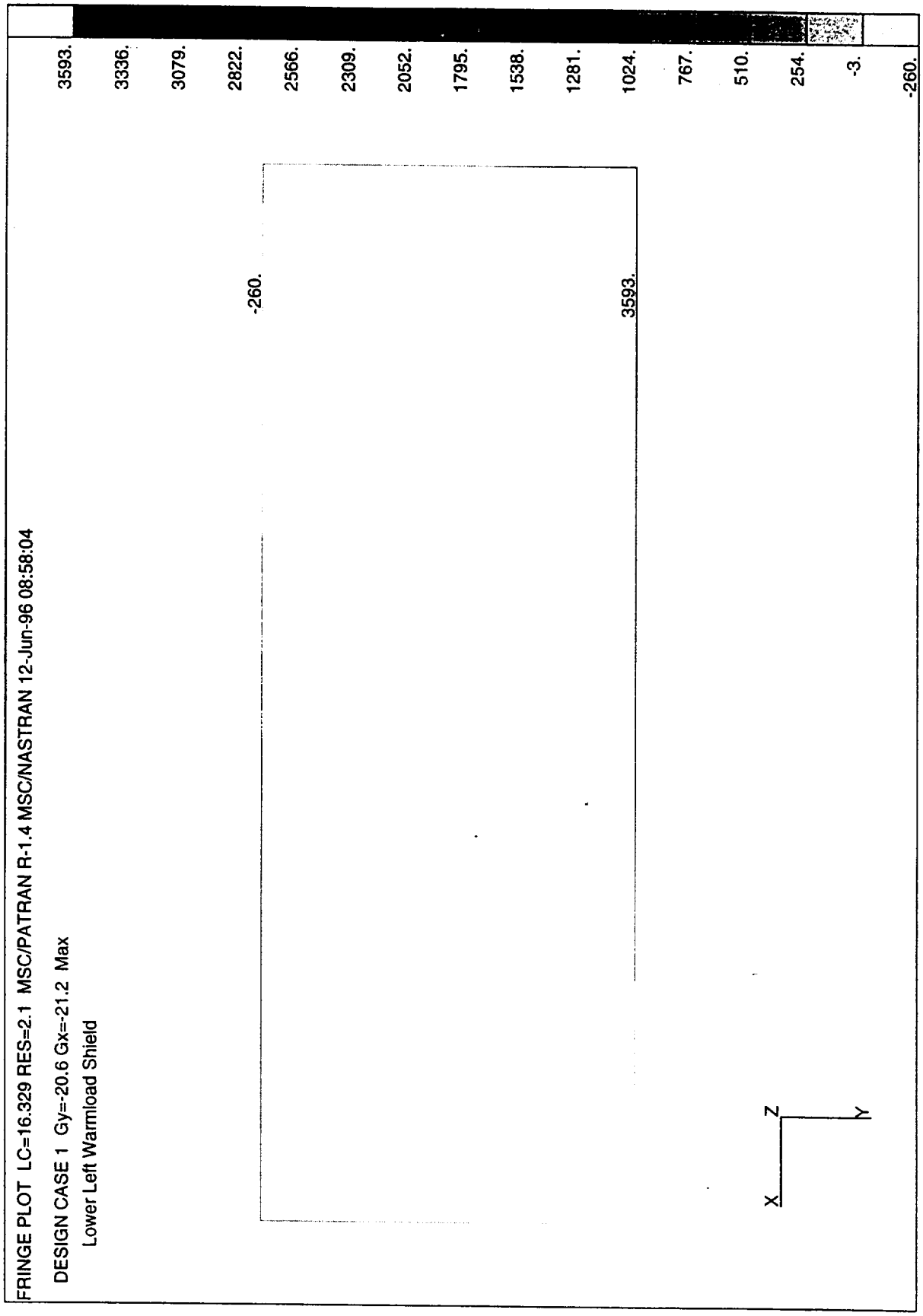

FRINGE PLOT LC=16.329 RES=2.1 MSC/PATRAN R-1.4 MSC/NASTRAN 11-Jun-96 16:45:37
DESIGN CASE 1 Gy=-20.6 Gx=-21.2 Max -3.
Upper Right Panel
1254.
1170.
1087.
1003.
919.
835.
751.
668.
584.
500.
416.
332.
249.
165.
81.
-3.
1254.
Z
Y
X

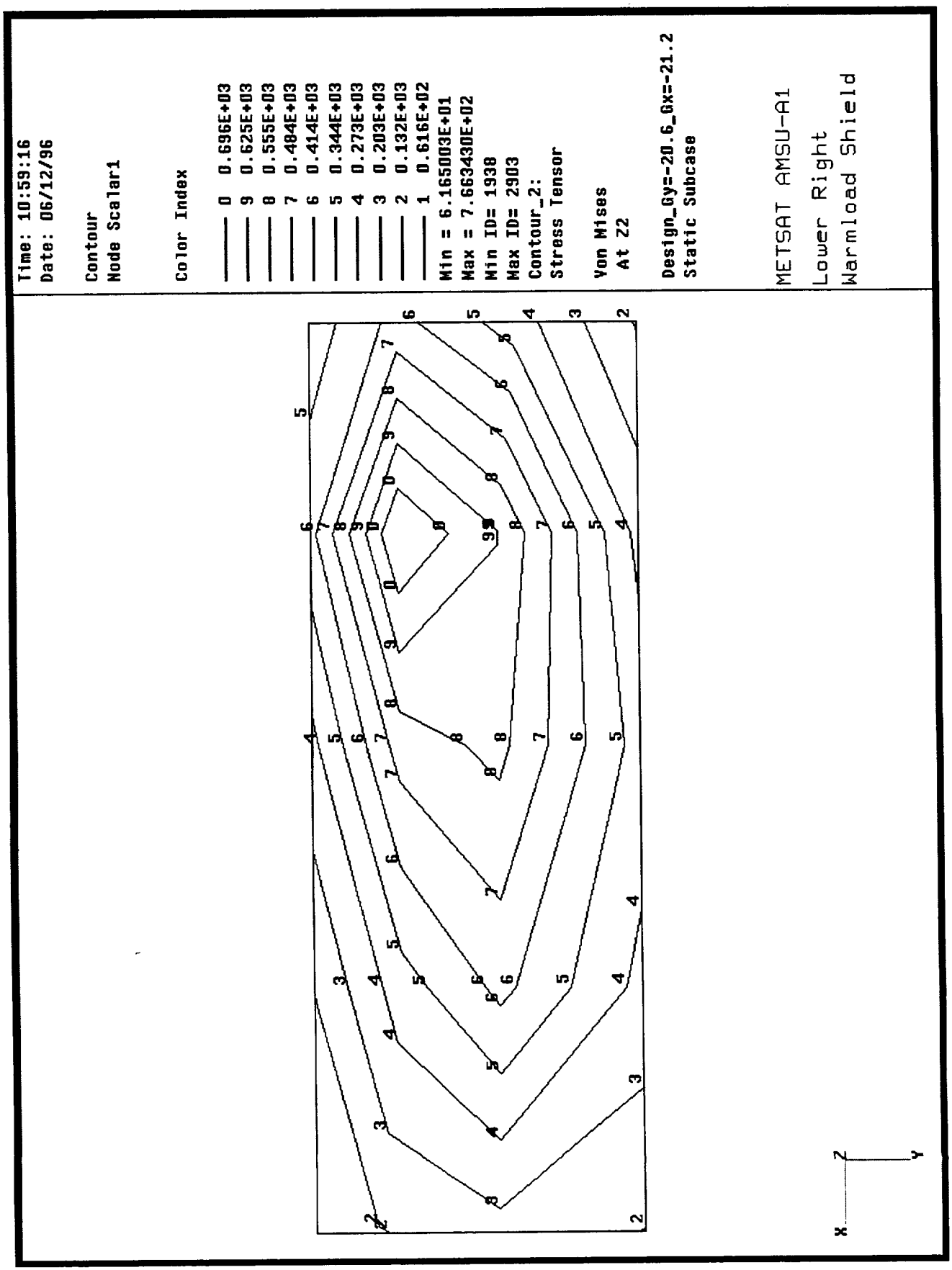

Time: 08:27:49
Date: 06/14/96
Contour
Node Scalar1
Color Index
0 0.207E+04
9 0.185E+04
8 0.162E+04
7 0.139E+04
6 0.116E+04
5 0.938E+03
4 0.710E+03
3 0.483E+03
2 0.256E+03
1 0.288E+02
Min = 2.882922E+01
Max = 2.300667E+03
Min ID= 2210
Max ID= 2231
Contour_3:
Stress Tensor
Von Mises
At Z1
Design_Gy=-20.6_Gx=21.2
Static Subcase
METSAT AMSU-A1
Top Panel
Z
Y
X

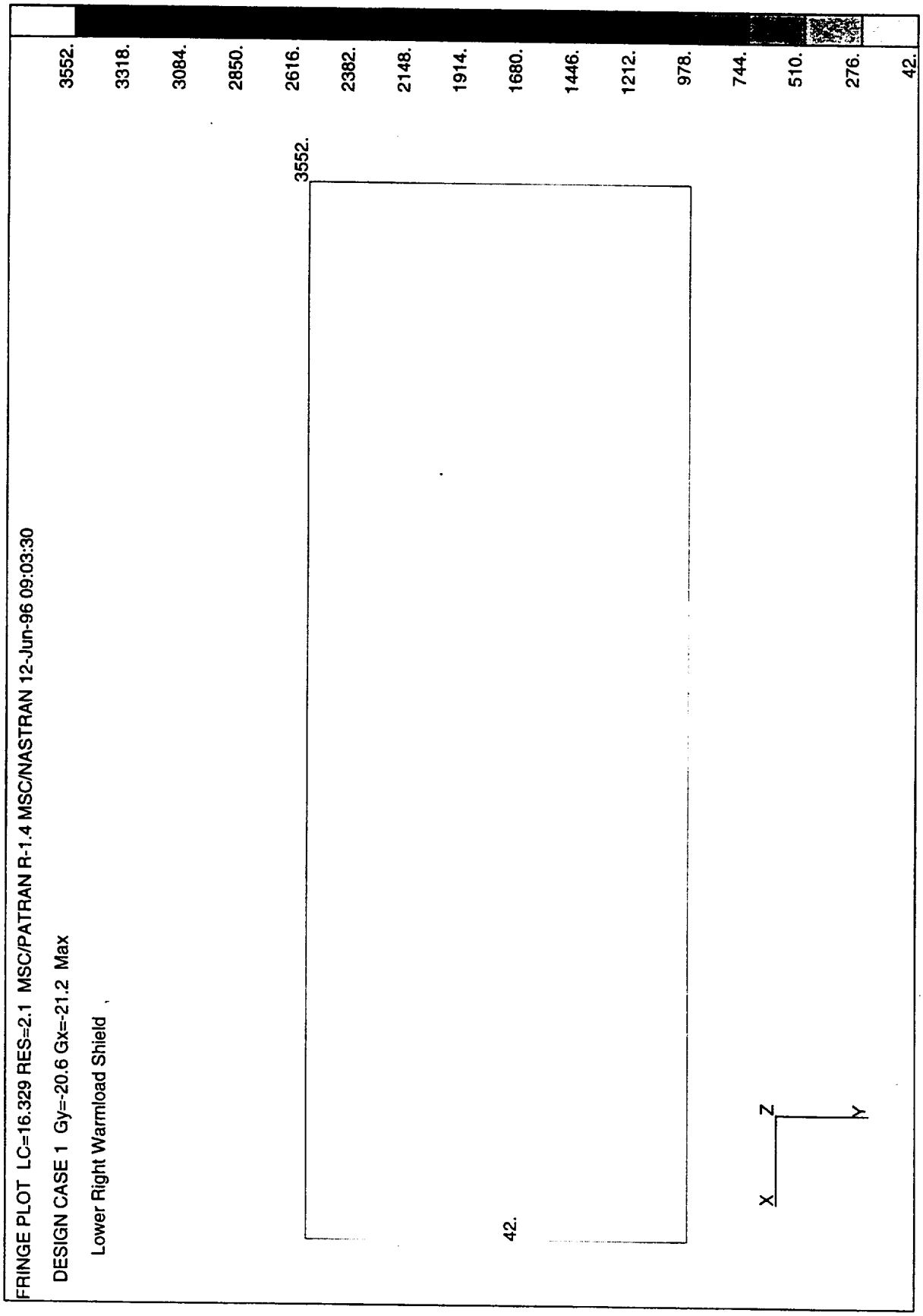

FRINGE PLOT LC=14.330 RES=2.1 MSC/PATRAN R-1.4 MSC/NASTRAN 12-Jun-96 08:54:02
DESIGN CASE 2 Gy=-20.6 Gx=21.2 Max
Top Panel
692.
644.
596.
548.
500.
452.
404.
356.
308.
260.
212.
163.
115.
67.
19.
-29.
-29.
692.
Z
Y
X

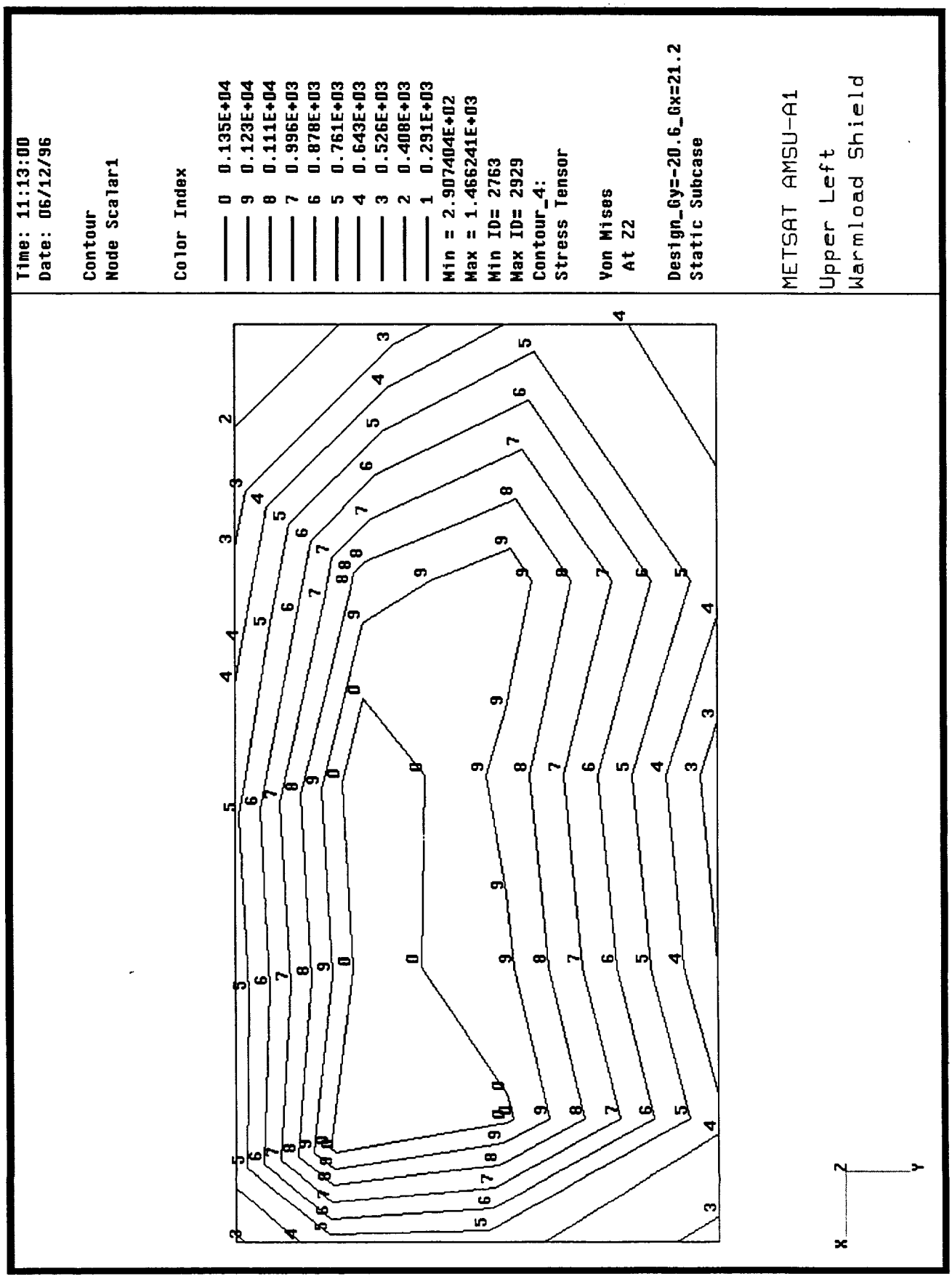

Time: 08:07:16
Date: 06/14/96
Contour
Node Scalar1
Color Index
0 0.176E+04
9 0.158E+04
8 0.140E+04
7 0.121E+04
6 0.103E+04
5 0.848E+03
4 0.665E+03
3 0.481E+03
2 0.298E+03
1 0.115E+03
Min = 1.149367E+02
Max = 1.947778E+03
Min ID= 1468
Max ID= 2231
Contour_7:
Stress Tensor
Von Mises
At Z1
Design_Gy=-20.6_Gz=19.6
Static Subcase
METSAT AMSU-A1
Left Panel

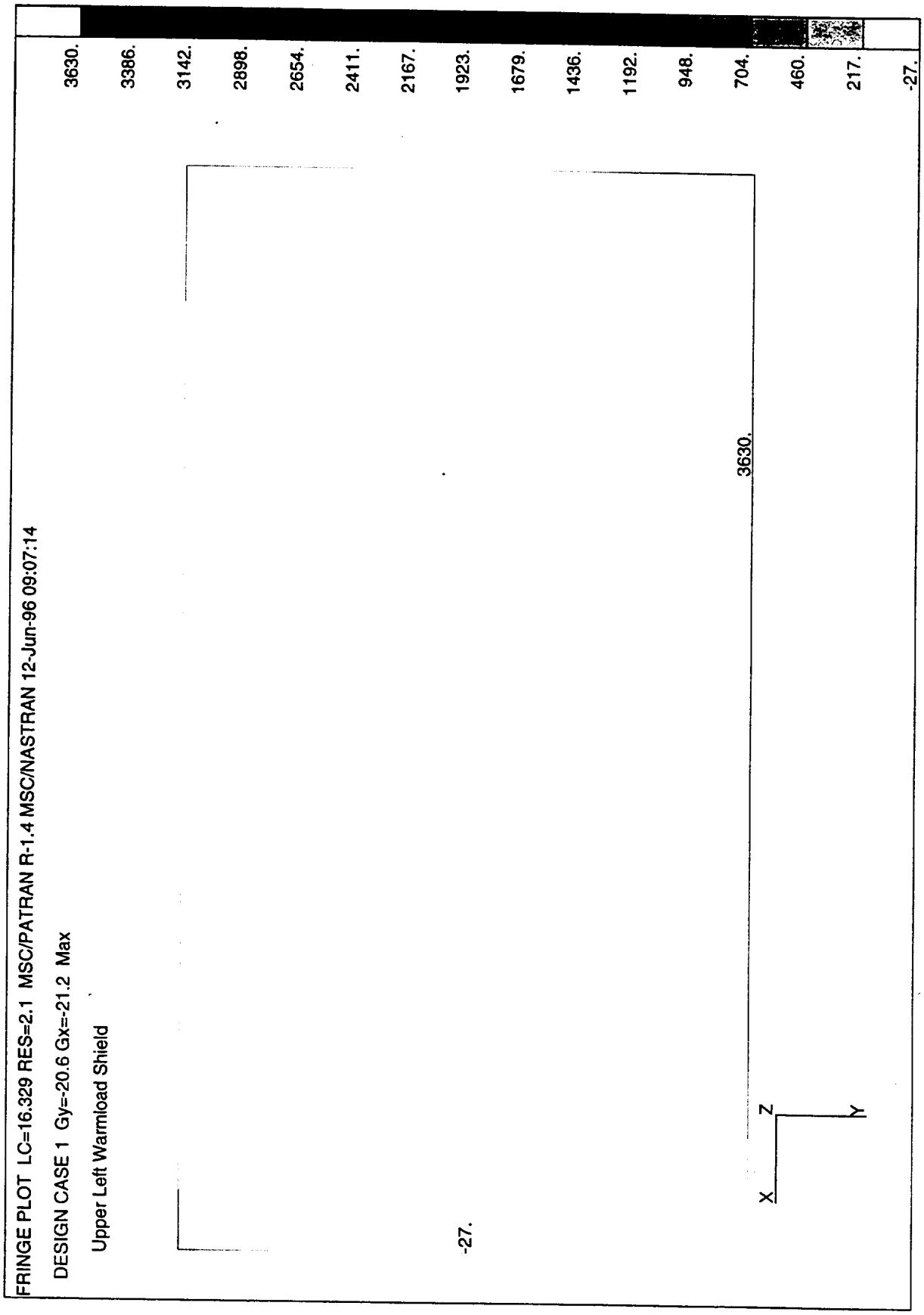

Time: 11:02:49
Date: 06/12/96
Contour
Node Scalar1
Color Index
0 0.186E+04
9 0.171E+04
8 0.155E+04
7 0.140E+04
6 0.125E+04
5 0.109E+04
4 0.940E+03
3 0.787E+03
2 0.634E+03
1 0.481E+03
Min = 4.810337E+02
Max = 2.011312E+03
Min ID= 2829
Max ID= 2914
Contour_1:
Stress Tensor
Von Mises
At Z1
Design_Gy=-20.6_Gx=-21.2
Static Subcase
METSAT AMSU-A1
Lower Left
Warmload Shield
Z
Y
X

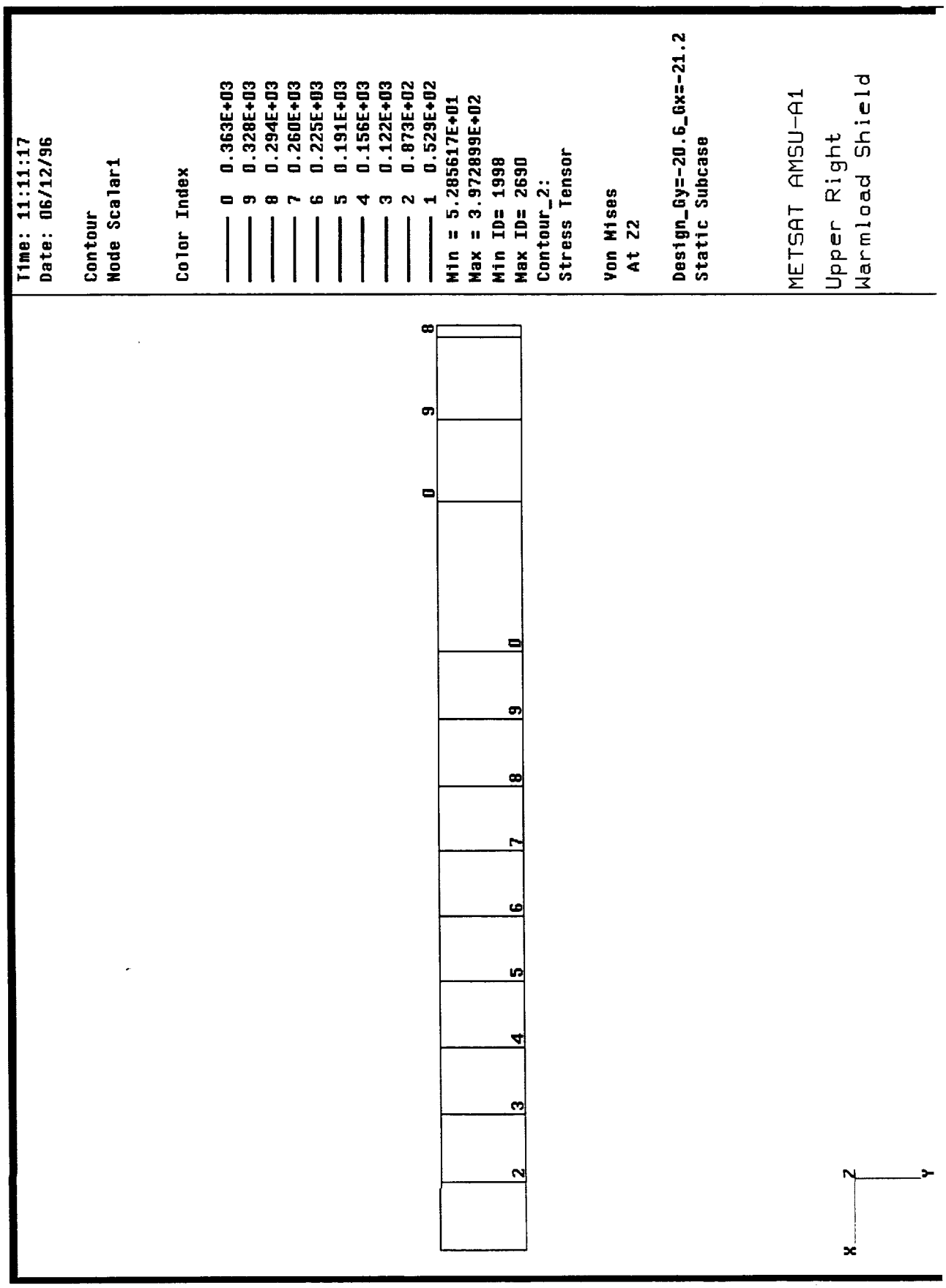

FRINGE PLOT LC=16.329 RES=2.1 MSC/PATRAN R-1.4 MSC/NASTRAN 12-Jun-96 08:58:04
DESIGN CASE 1 Gy=-20.6 Gx=-21.2 Max
Lower Left Warmload Shield
3593.
3336.
3079.
2822.
2566.
2309.
2052.
1795.
1538.
1281.
1024.
767.
510.
254.
-3.
-260.
-260.
3593.
X
Z
Y

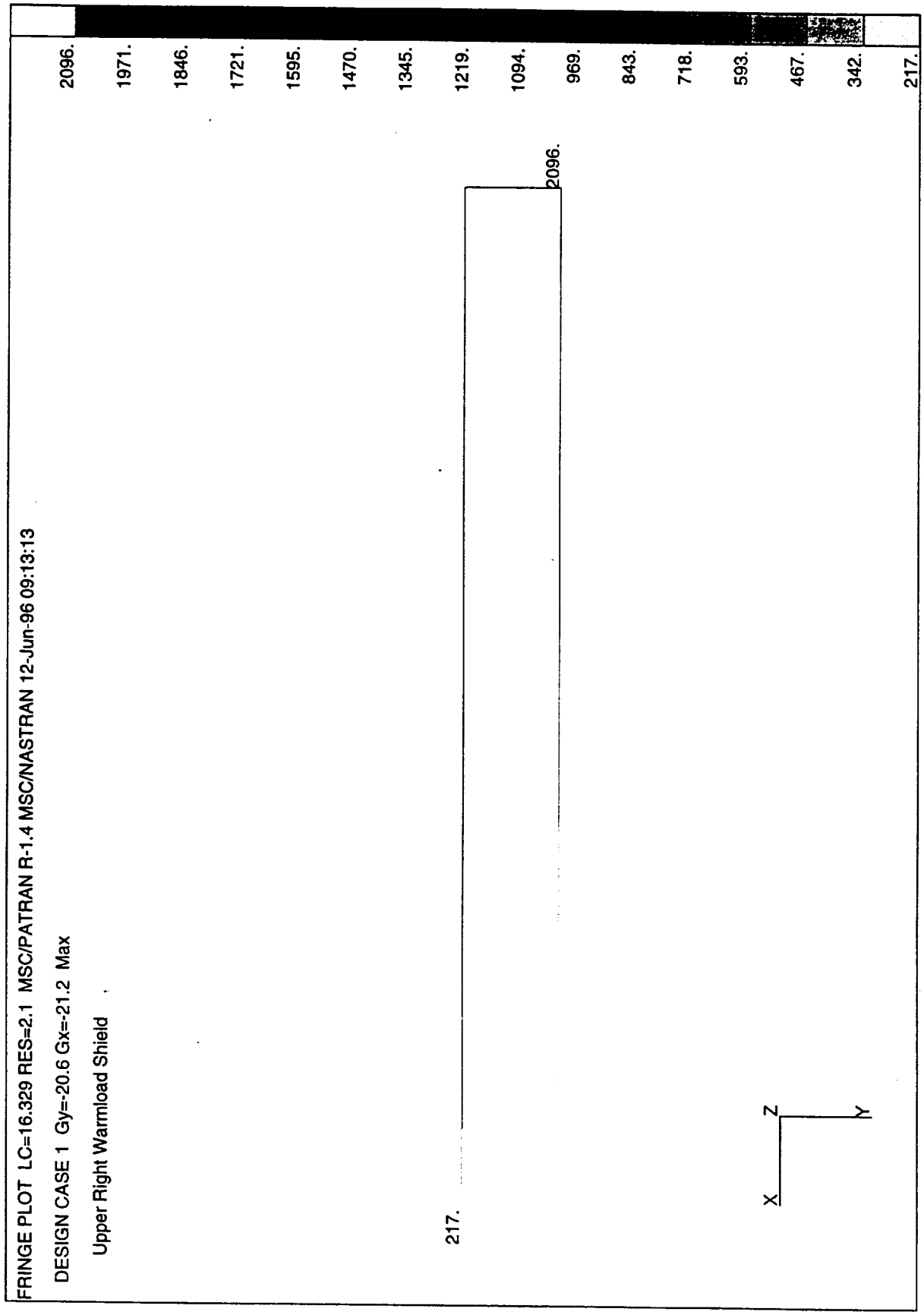

Time: 10:59:16
Date: 06/12/96
Contour
Node Scalar1
Color Index
0 0.696E+03
9 0.625E+03
8 0.555E+03
7 0.484E+03
6 0.414E+03
5 0.344E+03
4 0.273E+03
3 0.203E+03
2 0.132E+03
1 0.616E+02
Min = 6.165003E+01
Max = 7.663430E+02
Min ID= 1938
Max ID= 2903
Contour_2:
Stress Tensor
Von Mises
At Z2
Design_Gy=-20.6_Gx=-21.2
Static Subcase
METSAT AMSU-A1
Lower Right
Warmload Shield
X
Z
Y

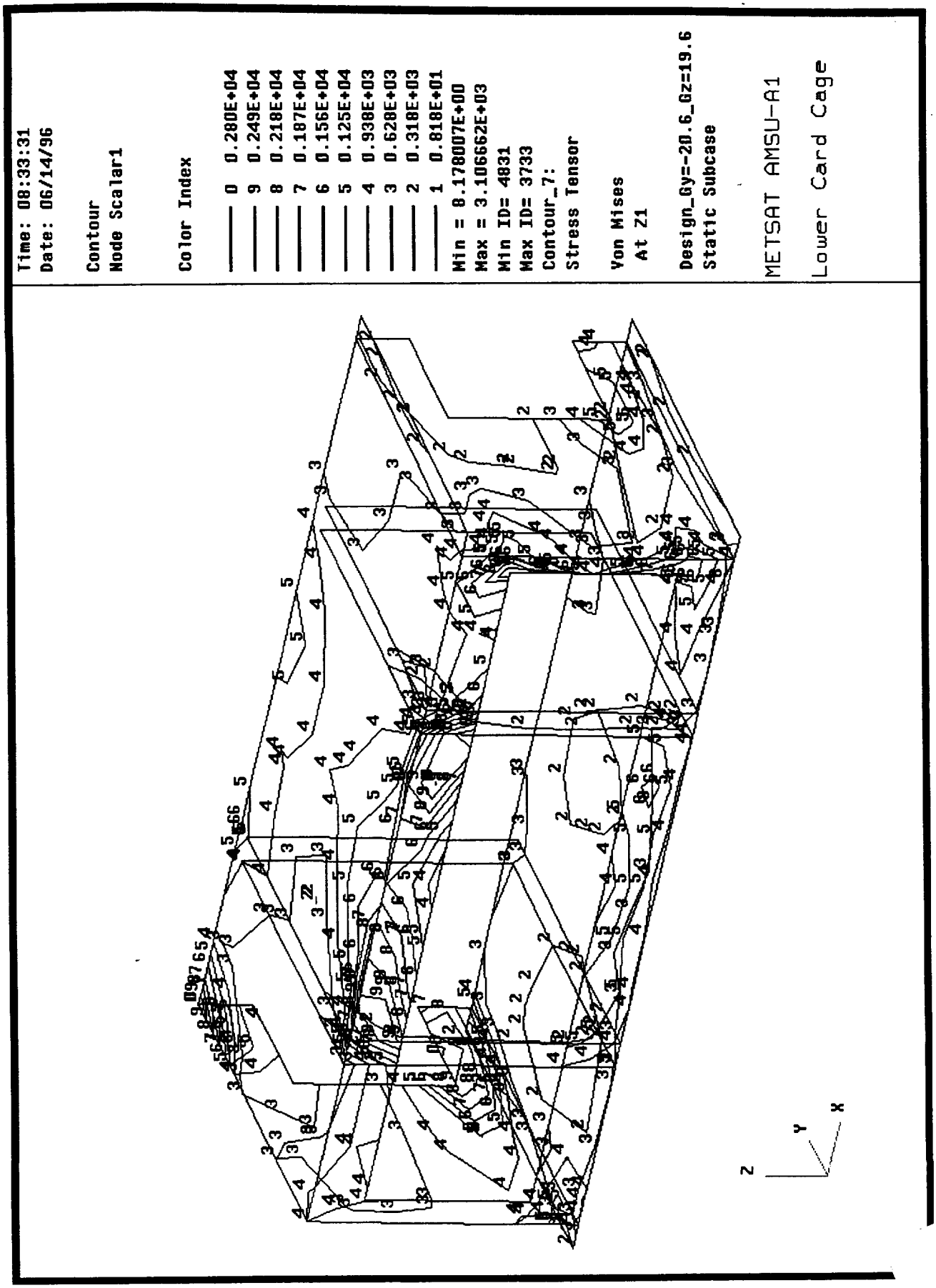

FRINGE PLOT LC=16.329 RES=2.1 MSC/PATRAN R-1.4 MSC/NASTRAN 12-Jun-96 09:03:30
DESIGN CASE 1 Gy=-20.6 Gx=-21.2 Max
Lower Right Warmload Shield
3552.
3318.
3084.
2850.
2616.
2382.
2148.
1914.
1680.
1446.
1212.
978.
744.
510.
276.
42.
3552.
42.
X
Z
Y

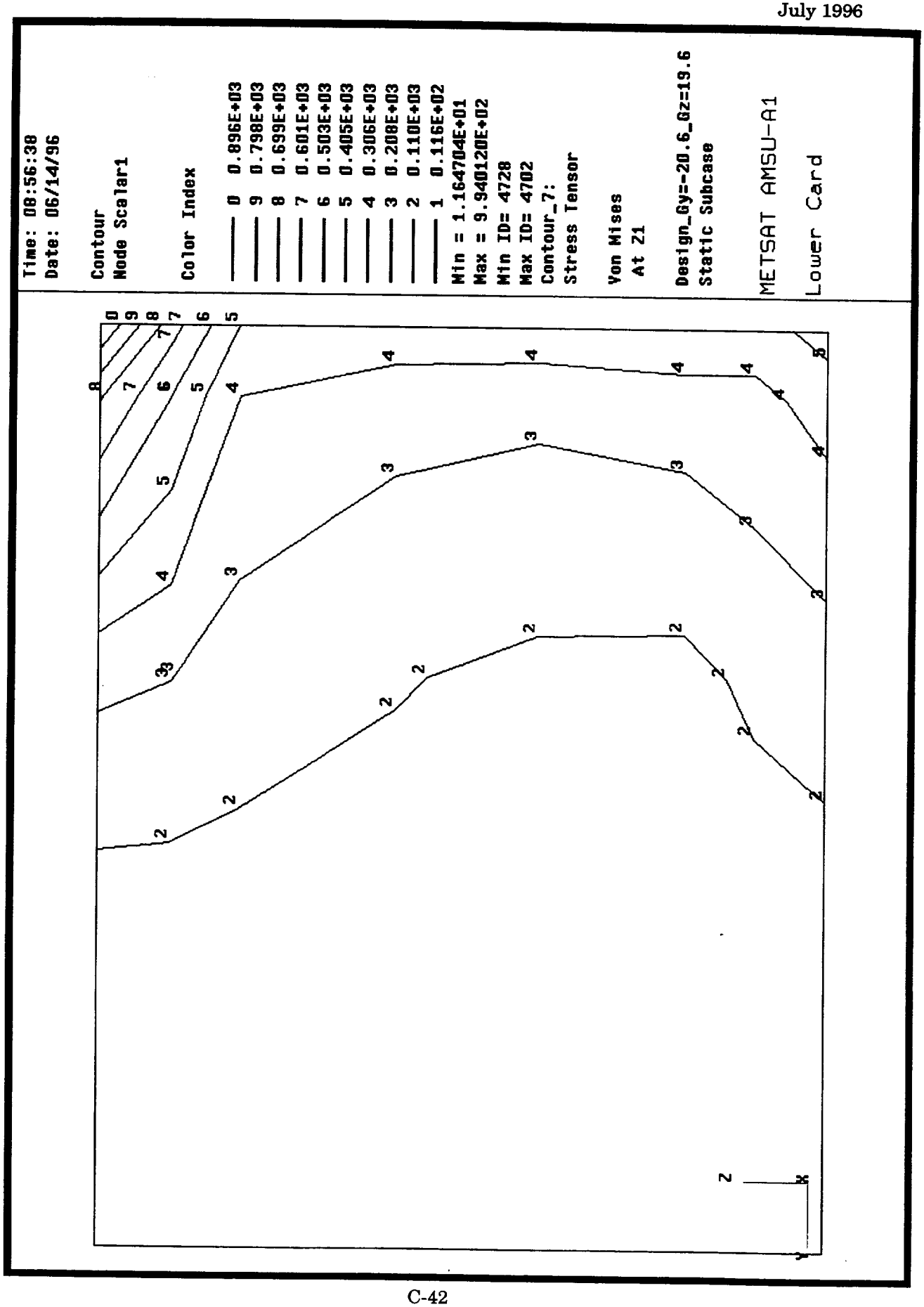

Time: 11:13:00
Date: 06/12/96
Contour
Node Scalar1
Color Index
0 0.135E+04
9 0.123E+04
8 0.111E+04
7 0.996E+03
6 0.878E+03
5 0.761E+03
4 0.643E+03
3 0.526E+03
2 0.408E+03
1 0.291E+03
Min = 2.907404E+02
Max = 1.466241E+03
Min ID= 2763
Max ID= 2929
Contour_4:
Stress Tensor
Von Mises
At Z2
Design_Gy=-20.6_Gx=21.2
Static Subcase
METSAT AMSU-A1
Upper Left
Warmload Shield
X
Z
Y

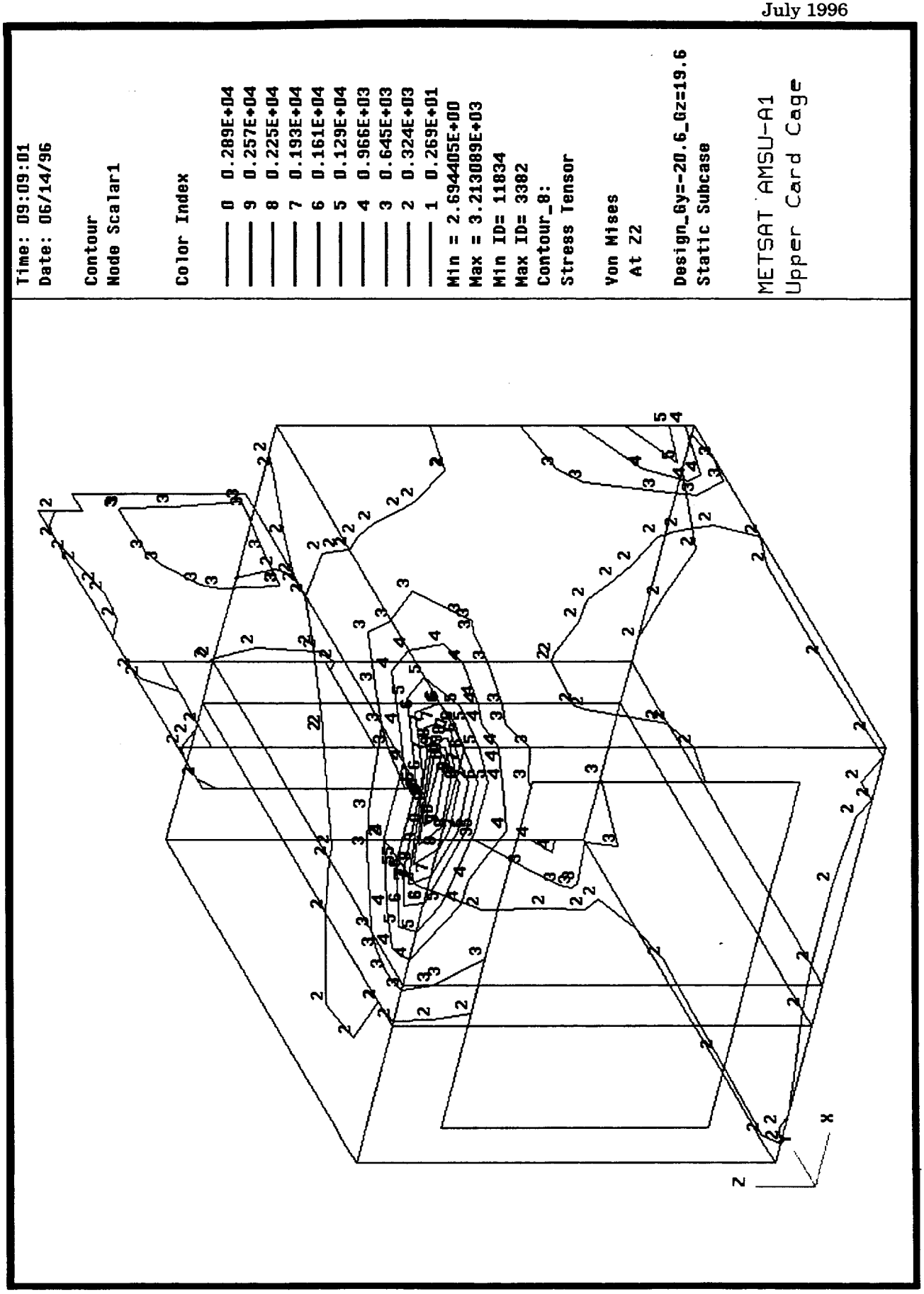

FRINGE PLOT LC=16.329 RES=2.1 MSC/PATRAN R-1.4 MSC/NASTRAN 12-Jun-96 09:07:14
DESIGN CASE 1 Gy=-20.6 Gx=-21.2 Max
Upper Left Warmload Shield
3630.
3386.
3142.
2898.
2654.
2411.
2167.
1923.
1679.
1436.
1192.
948.
704.
460.
217.
-27.
3630.
-27.
X
Z
Y

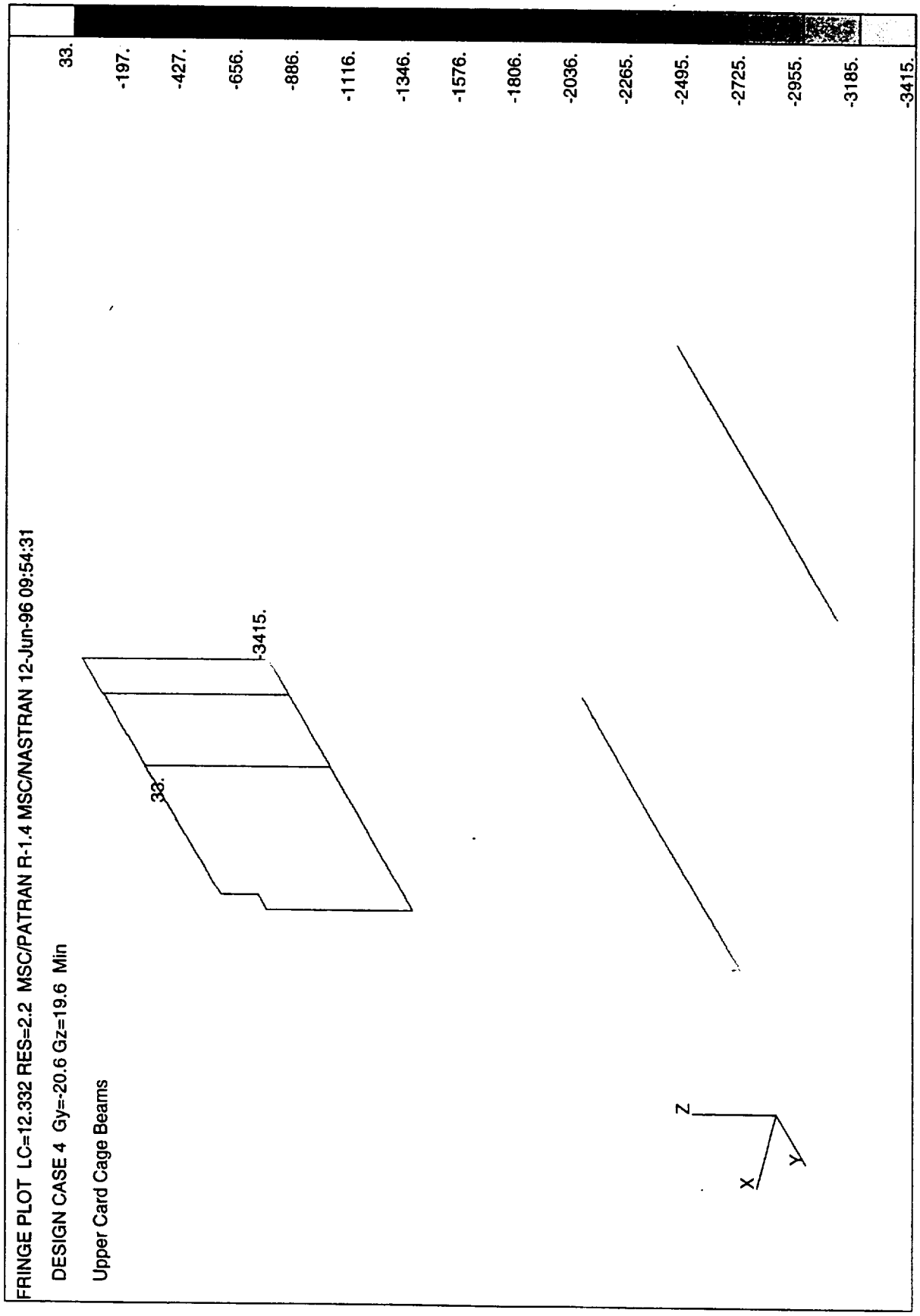

Time: 11:11:17
Date: 06/12/96
Contour
Node Scalar1
Color Index
0 0.363E+03
9 0.328E+03
8 0.294E+03
7 0.260E+03
6 0.225E+03
5 0.191E+03
4 0.156E+03
3 0.122E+03
2 0.873E+02
1 0.529E+02
Min = 5.285617E+01
Max = 3.972899E+02
Min ID= 1998
Max ID= 2690
Contour_2:
Stress Tensor
Von Mises
At Z2
Design_Gy=-20.6_Gx=-21.2
Static Subcase
METSAT AMSU-A1
Upper Right
Warmload Shield
8
9
0
0
9
8
7
6
5
4
3
2
Z
Y
X

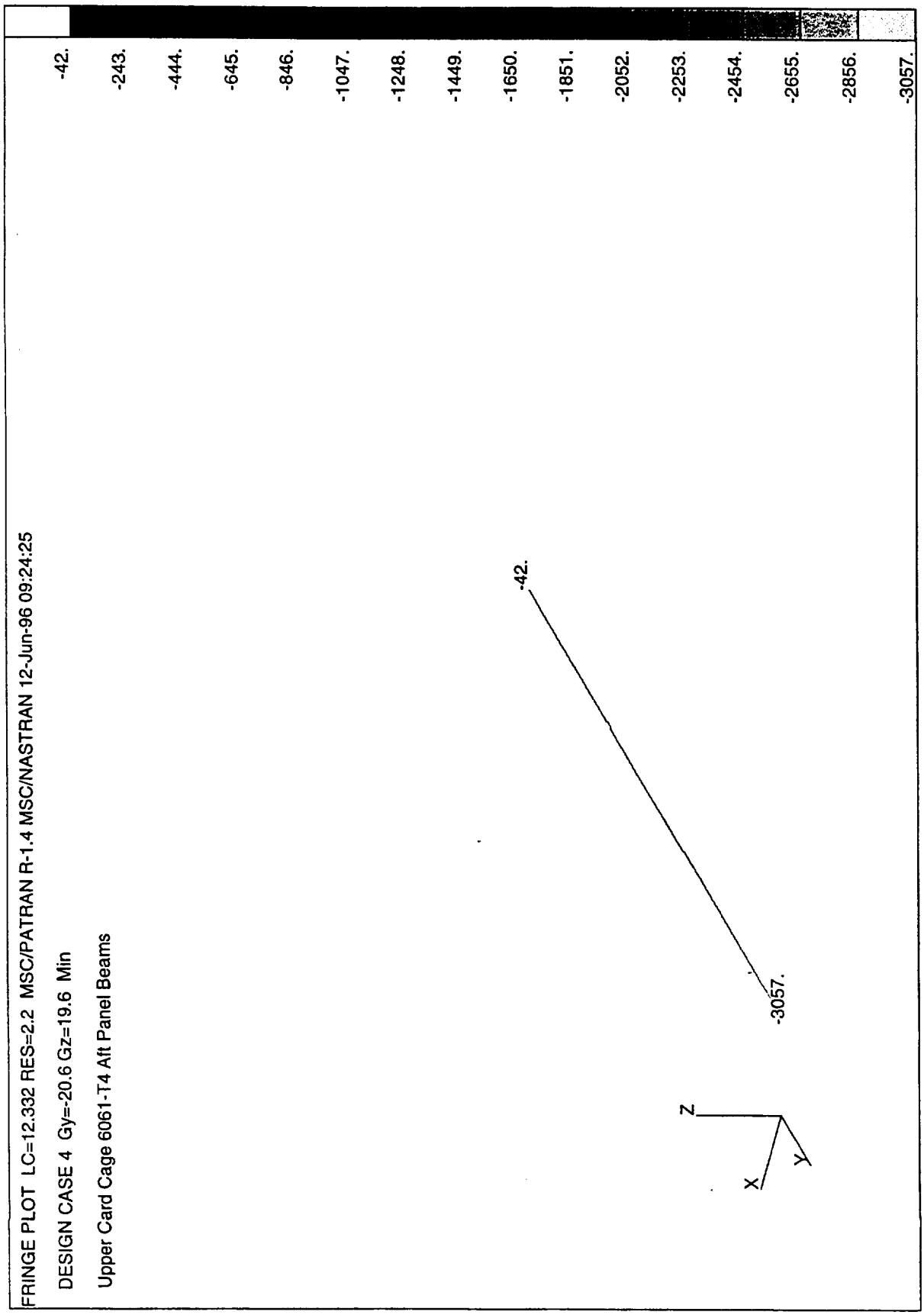

FRINGE PLOT LC=16.329 RES=2.1 MSC/PATRAN R-1.4 MSC/NASTRAN 12-Jun-96 09:13:13
DESIGN CASE 1 Gy=-20.6 Gx=-21.2 Max
Upper Right Warmload Shield
2096.
1971.
1846.
1721.
1595.
1470.
1345.
1219.
1094.
969.
843.
718.
593.
467.
342.
217.
2096.
217.
Z
X
Y

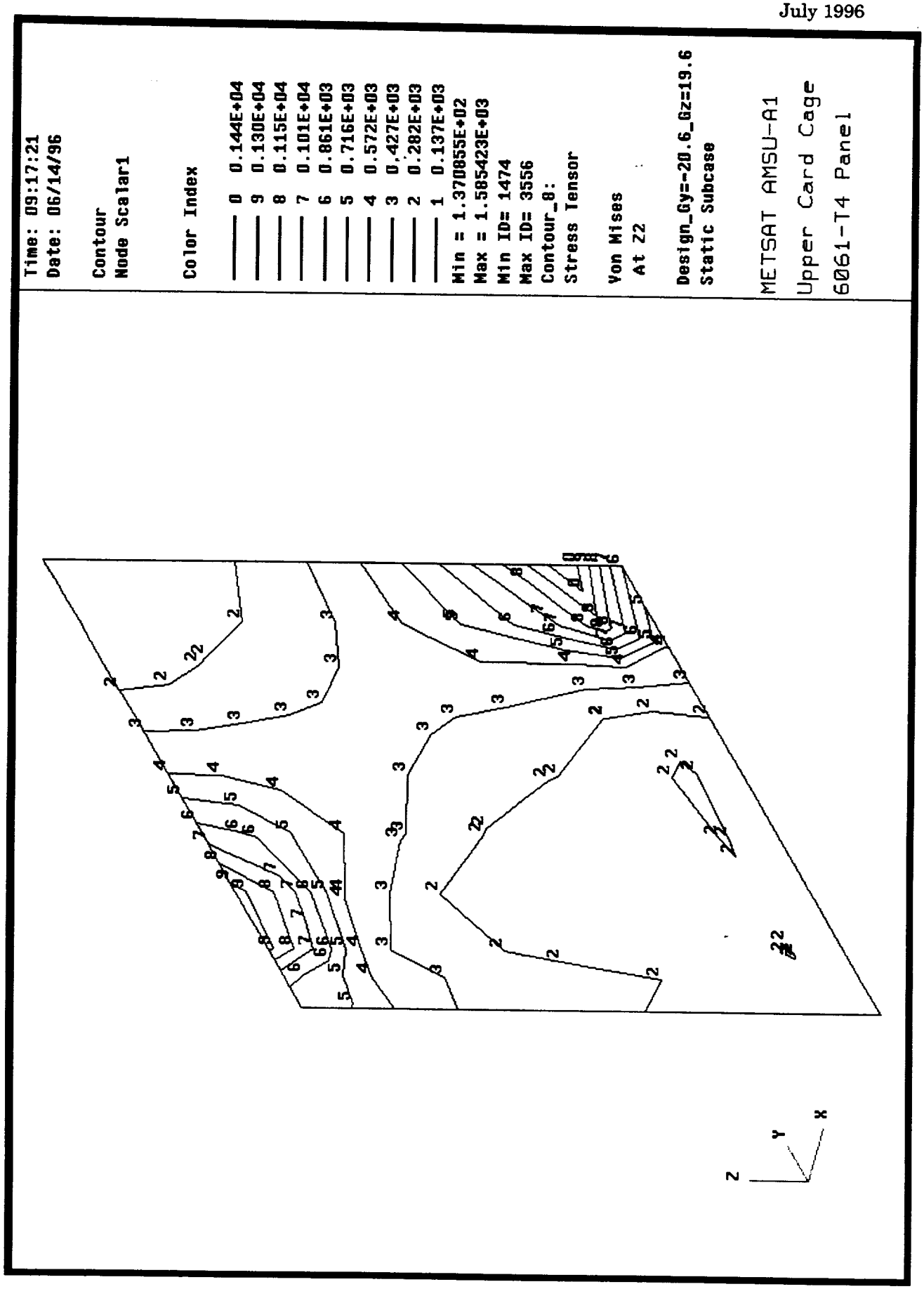

Time: 08:33:31
Date: 06/14/96
Contour
Node Scalar1
Color Index
0 0.280E+04
9 0.249E+04
8 0.218E+04
7 0.187E+04
6 0.156E+04
5 0.125E+04
4 0.938E+03
3 0.628E+03
2 0.318E+03
1 0.818E+01
Min = 0.178007E+00
Max = 3.106662E+03
Min ID= 4831
Max ID= 3733
Contour_7:
Stress Tensor
Von Mises
At Z1
Design_Gy=-20.6_Gz=19.6
Static Subcase
METSAT AMSU-A1
Lower Card Cage
Z
Y
X

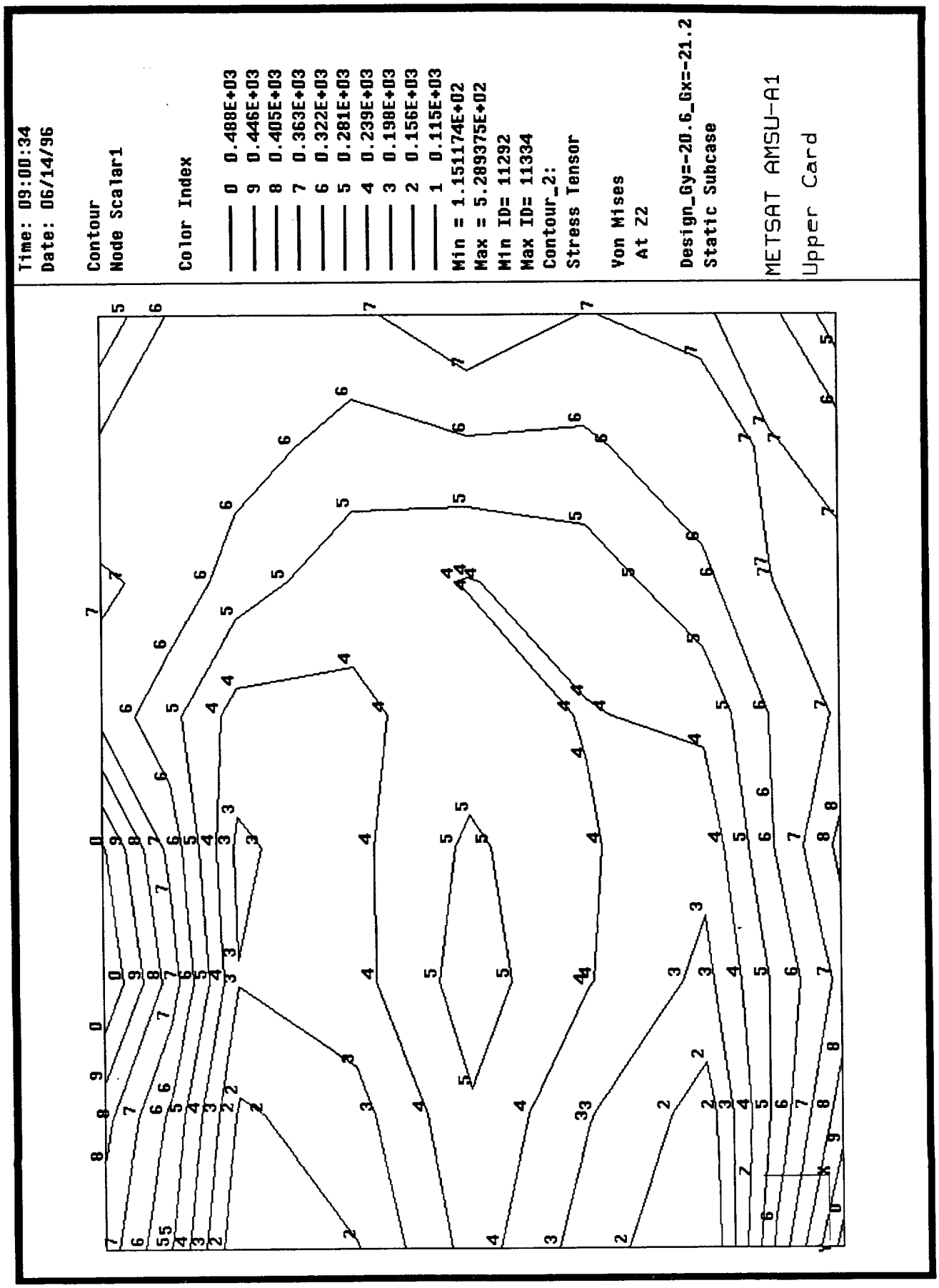

Time: 08:56:38
Date: 06/14/96
Contour
Mode Scalar1
Color Index
0 0.896E+03
9 0.798E+03
8 0.699E+03
7 0.601E+03
6 0.503E+03
5 0.405E+03
4 0.306E+03
3 0.208E+03
2 0.110E+03
1 0.116E+02
Min = 1.164704E+01
Max = 9.940120E+02
Min ID= 4728
Max ID= 4702
Contour_7:
Stress Tensor
Von Mises
At Z1
Design_Gy=-20.6_Gz=19.6
Static Subcase
METSAT AMSU-A1
Lower Card
Z
X
Y

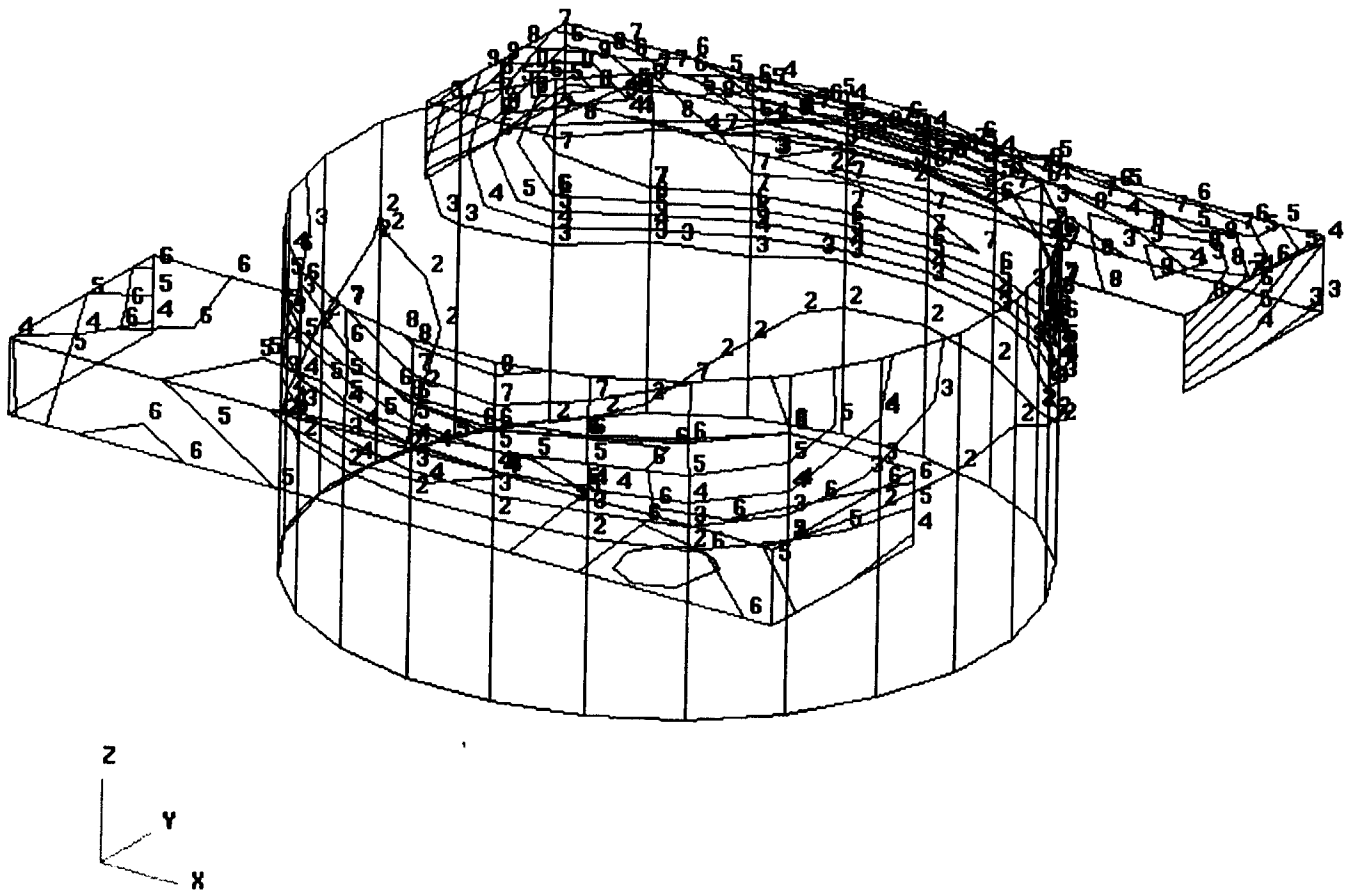

Time: 09:09:01
Date: 06/14/96
Contour
Node Scalar1
Color Index
0 0.289E+04
9 0.257E+04
8 0.225E+04
7 0.193E+04
6 0.161E+04
5 0.129E+04
4 0.966E+03
3 0.645E+03
2 0.324E+03
1 0.269E+01
Min = 2.694405E+00
Max = 3.213089E+03
Min ID= 11834
Max ID= 3382
Contour_8:
Stress Tensor
Von Mises
At Z2
Design_6y=-20.6_6z=19.6
Static Subcase
METSAT AMSU-A1
Upper Card Cage
Z
X


FRINGE PLOT LC=12.332 RES=2.2 MSC/PATRAN R-1.4 MSC/NASTRAN 12-Jun-96 09:54:31
DESIGN CASE 4 Gy=-20.6 Gz=19.6 Min
Upper Card Cage Beams
33.
-197.
-427.
-656.
-886.
-1116.
-1346.
-1576.
-1806.
-2036.
-2265.
-2495.
-2725.
-2955.
-3185.
-3415.
-3415.
33.
Z
X
Y


FRINGE PLOT LC=12.332 RES=2.2 MSC/PATRAN R-1.4 MSC/NASTRAN 12-Jun-96 09:24:25
DESIGN CASE 4 Gy=-20.6 Gz=19.6 Min
Upper Card Cage 6061-T4 Aft Panel Beams
-42.
-243.
-444.
-645.
-846.
-1047.
-1248.
-1449.
-1650.
-1851.
-2052.
-2253.
-2454.
-2655.
-2856.
-3057.
-42.
-3057.
Z
X
Y


Time: 09:17:21
Date: 06/14/96
Contour
Node Scalar1
Color Index
0 0.144E+04
9 0.130E+04
8 0.115E+04
7 0.101E+04
6 0.861E+03
5 0.716E+03
4 0.572E+03
3 0.427E+03
2 0.282E+03
1 0.137E+03
Min = 1.370855E+02
Max = 1.585423E+03
Min ID= 1474
Max ID= 3556
Contour_8:
Stress Tensor
Von Mises
At Z2
Design_Gy=-20.6_Gz=19.6
Static Subcase
METSAT AMSU-A1
Upper Card Cage
6061-T4 Panel
Z
Y
X


Time: 09:00:34
Date: 06/14/96
Contour
Node Scalar1
Color Index
0 0.488E+03
9 0.446E+03
8 0.405E+03
7 0.363E+03
6 0.322E+03
5 0.281E+03
4 0.239E+03
3 0.198E+03
2 0.156E+03
1 0.115E+03
Min = 1.151174E+02
Max = 5.289375E+02
Min ID= 11292
Max ID= 11334
Contour_2:
Stress Tensor
Von Mises
At Z2
Design_Gy=-20.6_Gx=-21.2
Static Subcase
METSAT AMSU-A1
Upper Card



Time: 09:21:29
Date: 06/14/96

Contour
Node Scalar1

Color Index

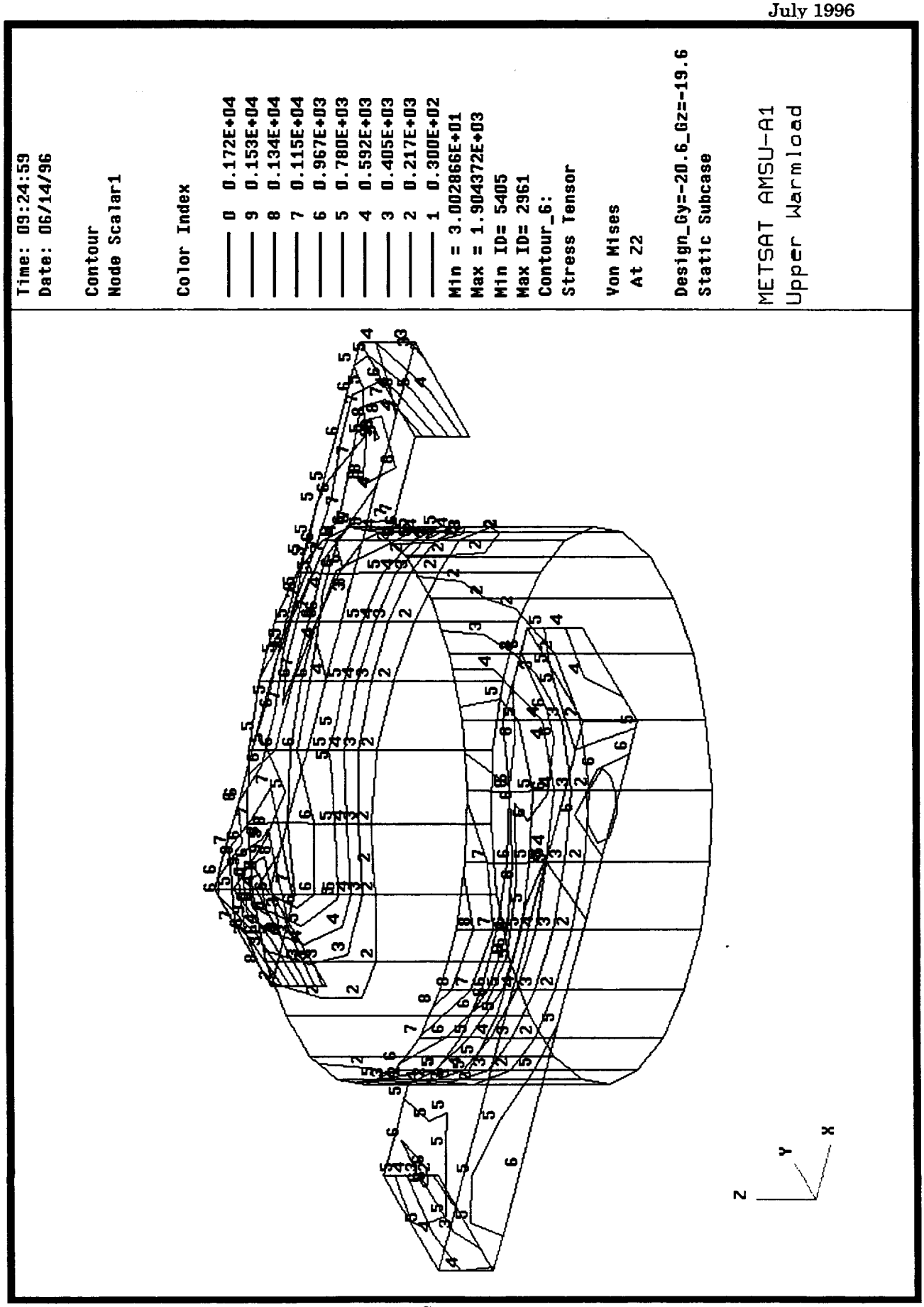
———	0	0.179E+04
———	9	0.160E+04
———	8	0.140E+04
———	7	0.121E+04
———	6	0.102E+04
———	5	0.823E+03
———	4	0.630E+03
———	3	0.437E+03
———	2	0.243E+03
———	1	0.498E+02

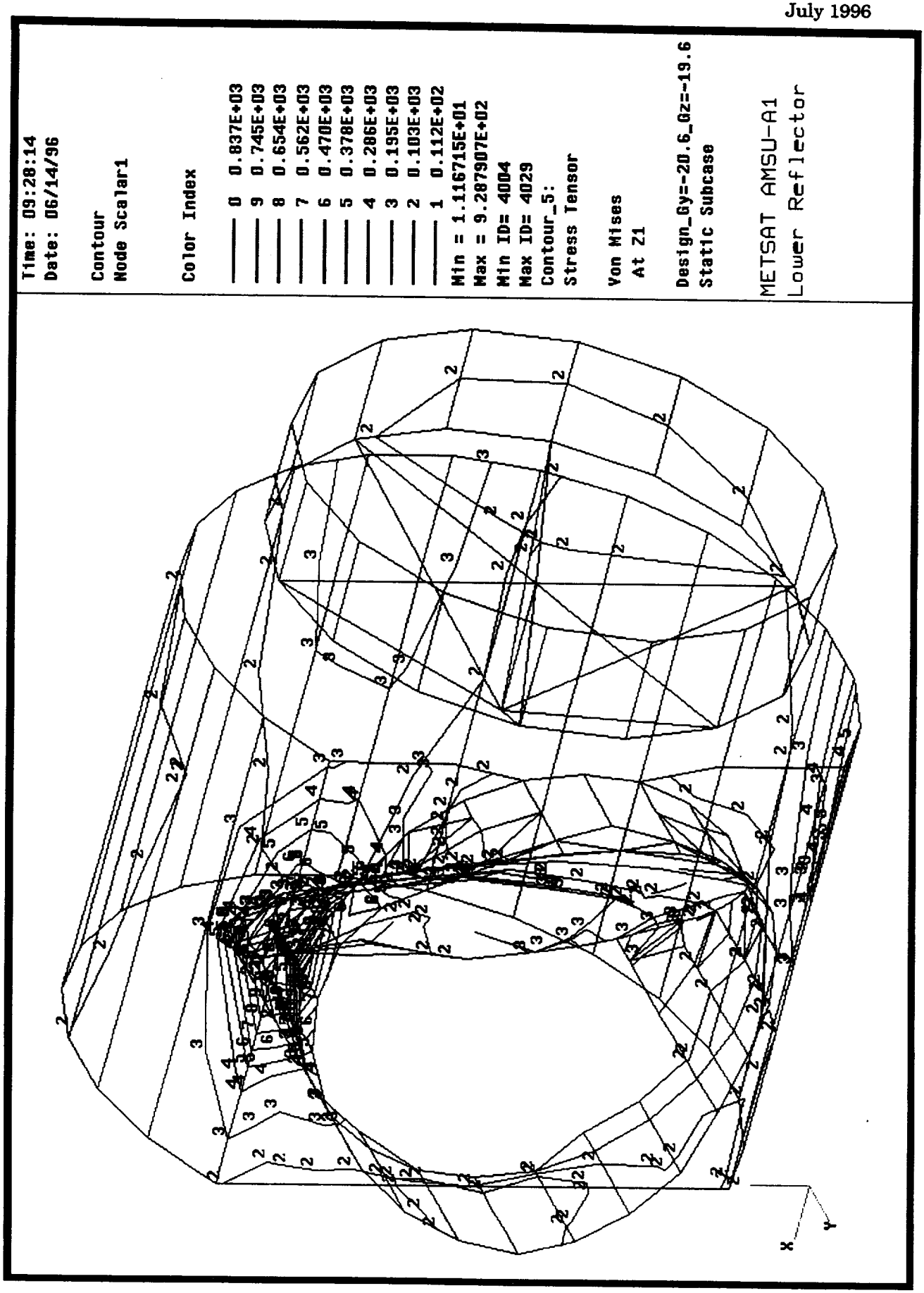
Min = 4.976259E+01
Max = 1.984076E+03
Min ID= 5171
Max ID= 3060
Contour_6:
Stress Tensor

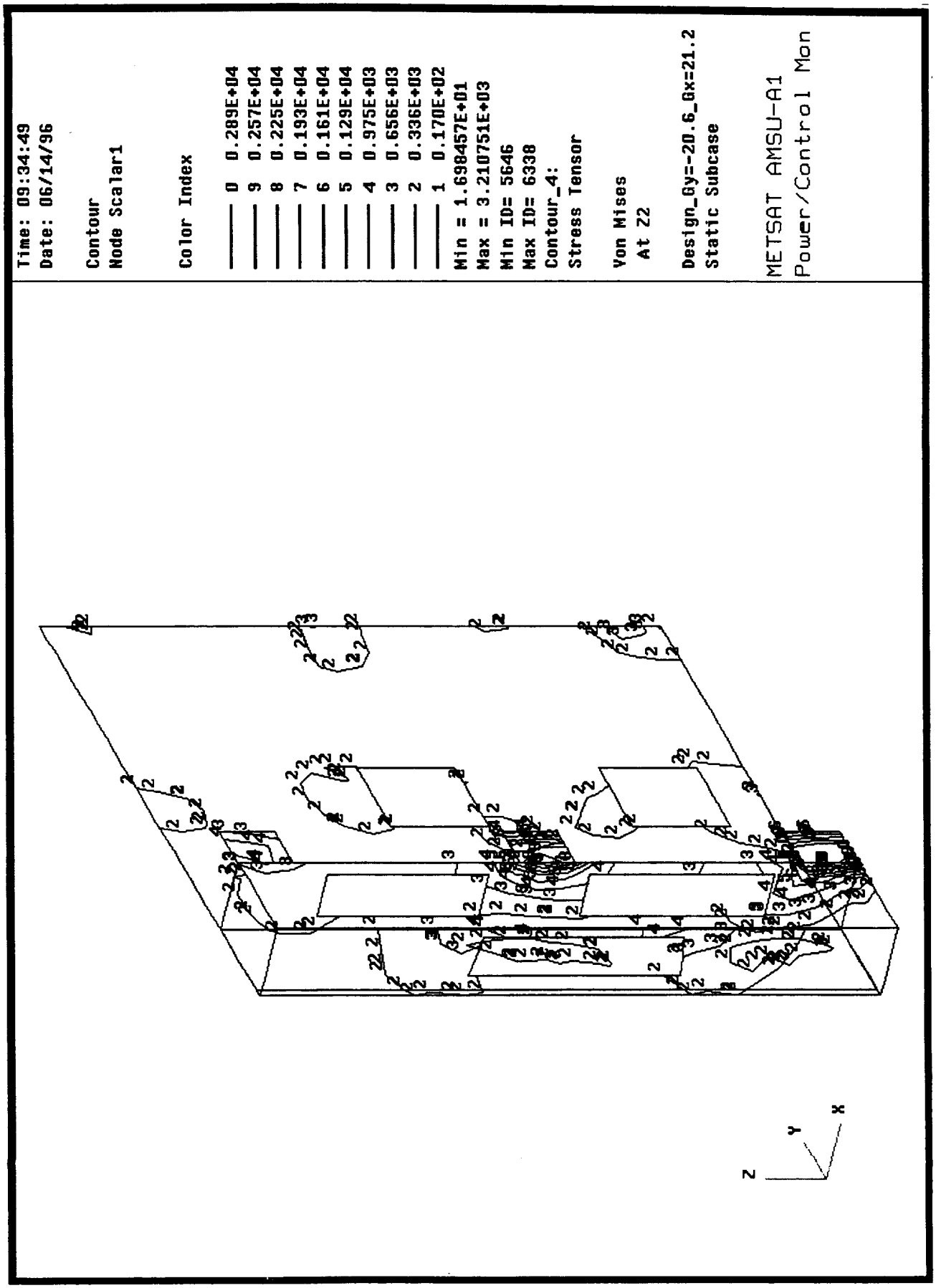
Von Mises
At Z2

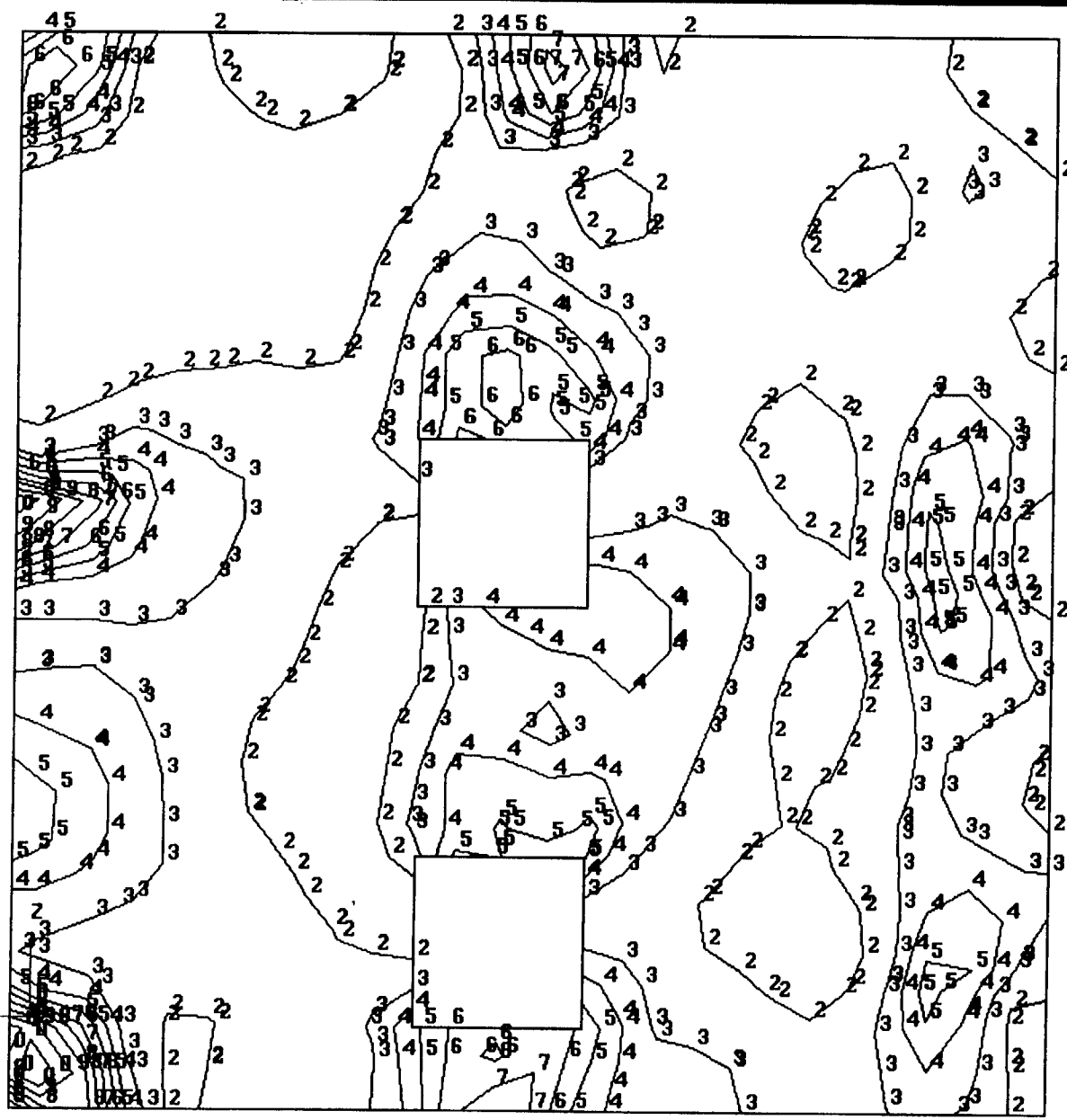
Design_Gy=-20.6_Gz=-19.6
Static Subcase

METSAT AMSU-A1
Lower Warmload


Time: 09:24:59
Date: 06/14/96
Contour
Node Scalar1
Color Index
0 0.172E+04
9 0.153E+04
8 0.134E+04
7 0.115E+04
6 0.967E+03
5 0.780E+03
4 0.592E+03
3 0.405E+03
2 0.217E+03
1 0.300E+02
Min = 3.002866E+01
Max = 1.904372E+03
Min ID= 5405
Max ID= 2961
Contour_6:
Stress Tensor
Von Mises
At Z2
Design_Gy=-20.6_Gz=-19.6
Static Subcase
METSAT AMSU-A1
Upper Warmload
Z
Y
X


Time: 09:28:14
Date: 06/14/96
Contour
Node Scalar1
Color Index
0 0.837E+03
9 0.745E+03
8 0.654E+03
7 0.562E+03
6 0.470E+03
5 0.378E+03
4 0.286E+03
3 0.195E+03
2 0.103E+03
1 0.112E+02
Min = 1.116715E+01
Max = 9.287907E+02
Min ID= 4004
Max ID= 4029
Contour_5:
Stress Tensor
Von Mises
At Z1
Design_Gy=-20.6_Gz=-19.6
Static Subcase
METSAT AMSU-A1
Lower Reflector
X
Y


Time: 09:34:49
Date: 06/14/96
Contour
Node Scalar1
Color Index
10 0.289E+04
9 0.257E+04
8 0.225E+04
7 0.193E+04
6 0.161E+04
5 0.129E+04
4 0.975E+03
3 0.656E+03
2 0.336E+03
1 0.170E+02
Min = 1.698457E+01
Max = 3.210751E+03
Min ID= 5646
Max ID= 6338
Contour_4:
Stress Tensor
Von Mises
At Z2
Design_Gy=-20.6_Gx=21.2
Static Subcase
METSAT AMSU-A1
Power/Control Mon
Z
Y
X



Time: 08:17:09
Date: 06/14/96

Contour
Node Scalar1

Color Index

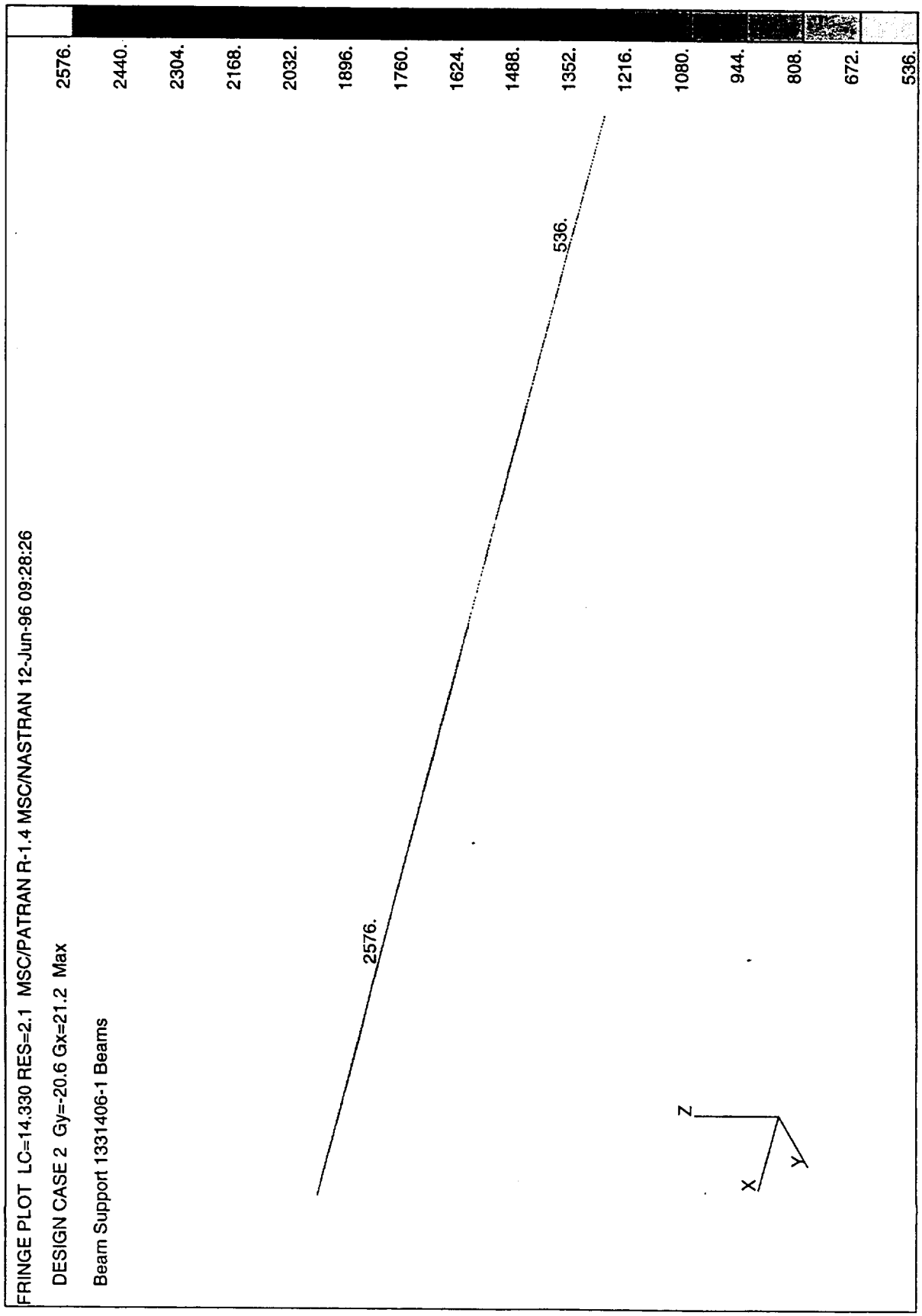
0	0.803E+03
9	0.715E+03
8	0.627E+03
7	0.540E+03
6	0.452E+03
5	0.364E+03
4	0.276E+03
3	0.188E+03
2	0.100E+03
1	0.121E+02

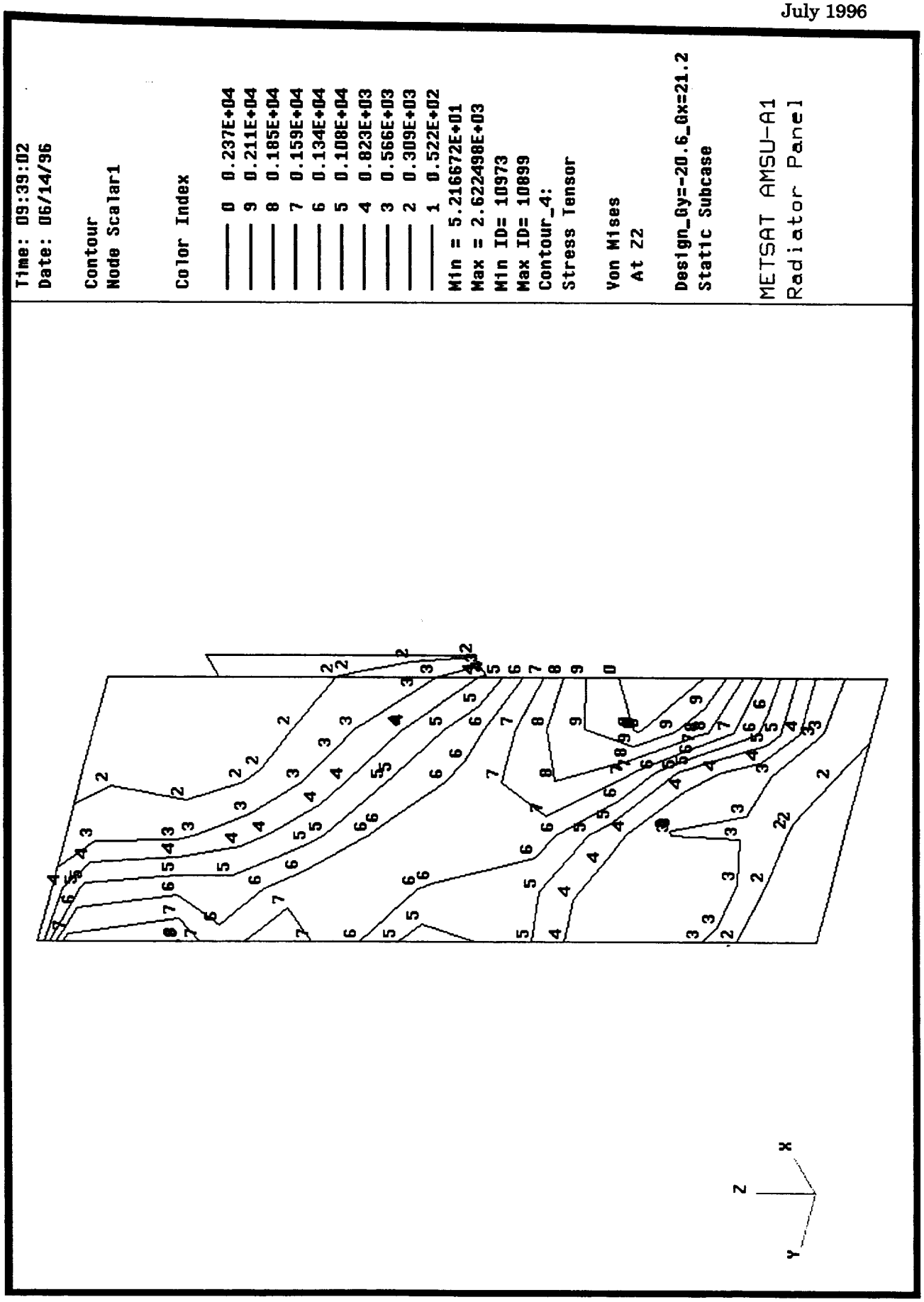
Min = 1.209474E+01
Max = 8.911633E+02
Min ID= 5601
Max ID= 6307
Contour_2:
Stress Tensor

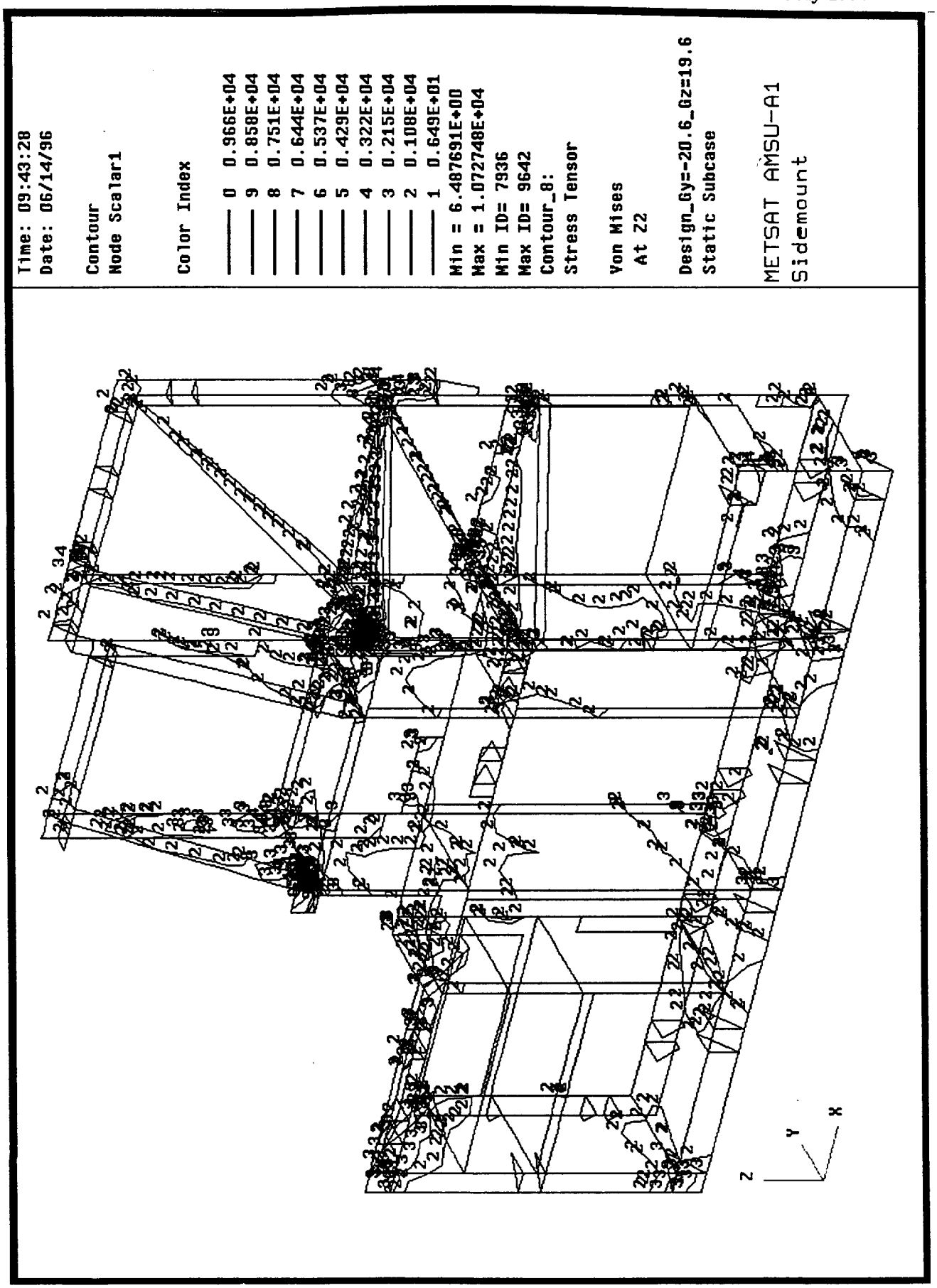
Von Mises
At Z2

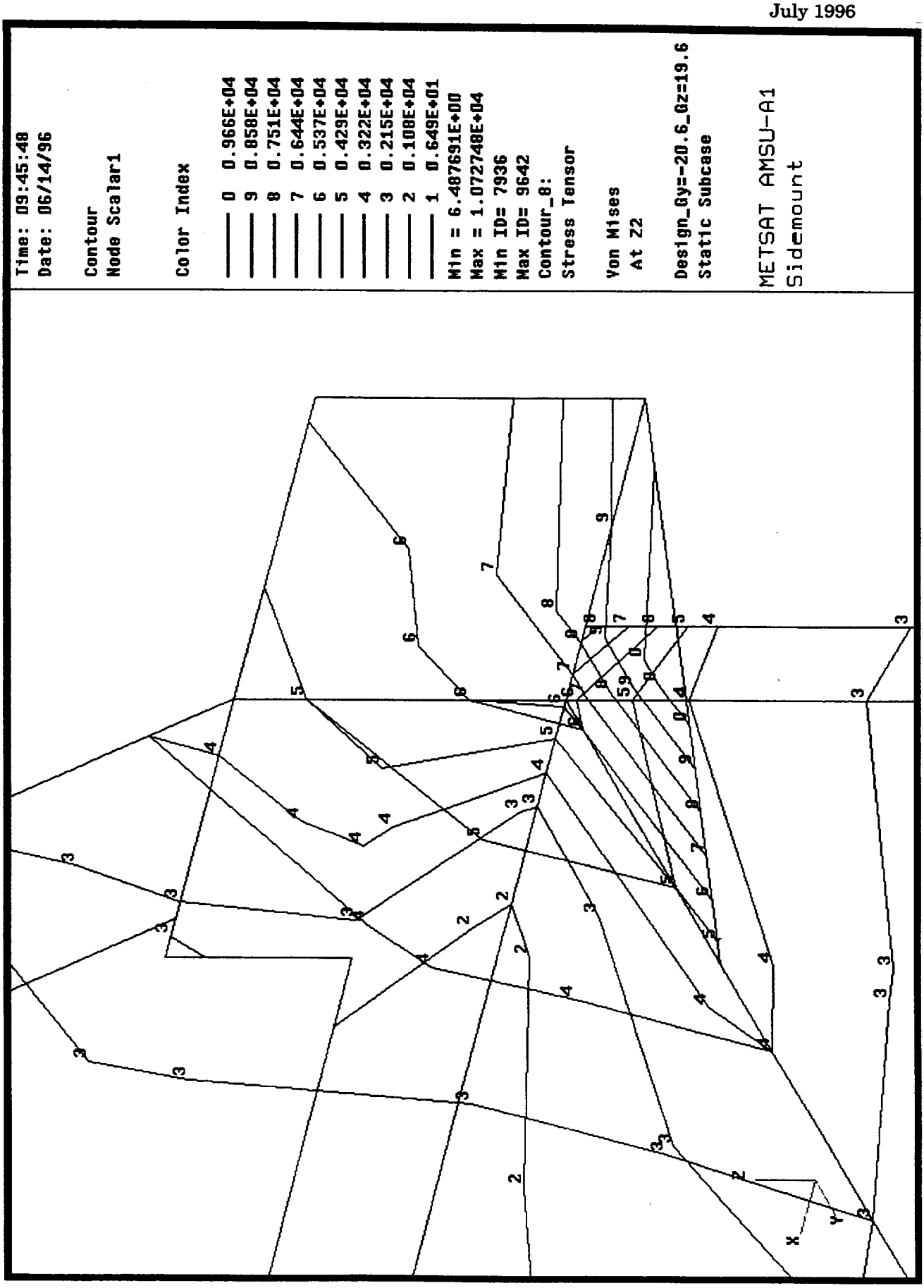
Design_Gy=-20.6_Gx=-21.2
Static Subcase

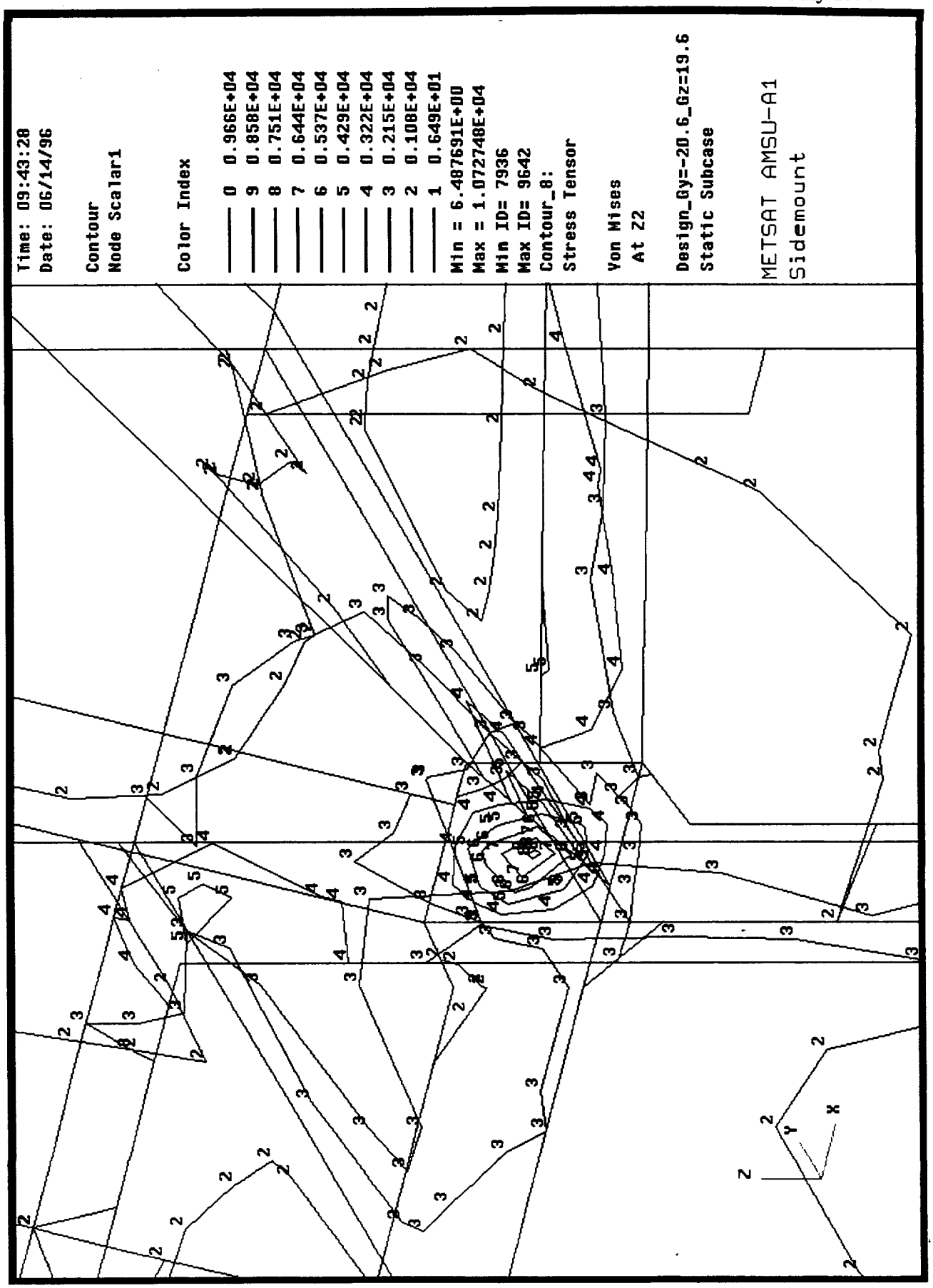
METSAT AMSU-A1
Power/Control
Monitor PWB

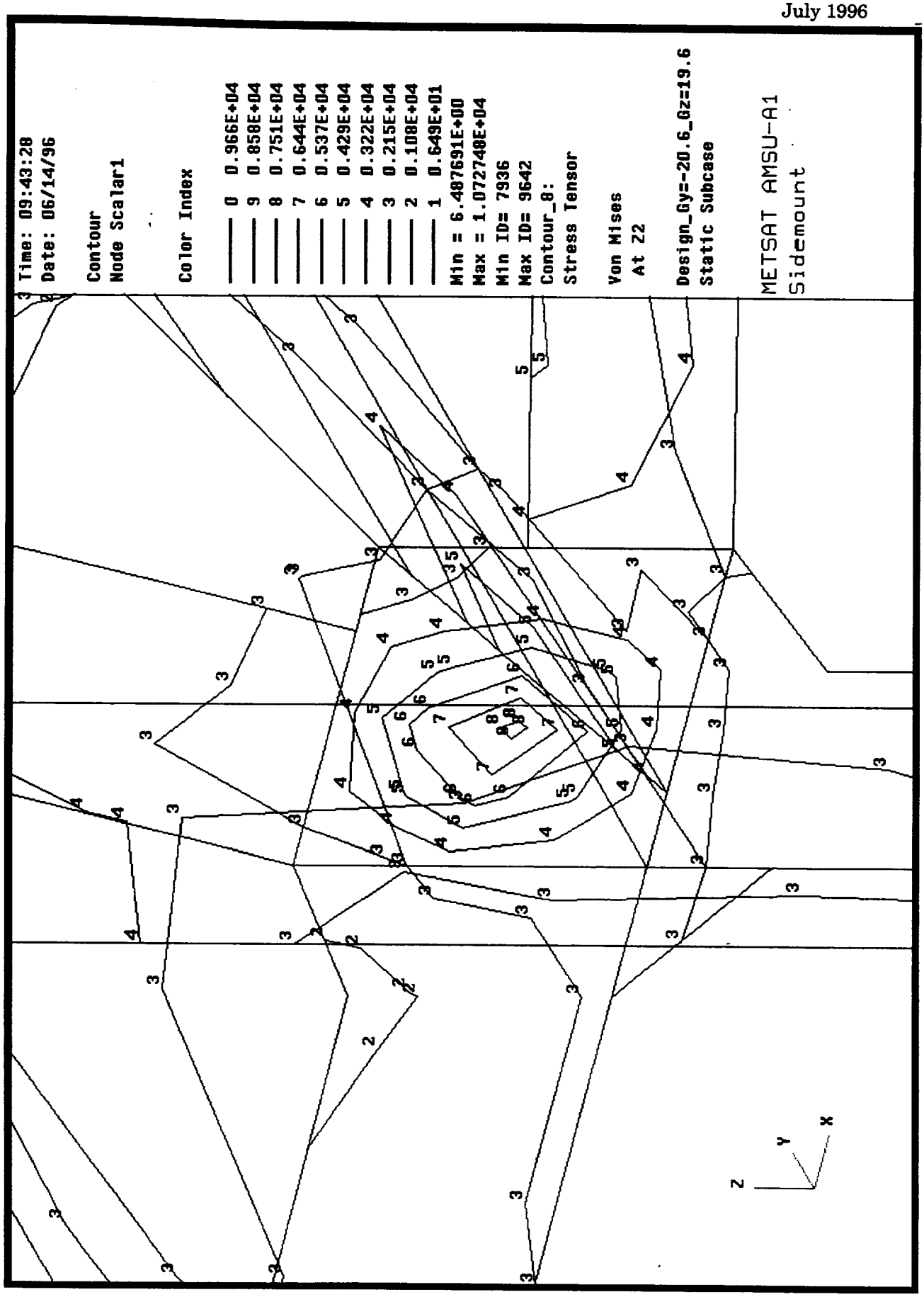

FRINGE PLOT LC=14.330 RES=2.1 MSC/PATRAN R-1.4 MSC/NASTRAN 12-Jun-96 09:28:26
DESIGN CASE 2 Gy=-20.6 Gx=21.2 Max
Beam Support 1331406-1 Beams
2576.
2440.
2304.
2168.
2032.
1896.
1760.
1624.
1488.
1352.
1216.
1080.
944.
808.
672.
536.
2576.
536.
Z
X
Y

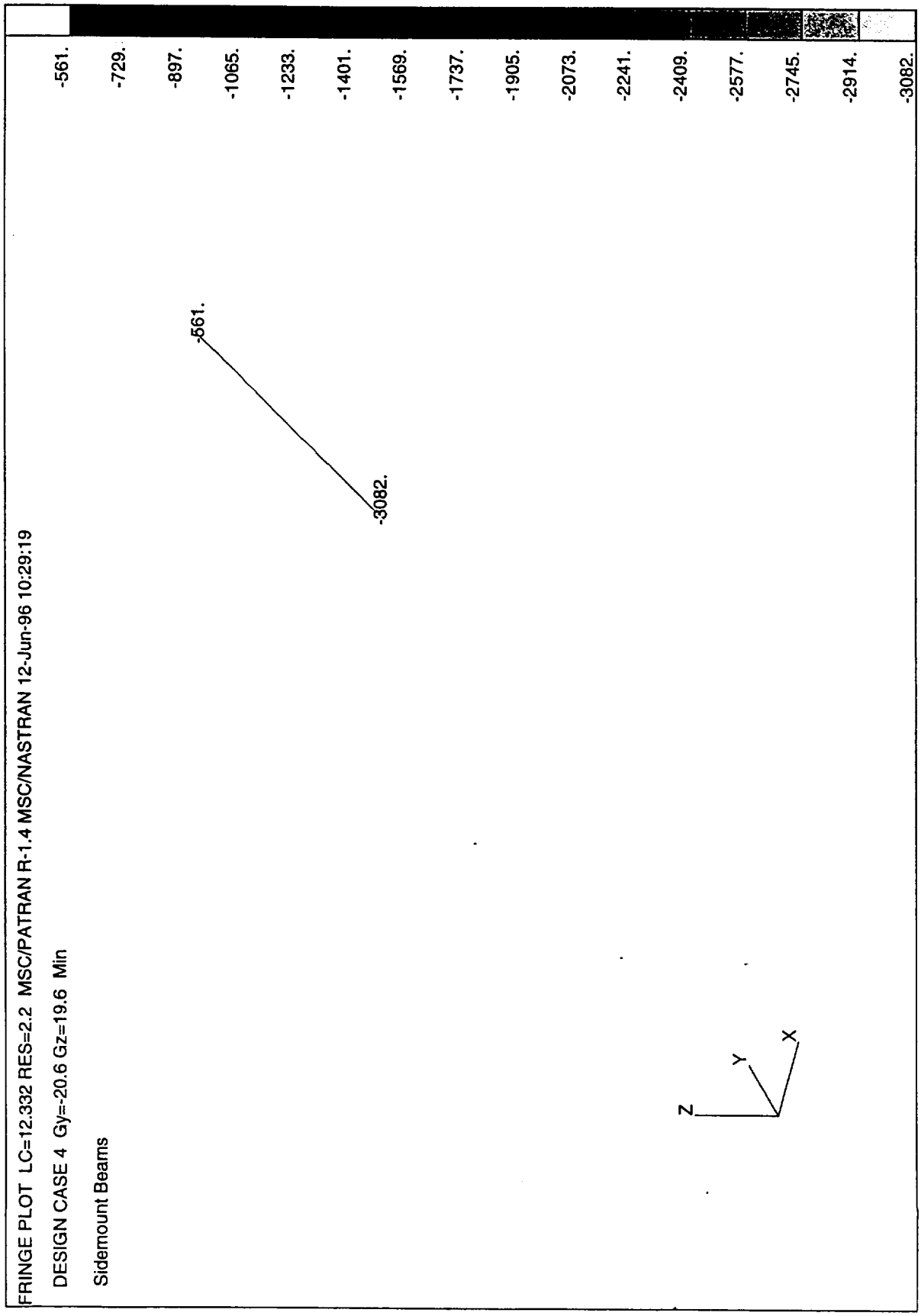

Time: 09:39:02
Date: 06/14/96
Contour
Node Scalar1
Color Index
0 0.237E+04
9 0.211E+04
8 0.185E+04
7 0.159E+04
6 0.134E+04
5 0.108E+04
4 0.823E+03
3 0.566E+03
2 0.309E+03
1 0.522E+02
Min = 5.216672E+01
Max = 2.622498E+03
Min ID= 10973
Max ID= 10899
Contour_4:
Stress Tensor
Von Mises
At Z2
Design_Gy=-20.6_Gx=21.2
Static Subcase
METSAT AMSU-A1
Radiator Panel
X
Z
Y

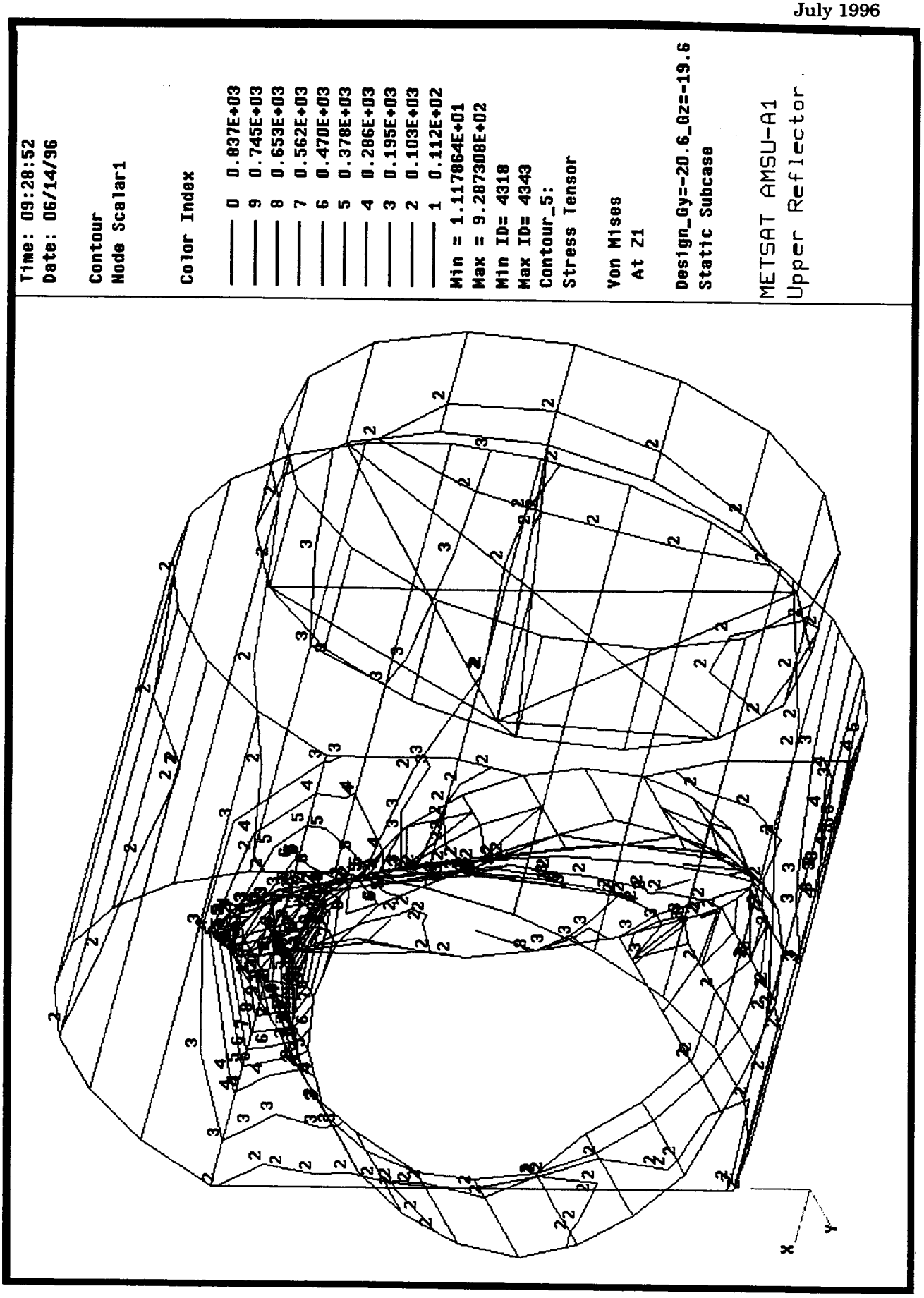

Time: 09:43:28
Date: 06/14/96
Contour
Node Scalar1
Color Index
0 0.966E+04
9 0.858E+04
8 0.751E+04
7 0.644E+04
6 0.537E+04
5 0.429E+04
4 0.322E+04
3 0.215E+04
2 0.108E+04
1 0.649E+01
Min = 6.487691E+00
Max = 1.072748E+04
Min ID= 7936
Max ID= 9642
Contour_8:
Stress Tensor
Von Mises
At Z2
Design_Gy=-20.6_Gz=19.6
Static Subcase
METSAT AMSU-A1
Sidemount
Z
Y
X

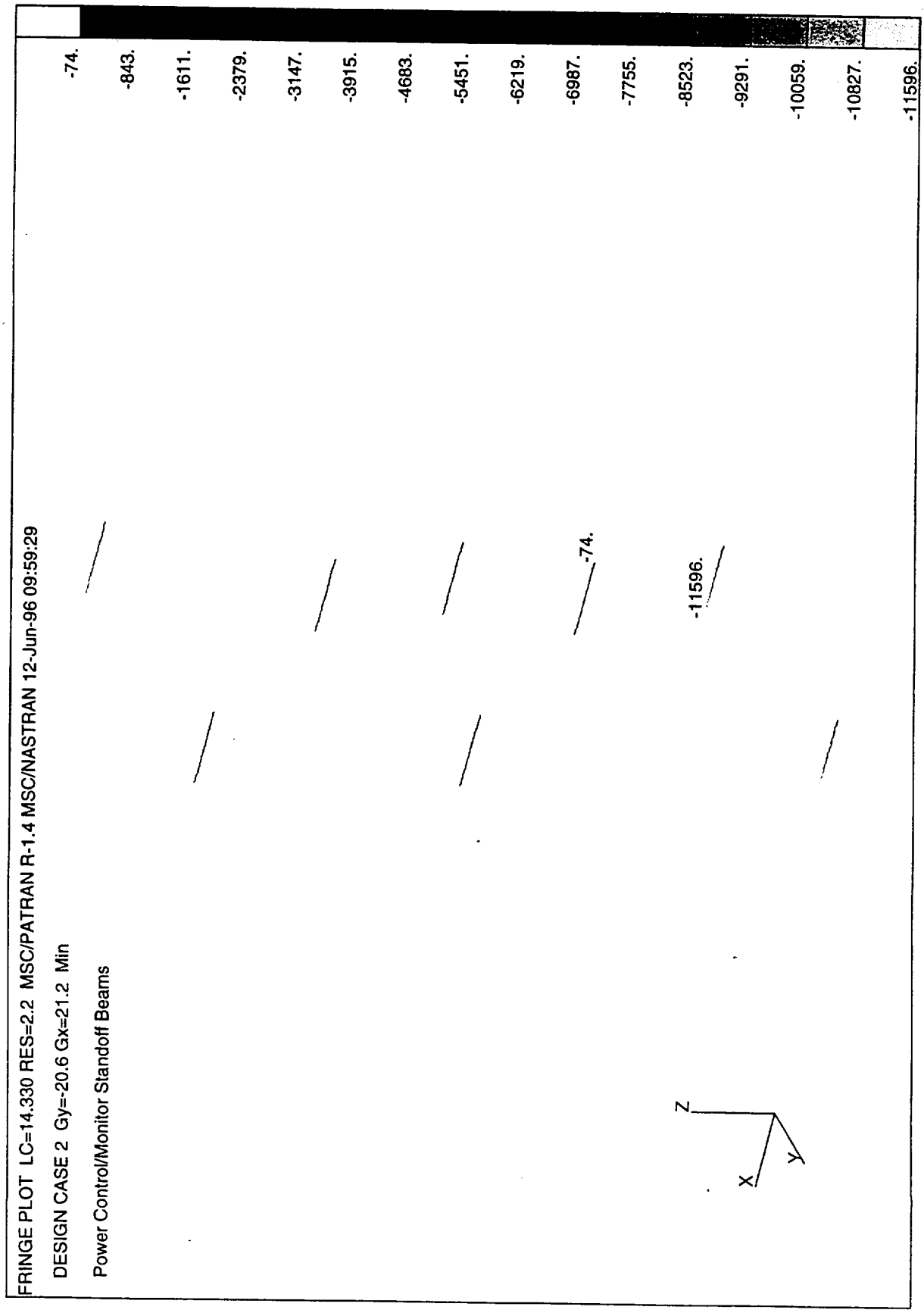

Time: 09:45:48
Date: 06/14/96
Contour
Node Scalar1
Color Index
0 0.966E+04
9 0.858E+04
8 0.751E+04
7 0.644E+04
6 0.537E+04
5 0.429E+04
4 0.322E+04
3 0.215E+04
2 0.108E+04
1 0.649E+01
Min = 6.487691E+00
Max = 1.072748E+04
Min ID= 7936
Max ID= 9642
Contour_8:
Stress Tensor
Von Mises
At Z2
Design_Gy=-20.6_Gz=19.6
Static Subcase
METSAT AMSU-A1
Sidemount

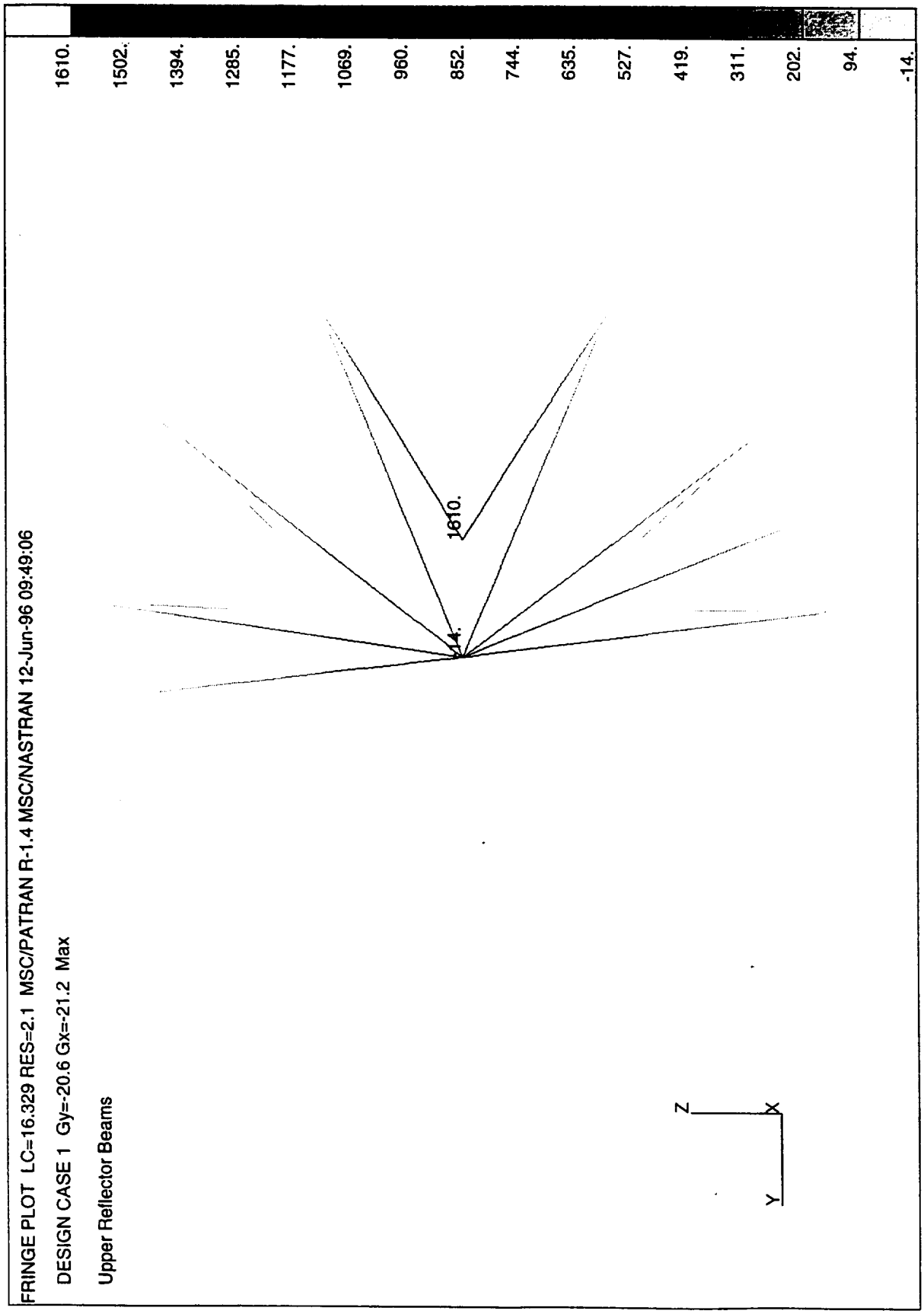

Time: 09:43:28
Date: 06/14/96
Contour
Node Scalar1
Color Index
0 0.966E+04
9 0.858E+04
8 0.751E+04
7 0.644E+04
6 0.537E+04
5 0.429E+04
4 0.322E+04
3 0.215E+04
2 0.108E+04
1 0.649E+01
Min = 6.487691E+00
Max = 1.072748E+04
Min ID= 7936
Max ID= 9642
Contour_8:
Stress Tensor
Von Mises
At Z2
Design_Gy=-20.6_Gz=19.6
Static Subcase
METSAT AMSU-A1
Sidemount
Z
Y
X


Time: 09:43:28
Date: 06/14/96
Contour
Node Scalar1
Color Index
0 0.966E+04
9 0.858E+04
8 0.751E+04
7 0.644E+04
6 0.537E+04
5 0.429E+04
4 0.322E+04
3 0.215E+04
2 0.108E+04
1 0.649E+01
Min = 6.487691E+00
Max = 1.072748E+04
Min ID= 7936
Max ID= 9642
Contour_8:
Stress Tensor
Von Mises
At Z2
Design_Gy=-20.6_Gz=19.6
Static Subcase
METSAT AMSU-A1
Sidemount
Z
Y
X


FRINGE PLOT LC=12.332 RES=2.2 MSC/PATRAN R-1.4 MSC/NASTRAN 12-Jun-96 10:29:19
DESIGN CASE 4 Gy=-20.6 Gz=19.6 Min
Sidemount Beams
-561.
-729.
-897.
-1065.
-1233.
-1401.
-1569.
-1737.
-1905.
-2073.
-2241.
-2409.
-2577.
-2745.
-2914.
-3082.
-561.
-3082.
Z
Y
X


Time: 09:28:52
Date: 06/14/96
Contour
Node Scalar1
Color Index
0 0.837E+03
9 0.745E+03
8 0.653E+03
7 0.562E+03
6 0.470E+03
5 0.378E+03
4 0.286E+03
3 0.195E+03
2 0.103E+03
1 0.112E+02
Min = 1.117864E+01
Max = 9.287308E+02
Min ID= 4318
Max ID= 4343
Contour_5:
Stress Tensor
Von Mises
At Z1
Design_Gy=-20.6_Gz=-19.6
Static Subcase
METSAT AMSU-A1
Upper Reflector
X
Y


FRINGE PLOT LC=14.330 RES=2.2 MSC/PATRAN R-1.4 MSC/NASTRAN 12-Jun-96 09:59:29
DESIGN CASE 2 Gy=-20.6 Gx=21.2 Min
Power Control/Monitor Standoff Beams
-74.
-843.
-1611.
-2379.
-3147.
-3915.
-4683.
-5451.
-6219.
-6987.
-7755.
-8523.
-9291.
-10059.
-10827.
-11596.
-74.
-11596.
Z
X
Y


FRINGE PLOT LC=16.329 RES=2.1 MSC/PATRAN R-1.4 MSC/NASTRAN 12-Jun-96 09:49:06
DESIGN CASE 1 Gy=-20.6 Gx=-21.2 Max
Upper Reflector Beams
1610.
1502.
1394.
1285.
1177.
1069.
960.
852.
744.
635.
527.
419.
311.
202.
94.
-14.
1610.
-14.
Z
X
Y

Appendix D

RANDOM VIBRATION STRESSES

(7 PERCENT CRITICAL DAMPING Q=7)

RANDOM VIBRATION SUMMARY - METSAT QUALIFICATION LEVEL (8.8 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	286	319	957	349	406	1219	1266	1282	3846
	5	133			140			305		
	7	78			124			125		
179 Z2	10	286	320	961	332	376	1127	1244	1263	3790
	12	145			108			214		
	14	77			109			143		
197 Z1	3	431	448	1345	497	520	1561	1841	1866	5598
	5	201			265			802		
	7	66			77			164		
197 Z2	10	423	438	1314	475	516	1548	1783	1785	5355
	12	242			207			771		
	14	54			113			41		
3523 Z1	3	262	289	868	244	289	866	774	787	2361
	5	136			135			182		
	7	65			82			87		
3523 Z2	10	276	295	885	266	311	934	860	882	2646
	12	105			122			207		
	14	60			93			121		
3522 Z1	3	270	455	1364	190	460	1379	666	1310	3931
	5	394			370			1207		
	7	106			156			258		
3522 Z2	10	252	485	1454	321	537	1610	823	1461	4382
	12	437			455			1389		
	14	105			133			214		

215 Z1	3		318	327	982		349	383	1148		1387	1413	4238
	5		115				145				449		
	7		45				89				157		
215 Z2	10		329	336	1008		360	394	1182		1403	1412	4237
	12		145				119				434		
	14		38				96				96		
3524 Z1	3		184	209	626		164	239	718		469	534	1601
	5		93				65				150		
	7		54				115				158		
3524 Z2	10		185	206	617		156	255	765		467	520	1561
	12		79				88				169		
	14		51				128				137		

LOWER BASEPLATE
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
10	2	90	142	425	91	132	395	292	321	963
	3	42	94	281	97	137	412	249	278	834
	4	42	94	281	97	137	412	249	278	834
	5	90	142	425	91	132	395	292	321	963
	6	51			40			29		
	12	399	450	1351	237	277	831	173	202	606
	13	125	176	529	92	132	397	216	245	735
	14	125	176	529	92	132	397	216	245	735
	15	399	450	1351	237	277	831	173	202	606
25	2	360	373	1120	931	976	2927	2404	2428	7285
	3	362	376	1127	918	962	2887	2379	2403	7210
	4	362	376	1127	918	962	2887	2379	2403	7210
	5	360	373	1120	931	976	2927	2404	2428	7285
	6	14			44			24		
	12	376	390	1170	1006	1050	3150	2567	2591	7773
	13	404	417	1252	994	1039	3117	2562	2586	7759
	14	404	417	1252	994	1039	3117	2562	2586	7759
	15	376	390	1170	1006	1050	3150	2567	2591	7773
34	2	254	279	838	784	824	2473	2109	2182	6545
	3	251	276	829	786	826	2478	2116	2189	6566
	4	251	276	829	786	826	2478	2116	2189	6566
	5	254	279	838	784	824	2473	2109	2182	6545
	6	26			41			72		
	12	377	403	1210	1054	1095	3284	2947	3020	9060
	13	372	398	1193	1055	1096	3287	2922	2995	8984
	14	372	398	1193	1055	1096	3287	2922	2995	8984
	15	377	403	1210	1054	1095	3284	2947	3020	9060

35	2		353	388	1164		994	1045	3134		2952	3027	9081
	3		346	381	1143		996	1047	3142		2927	3002	9006
	4		346	381	1143		996	1047	3142		2927	3002	9006
	5		353	388	1164		994	1045	3134		2952	3027	9081
	6		35				51				75		
	12		344	379	1138		1004	1055	3166		3109	3185	9554
	13		357	392	1175		992	1043	3128		3104	3179	9536
	14		357	392	1175		992	1043	3128		3104	3179	9536
	15		344	379	1138		1004	1055	3166		3109	3185	9554
36	2		468	516	1549		1459	1562	4685		2759	2825	8474
	3		437	486	1457		1453	1556	4667		2747	2813	8440
	4		437	486	1457		1453	1556	4667		2747	2813	8440
	5		468	516	1549		1459	1562	4685		2759	2825	8474
	6		48				103				66		
	12		256	304	912		859	962	2886		1441	1507	4520
	13		273	321	963		845	948	2843		1469	1535	4605
	14		273	321	963		845	948	2843		1469	1535	4605
	15		256	304	912		859	962	2886		1441	1507	4520
87	2		449	473	1419		803	828	2485		1918	1934	5802
	3		448	472	1417		798	822	2467		1895	1911	5733
	4		448	472	1417		798	822	2467		1895	1911	5733
	5		449	473	1419		803	828	2485		1918	1934	5802
	6		24				25				16		
	12		401	425	1275		877	901	2704		1826	1841	5524
	13		401	426	1277		857	882	2647		1809	1825	5474
	14		401	426	1277		857	882	2647		1809	1825	5474
	15		401	425	1275		877	901	2704		1826	1841	5524
88	2		427	461	1382		924	967	2901		1907	1957	5870
	3		427	461	1384		905	948	2845		1890	1940	5820
	4		427	461	1384		905	948	2845		1890	1940	5820
	5		427	461	1382		924	967	2901		1907	1957	5870
	6		34				43				50		
	12		646	679	2038		1315	1358	4073		2839	2889	8668
	13		651	684	2053		1504	1547	4642		2993	3043	9129
	14		651	684	2053		1504	1547	4642		2993	3043	9129
	15		646	679	2038		1315	1358	4073		2839	2889	8668

89	2		553	584	1752		1199	1226	3677		2439	2513	7538
	3		550	581	1743		1116	1142	3426		2362	2435	7304
	4		550	581	1743		1116	1142	3426		2362	2435	7304
	5		553	584	1752		1199	1226	3677		2439	2513	7538
	6		31				26				73		
	12		157	189	566		124	150	450		331	404	1211
	13		160	191	574		187	213	640		361	434	1301
	14		160	191	574		187	213	640		361	434	1301
	15		157	189	566		124	150	450		331	404	1211
93	2		131	200	599		289	321	963		927	955	2866
	3		130	199	598		285	317	952		934	962	2885
	4		130	199	598		285	317	952		934	962	2885
	5		131	200	599		289	321	963		927	955	2866
	6		69				32				28		
	12		237	306	918		393	426	1277		1340	1368	4103
	13		231	301	902		403	436	1307		1325	1353	4058
	14		231	301	902		403	436	1307		1325	1353	4058
	15		237	306	918		393	426	1277		1340	1368	4103

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

ELEMENT ID.	STRESS ID.	RMS COMP STRESS	X-LOAD RMS PRIN STRESS	X-LOAD RMS 3 SIG STRESS	RMS COMP STRESS	Y-LOAD RMS PRIN STRESS	Y-LOAD RMS 3 SIG STRESS	RMS COMP STRESS	Z-LOAD RMS PRIN STRESS	Z-LOAD RMS 3 SIG STRESS
2481 Z1	3	845	2075	6224	176	517	1550	198	613	1838
	5	2061			479			587		
	7	131			113			102		
2481 Z2	10	697	1845	5536	195	559	1678	230	623	1868
	12	1798			476			575		
	14	233			174			137		
2501 Z1	3	2180	2246	6738	700	708	2124	780	791	2373
	5	660			229			246		
	7	323			62			79		
2501 Z2	10	2227	2283	6848	717	725	2175	794	801	2404
	12	717			216			234		
	14	296			63			67		
2505 Z1	3	1937	1964	5892	1333	1341	4023	569	614	1843
	5	864			364			251		
	7	172			87			128		
2505 Z2	10	1790	2010	6031	435	520	1560	607	675	2024
	12	916			273			200		
	14	490			145			179		
2512 Z1	3	2176	2215	6646	1318	1325	3976	707	731	2192
	5	996			255			252		
	7	218			89			106		
2512 Z2	10	1753	2006	6018	467	491	1474	670	725	2174
	12	570			194			186		
	14	603			84			171		
2503 Z1	3	3178	3194	9581	916	918	2753	1018	1020	3061
	5	973			256			291		
	7	186			29			38		

2503 Z2	10		3104	3131	9394		880	883	2650		995	999	2997
	12		1074				315				345		
	14		237				40				50		
2496 Z1	3		2703	2765	8295		861	881	2644		936	954	2863
	5		1219				381				420		
	7		308				100				100		
2496 Z2	10		2949	3009	9027		892	930	2789		1013	1058	3173
	12		1456				485				540		
	14		306				130				152		

LOWER MOTOR MT PANEL
BAR ELEMENT
7075-T6 FTY=66000 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
2546	2	4333	4857	14572	680	841	2522	923	1064	3192
	3	4507	5031	15093	677	838	2515	949	1090	3271
	4	4507	5031	15093	677	838	2515	949	1090	3271
	5	4333	4857	14572	680	841	2522	923	1064	3192
	6	524			161			141		
	12	1788	2313	6938	247	408	1223	390	531	1594
	13	1898	2423	7268	273	434	1302	422	563	1690
	14	1898	2423	7268	273	434	1302	422	563	1690
	15	1788	2313	6938	247	408	1223	390	531	1594
2565	2	1645	2922	8765	244	418	1254	380	645	1936
	3	1624	2901	8702	243	417	1251	371	637	1910
	4	1624	2901	8702	243	417	1251	371	637	1910
	5	1645	2922	8765	244	418	1254	380	645	1936
	6	1277			174			266		
	12	3524	4801	14404	502	676	2028	755	1020	3061
	13	3624	4901	14702	521	695	2085	779	1044	3132
	14	3624	4901	14702	521	695	2085	779	1044	3132
	15	3524	4801	14404	502	676	2028	755	1020	3061
2603	2	281	975	2926	190	284	853	74	237	712
	3	456	1150	3450	178	273	818	92	256	769
	4	2462	3157	9470	446	540	1620	625	789	2368
	5	2406	3101	9302	456	550	1650	620	784	2352
	6	694			94			164		
	12	143	837	2511	64	158	474	47	211	632
	13	199	893	2679	120	214	643	74	237	712
	14	474	1169	3506	391	485	1455	203	367	1100
	15	429	1124	3371	362	456	1368	185	349	1047

2602	2		155	862	2585		62	154	462		31	199	596
	3		254	960	2879		69	160	481		46	214	642
	4		1248	1954	5861		654	746	2237		198	366	1098
	5		1213	1919	5758		653	744	2233		192	360	1079
	6		706				92				168		
	12		384	1091	3272		122	213	640		126	294	883
	13		151	857	2571		63	155	464		66	234	703
	14		1933	2639	7917		717	808	2425		462	630	1889
	15		2000	2706	8119		733	824	2472		487	655	1966
2564	2		765	1754	5262		151	299	897		206	417	1250
	3		789	1778	5335		141	289	866		198	409	1228
	4		789	1778	5335		141	289	866		198	409	1228
	5		765	1754	5262		151	299	897		206	417	1250
	6		989				148				211		
	12		2618	3607	10822		377	526	1577		564	775	2324
	13		2592	3581	10744		371	519	1557		554	765	2294
	14		2592	3581	10744		371	519	1557		554	765	2294
	15		2618	3607	10822		377	526	1577		564	775	2324

UPPER MOTOR MT PANEL
QUAD ELEMENT
7075-T6 FTY=66000 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
2331 Z1	3	673	754	2262	327	362	1086	158	180	539
	5	452			123			90		
	7	156			91			44		
2331 Z2	10	728	1010	3029	351	386	1159	171	211	634
	12	122			44			46		
	14	500			110			82		
2332 Z1	3	2153	2161	6484	855	868	2604	507	511	1532
	5	666			324			170		
	7	112			84			35		
2332 Z2	10	2125	2228	6685	831	854	2561	496	510	1531
	12	1124			433			266		
	14	337			98			59		
2287 Z1	3	48	127	380	116	142	425	115	181	544
	5	40			38			22		
	7	83			52			103		
2287 Z2	10	27	88	264	67	111	333	72	141	423
	12	18			23			27		
	14	65			62			89		

UPPER MOTOR MT PANEL
BAR ELEMENT
7075-T6 FTY=66000 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
2383	2	697	1227	3682	207	407	1221	110	254	761
	3	625	1155	3466	174	374	1123	96	240	719
	4	625	1155	3466	174	374	1123	96	240	719
	5	697	1227	3682	207	407	1221	110	254	761
	6	530			200			144		
	12	2296	2826	8478	574	774	2323	511	655	1966
	13	2253	2783	8349	573	773	2319	497	641	1924
	14	2253	2783	8349	573	773	2319	497	641	1924
	15	2296	2826	8478	574	774	2323	511	655	1966
2365	2	74	167	502	93	166	498	91	182	546
	3	415	508	1524	216	290	869	156	247	741
	4	415	508	1524	216	290	869	156	247	741
	5	74	167	502	93	166	498	91	182	546
	6	94			73			91		
	12	148	241	723	86	159	478	44	135	405
	13	323	416	1249	187	260	780	82	174	521
	14	323	416	1249	187	260	780	82	174	521
	15	148	241	723	86	159	478	44	135	405
2376	2	439	680	2041	185	298	895	188	270	809
	3	162	403	1210	115	228	685	194	276	829
	4	162	403	1210	115	228	685	194	276	829
	5	439	680	2041	185	298	895	188	270	809
	6	242			114			82		
	12	241	483	1448	108	222	666	117	199	597
	13	106	348	1044	71	185	555	133	215	645
	14	106	348	1044	71	185	555	133	215	645
	15	241	483	1448	108	222	666	117	199	597

2413	2		197	304	913		140	191	573		120	177	531
	3		242	350	1049		217	267	802		297	354	1061
	4		242	350	1049		217	267	802		297	354	1061
	5		197	304	913		140	191	573		120	177	531
	6		107				51				57		
	12		36	143	429		17	67	202		17	74	221
	13		44	151	453		34	85	254		27	83	250
	14		44	151	453		34	85	254		27	83	250
	15		36	143	429		17	67	202		17	74	221

UPPER MOTOR MT PANEL
BEAM ELEMENT
7075-T6 FTY=66000 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
2444	4	1522		4566	353		1060	266		797
	5	1079		3238	281		843	207		620
	6	1475		4424	356		1069	266		799
	7	1124		3371	274		822	204		613
	104	891		2673	470		1411	231		694
	105	2575		7725	701		2102	487		1460
	106	819		2458	435		1306	212		636
	107	2633		7899	730		2190	503		1509
2397	4	1237		3712	409		1226	352		1057
	5	777		2330	355		1066	273		820
	6	1098		3295	333		999	298		893
	7	1176		3528	349		1048	312		937
	104	302		907	117		351	98		294
	105	518		1553	155		464	109		327
	106	1294		3881	314		943	260		780
	107	1161		3482	288		865	242		726
2396	4	1615		4846	610		1829	422		1265
	5	2139		6417	591		1773	530		1591
	6	1774		5321	573		1718	421		1262
	7	1695		5086	598		1793	408		1223
	104	654		1961	261		782	230		690
	105	300		899	318		954	181		543
	106	1491		4472	466		1398	289		867
	107	1403		4209	414		1243	266		799

2395	4		869		2607		236		709		164		493
	5		1506		4518		348		1045		267		802
	6		569		1706		410		1230		236		707
	7		558		1673		420		1261		248		745
	104		1656		4967		632		1896		477		1430
	105		981		2944		413		1239		319		956
	106		627		1880		510		1530		326		978
	107		728		2184		550		1650		350		1051

LOWER FRONT 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
1234 Z1	3	1060	1101	3302	310	401	1202	107	407	1222
	5	912			325			167		
	7	87			83			269		
1234 Z2	10	1152	1210	3630	421	487	1461	140	417	1250
	12	904			334			113		
	14	133			101			290		
1237 Z1	3	180	207	622	202	282	847	69	384	1152
	5	49			57			41		
	7	66			135			329		
1237 Z2	10	167	191	574	212	298	893	75	404	1213
	12	28			55			50		
	14	63			144			341		
1238 Z1	3	259	289	867	305	330	991	135	350	1049
	5	59			21			33		
	7	84			89			261		
1238 Z2	10	241	270	810	309	333	1000	131	313	938
	12	54			20			36		
	14	79			88			224		
1235 Z1	3	114	661	1982	136	351	1052	102	467	1401
	5	641			217			241		
	7	105			169			287		
1235 Z2	10	181	677	2032	187	385	1154	75	502	1505
	12	640			211			180		
	14	136			185			371		
1225 Z1	3	526	695	2084	436	549	1648	173	388	1163
	5	452			196			124		
	7	203			201			237		

1225 Z2	10		387	658	1975		466	596	1787		132	421	1263
	12		396				170				65		
	14		267				235				321		
1226 Z1	3		167	200	601		218	321	962		61	367	1102
	5		75				101				145		
	7		64				150				261		
1226 Z2	10		239	264	791		347	426	1277		92	410	1230
	12		99				157				61		
	14		63				145				333		
1240 Z1	3		246	333	1000		298	343	1030		121	217	652
	5		125				108				72		
	7		135				103				119		
1240 Z2	10		254	354	1061		306	367	1100		126	210	630
	12		136				122				63		
	14		147				122				111		
1334 Z1	3		52	177	530		65	208	623		62	179	538
	5		40				66				53		
	7		131				142				122		
1334 Z2	10		63	204	613		65	109	328		49	184	552
	12		78				49				73		
	14		134				52				123		

LOWER FRONT 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
1206	2	1312	1961	5884	723	1062	3187	667	1003	3009
	3	1226	1875	5624	655	994	2983	884	1220	3660
	4	1226	1875	5624	655	994	2983	884	1220	3660
	5	1312	1961	5884	723	1062	3187	667	1003	3009
	6	649			339			336		
	12	358	1007	3022	218	558	1673	208	544	1631
	13	369	1018	3055	220	560	1679	183	519	1556
	14	369	1018	3055	220	560	1679	183	519	1556
	15	358	1007	3022	218	558	1673	208	544	1631
1155	2	108	127	380	46	56	168	56	86	259
	3	106	125	374	128	137	411	69	99	296
	4	106	125	374	128	137	411	69	99	296
	5	108	127	380	46	56	168	56	86	259
	6	19			9			30		
	12	73	91	273	70	79	238	55	85	255
	13	555	574	1722	454	464	1391	247	277	831
	14	555	574	1722	454	464	1391	247	277	831
	15	73	91	273	70	79	238	55	85	255
1156	2	76	92	275	80	88	265	65	88	263
	3	569	585	1754	458	466	1399	263	286	858
	4	569	585	1754	458	466	1399	263	286	858
	5	76	92	275	80	88	265	65	88	263
	6	16			8			22		
	12	152	168	504	90	99	296	82	104	312
	13	298	314	941	288	296	888	105	127	381
	14	298	314	941	288	296	888	105	127	381
	15	152	168	504	90	99	296	82	104	312

1183	2		468	505	1516		249	299	896		206	267	802
	3		163	201	603		55	104	311		79	140	421
	4		163	201	603		55	104	311		79	140	421
	5		468	505	1516		249	299	896		206	267	802
	6		37				49				61		
	12		447	484	1452		255	304	911		198	260	780
	13		204	241	723		71	120	360		70	132	395
	14		204	241	723		71	120	360		70	132	395
	15		447	484	1452		255	304	911		198	260	780
1161	2		239	255	764		619	640	1919		358	367	1102
	3		407	423	1268		215	236	707		180	189	567
	4		407	423	1268		215	236	707		180	189	567
	5		239	255	764		619	640	1919		358	367	1102
	6		16				21				9		
	12		108	124	371		227	248	743		71	80	240
	13		110	126	377		44	65	196		29	38	113
	14		110	126	377		44	65	196		29	38	113
	15		108	124	371		227	248	743		71	80	240
1216	2		504	544	1631		195	260	781		416	583	1750
	3		137	176	529		137	202	607		430	597	1791
	4		137	176	529		137	202	607		430	597	1791
	5		504	544	1631		195	260	781		416	583	1750
	6		40				65				167		
	12		449	488	1465		200	266	797		371	538	1615
	13		229	268	805		267	333	998		570	737	2211
	14		229	268	805		267	333	998		570	737	2211
	15		449	488	1465		200	266	797		371	538	1615
1363	2		37	150	451		73	218	655		63	174	522
	3		43	157	470		40	186	557		36	148	443
	4		43	157	470		40	186	557		36	148	443
	5		37	150	451		73	218	655		63	174	522
	6		113				145	291	872		111		
	12		43	157	470		79	224	673		67	178	535
	13		68	181	544		49	194	583		37	148	444
	14		68	181	544		49	194	583		37	148	444
	15		43	157	470		79	224	673		67	178	535

1369	2		132	178	533		139	245	735		92	169	506
	3		189	235	706		152	258	775		113	190	569
	4		189	235	706		152	258	775		113	190	569
	5		132	178	533		139	245	735		92	169	506
	6		46				106				77		
	12		91	137	412		68	174	522		48	125	375
	13		162	208	624		130	237	710		105	182	546
	14		162	208	624		130	237	710		105	182	546
	15		91	137	412		68	174	522		48	125	375

LOWER 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
330 Z1	3	41	406	1217	40	317	952	48	339	1016
	5	370			280			324		
	7	113			102			65		
330 Z2	10	34	298	893	24	243	729	33	285	856
	12	268			214			283		
	14	88			79			26		
342 Z1	3	133	440	1321	71	341	1022	48	581	1742
	5	284			202			236		
	7	219			193			429		
342 Z2	10	51	329	988	29	263	789	111	514	1543
	12	156			125			173		
	14	220			180			371		
345 Z1	3	115	161	483	102	205	614	241	280	841
	5	49			113			134		
	7	72			97			76		
345 Z2	10	140	210	631	97	194	581	300	610	1830
	12	151			118			223		
	14	64			85			346		
355 Z1	3	122	170	509	88	163	490	270	371	1112
	5	76			69			158		
	7	67			84			147		
355 Z2	10	140	176	527	101	153	459	305	457	1372
	12	87			45			79		
	14	56			75			240		
334 Z1	3	104	641	1922	61	490	1470	217	366	1099
	5	544			436			285		
	7	228			153			110		

334 Z2	10		57	398	1195		59	333	998		108	400	1201
	12		292				249				122		
	14		190				151				285		
344 Z1	3		116	308	924		173	274	823		461	517	1551
	5		126				77				139		
	7		187				142				146		
344 Z2	10		114	332	995		122	316	947		390	726	2177
	12		159				166				287		
	14		194				170				384		
352 Z1	3		134	363	1090		63	276	829		150	460	1381
	5		227				149				77		
	7		177				164				345		
352 Z2	10		118	345	1034		68	275	825		140	532	1596
	12		194				159				260		
	14		185				155				327		

LOWER 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
304	2	113	133	400	266	277	830	747	774	2323
	3	253	272	817	221	231	693	640	668	2004
	4	253	272	817	221	231	693	640	668	2004
	5	113	133	400	266	277	830	747	774	2323
	6	20			10			28		
	12	396	416	1247	315	325	976	466	494	1481
	13	310	330	989	245	256	767	403	431	1293
	14	310	330	989	245	256	767	403	431	1293
	15	396	416	1247	315	325	976	466	494	1481
312	2	76	121	364	78	110	330	29	53	160
	3	38	83	250	22	54	163	68	92	277
	4	38	83	250	22	54	163	68	92	277
	5	76	121	364	78	110	330	29	53	160
	6	46			33			24		
	12	282	328	984	127	159	478	134	159	476
	13	270	316	947	438	470	1410	440	464	1393
	14	270	316	947	438	470	1410	440	464	1393
	15	282	328	984	127	159	478	134	159	476
314	2	110	131	392	137	164	492	413	481	1444
	3	133	154	463	188	215	645	471	539	1617
	4	133	154	463	188	215	645	471	539	1617
	5	110	131	392	137	164	492	413	481	1444
	6	21			27			68		
	12	40	61	183	41	68	203	96	164	491
	13	51	72	216	80	106	318	122	190	570
	14	51	72	216	80	106	318	122	190	570
	15	40	61	183	41	68	203	96	164	491

313	2		250	284	851		128	154	463		178	191	572
	3		277	311	933		443	469	1407		492	505	1516
	4		277	311	933		443	469	1407		492	505	1516
	5		250	284	851		128	154	463		178	191	572
	6		34				26				13		
	12		560	594	1781		178	205	614		243	256	767
	13		411	445	1335		279	305	916		171	184	552
	14		411	445	1335		279	305	916		171	184	552
	15		560	594	1781		178	205	614		243	256	767
305	2		309	324	973		246	262	786		468	520	1561
	3		266	281	844		207	222	667		259	311	933
	4		266	281	844		207	222	667		259	311	933
	5		309	324	973		246	262	786		468	520	1561
	6		15				16				52		
	12		63	78	233		40	56	168		35	87	260
	13		196	212	635		172	188	563		189	241	723
	14		196	212	635		172	188	563		189	241	723
	15		63	78	233		40	56	168		35	87	260

UPPER BASEPLATE
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
5801 Z1	3	232	247	741	141	180	540	94	203	609
	5	148			88			134		
	7	39			60			87		
5801 Z2	10	748	753	2260	484	497	1492	322	358	1073
	12	478			263			207		
	14	38			57			73		
698 Z1	3	348	608	1823	235	551	1652	409	752	2257
	5	333			325			300		
	7	267			267			394		
698 Z2	10	254	503	1509	219	576	1728	360	688	2065
	12	308			270			276		
	14	220			331			368		
697 Z1	3	263	504	1512	485	611	1832	354	608	1823
	5	195			293			265		
	7	273			200			294		
697 Z2	10	224	569	1706	522	636	1908	378	673	2018
	12	241			269			297		
	14	336			205			333		
690 Z1	3	15	204	611	12	159	478	35	190	570
	5	18			44			64		
	7	187			131			140		
690 Z2	10	18	193	580	23	165	494	33	183	550
	12	21			52			61		
	14	174			126			135		

UPPER BASEPLATE
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
5805	2	357	465	1394	232	295	884	161	211	633
	3	200	308	925	183	246	737	150	200	601
	4	200	308	925	183	246	737	150	200	601
	5	357	465	1394	232	295	884	161	211	633
	6	108			63			50		
	12	1687	1795	5384	1035	1098	3294	688	738	2213
	13	1633	1741	5224	1105	1168	3505	800	850	2549
	14	1633	1741	5224	1105	1168	3505	800	850	2549
	15	1687	1795	5384	1035	1098	3294	688	738	2213
621	2	638	748	2243	375	440	1321	252	299	896
	3	534	644	1932	338	403	1209	233	280	840
	4	534	644	1932	338	403	1209	233	280	840
	5	638	748	2243	375	440	1321	252	299	896
	6	110			65			47		
	12	109	219	657	96	161	484	91	138	414
	13	200	310	929	105	170	511	81	128	384
	14	200	310	929	105	170	511	81	128	384
	15	109	219	657	96	161	484	91	138	414
660	2	365	423	1269	596	641	1922	254	417	1252
	3	257	315	945	559	604	1811	359	522	1567
	4	257	315	945	559	604	1811	359	522	1567
	5	365	423	1269	596	641	1922	254	417	1252
	6	58			45			163		
	12	140	198	595	280	325	974	205	368	1104
	13	276	334	1002	334	379	1136	142	305	914
	14	276	334	1002	334	379	1136	142	305	914
	15	140	198	595	280	325	974	205	368	1104

657	2		43	105	314		101	223	668		112	162	486
	3		61	124	371		83	205	614		32	82	247
	4		61	124	371		83	205	614		32	82	247
	5		43	105	314		101	223	668		112	162	486
	6		62				122				50		
	12		150	212	637		429	551	1653		214	264	792
	13		151	213	639		428	550	1649		340	391	1172
	14		151	213	639		428	550	1649		340	391	1172
	15		150	212	637		429	551	1653		214	264	792
658	2		87	154	461		316	440	1319		310	353	1060
	3		107	173	520		287	411	1232		394	437	1311
	4		107	173	520		287	411	1232		394	437	1311
	5		87	154	461		316	440	1319		310	353	1060
	6		67				123				43		
	12		342	409	1226		557	681	2043		205	249	746
	13		371	438	1313		554	678	2033		253	296	889
	14		371	438	1313		554	678	2033		253	296	889
	15		342	409	1226		557	681	2043		205	249	746
659	2		383	431	1294		560	640	1920		209	252	755
	3		310	359	1076		535	615	1845		322	365	1096
	4		310	359	1076		535	615	1845		322	365	1096
	5		383	431	1294		560	640	1920		209	252	755
	6		49				80				43		
	12		334	383	1148		552	632	1896		199	242	725
	13		257	306	917		545	625	1876		533	576	1729
	14		257	306	917		545	625	1876		533	576	1729
	15		334	383	1148		552	632	1896		199	242	725
670	2		102	166	498		62	158	473		90	259	778
	3		143	208	623		153	249	748		307	476	1429
	4		143	208	623		153	249	748		307	476	1429
	5		102	166	498		62	158	473		90	259	778
	6		64				96				169		
	12		75	140	419		43	139	417		96	265	796
	13		122	187	560		141	237	711		282	451	1353
	14		122	187	560		141	237	711		282	451	1353
	15		75	140	419		43	139	417		96	265	796

UPPER FRONT 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	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
1532 Z1	3	108	221	664	126	315	944	91	232	695
	5	35			49			91		
	7	145			224			141		
1532 Z2	10	125	239	718	108	322	965	184	283	850
	12	49			44			49		
	14	147			244			153		
1540 Z1	3	255	357	1072	256	436	1309	171	394	1181
	5	195			247			216		
	7	129			185			199		
1540 Z2	10	277	384	1152	227	549	1648	100	434	1301
	12	269			474			343		
	14	111			156			174		
1538 Z1	3	269	390	1171	197	308	923	141	373	1119
	5	73			158			184		
	7	196			129			209		
1538 Z2	10	209	297	891	259	388	1163	243	434	1302
	12	72			157			158		
	14	141			172			230		
1539 Z1	3	171	394	1181	170	386	1157	112	377	1132
	5	172			260			205		
	7	222			164			214		
1539 Z2	10	185	404	1212	141	514	1543	78	440	1319
	12	253			415			262		
	14	182			193			253		
1550 Z1	3	140	309	927	107	310	930	52	332	997
	5	180			255			167		
	7	147			106			215		

1550 Z2	10		136	341	1024		130	413	1240		78	416	1247
	12		309				331				222		
	14		82				153				256		
1551 Z1	3		134	540	1620		110	568	1704		76	412	1236
	5		494				528				266		
	7		136				135				221		
1551 Z2	10		201	732	2196		159	673	2018		68	508	1525
	12		714				634				351		
	14		99				140				264		
1544 Z1	3		88	236	708		79	389	1166		147	347	1042
	5		68				161				205		
	7		158				265				169		
1544 Z2	10		100	243	730		119	389	1168		212	337	1011
	12		50				101				75		
	14		166				279				181		

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	4834	5272	15817	3401	3872	11615	864	1212	3637
	3	4155	4594	13781	4195	4666	13997	1102	1450	4351
	4	4155	4594	13781	4195	4666	13997	1102	1450	4351
	5	4834	5272	15817	3401	3872	11615	864	1212	3637
	6	438			471			348		
	12	5174	5612	16837	2442	2913	8739	1010	1358	4074
	13	4637	5076	15227	3413	3885	11654	1601	1949	5846
	14	4637	5076	15227	3413	3885	11654	1601	1949	5846
	15	5174	5612	16837	2442	2913	8739	1010	1358	4074
1407	2	2401	2931	8792	1064	1513	4539	1368	1781	5344
	3	2457	2987	8961	1141	1590	4770	1347	1760	5281
	4	2457	2987	8961	1141	1590	4770	1347	1760	5281
	5	2401	2931	8792	1064	1513	4539	1368	1781	5344
	6	529			449			413		
	12	1438	1967	5902	1122	1570	4711	797	1211	3632
	13	1478	2007	6021	1176	1625	4874	775	1188	3564
	14	1478	2007	6021	1176	1625	4874	775	1188	3564
	15	1438	1967	5902	1122	1570	4711	797	1211	3632
1405	2	240	728	2183	901	1438	4314	384	511	1534
	3	239	727	2180	171	708	2124	210	338	1013
	4	239	727	2180	171	708	2124	210	338	1013
	5	240	728	2183	901	1438	4314	384	511	1534
	6	488			537			127		
	12	1218	1706	5118	1766	2303	6908	447	574	1722
	13	1124	1612	4836	1196	1732	5197	333	461	1382
	14	1124	1612	4836	1196	1732	5197	333	461	1382
	15	1218	1706	5118	1766	2303	6908	447	574	1722

1397	2		1184	1717	5152		723	1222	3665		706	1227	3682
	3		1165	1699	5096		777	1276	3828		677	1199	3596
	4		1165	1699	5096		777	1276	3828		677	1199	3596
	5		1184	1717	5152		723	1222	3665		706	1227	3682
	6		533				498				522		
	12		204	737	2211		318	816	2449		217	739	2216
	13		213	746	2239		312	810	2431		240	762	2286
	14		213	746	2239		312	810	2431		240	762	2286
	15		204	737	2211		318	816	2449		217	739	2216
1346	2		478	493	1478		324	396	1189		268	417	1252
	3		394	409	1227		146	218	653		168	317	951
	4		394	409	1227		146	218	653		168	317	951
	5		478	493	1478		324	396	1189		268	417	1252
	6		15				72				150		
	12		233	248	743		252	324	972		201	351	1053
	13		110	125	376		87	159	478		135	284	853
	14		110	125	376		87	159	478		135	284	853
	15		233	248	743		252	324	972		201	351	1053
1350	2		133	179	536		101	146	437		98	148	443
	3		92	138	414		163	208	623		112	162	486
	4		92	138	414		163	208	623		112	162	486
	5		133	179	536		101	146	437		98	148	443
	6		46				45				50		
	12		33	78	235		34	79	237		21	71	214
	13		75	121	363		164	209	626		125	175	525
	14		75	121	363		164	209	626		125	175	525
	15		33	78	235		34	79	237		21	71	214

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	1832	5496	382	862	2585	317	626	1877
	5	1783			849			599		
	7	242			77			91		
6866 Z2	10	687	1673	5019	380	820	2459	303	600	1801
	12	1637			796			575		
	14	189			102			87		
6865 Z1	3	843	1940	5821	394	763	2289	254	497	1490
	5	1024			602			397		
	7	1003			244			155		
6865 Z2	10	717	1767	5300	384	742	2225	255	463	1388
	12	948			555			357		
	14	927			258			148		
7298 Z1	3	4200	6012	18035	1477	1831	5494	955	1156	3469
	5	4994			1205			762		
	7	1358			471			282		
7298 Z2	10	3957	5607	16821	1403	1677	5030	920	1084	3253
	12	4808			1161			741		
	14	1148			376			238		
7299 Z1	3	1326	4038	12115	640	893	2679	569	775	2324
	5	3920			715			575		
	7	566			212			203		
7299 Z2	10	1247	3885	11656	567	815	2444	513	722	2165
	12	3785			702			575		
	14	516			167			175		
6897 Z1	3	314	1514	4543	333	539	1617	274	434	1302
	5	1214			438			383		
	7	601			144			91		

6897 Z2	10		512	1441	4323		317	520	1560		263	385	1155
	12		1080				371				315		
	14		579				174				93		
6898 Z1	3		1362	2139	6416		409	759	2278		523	668	2003
	5		1318				682				479		
	7		798				164				166		
6898 Z2	10		1189	2044	6132		429	737	2211		513	665	1995
	12		1238				632				472		
	14		830				180				171		
7334 Z1	3		2138	3826	11477		726	898	2695		422	531	1593
	5		3634				620				397		
	7		568				219				121		
7334 Z2	10		2016	3716	11149		711	835	2506		440	519	1557
	12		3562				619				387		
	14		512				164				102		
7335 Z1	3		3260	4486	13459		454	646	1938		544	652	1956
	5		3915				554				443		
	7		837				133				150		
7335 Z2	10		3061	4288	12865		404	598	1795		468	582	1747
	12		3835				543				428		
	14		746				104				133		

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	828	1121	3364	372	519	1558	215	340	1020
	3	1294	1587	4761	378	525	1574	213	338	1013
	4	1294	1587	4761	378	525	1574	213	338	1013
	5	828	1121	3364	372	519	1558	215	340	1020
	6	293			147			124		
	12	138	431	1294	160	307	922	103	227	681
	13	329	622	1866	118	265	796	86	210	630
	14	329	622	1866	118	265	796	86	210	630
	15	138	431	1294	160	307	922	103	227	681
1668	2	87	120	360	116	165	495	78	125	375
	3	259	292	876	150	199	596	93	139	418
	4	259	292	876	150	199	596	93	139	418
	5	87	120	360	116	165	495	78	125	375
	6	33			49			47		
	12	115	148	443	122	171	513	78	125	374
	13	282	315	946	147	196	587	95	142	425
	14	282	315	946	147	196	587	95	142	425
	15	115	148	443	122	171	513	78	125	374
1669	2	156	235	705	44	101	304	30	79	236
	3	253	332	997	97	155	465	69	118	354
	4	253	332	997	97	155	465	69	118	354
	5	156	235	705	44	101	304	30	79	236
	6	79			58			49		
	12	76	155	465	37	95	286	22	71	213
	13	115	195	584	31	89	267	23	72	216
	14	115	195	584	31	89	267	23	72	216
	15	76	155	465	37	95	286	22	71	213

1680	2		743	848	2545		284	310	930		396	445	1335
	3		599	705	2115		320	346	1038		340	390	1169
	4		599	705	2115		320	346	1038		340	390	1169
	5		743	848	2545		284	310	930		396	445	1335
	6		106				26				49		
	12		541	647	1941		191	217	651		302	351	1054
	13		466	572	1715		222	248	745		247	296	889
	14		466	572	1715		222	248	745		247	296	889
	15		541	647	1941		191	217	651		302	351	1054
1681	2		282	436	1307		71	127	380		64	161	484
	3		287	440	1321		157	212	637		178	275	826
	4		287	440	1321		157	212	637		178	275	826
	5		282	436	1307		71	127	380		64	161	484
	6		154				56				97		
	12		128	282	846		80	135	406		87	185	554
	13		88	241	724		77	132	397		71	168	505
	14		88	241	724		77	132	397		71	168	505
	15		128	282	846		80	135	406		87	185	554
7262	2		522	1040	3121		172	282	845		106	178	535
	3		527	1045	3136		168	278	835		102	175	526
	4		527	1045	3136		168	278	835		102	175	526
	5		522	1040	3121		172	282	845		106	178	535
	6		519				110				73		
	12		739	1258	3773		96	206	619		88	161	484
	13		685	1203	3610		91	202	605		77	150	451
	14		685	1203	3610		91	202	605		77	150	451
	15		739	1258	3773		96	206	619		88	161	484

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	889	1895	5685	939	2221	6662	280	706	2118
	5	187			299			221		
	7	1311			1569			455		
1065 Z2	10	749	1664	4992	915	2120	6359	328	685	2056
	12	205			293			169		
	14	1155			1483			430		
1107 Z1	3	301	447	1341	820	1240	3719	1424	2356	7068
	5	165			493			986		
	7	203			560			1130		
1107 Z2	10	324	473	1420	831	1242	3727	1429	2352	7055
	12	189			454			974		
	14	206			569			1128		
1049 Z1	3	1444	1455	4366	2316	2385	7156	984	1020	3061
	5	70			173			79		
	7	126			390			185		
1049 Z2	10	1284	1293	3880	1985	2037	6111	896	928	2784
	12	70			177			80		
	14	105			311			164		
1064 Z1	3	1057	1275	3826	1795	1946	5838	838	875	2624
	5	87			290			322		
	7	509			500			143		
1064 Z2	10	1055	1143	3430	1504	1606	4818	805	838	2515
	12	94			278			325		
	14	304			369			130		
1047 Z1	3	284	629	1888	569	1502	4507	268	2227	6682
	5	261			1079			1785		
	7	357			628			930		

1047 Z2	10		349	769	2306		696	1466	4399		374	2319	6957
	12		394				993				1840		
	14		397				603				965		
1115, Z1	3		174	417	1252		271	635	1905		959	1943	5829
	5		201				154				206		
	7		229				418				1307		
1115 Z2	10		193	491	1474		203	520	1560		905	1844	5533
	12		154				196				331		
	14		317				321				1193		
1116 Z1	3		164	422	1266		254	709	2127		841	2293	6879
	5		100				188				529		
	7		288				487				1601		
1116 Z2	10		172	475	1424		173	628	1883		781	2209	6628
	12		129				171				501		
	14		323				456				1562		
1135 Z1	3		168	357	1070		247	624	1873		795	1932	5796
	5		100				191				564		
	7		220				404				1247		
1135 Z2	10		161	433	1300		213	546	1639		790	1834	5502
	12		134				173				539		
	14		286				353				1163		
1113 Z1	3		146	341	1024		204	467	1402		190	1039	3116
	5		49				92				70		
	7		239				315				907		
1113 Z2	10		312	483	1450		281	541	1623		212	987	2962
	12		148				110				79		
	14		240				335				839		

LOWER SHELF
BEAM ELEMENT
BERYLLIUM FTY=50000 PSI

ELEMENT ID.	STRESS ID.	RMS COMP STRESS	X-LOAD RMS PRIN STRESS	X-LOAD RMS 3 SIG STRESS	RMS COMP STRESS	Y-LOAD RMS PRIN STRESS	Y-LOAD RMS 3 SIG STRESS	RMS COMP STRESS	Z-LOAD RMS PRIN STRESS	Z-LOAD RMS 3 SIG STRESS
463	4	70		210	221		664	387		1160
	5	174		522	485		1455	895		2685
	6	172		515	481		1442	903		2710
	7	92		276	341		1023	324		971
	104	147		442	269		806	406		1218
	105	389		1168	567		1701	1134		3403
	106	384		1151	559		1676	1118		3353
	107	192		577	340		1020	542		1625
831	4	54		161	54		163	89		267
	5	168		503	166		499	80		240
	6	82		247	121		363	153		458
	7	68		205	109		326	154		461
	104	57		170	61		184	74		221
	105	48		145	45		135	136		408
	106	98		294	89		267	270		809
	107	92		275	85		254	262		787
464	4	34		101	39		117	92		277
	5	25		76	39		116	99		296
	6	32		97	88		264	223		670
	7	32		96	88		263	223		668
	104	88		265	242		726	242		727
	105	98		295	248		745	279		836
	106	238		715	594		1781	653		1960
	107	236		709	594		1782	650		1949

UPPER SHELF
QUAD ELEMENT
BERYLLIUM FTY=50000 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
2007	3	30	1140	3419	32	1291	3873	31	1399	4196
2007	5	1128			1282			1367		
2007	7	112			107			208		
2007	10	29	1234	3701	32	1095	3284	31	1475	4424
2007	12	1223			1081			1448		
2007	14	110			118			197		
2021	3	22	1162	3485	25	1291	3872	25	1408	4223
2021	5	1152			1282			1384		
2021	7	107			101			182		
2021	10	23	1243	3728	24	1130	3391	26	1451	4352
2021	12	1234			1119			1430		
2021	14	102			111			173		
1980	3	210	984	2952	204	761	2284	308	1310	3930
1980	5	852			641			1127		
1980	7	320			259			429		
1980	10	164	975	2925	289	1283	3848	423	1364	4091
1980	12	869			1099			1116		
1980	14	294			427			482		
1988	3	391	973	2918	384	804	2411	551	1329	3988
1988	5	766			601			1006		
1988	7	347			292			501		
1988	10	309	947	2841	547	1196	3587	774	1441	4322
1988	12	775			932			1002		
1988	14	331			414			541		
1989	3	655	867	2602	624	763	2289	893	1154	3462
1989	5	341			261			432		
1989	7	334			264			435		

1989	10		538	777	2332		929	1189	3567		1261	1476	4429
1989	12		341				467				434		
1989	14		323				433				473		
1801	3		217	247	742		228	258	773		351	395	1184
1801	5		43				27				46		
1801	7		78				82				124		
1801	10		212	234	703		186	211	632		352	392	1175
1801	12		27				30				40		
1801	14		68				67				118		
1802	3		142	355	1064		124	320	961		247	576	1728
1802	5		86				64				73		
1802	7		239				225				407		
1802	10		153	340	1021		165	363	1089		243	549	1647
1802	12		39				43				37		
1802	14		237				252				396		
1815	3		133	546	1638		145	522	1565		191	783	2348
1815	5		202				132				140		
1815	7		377				383				617		
1815	10		126	474	1421		90	454	1361		188	752	2255
1815	12		106				130				95		
1815	14		357				343				609		
2090	3		217	647	1942		314	776	2327		372	916	2747
2090	5		152				192				191		
2090	7		462				519				628		
2090	10		255	647	1940		203	580	1740		436	1051	3152
2090	12		137				140				223		
2090	14		447				407				713		
2089	3		131	667	2002		215	733	2198		275	963	2888
2089	5		196				199				254		
2089	7		503				525				698		
2089	10		149	661	1982		132	609	1828		286	988	2964
2089	12		181				169				263		
2089	14		495				458				714		
2099	3		214	647	1941		324	768	2304		309	863	2590
2099	5		94				92				143		
2099	7		490				548				632		
2099	10		230	642	1926		191	576	1728		357	978	2933

2099	12		92				93				153		
2099	14		477				431				716		
2023	3		43	1167	3500		50	1253	3759		70	1418	4253
2023	5		1151				1243				1382		
2023	7		133				112				218		
2023	10		40	1227	3681		40	1152	3456		68	1446	4338
2023	12		1215				1135				1417		
2023	14		118				139				201		
1983	3		137	867	2600		131	956	2869		238	1178	3535
1983	5		828				923				1073		
1983	7		169				165				314		
1983	10		123	927	2782		128	815	2446		237	1262	3786
1983	12		898				776				1161		
1983	14		154				164				321		

UPPER SHELF
BAR ELEMENT
BERYLLIUM FTY=50000 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
1782	2	176	321	962	176	322	967	240	490	1471
1782	3	235	380	1139	232	379	1137	377	627	1882
1782	4	235	380	1139	232	379	1137	377	627	1882
1782	5	176	321	962	176	322	967	240	490	1471
1782	6	145			147			250		
1782	12	130	275	825	117	264	791	123	374	1122
1782	13	296	441	1323	282	429	1288	474	724	2172
1782	14	296	441	1323	282	429	1288	474	724	2172
1782	15	130	275	825	117	264	791	123	374	1122

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	131	242	725	94	219	658	67	145	434
2205	5	141			184			86		
2205	7	106			66			68		
2205	10	88	222	665	120	218	653	60	151	453
2205	12	141			164			98		
2205	14	103			72			70		

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	123	250	750	170	205	614	147	234	703
2222	3	105	233	698	234	269	807	180	267	800
2222	4	105	233	698	234	269	807	180	267	800
2222	5	123	250	750	170	205	614	147	234	703
2222	6	127			34			87		
2222	12	111	239	716	285	319	958	199	286	858
2222	13	138	265	794	310	345	1035	266	353	1060
2222	14	138	265	794	310	345	1035	266	353	1060
2222	15	111	239	716	285	319	958	199	286	858
2219	2	351	421	1263	106	149	447	92	133	400
2219	3	571	640	1921	140	183	549	164	205	614
2219	4	571	640	1921	140	183	549	164	205	614
2219	5	351	421	1263	106	149	447	92	133	400
2219	6	69			43			41		
2219	12	852	921	2763	202	245	734	239	280	841
2219	13	1229	1299	3896	303	346	1038	362	403	1209
2219	14	1229	1299	3896	303	346	1038	362	403	1209
2219	15	852	921	2763	202	245	734	239	280	841
2223	2	200	424	1271	40	94	282	36	106	319
2223	3	411	635	1904	81	135	404	87	156	469
2223	4	411	635	1904	81	135	404	87	156	469
2223	5	200	424	1271	40	94	282	36	106	319
2223	6	223			54			70		
2223	12	232	455	1365	69	122	367	52	122	365
2223	13	302	525	1575	84	137	412	72	142	426
2223	14	302	525	1575	84	137	412	72	142	426
2223	15	232	455	1365	69	122	367	52	122	365

2212	2		205	361	1083		165	261	783		121	229	686
2212	3		115	271	812		110	206	618		132	239	718
2212	4		115	271	812		110	206	618		132	239	718
2212	5		205	361	1083		165	261	783		121	229	686
2212	6		155				96				108		
2212	12		27	182	546		24	121	362		20	127	382
2212	13		19	174	523		21	117	351		21	128	384
2212	14		19	174	523		21	117	351		21	128	384
2212	15		27	182	546		24	121	362		20	127	382

LOWER RIGHT 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
529	3	264	486	1458	1192	1405	4214	1076	1189	3567
529	5	139			799			480		
529	7	278			359			283		
529	10	203	369	1106	1165	1368	4103	575	641	1923
529	12	115			796			354		
529	14	205			340			138		
465	3	53	88	263	84	135	404	53	160	481
465	5	43			84			44		
465	7	39			51			112		
465	10	34	69	208	88	149	448	55	127	380
465	12	51			79			53		
465	14	25			66			73		
606	3	263	345	1034	175	298	895	116	361	1082
606	5	66			58			33		
606	7	151			172			283		
606	10	214	286	859	218	304	913	268	426	1278
606	12	94			76			84		
606	14	118			141			233		
599	3	62	463	1389	105	307	920	73	313	939
599	5	408			170			150		
599	7	149			166			198		
599	10	100	342	1027	121	235	704	147	287	861
599	12	326			143			129		
599	14	63			102			149		
589	3	79	299	896	250	695	2084	334	413	1238
589	5	282			671			172		
589	7	60			104			138		

589	10		210	270	811		286	694	2082		119	520	1560
589	12		129				657				510		
589	14		93				123				64		
588	3		47	210	629		84	411	1234		44	290	869
588	5		142				231				107		
588	7		105				243				212		
588	10		105	192	575		93	374	1122		71	351	1054
588	12		43				211				76		
588	14		113				214				278		
598	3		157	725	2176		176	530	1590		168	420	1259
598	5		664				386				282		
598	7		186				226				186		
598	10		242	329	987		186	373	1119		183	375	1126
598	12		291				265				151		
598	14		58				142				208		
530	3		185	439	1316		675	829	2486		894	952	2857
530	5		105				359				309		
530	7		291				269				194		
530	10		198	449	1346		808	937	2810		332	563	1688
530	12		109				374				302		
530	14		292				269				245		
580	3		174	345	1034		657	1286	3859		180	341	1023
580	5		248				1157				291		
580	7		129				285				90		
580	10		172	321	962		765	1300	3901		236	425	1274
580	12		239				1180				301		
580	14		110				253				153		

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	87	119	357	133	180	541	355	509	1528
440	3	79	111	334	138	185	556	300	455	1364
440	4	79	111	334	138	185	556	300	455	1364
440	5	87	119	357	133	180	541	355	509	1528
440	6	32			47			155		
440	12	57	89	266	87	134	402	213	368	1103
440	13	54	86	257	87	134	401	218	373	1118
440	14	54	86	257	87	134	401	218	373	1118
440	15	57	89	266	87	134	402	213	368	1103
430	2	174	335	1004	183	264	793	77	180	539
430	3	66	227	681	132	213	638	67	170	509
430	4	66	227	681	132	213	638	67	170	509
430	5	174	335	1004	183	264	793	77	180	539
430	6	161			81			103		
430	12	181	342	1027	112	193	578	69	172	515
430	13	131	292	877	87	168	505	51	154	462
430	14	131	292	877	87	168	505	51	154	462
430	15	181	342	1027	112	193	578	69	172	515
449	2	343	701	2104	143	302	907	203	382	1147
449	3	269	628	1883	140	300	900	118	297	892
449	4	269	628	1883	140	300	900	118	297	892
449	5	343	701	2104	143	302	907	203	382	1147
449	6	359			159			179		
449	12	656	1015	3045	257	416	1248	349	528	1584
449	13	444	802	2407	207	366	1099	221	400	1199
449	14	444	802	2407	207	366	1099	221	400	1199
449	15	656	1015	3045	257	416	1248	349	528	1584

434	2		316	435	1304		157	283	849		125	233	699
434	3		201	319	958		100	226	679		77	185	555
434	4		201	319	958		100	226	679		77	185	555
434	5		316	435	1304		157	283	849		125	233	699
434	6		119				126				108		
434	12		258	377	1131		138	264	792		109	217	652
434	13		220	338	1015		115	241	724		78	186	557
434	14		220	338	1015		115	241	724		78	186	557
434	15		258	377	1131		138	264	792		109	217	652

LOWER RIGHT PANEL
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
822	4	244		733	78		234	170		511
822	5	216		649	131		394	89		266
822	6	202		605	127		380	179		536
822	7	209		626	134		403	198		593
822	104	183		548	99		296	160		480
822	105	270		811	147		440	168		504
822	106	947		2841	283		849	447		1342
822	107	940		2819	272		815	446		1338
462	4	51		152	45		134	73		220
462	5	75		224	80		241	87		262
462	6	64		191	141		424	202		607
462	7	57		171	138		413	201		603
462	104	15		45	35		105	88		265
462	105	19		56	51		152	73		220
462	106	38		114	96		288	192		577
462	107	38		114	95		285	194		582
463	4	70		210	221		664	387		1160
463	5	174		522	485		1455	895		2685
463	6	172		515	481		1442	903		2710
463	7	92		276	341		1023	324		971
463	104	147		442	269		806	406		1218
463	105	389		1168	567		1701	1134		3403
463	106	384		1151	559		1676	1118		3353
463	107	192		577	340		1020	542		1625

464	4		34		101		39		117		92		277
464	5		25		76		39		116		99		296
464	6		32		97		88		264		223		670
464	7		32		96		88		263		223		668
464	104		88		265		242		726		242		727
464	105		98		295		248		745		279		836
464	106		238		715		594		1781		653		1960
464	107		236		709		594		1782		650		1949

UPPER 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
2230	3	47	238	714	114	281	842	65	120	360
2230	5	39			193			70		
2230	7	195			121			52		
2230	10	73	321	962	127	292	877	78	152	457
2230	12	194			266			117		
2230	14	177			66			51		
2237	3	58	289	868	94	285	854	40	120	361
2237	5	74			259			103		
2237	7	224			69			38		
2237	10	46	297	890	102	322	966	48	118	355
2237	12	89			264			93		
2237	14	228			113			42		
2236	3	94	287	862	555	564	1691	225	233	698
2236	5	41			120			50		
2236	7	218			63			38		
2236	10	100	293	879	589	601	1802	235	242	727
2236	12	64			132			63		
2236	14	210			72			37		
2231	3	75	266	798	364	381	1144	149	172	515
2231	5	33			109			54		
2231	7	211			68			51		
2231	10	69	265	794	373	438	1315	165	193	580
2231	12	55			123			58		
2231	14	202			144			62		

UPPER 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
2270	2	813	1390	4169	582	957	2870	382	634	1903
2270	3	767	1344	4031	557	931	2794	383	635	1906
2270	4	767	1344	4031	557	931	2794	383	635	1906
2270	5	813	1390	4169	582	957	2870	382	634	1903
2270	6	577			374			253		
2270	12	1662	2239	6716	1140	1514	4543	751	1003	3010
2270	13	1586	2163	6489	1110	1485	4454	748	1001	3002
2270	14	1586	2163	6489	1110	1485	4454	748	1001	3002
2270	15	1662	2239	6716	1140	1514	4543	751	1003	3010
2255	2	55	93	278	47	88	265	59	145	436
2255	3	194	231	694	126	168	504	92	179	537
2255	4	194	231	694	126	168	504	92	179	537
2255	5	55	93	278	47	88	265	59	145	436
2255	6	38			42			87		
2255	12	99	137	411	56	97	292	56	143	428
2255	13	195	233	698	125	167	501	90	176	529
2255	14	195	233	698	125	167	501	90	176	529
2255	15	99	137	411	56	97	292	56	143	428
2269	2	140	381	1143	163	287	860	86	173	519
2269	3	147	388	1163	132	256	768	80	166	499
2269	4	147	388	1163	132	256	768	80	166	499
2269	5	140	381	1143	163	287	860	86	173	519
2269	6	241			124			87		
2269	12	239	481	1442	220	344	1033	128	215	645
2269	13	231	473	1418	196	320	959	119	206	618
2269	14	231	473	1418	196	320	959	119	206	618
2269	15	239	481	1442	220	344	1033	128	215	645

2265	2		67	107	321		37	91	273		60	109	328
2265	3		75	115	346		70	125	375		115	164	492
2265	4		75	115	346		70	125	375		115	164	492
2265	5		67	107	321		37	91	273		60	109	328
2265	6		40				55				49		
2265	12		100	140	420		103	158	473		222	271	813
2265	13		84	124	373		167	221	663		182	231	692
2265	14		84	124	373		167	221	663		182	231	692
2265	15		100	140	420		103	158	473		222	271	813
2261	2		190	224	672		119	165	496		121	152	456
2261	3		122	156	468		70	116	349		93	124	371
2261	4		122	156	468		70	116	349		93	124	371
2261	5		190	224	672		119	165	496		121	152	456
2261	6		34				46				31		
2261	12		128	162	486		241	287	862		146	177	530
2261	13		130	164	493		142	189	566		129	160	479
2261	14		130	164	493		142	189	566		129	160	479
2261	15		128	162	486		241	287	862		146	177	530
2266	2		729	1110	3329		161	278	834		129	208	623
2266	3		185	566	1699		47	165	494		33	112	335
2266	4		185	566	1699		47	165	494		33	112	335
2266	5		729	1110	3329		161	278	834		129	208	623
2266	6		381				117				79		
2266	12		346	727	2180		129	246	739		64	142	427
2266	13		183	564	1693		86	204	611		36	115	344
2266	14		183	564	1693		86	204	611		36	115	344
2266	15		346	727	2180		129	246	739		64	142	427

UPPER 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
1652	3	324	1006	3019	67	369	1107	59	302	906
1652	5	977			336			282		
1652	7	142			100			69		
1652	10	304	697	2090	139	357	1072	122	288	863
1652	12	660			301			253		
1652	14	121			111			76		
1653	3	361	1064	3192	89	357	1072	80	311	933
1653	5	1014			305			279		
1653	7	187			118			86		
1653	10	392	964	2893	217	339	1016	170	291	874
1653	12	941			289			271		
1653	14	117			78			50		
1654	3	299	1197	3591	55	425	1276	62	325	976
1654	5	1164			377			284		
1654	7	172			134			104		
1654	10	329	1116	3347	168	340	1019	107	265	796
1654	12	1103			334			259		
1654	14	99			31			32		
1655	3	259	1041	3123	42	435	1305	45	317	951
1655	5	1040			427			298		
1655	7	33			56			72		
1655	10	304	1006	3017	173	387	1161	133	285	854
1655	12	1000			383			272		
1655	14	61			29			43		
1575	3	108	220	659	195	277	830	107	239	716
1575	5	79			163			160		
1575	7	125			96			102		

1575	10		110	218	654		200	281	844		110	236	708
1575	12		80				158				163		
1575	14		122				100				96		
1615	3		372	757	2272		456	1048	3145		350	692	2076
1615	5		640				1001				643		
1615	7		213				167				130		
1615	10		311	689	2067		485	1077	3231		306	677	2032
1615	12		618				1015				648		
1615	14		164				192				104		

UPPER 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
1571	2	199	255	766	233	328	984	253	411	1234
1571	3	79	135	406	117	213	638	82	240	721
1571	4	79	135	406	117	213	638	82	240	721
1571	5	199	255	766	233	328	984	253	411	1234
1571	6	56			95			158		
1571	12	196	252	755	219	314	943	244	402	1207
1571	13	85	141	423	114	209	628	93	251	754
1571	14	85	141	423	114	209	628	93	251	754
1571	15	196	252	755	219	314	943	244	402	1207

TOP 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
2148	3	380	402	1205	347	384	1153	763	773	2318
2148	5	327			322			615		
2148	7	40			48			38		
2148	10	373	407	1221	351	392	1175	774	781	2343
2148	12	330			331			587		
2148	14	51			50			37		
10210	3	1146	1619	4858	127	178	533	238	342	1027
10210	5	821			104			168		
10210	7	615			61			135		
10210	10	507	596	1787	101	132	395	145	182	547
10210	12	383			87			96		
10210	14	137			37			57		
10203	3	1572	1575	4725	185	196	587	343	350	1049
10203	5	678			73			142		
10203	7	53			36			36		
10203	10	1117	1151	3452	184	193	580	301	313	938
10203	12	348			87			129		
10203	14	165			30			47		
10198	3	889	890	2671	138	143	428	221	223	669
10198	5	358			61			82		
10198	7	25			21			16		
10198	10	997	1004	3013	152	157	472	221	227	682
10198	12	246			55			71		
10198	14	77			24			31		
10139	3	154	167	500	52	63	190	452	474	1421
10139	5	32			12			92		
10139	7	42			24			91		

10139	10		148	162	486		41	57	170		436	463	1389
10139	12		38				20				93		
10139	14		41				24				100		
10140	3		99	115	344		86	90	269		391	416	1247
10140	5		26				13				63		
10140	7		38				16				93		
10140	10		93	112	337		80	84	253		383	412	1236
10140	12		25				13				62		
10140	14		42				17				101		

TOP PANEL
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
2186	4	82		246	16		48	15		46
2186	5	321		962	135		404	134		403
2186	6	186		557	110		329	108		323
2186	7	292		875	141		422	137		412
2186	104	65		194	11		32	12		35
2186	105	150		449	36		107	38		114
2186	106	57		172	39		117	39		116
2186	107	135		406	38		113	39		118
2196	4	21		62	6		17	10		31
2196	5	33		99	21		63	33		98
2196	6	32		95	31		92	44		132
2196	7	34		102	24		71	36		107
2196	104	21		62	6		17	10		31
2196	105	29		88	16		49	24		71
2196	106	108		325	149		447	138		413
2196	107	37		112	33		99	36		107
2197	4	24		71	20		61	32		95
2197	5	24		71	16		47	29		88
2197	6	111		334	165		496	137		412
2197	7	33		98	33		98	38		115
2197	104	24		71	20		61	32		95
2197	105	52		157	108		325	156		469
2197	106	140		420	191		574	155		466
2197	107	70		209	134		401	174		523

2194	4		25		75		32		97		35		106
2194	5		75		225		114		341		138		414
2194	6		66		198		30		90		91		273
2194	7		76		228		109		328		143		430
2194	104		25		75		32		97		35		106
2194	105		39		118		22		67		33		99
2194	106		60		179		86		258		68		205
2194	107		41		123		28		85		34		101

LEFT 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
2982	3	84	329	988	246	536	1608	111	214	641
2982	5	266			498			188		
2982	7	125			105			52		
2982	10	55	275	826	154	483	1449	167	268	803
2982	12	210			469			237		
2982	14	120			67			55		
3041	3	530	570	1711	931	952	2856	570	586	1759
3041	5	195			342			239		
3041	7	123			114			75		
3041	10	669	704	2112	813	834	2502	383	403	1208
3041	12	285			322			176		
3041	14	120			104			66		
5765	3	172	397	1191	284	826	2477	267	513	1538
5765	5	385			821			495		
5765	7	52			48			65		
5765	10	252	520	1561	238	752	2257	155	299	896
5765	12	449			742			278		
5765	14	139			73			55		
2809	3	44	134	403	142	598	1794	75	266	797
2809	5	65			567			176		
2809	7	79			118			130		
2809	10	46	151	454	116	552	1655	162	604	1811
2809	12	88			526			531		
2809	14	81			106			178		
2810	3	38	117	350	207	657	1970	93	278	835
2810	5	69			639			216		
2810	7	61			89			107		

2810	10		46	152	455		174	589	1767		216	660	1981
2810	12		111				577				644		
2810	14		65				72				86		
5724	3		635	668	2004		816	833	2499		360	377	1130
5724	5		250				254				146		
5724	7		117				98				63		
5724	10		572	610	1829		755	770	2311		251	271	813
5724	12		209				261				107		
5724	14		123				87				57		
3050	3		429	790	2369		450	669	2006		193	283	848
3050	5		595				420				203		
3050	7		265				233				84		
3050	10		390	543	1629		414	625	1875		150	225	675
3050	12		401				424				148		
3050	14		147				206				76		
5725	3		231	602	1806		116	481	1444		71	234	703
5725	5		558				449				202		
5725	7		128				108				73		
5725	10		240	519	1557		168	450	1349		83	196	589
5725	12		477				421				165		
5725	14		108				90				59		
5029	3		109	372	1117		53	304	913		53	230	690
5029	5		56				221				176		
5029	7		289				145				97		
5029	10		92	346	1039		69	236	709		50	133	400
5029	12		54				163				85		
5029	14		273				110				63		
5030	3		56	268	803		39	240	721		64	151	452
5030	5		84				101				96		
5030	7		197				167				69		
5030	10		48	247	740		33	178	534		63	145	436
5030	12		65				90				80		
5030	14		190				113				73		
3052	3		44	203	610		147	251	753		96	158	473
3052	5		31				93				116		
3052	7		165				128				51		

3052	10		146	295	886		209	254	762		237	258	773
3052	12		80				54				31		
3052	14		179				95				68		
3030	3		201	286	858		514	523	1570		235	249	746
3030	5		99				124				101		
3030	7		126				61				44		
3030	10		264	341	1024		549	568	1703		335	341	1022
3030	12		119				125				53		
3030	14		131				91				41		
3042	3		115	270	809		408	449	1348		172	191	572
3042	5		76				140				111		
3042	7		173				114				39		
3042	10		199	337	1010		451	473	1418		295	311	933
3042	12		103				122				45		
3042	14		179				87				65		
2815	3		96	290	870		337	927	2780		109	256	769
2815	5		248				917				201		
2815	7		90				78				91		
2815	10		77	278	835		227	762	2286		271	759	2278
2815	12		237				740				746		
2815	14		92				109				81		
2816	3		68	254	761		240	739	2217		80	261	783
2816	5		204				725				212		
2816	7		96				84				94		
2816	10		60	285	856		165	657	1971		204	752	2257
2816	12		242				629				725		
2816	14		98				118				123		
2883	3		260	365	1096		161	262	785		80	204	613
2883	5		54				153				54		
2883	7		182				105				137		
2883	10		311	410	1231		143	339	1017		89	204	611
2883	12		69				212				64		
2883	14		184				158				127		
2884	3		261	386	1159		201	269	808		74	189	567
2884	5		85				57				37		
2884	7		194				120				132		
2884	10		320	436	1309		150	252	756		95	208	625

2884	12		87				39				35		
2884	14		201				147				140		
5008	3		183	280	840		147	245	734		56	182	547
5008	5		39				112				36		
5008	7		153				114				136		
5008	10		225	323	970		120	355	1064		71	181	544
5008	12		51				158				42		
5008	14		164				215				124		

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		573	767	2300		247	348	1045		196	256	769
2637	5		148				191				88		
2637	7		346				126				101		
2637	10		541	760	2281		214	325	974		170	245	735
2637	12		128				171				66		
2637	14		372				130				116		
2638	3		216	614	1841		226	374	1121		99	233	699
2638	5		185				168				82		
2638	7		412				174				142		
2638	10		218	617	1850		241	394	1183		73	178	533
2638	12		199				171				69		
2638	14		408				185				107		
2635	3		426	511	1534		223	239	716		253	267	800
2635	5		36				46				62		
2635	7		201				55				53		
2635	10		397	501	1502		223	240	721		194	217	650
2635	12		66				38				73		
2635	14		213				59				57		
4929	3		377	517	1552		206	234	703		119	151	452
4929	5		46				24				15		
4929	7		257				77				66		
4929	10		394	563	1688		193	230	689		119	168	504
4929	12		54				19				29		
4929	14		293				88				82		

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	532	1547	4641	225	518	1553	130	425	1275
2645	3	733	1748	5244	273	566	1698	205	500	1500
2645	4	733	1748	5244	273	566	1698	205	500	1500
2645	5	532	1547	4641	225	518	1553	130	425	1275
2645	6	1015			293			295		
2645	12	632	1647	4940	323	616	1848	433	728	2184
2645	13	930	1944	5832	225	518	1554	359	654	1962
2645	14	930	1944	5832	225	518	1554	359	654	1962
2645	15	632	1647	4940	323	616	1848	433	728	2184
4927	2	349	1143	3428	144	389	1168	93	338	1014
4927	3	315	1109	3327	137	383	1148	89	334	1001
4927	4	315	1109	3327	137	383	1148	89	334	1001
4927	5	349	1143	3428	144	389	1168	93	338	1014
4927	6	794			245			245		
4927	12	592	1386	4157	126	371	1112	196	441	1322
4927	13	431	1224	3673	129	375	1124	207	451	1354
4927	14	431	1224	3673	129	375	1124	207	451	1354
4927	15	592	1386	4157	126	371	1112	196	441	1322
2643	2	506	924	2771	243	521	1564	555	779	2338
2643	3	494	912	2735	242	520	1561	555	780	2339
2643	4	494	912	2735	242	520	1561	555	780	2339
2643	5	506	924	2771	243	521	1564	555	779	2338
2643	6	418			279			224		
2643	12	763	1181	3544	153	432	1295	209	433	1300
2643	13	743	1161	3484	146	424	1273	202	426	1279
2643	14	743	1161	3484	146	424	1273	202	426	1279
2643	15	763	1181	3544	153	432	1295	209	433	1300

2652	2		949	1143	3428		240	514	1542		351	445	1335
2652	3		1120	1314	3941		459	734	2201		397	492	1476
2652	4		1120	1314	3941		459	734	2201		397	492	1476
2652	5		949	1143	3428		240	514	1542		351	445	1335
2652	6		194				274				94		
2652	12		747	941	2822		149	423	1269		247	341	1024
2652	13		525	719	2157		277	551	1653		205	299	898
2652	14		525	719	2157		277	551	1653		205	299	898
2652	15		747	941	2822		149	423	1269		247	341	1024
2646	2		69	268	803		97	181	544		134	187	562
2646	3		113	312	937		115	199	596		131	184	553
2646	4		113	312	937		115	199	596		131	184	553
2646	5		69	268	803		97	181	544		134	187	562
2646	6		199				84				53		
2646	12		155	354	1061		108	192	575		40	93	278
2646	13		171	370	1109		135	219	658		51	104	312
2646	14		171	370	1109		135	219	658		51	104	312
2646	15		155	354	1061		108	192	575		40	93	278
2651	2		294	462	1387		410	704	2111		340	672	2016
2651	3		445	613	1839		390	684	2051		381	713	2139
2651	4		445	613	1839		390	684	2051		381	713	2139
2651	5		294	462	1387		410	704	2111		340	672	2016
2651	6		168				293				332		
2651	12		419	587	1760		590	884	2651		637	969	2907
2651	13		298	466	1397		299	593	1778		964	1296	3888
2651	14		298	466	1397		299	593	1778		964	1296	3888
2651	15		419	587	1760		590	884	2651		637	969	2907

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	399	527	1580	173	204	612	183	215	645
2619	5	90			40			41		
2619	7	236			72			75		
2619	10	441	558	1673	176	202	605	179	218	653
2619	12	108			33			40		
2619	14	228			65			83		
2618	3	261	290	869	174	180	540	122	136	408
2618	5	109			80			57		
2618	7	71			25			33		
2618	10	286	312	936	122	137	410	122	137	411
2618	12	77			79			58		
2618	14	77			29			34		
2614	3	226	288	863	106	124	373	82	107	322
2614	5	78			39			39		
2614	7	114			39			41		
2614	10	227	292	875	92	120	359	94	129	387
2614	12	64			43			55		
2614	14	121			47			51		
2613	3	153	222	666	86	115	344	63	112	335
2613	5	33			38			49		
2613	7	114			47			55		
2613	10	150	192	577	85	104	311	76	108	323
2613	12	27			28			38		
2613	14	83			38			47		

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	881	982	2947	341	375	1125	340	390	1169
2633	3	1074	1176	3527	432	467	1401	532	581	1744
2633	4	1074	1176	3527	432	467	1401	532	581	1744
2633	5	881	982	2947	341	375	1125	340	390	1169
2633	6	101			34			49		
2633	12	1939	2041	6122	729	764	2291	759	808	2424
2633	13	2058	2159	6477	730	765	2294	923	973	2918
2633	14	2058	2159	6477	730	765	2294	923	973	2918
2633	15	1939	2041	6122	729	764	2291	759	808	2424
2627	2	589	1248	3745	245	545	1634	185	515	1546
2627	3	320	980	2940	250	550	1649	161	492	1476
2627	4	320	980	2940	250	550	1649	161	492	1476
2627	5	589	1248	3745	245	545	1634	185	515	1546
2627	6	660			300			331		
2627	12	1245	1905	5714	571	871	2612	689	1019	3058
2627	13	986	1646	4938	290	590	1770	339	670	2009
2627	14	986	1646	4938	290	590	1770	339	670	2009
2627	15	1245	1905	5714	571	871	2612	689	1019	3058

UPPER LEFT WARMLOAD SHIELD
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	RMS COMP STRESS	Y-LOAD RMS PRIN STRESS	Y-LOAD RMS 3 SIG STRESS	RMS COMP STRESS	Z-LOAD RMS PRIN STRESS	Z-LOAD RMS 3 SIG STRESS
2676	3	451	640	1920	316	372	1116	159	188	564
2676	5	71			56			36		
2676	7	328			134			66		
2676	10	488	712	2136	286	354	1063	154	196	587
2676	12	97			50			38		
2676	14	371			144			81		
2686	3	26	264	792	19	129	386	16	111	332
2686	5	106			58			60		
2686	7	194			88			69		
2686	10	86	228	685	34	98	295	38	98	295
2686	12	55			43			56		
2686	14	157			60			51		
2684	3	64	319	958	56	160	479	42	130	391
2684	5	62			71			75		
2684	7	256			96			70		
2684	10	56	356	1067	47	172	516	36	154	462
2684	12	54			55			78		
2684	14	301			121			95		
2683	3	140	333	999	87	178	534	81	134	402
2683	5	30			54			44		
2683	7	242			106			69		
2683	10	121	337	1010	80	187	560	61	152	456
2683	12	44			50			80		
2683	14	252			120			81		

2682	3		217	441	1322		205	315	946		153	254	763
2682	5		151				234				201		
2682	7		254				95				73		
2682	10		193	421	1262		167	264	792		176	218	653
2682	12		122				183				161		
2682	14		261				89				49		

UPPER LEFT WARMLOAD SHIELD
BAR 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
2691	2	713	1960	5881	272	776	2329	276	677	2030
2691	3	879	2126	6379	305	810	2429	283	683	2049
2691	4	879	2126	6379	305	810	2429	283	683	2049
2691	5	713	1960	5881	272	776	2329	276	677-	2030
2691	6	1247			504			400		
2691	12	1241	2488	7465	439	943	2829	590	991	2972
2691	13	1742	2990	8969	329	833	2500	596	996	2989
2691	14	1742	2990	8969	329	833	2500	596	996	2989
2691	15	1241	2488	7465	439	943	2829	590	991	2972
2700	2	1059	1353	4060	242	355	1066	170	288	863
2700	3	1451	1746	5237	357	470	1410	256	374	1123
2700	4	1451	1746	5237	357	470	1410	256	374	1123
2700	5	1059	1353	4060	242	355	1066	170	288	863
2700	6	295			113			118		
2700	12	717	1012	3036	157	269	808	118	236	708
2700	13	656	951	2852	149	262	785	119	237	712
2700	14	656	951	2852	149	262	785	119	237	712
2700	15	717	1473	4420	157	269	808	118	236	708
2690	2	470	1194	3582	239	669	2008	340	621	1863
2690	3	434	1157	3472	248	678	2035	340	621	1862
2690	4	434	1157	3472	248	678	2035	340	621	1862
2690	5	470	1194	3582	239	669	2008	340	621	1863
2690	6	724			430			281		
2690	12	1150	1873	5620	234	665	1994	288	569	1706
2690	13	988	1712	5137	178	608	1824	278	558	1675
2690	14	988	1712	5137	178	608	1824	278	558	1675
2690	15	1150	1873	5620	234	665	1994	288	569	1706

2687	2		857	1364	4093		479	919	2757		832	1128	3384
2687	3		902	1409	4228		463	903	2708		798	1094	3282
2687	4		902	1409	4228		463	903	2708		798	1094	3282
2687	5		857	1364	4093		479	919	2757		832	1128	3384
2687	6		507				440				296		
2687	12		387	894	2683		311	750	2251		418	714	2142
2687	13		410	917	2750		316	755	2265		426	722	2165
2687	14		410	917	2750		316	755	2265		426	722	2165
2687	15		387	894	2683		311	750	2251		418	714	2142
2692	2		508	617	1852		670	729	2188		753	813	2439
2692	3		426	536	1607		537	597	1792		482	542	1625
2692	4		426	536	1607		537	597	1792		482	542	1625
2692	5		508	617	1852		670	729	2188		753	813	2439
2692	6		110				60				60		
2692	12		155	265	794		118	178	533		109	169	506
2692	13		147	257	770		138	198	594		112	172	515
2692	14		147	257	770		138	198	594		112	172	515
2692	15		155	265	794		118	178	533		109	169	506

UPPER RIGHT WARMLOAD SHIELD
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
2659	3		422	438	1314		135	143	428		122	124	373
2659	5		39				31				13		
2659	7		79				29				16		
2659	10		494	512	1535		170	185	554		135	138	414
2659	12		50				48				23		
2659	14		90				46				18		
2658	3		363	398	1194		98	139	418		90	100	299
2658	5		31				92				37		
2658	7		114				44				24		
2658	10		364	394	1182		132	163	488		100	108	323
2658	12		32				80				31		
2658	14		104				51				25		

UPPER RIGHT WARMLOAD SHIELD
BAR 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
2671	2	1441	2576	7728	431	707	2122	272	490	1471
2671	3	1400	2535	7604	421	698	2093	267	485	1455
2671	4	1400	2535	7604	421	698	2093	267	485	1455
2671	5	1441	2576	7728	431	707	2122	272	490	1471
2671	6	1135			276			218		
2671	12	2437	3572	10715	726	1002	3005	464	682	2046
2671	13	2315	3450	10350	686	962	2886	439	657	1972
2671	14	2315	3450	10350	686	962	2886	439	657	1972
2671	15	2437	3572	10715	726	1002	3005	464	682	2046
2666	2	401	417	1250	191	212	636	148	162	486
2666	3	671	686	2058	264	285	855	160	173	520
2666	4	671	686	2058	264	285	855	160	173	520
2666	5	401	417	1250	191	212	636	148	162	486
2666	6	15			21			14		
2666	12	448	463	1390	164	185	555	154	168	503
2666	13	413	429	1286	243	265	794	119	133	398
2666	14	413	429	1286	243	265	794	119	133	398
2666	15	448	463	1390	164	185	555	154	168	503
2660	2	139	197	592	260	296	887	94	125	376
2660	3	260	319	956	307	342	1026	186	218	653
2660	4	260	319	956	307	342	1026	186	218	653
2660	5	139	197	592	260	296	887	94	125	376
2660	6	58			35			31		
2660	12	175	234	701	146	181	544	46	77	231
2660	13	185	244	732	151	187	560	52	84	251
2660	14	185	244	732	151	187	560	52	84	251
2660	15	175	234	701	146	181	544	46	77	231

LOWER CARD CAGE ASSEMBLY
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
3710	3	100	177	532	505	1134	3402	294	358	1074
3710	5	128			1016			180		
3710	7	62			272			107		
3710	10	155	192	576	558	942	2826	519	621	1863
3710	12	108			812			169		
3710	14	55			224			214		
3760	3	690	739	2217	857	974	2921	1235	1393	4178
3760	5	311			552			296		
3760	7	145			222			415		
3760	10	690	716	2148	864	918	2754	1288	1346	4039
3760	12	245			298			689		
3760	14	111			183			196		
3689	3	177	363	1088	322	532	1595	441	633	1900
3689	5	254			327			136		
3689	7	142			207			309		
3689	10	211	395	1185	282	479	1438	515	793	2378
3689	12	204			155			403		
3689	14	187			253			329		
3599	3	230	514	1542	797	1849	5546	231	429	1287
3599	5	103			149			90		
3599	7	341			1337			259		
3599	10	311	637	1912	750	1793	5378	424	672	2016
3599	12	122			194			107		
3599	14	410			1291			374		
3711	3	105	217	650	822	1439	4316	259	360	1079
3711	5	183			1415			270		
3711	7	61			120			95		

3711	10		183	218	654		876	1138	3413		714	753	2260
3711	12		156				1088				214		
3711	14		47				114				146		
3686	3		611	698	2093		998	1057	3171		1472	1543	4630
3686	5		217				221				236		
3686	7		203				221				306		
3686	10		595	634	1901		962	1033	3098		1551	1647	4942
3686	12		141				215				384		
3686	14		137				240				349		
3585	3		315	476	1429		547	799	2397		350	2392	7177
3585	5		454				768				2372		
3585	7		60				89				205		
3585	10		290	520	1561		493	892	2675		444	2447	7342
3585	12		491				850				2427		
3585	14		82				129				201		
3593	3		623	659	1976		1564	1701	5102		362	406	1217
3593	5		104				392				116		
3593	7		139				423				112		
3593	10		745	767	2301		1696	1824	5471		693	722	2167
3593	12		59				255				59		
3593	14		125				449				140		
3594	3		153	381	1142		636	2163	6489		464	627	1882
3594	5		75				237				67		
3594	7		264				1715				302		
3594	10		205	418	1255		868	2243	6730		716	939	2817
3594	12		67				166				66		
3594	14		274				1690				441		
3685	3		235	287	860		313	356	1068		489	572	1716
3685	5		52				41				29		
3685	7		110				117				212		
3685	10		197	244	732		344	403	1209		521	586	1759
3685	12		54				29				47		
3685	14		95				149				187		
3595	3		404	538	1613		961	2181	6544		1034	1116	3348
3595	5		129				415				93		
3595	7		234				1468				290		

3595	10		274	472	1417		849	2109	6326		796	952	2856
3595	12		134				409				120		
3595	14		259				1463				360		
3547	3		100	317	950		361	2193	6579		321	556	1668
3547	5		39				170				62		
3547	7		245				1925				341		
3547	10		78	331	994		289	2138	6413		191	631	1892
3547	12		39				141				60		
3547	14		272				1921				501		
3571	3		699	1222	3665		1174	2043	6130		801	1794	5381
3571	5		200				398				910		
3571	7		731				1196				936		
3571	10		660	1190	3569		1081	2020	6060		932	1761	5284
3571	12		268				417				994		
3571	14		698				1227				798		

LOWER CARD
QUAD ELEMENT
REINFORCED PLASTIC FTY=24000 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
4830	3	147	187	561	494	643	1929	141	174	523
4830	5	32			69			18		
4830	7	79			292			72		
4830	10	129	153	458	486	617	1851	141	179	538
4830	12	22			69			17		
4830	14	56			268			79		
4806	3	245	300	901	448	556	1668	152	222	665
4806	5	45			64			20		
4806	7	119			230			119		
4806	10	239	300	901	456	567	1702	161	214	642
4806	12	30			56			36		
4806	14	129			238			97		

UPPER CARD CAGE ASSEMBLY
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
3250	3	938	1261	3784	864	1156	3469	1114	1505	4514
3250	5	1079			984			1302		
3250	7	243			225			281		
3250	10	1058	1412	4237	961	1294	3882	1250	1692	5077
3250	12	1231			1128			1477		
3250	14	253			235			308		
3259	3	608	968	2903	578	902	2705	716	1161	3483
3259	5	874			814			1047		
3259	7	183			168			225		
3259	10	770	1074	3223	702	996	2989	942	1280	3841
3259	12	1011			935			1213		
3259	14	139			135			152		
3251	3	228	1732	5195	207	1596	4788	274	2066	6197
3251	5	1438			1329			1719		
3251	7	664			609			788		
3251	10	60	1640	4919	54	1513	4538	76	1959	5877
3251	12	1378			1271			1648		
3251	14	643			594			765		
3260	3	186	1418	4253	159	1301	3904	230	1695	5084
3260	5	1271			1166			1520		
3260	7	425			393			506		
3260	10	40	1337	4012	33	1224	3673	49	1601	4803
3260	12	1214			1113			1454		
3260	14	400			364			479		
3249	3	961	988	2964	884	907	2721	1113	1150	3451
3249	5	645			590			753		
3249	7	96			86			122		

3249	10		986	998	2994		896	910	2731		1139	1157	3470
3249	12		559				512				644		
3249	14		72				77				96		
3258	3		461	573	1719		446	543	1630		538	676	2028
3258	5		478				451				565		
3258	7		103				95				124		
3258	10		531	594	1782		496	543	1630		651	735	2205
3258	12		393				362				466		
3258	14		112				93				150		
3475	3		98	410	1230		77	364	1093		62	353	1060
3475	5		381				312				283		
3475	7		95				123				143		
3475	10		100	438	1313		101	468	1405		83	449	1346
3475	12		399				439				391		
3475	14		114				104				145		
3476	3		217	793	2380		177	647	1940		125	568	1704
3476	5		772				613				488		
3476	7		110				126				189		
3476	10		217	806	2418		211	781	2343		151	649	1947
3476	12		781				761				579		
3476	14		123				107				187		

UPPER CARD CAGE ASSEMBLY
BAR 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
3229	2	1905	1933	5800	1749	1776	5328	2244	2285	6854
3229	3	2090	2119	6356	1928	1954	5863	2510	2551	7652
3229	4	2090	2119	6356	1928	1954	5863	2510	2551	7652
3229	5	1905	1933	5800	1749	1776	5328	2244	2285	6854
3229	6	28			26			41		
3229	12	98	127	380	101	127	382	190	231	692
3229	13	135	164	491	128	155	464	160	201	603
3229	14	135	164	491	128	155	464	160	201	603
3229	15	98	127	380	101	127	382	190	231	692
3215	2	112	185	556	114	186	557	143	233	698
3215	3	176	249	748	189	260	780	234	323	970
3215	4	176	249	748	189	260	780	234	323	970
3215	5	112	185	556	114	186	557	143	233	698
3215	6	73			71			90		
3215	12	596	669	2008	562	633	1899	704	794	2382
3215	13	486	560	1679	459	530	1590	580	669	2008
3215	14	486	560	1679	459	530	1590	580	669	2008
3215	15	596	669	2008	562	633	1899	704	794	2382
3208	2	1347	1449	4347	2037	2235	6706	1280	1419	4258
3208	3	1669	1771	5312	2259	2457	7371	1479	1618	4855
3208	4	1669	1771	5312	2259	2457	7371	1479	1618	4855
3208	5	1347	1449	4347	2037	2235	6706	1280	1419	4258
3208	6	102			199			139		
3208	12	544	646	1938	809	1007	3022	571	709	2128
3208	13	712	814	2441	585	784	2352	558	697	2092
3208	14	712	814	2441	585	784	2352	558	697	2092
3208	15	544	646	1938	809	1007	3022	571	709	2128

3216	2		460	482	1447		619	651	1953		408	436	1309
3216	3		374	397	1190		675	707	2120		435	463	1389
3216	4		374	397	1190		675	707	2120		435	463	1389
3216	5		460	482	1447		619	651	1953		408	436	1309
3216	6		22				32				28		
3216	12		39	61	183		39	71	212		20	48	144
3216	13		50	72	217		42	74	222		36	64	191
3216	14		50	72	217		42	74	222		36	64	191
3216	15		39	61	183		39	71	212		20	48	144

UPPER CARD CAGE ASSEMBLY
QUAD ELEMENT
6061-T4 FTY=16000 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
3403	3	43	477	1431	57	616	1847	55	554	1663
3403	5	411			560			458		
3403	7	169			176			219		
3403	10	50	517	1551	53	591	1774	68	664	1991
3403	12	466			529			588		
3403	14	155			182			213		
3341	3	29	373	1118	39	344	1031	32	431	1293
3341	5	362			323			415		
3341	7	62			80			80		
3341	10	54	389	1167	38	354	1063	46	466	1399
3341	12	285			253			330		
3341	14	186			179			239		
3404	3	174	816	2448	252	1120	3359	150	766	2297
3404	5	773			1080			637		
3404	7	167			186			281		
3404	10	195	867	2602	238	1064	3191	190	910	2729
3404	12	823			1025			786		
3404	14	174			179			299		
3395	3	193	393	1178	269	488	1464	176	357	1071
3395	5	318			415			205		
3395	7	122			126			166		
3395	10	212	387	1162	253	485	1455	219	378	1133
3395	12	318			417			212		
3395	14	110			126			162		
3396	3	714	777	2331	896	971	2913	605	703	2109
3396	5	416			586			272		
3396	7	151			170			205		

3396	10		690	751	2254		941	1025	3075		504	597	1791
3396	12		431				587				282		
3396	14		140				192				171		
3387	3		58	292	875		58	342	1026		56	227	680
3387	5		259				307				206		
3387	7		88				99				60		
3387	10		82	272	816		78	344	1032		104	187	562
3387	12		241				310				149		
3387	14		77				95				57		

UPPER CARD CAGE ASSEMBLY
BAR ELEMENT
6061-T4 FTY=16000 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
3482	2	663	673	2020	712	724	2171	1114	1138	3414
3482	3	722	733	2200	754	766	2297	1251	1275	3826
3482	4	722	733	2200	754	766	2297	1251	1275	3826
3482	5	663	673	2020	712	724	2171	1114	1138	3414
3482	6	11			11			24		
3482	12	77	88	265	61	72	216	112	136	409
3482	13	74	85	255	62	74	221	53	77	231
3482	14	74	85	255	62	74	221	53	77	231
3482	15	77	88	265	61	72	216	112	136	409

UPPER CARD
QUAD ELEMENT
REINFORCED PLASTIC FTY=24000 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
10328	3	39	296	887	13	69	207	15	59	177
10328	5	293			68			58		
10328	7	26			7			6		
10328	10	35	314	942	14	76	228	12	67	200
10328	12	312			75			66		
10328	14	26			8			7		
10329	3	195	506	1517	29	81	242	28	63	188
10329	5	478			77			59		
10329	7	92			13			12		
10329	10	207	536	1608	27	91	273	27	69	207
10329	12	514			89			66		
10329	14	84			12			11		
10701	3	40	333	1000	13	74	223	16	69	206
10701	5	331			74			67		
10701	7	29			6			10		
10701	10	41	314	943	11	70	211	11	64	191
10701	12	311			69			62		
10701	14	28			7			8		
10702	3	210	553	1659	30	88	265	27	68	205
10702	5	532			86			65		
10702	7	86			12			12		
10702	10	197	526	1577	30	79	236	32	72	217
10702	12	500			75			68		
10702	14	93			13			13		

10693	3		54	382	1145		15	108	323		15	104	313
10693	5		377				106				102		
10693	7		38				13				13		
10693	10		54	354	1061		15	102	305		14	121	363
10693	12		348				99				120		
10693	14		40				14				13		
10292	3		53	332	997		14	103	310		17	79	237
10292	5		327				102				77		
10292	7		40				11				10		
10292	10		53	359	1077		14	110	330		16	82	245
10292	12		354				109				80		
10292	14		38				11				11		

LOWER WARMLOAD
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
2789	3	668	1496	4489	822	1965	5896	470	1053	3160
2789	5	1444			1945			1026		
2789	7	209			152			127		
2789	10	916	1542	4626	1579	2150	6451	686	1102	3307
2789	12	1489			2103			1072		
2789	14	182			164			113		
2778	3	469	675	2026	873	949	2848	474	543	1630
2778	5	407			505			286		
2778	7	235			184			134		
2778	10	1165	1214	3642	1457	1490	4471	913	935	2804
2778	12	442			551			310		
2778	14	194			177			115		
2777	3	409	647	1940	724	1032	3095	392	555	1666
2777	5	373			479			251		
2777	7	255			412			223		
2777	10	1006	1056	3168	1199	1265	3794	769	793	2380
2777	12	387			526			266		
2777	14	183			220			114		
2788	3	639	1354	4063	742	1849	5547	481	1050	3149
2788	5	1293			1733			975		
2788	7	209			358			206		
2788	10	817	1353	4059	1427	1974	5923	630	1030	3091
2788	12	1311			1899			1002		
2788	14	150			203			107		
2771	3	224	671	2014	132	587	1761	39	390	1171
2771	5	194			204			103		
2771	7	462			417			317		

2771	10		464	817	2452		353	584	1751		150	442	1325
2771	12		163				197				98		
2771	14		481				299				317		
2772	3		858	1080	3241		647	838	2513		506	681	2042
2772	5		279				192				227		
2772	7		421				351				282		
2772	10		818	1075	3225		554	708	2124		465	630	1890
2772	12		299				210				186		
2772	14		446				277				270		
2760	3		1423	1523	4570		953	1091	3273		996	1091	3273
2760	5		580				398				354		
2760	7		307				309				265		
2760	10		1464	1603	4808		939	1067	3200		953	1062	3185
2760	12		569				421				364		
2760	14		379				287				276		
2761	3		1320	1567	4700		982	1154	3463		1058	1212	3636
2761	5		404				300				329		
2761	7		536				383				369		
2761	10		1238	1600	4800		973	1139	3416		1069	1239	3717
2761	12		402				285				301		
2761	14		658				376				400		
2782	3		186	749	2247		101	750	2250		100	494	1481
2782	5		135				184				112		
2782	7		588				606				388		
2782	10		315	809	2426		312	786	2357		255	582	1747
2782	12		123				156				94		
2782	14		582				546				400		
2783	3		1118	1335	4006		1169	1347	4042		813	926	2779
2783	5		419				384				305		
2783	7		447				415				266		
2783	10		1243	1424	4271		1192	1363	4088		836	963	2889
2783	12		430				413				311		
2783	14		424				402				287		
2793	3		1550	1614	4843		1512	1566	4699		1088	1158	3473
2793	5		607				652				388		
2793	7		255				224				231		

2793	10		1563	1680	5040		1396	1487	4461		1018	1115	3346
2793	12		615				661				386		
2793	14		353				274				266		
2794	3		1844	2107	6321		1833	2021	6064		1408	1570	4711
2794	5		605				564				440		
2794	7		629				523				429		
2794	10		1767	2135	6405		1834	2060	6180		1413	1606	4817
2794	12		591				571				436		
2794	14		754				581				475		
2767	3		567	708	2124		696	757	2272		275	365	1094
2767	5		376				318				217		
2767	7		216				164				115		
2767	10		1116	1162	3487		965	1002	3006		634	663	1989
2767	12		401				352				233		
2767	14		188				155				111		
2768	3		568	693	2078		622	827	2480		250	371	1112
2768	5		328				308				176		
2768	7		213				326				153		
2768	10		975	1018	3053		824	868	2603		547	565	1696
2768	12		349				349				189		
2768	14		169				151				83		
5091	3		826	982	2945		1606	1832	5497		675	791	2373
5091	5		975				1831				788		
5091	7		33				20				20		
5091	10		378	1002	3005		827	1878	5635		351	810	2429
5091	12		993				1874				805		
5091	14		75				69				45		
5092	3		844	1118	3353		1405	1762	5287		638	823	2469
5092	5		1050				1647				769		
5092	7		136				203				100		
5092	10		273	1051	3153		641	1666	4999		288	775	2325
5092	12		1045				1659				768		
5092	14		68				88				57		
5132	3		786	999	2998		1091	1318	3953		452	573	1718
5132	5		952				1229				542		
5132	7		101				142				61		

5132	10		289	962	2887		485	1246	3739		163	539	1616
5132	12		951				1241				535		
5132	14		85				65				39		
5133	3		811	983	2948		1240	1401	4203		488	576	1729
5133	5		974				1398				575		
5133	7		39				22				12		
5133	10		321	999	2998		639	1437	4312		206	592	1775
5133	12		992				1433				587		
5133	14		68				57				41		

UPPER WARMLOAD
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
2740	3	697	739	2216	1340	1381	4144	1184	1204	3613
2740	5	128			253			193		
2740	7	159			215			142		
2740	10	603	641	1923	1229	1276	3827	1045	1084	3253
2740	12	109			225			216		
2740	14	142			221			185		
5692	3	124	257	772	50	141	423	27	100	301
5692	5	161			86			73		
5692	7	113			71			45		
5692	10	123	251	752	49	139	416	26	113	339
5692	12	148			71			79		
5692	14	114			78			54		
2741	3	390	453	1360	624	764	2293	504	582	1746
2741	5	269			316			252		
2741	7	108			251			161		
2741	10	509	565	1696	684	838	2514	582	705	2116
2741	12	187			306			216		
2741	14	146			286			246		
2729	3	370	402	1205	639	756	2268	464	509	1528
2729	5	153			318			249		
2729	7	89			226			109		
2729	10	443	587	1761	656	737	2212	597	667	2000
2729	12	169			333			321		
2729	14	245			182			155		
2730	3	202	290	871	191	490	1471	77	297	890
2730	5	82			160			100		
2730	7	136			315			208		

2730	10		277	408	1223		258	468	1403		157	378	1134
2730	12		91				140				111		
2730	14		204				262				243		
2744	3		206	623	1868		360	979	2936		268	687	2062
2744	5		540				851				596		
2744	7		186				281				195		
2744	10		394	629	1886		775	1064	3192		515	711	2134
2744	12		572				952				651		
2744	14		115				180				109		
2745	3		219	670	2009		418	985	2954		303	692	2076
2745	5		584				955				682		
2745	7		196				129				63		
2745	10		445	695	2084		897	1136	3409		607	781	2344
2745	12		619				1047				742		
2745	14		138				146				83		
2733	3		236	377	1130		325	569	1706		255	415	1246
2733	5		139				234				167		
2733	7		183				285				199		
2733	10		275	338	1014		578	639	1917		471	499	1497
2733	12		156				265				186		
2733	14		107				151				94		
2734	3		213	388	1164		433	508	1523		349	370	1111
2734	5		154				258				194		
2734	7		202				137				61		
2734	10		353	425	1276		753	791	2374		634	645	1936
2734	12		164				283				214		
2734	14		137				140				71		
2707	3		986	1013	3039		2577	2625	7876		1400	1449	4348
2707	5		325				834				457		
2707	7		137				294				223		
2707	10		597	721	2163		2279	2345	7034		1282	1326	3977
2707	12		228				810				464		
2707	14		247				318				194		
2708	3		397	477	1431		859	986	2959		498	589	1768
2708	5		282				498				231		
2708	7		125				250				181		

2708	10		765	831	2492		1030	1170	3511		619	699	2097
2708	12		212				410				211		
2708	14		202				326				197		
2718	3		211	315	944		802	848	2543		438	488	1463
2718	5		75				251				137		
2718	7		157				165				131		
2718	10		337	410	1230		1277	1355	4064		585	622	1867
2718	12		75				355				186		
2718	14		156				279				128		
2719	3		89	262	785		120	527	1582		36	325	976
2719	5		61				98				57		
2719	7		186				418				279		
2719	10		171	324	971		191	638	1913		104	331	993
2719	12		69				115				78		
2719	14		197				483				240		
5710	3		75	131	392		35	165	496		13	54	161
5710	5		74				74				26		
5710	7		56				109				34		
5710	10		74	189	567		34	143	429		12	69	207
5710	12		137				64				45		
5710	14		77				93				37		
2711	3		327	615	1846		716	1583	4748		237	768	2303
2711	5		524				1549				746		
2711	7		162				172				106		
2711	10		760	835	2505		890	1584	4752		541	807	2422
2711	12		644				1551				797		
2711	14		120				150				52		
2712	3		362	697	2092		739	1658	4973		219	803	2410
2712	5		353				1645				793		
2712	7		340				108				77		
2712	10		635	707	2120		945	1717	5151		566	853	2558
2712	12		413				1691				840		
2712	14		145				141				61		
2722	3		212	314	942		225	540	1621		59	263	788
2722	5		45				423				183		
2722	7		166				192				127		
2722	10		185	268	805		892	942	2826		326	344	1032

2722	12		74				440				204		
2722	14		127				158				50		
2723	3		159	466	1398		333	539	1618		93	254	761
2723	5		68				474				215		
2723	7		350				117				79		
2723	10		187	280	840		1139	1165	3496		403	419	1257
2723	12		65				523				232		
2723	14		141				131				55		

BEAM SUPPORT
BEAM 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
3159	4	101		304	286		859	337		1012
3159	5	246		737	349		1047	341		1024
3159	6	389		1166	466		1398	270		809
3159	7	189		567	263		789	346		1039
3159	104	86		258	167		501	370		1111
3159	105	253		759	294		881	894		2681
3159	106	327		982	606		1818	210		629
3159	107	209		627	261		783	931		2793
3160	4	29		88	84		253	40		119
3160	5	272		816	180		541	297		892
3160	6	461		1384	795		2384	410		1229
3160	7	219		658	99		298	331		994
3160	104	149		446	84		251	302		905
3160	105	168		504	98		293	267		801
3160	106	218		654	500		1499	453		1359
3160	107	208		624	156		467	256		767
3161	4	165		496	316		948	119		357
3161	5	314		942	356		1068	165		495
3161	6	883		2649	1368		4104	607		1821
3161	7	193		579	154		461	148		445
3161	104	113		340	284		852	403		1209
3161	105	50		150	66		198	62		185
3161	106	326		978	282		847	179		537
3161	107	40		120	50		149	30		89

3156	4		60		179		67		200		44		131
3156	5		116		348		73		220		36		108
3156	6		71		213		77		232		57		172
3156	7		117		352		75		224		36		109
3156	104		109		327		135		405		57		171
3156	105		37		110		125		374		44		133
3156	106		108		323		83		250		112		336
3156	107		34		102		99		297		44		132
3157	4		50		151		99		298		78		234
3157	5		124		371		135		406		60		179
3157	6		57		172		134		403		198		594
3157	7		123		370		111		334		49		146
3157	104		104		311		211		632		126		377
3157	105		141		424		261		784		241		722
3157	106		140		420		390		1169		242		726
3157	107		134		401		203		608		262		785
3158	4		46		139		41		124		164		492
3158	5		94		281		139		418		83		250
3158	6		66		198		246		739		275		825
3158	7		96		287		125		375		98		293
3158	104		161		484		257		770		143		430
3158	105		137		412		259		777		229		687
3158	106		290		871		396		1189		169		507
3158	107		107		322		181		543		220		659
3155	4		56		169		53		158		25		76
3155	5		322		965		96		287		116		347
3155	6		52		155		144		433		57		172
3155	7		320		959		101		304		113		340
3155	104		217		651		114		343		57		172
3155	105		91		274		107		320		44		132
3155	106		203		610		55		164		69		208
3155	107		93		279		96		288		41		123

3154	4		301		902		93		279		77		231
3154	5		478		1434		149		448		149		447
3154	6		279		836		154		461		90		269
3154	7		481		1442		155		465		150		450
3154	104		141		422		77		230		89		266
3154	105		526		1578		169		506		208		623
3154	106		122		366		91		272		70		210
3154	107		528		1585		171		514		211		632
3162	4		38		113		59		176		26		79
3162	5		95		285		160		480		147		441
3162	6		77		230		41		122		83		248
3162	7		103		308		165		494		141		423
3162	104		153		460		252		755		166		497
3162	105		88		264		79		236		54		161
3162	106		196		589		363		1090		163		490
3162	107		63		190		20		60		77		232
3153	4		30		91		62		186		53		160
3153	5		249		748		235		706		390		1170
3153	6		211		634		104		311		232		695
3153	7		244		732		233		699		369		1107
3153	104		163		490		123		370		187		561
3153	105		173		519		132		396		315		946
3153	106		168		504		220		660		179		538
3153	107		172		516		134		403		318		954

LOWER REFLECTOR
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
4790	3	397	463	1389	159	174	521	313	327	981
4790	5	384			157			309		
4790	7	72			16			16		
4790	10	375	457	1370	152	170	510	301	320	959
4790	12	386			153			302		
4790	14	75			17			18		
4686	3	359	406	1217	151	167	501	317	332	995
4686	5	383			152			321		
4686	7	33			16			13		
4686	10	357	391	1172	145	161	483	305	321	964
4686	12	358			147			311		
4686	14	33			15			13		
4382	3	99	338	1013	82	186	557	48	136	407
4382	5	243			126			98		
4382	7	150			79			57		
4382	10	127	502	1506	96	275	825	53	231	694
4382	12	432			226			186		
4382	14	162			93			90		
4365	3	259	679	2038	119	297	891	124	285	854
4365	5	516			266			258		
4365	7	262			75			65		
4365	10	98	672	2016	67	309	926	67	316	947
4365	12	630			296			306		
4365	14	156			55			49		
4532	3	1101	2919	8758	459	1240	3721	439	1201	3604
4532	5	2849			1219			1180		
4532	7	358			130			128		

4532	10		1012	2791	8372		442	1197	3592		416	1150	3451
4532	12		2779				1191				1147		
4532	14		146				69				54		
4533	3		950	2876	8628		411	1225	3676		411	1195	3584
4533	5		2830				1197				1169		
4533	7		299				151				141		
4533	10		1063	2815	8445		434	1197	3592		444	1166	3497
4533	12		2811				1195				1164		
4533	14		88				44				34		
4514	3		607	1908	5723		347	1005	3015		309	907	2720
4514	5		1894				1001				903		
4514	7		135				55				48		
4514	10		637	1885	5656		371	1030	3091		333	923	2768
4514	12		1863				1004				901		
4514	14		166				131				113		
4515	3		1939	1945	5836		1037	1043	3129		930	932	2797
4515	5		841				385				352		
4515	7		79				63				37		
4515	10		1914	1926	5778		1002	1007	3020		902	905	2716
4515	12		686				359				312		
4515	14		120				53				45		
4398	3		155	374	1122		134	273	820		73	190	570
4398	5		274				212				131		
4398	7		148				92				83		
4398	10		206	479	1436		143	329	987		81	252	756
4398	12		280				289				189		
4398	14		232				86				103		
4381	3		315	1016	3048		183	549	1647		130	386	1158
4381	5		952				543				374		
4381	7		211				49				56		
4381	10		381	1004	3012		182	589	1768		133	402	1207
4381	12		957				575				390		
4381	14		172				77				57		

LOWER REFLECTOR
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
4573	2	483	493	1478	244	251	754	179	186	557
4573	3	544	554	1663	484	491	1473	337	343	1029
4573	4	2915	2925	8776	3247	3254	9763	2382	2388	7165
4573	5	2784	2795	8384	3016	3023	9070	2228	2234	6703
4573	6	10			7			6		
4573	12	4	15	44	6	13	39	6	13	38
4573	13	9	19	58	12	19	57	13	19	57
4573	14	65	75	226	77	84	251	80	86	259
4573	15	61	71	213	71	78	233	74	80	240
4574	2	637	647	1941	347	355	1066	255	262	787
4574	3	835	845	2534	617	625	1875	427	434	1302
4574	4	3208	3218	9654	3454	3463	10388	2338	2345	7035
4574	5	2869	2879	8636	3156	3164	9492	2138	2145	6436
4574	6	10			8			7		
4574	12	10	20	59	8	17	50	6	13	39
4574	13	19	29	88	18	26	78	12	19	57
4574	14	122	132	397	115	123	369	76	84	251
4574	15	113	123	369	106	114	343	71	78	234

POWER CONTROL/MONITOR - BRACKET
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
6495	3	160	2082	6247	117	473	1419	91	468	1403
6495	5	1980			437			421		
6495	7	443			113			132		
6495	10	225	2075	6225	87	427	1282	78	406	1218
6495	12	1990			410			396		
6495	14	397			76			55		
6496	3	1147	2661	7982	127	421	1264	141	491	1472
6496	5	2164			383			429		
6496	7	867			106			147		
6496	10	1110	2683	8050	133	444	1333	148	458	1374
6496	12	2174			410			417		
6496	14	895			103			112		
10383	3	268	1000	2999	146	252	756	185	340	1021
10383	5	901			221			244		
10383	7	269			57			122		
10383	10	208	1106	3319	137	290	871	231	445	1334
10383	12	876			236			280		
10383	14	455			91			188		
10351	3	172	828	2483	73	210	630	102	296	887
10351	5	731			198			237		
10351	7	251			41			106		
10351	10	166	659	1978	49	246	738	57	357	1071
10351	12	531			211			255		
10351	14	251			84			175		
6497	3	923	966	2898	108	128	384	115	126	377
6497	5	397			50			39		
6497	7	156			40			31		

6497	10		892	930	2789		110	139	416		117	137	411
6497	12		396				49				40		
6497	14		142				50				44		
6498	3		297	847	2541		98	131	392		78	122	367
6498	5		479				53				49		
6498	7		450				50				57		
6498	10		323	878	2634		96	139	417		89	143	428
6498	12		479				53				50		
6498	14		470				61				70		
10401	3		364	840	2520		219	239	716		494	502	1506
10401	5		683				112				212		
10401	7		273				50				49		
10401	10		737	880	2641		140	177	531		396	414	1242
10401	12		655				116				193		
10401	14		180				48				63		
10403	3		378	1216	3647		151	249	748		338	494	1481
10403	5		1167				192				299		
10403	7		203				75				174		
10403	10		604	1312	3936		98	276	827		248	552	1655
10403	12		1225				194				319		
10403	14		248				121				266		
10395	3		76	488	1464		20	114	343		22	184	552
10395	5		481				108				160		
10395	7		55				24				62		
10395	10		104	395	1184		18	186	557		18	392	1176
10395	12		359				184				386		
10395	14		101				16				47		
10394	3		151	502	1505		61	84	253		113	157	472
10394	5		323				52				69		
10394	7		251				27				63		
10394	10		133	451	1352		77	104	311		172	202	605
10394	12		405				56				67		
10394	14		120				35				63		

6492	3		260	1933	5800		77	384	1153		98	712	2135
6492	5		1887				368				641		
6492	7		279				70				208		
6492	10		111	1744	5233		76	369	1107		80	560	1681
6492	12		1728				362				544		
6492	14		164				45				88		

POWER CONTROL/MONITOR - PWB
QUAD ELEMENT
REINFORCED PLASTIC FTY=24000 PSI

ELEMENT ID.	STRESS ID.		RMS COMP STRESS	X-LOAD RMS PRIN STRESS	RMS 3 SIG STRESS		RMS COMP STRESS	Y-LOAD RMS PRIN STRESS	RMS 3 SIG STRESS		RMS COMP STRESS	Z-LOAD RMS PRIN STRESS	RMS 3 SIG STRESS
5861	10		44	1053	3160		76	554	1663		51	411	1233
5861	12		1044				542				404		
5861	14		97				75				50		
5861	3		81	597	1790		70	513	1539		51	375	1124
5861	5		593				508				371		
5861	7		47				44				33		
5875	10		134	509	1528		69	254	761		68	220	661
5875	12		380				189				166		
5875	14		220				109				91		
5875	3		104	404	1213		54	226	677		54	188	563
5875	5		377				179				152		
5875	7		90				90				69		
5874	10		52	805	2414		91	497	1491		79	374	1121
5874	12		788				482				356		
5874	14		112				78				72		
5874	3		57	582	1746		80	470	1410		73	347	1042
5874	5		573				465				338		
5874	7		68				42				50		
5987	10		544	1063	3189		215	493	1479		163	367	1102
5987	12		913				466				348		
5987	14		280				87				63		
5987	3		281	591	1773		152	443	1328		119	328	985
5987	5		584				437				323		
5987	7		46				42				33		
5866	10		25	452	1356		18	322	966		14	241	724
5866	12		444				317				237		
5866	14		57				40				32		

5866	3		27	566	1698		18	338	1015		14	250	749
5866	5		560				334				246		
5866	7		56				38				32		
5862	10		80	456	1368		35	183	550		27	140	419
5862	12		439				172				132		
5862	14		79				42				30		
5862	3		64	186	557		27	149	447		21	116	347
5862	5		148				133				105		
5862	7		67				43				32		
5860	10		47	183	550		48	81	244		36	61	184
5860	12		60				31				25		
5860	14		130				41				30		
5860	3		125	208	624		54	89	266		42	63	189
5860	5		141				53				38		
5860	7		75				35				23		
5986	10		493	598	1793		212	283	848		156	210	629
5986	12		134				82				62		
5986	14		220				119				89		
5986	3		178	294	882		109	205	616		90	159	478
5986	5		66				83				59		
5986	7		163				109				83		
5867	10		41	523	1568		29	372	1117		21	277	830
5867	12		521				372				276		
5867	14		25				11				14		
5867	3		40	628	1883		29	391	1172		21	286	857
5867	5		626				390				285		
5867	7		27				11				13		

POWER CONTROL/MONITOR - STANDOFFS
BAR ELEMENT
CRES 1/A HARD FTY=44000 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
6481	2	43	111	334	46	65	195	54	69	208
6481	3	43	111	334	46	65	195	54	69	208
6481	4	190	258	775	255	274	822	192	207	620
6481	5	190	258	775	255	274	822	192	207	620
6481	6	69			19			15		
6481	12	932	1001	3003	821	840	2520	913	928	2785
6481	13	932	1001	3003	821	840	2520	913	928	2785
6481	14	2223	2292	6876	1001	1020	3059	1206	1221	3662
6481	15	2223	2292	6876	1001	1020	3059	1206	1221	3662
6482	2	205	253	759	54	71	213	48	68	204
6482	3	205	253	759	54	71	213	48	68	204
6482	4	167	215	645	197	215	645	145	165	495
6482	5	167	215	645	197	215	645	145	165	495
6482	6	48			18			20		
6482	12	2455	2502	7507	755	773	2318	919	939	2816
6482	13	2455	2502	7507	755	773	2318	919	939	2816
6482	14	2082	2130	6389	1027	1045	3134	1456	1476	4428
6482	15	2082	2130	6389	1027	1045	3134	1456	1476	4428
6483	2	143	184	551	113	149	448	77	99	297
6483	3	143	184	551	113	149	448	77	99	297
6483	4	271	312	936	292	329	987	182	203	610
6483	5	271	312	936	292	329	987	182	203	610
6483	6	41			37			22		
6483	12	3397	3438	10313	734	771	2313	964	986	2958
6483	13	3397	3438	10313	734	771	2313	964	986	2958
6483	14	1937	1978	5933	1335	1371	4114	1578	1600	4799
6483	15	1937	1978	5933	1335	1371	4114	1578	1600	4799

6484	2		215	230	689		141	150	451		82	89	267
6484	3		215	230	689		141	150	451		82	89	267
6484	4		134	149	446		156	166	497		105	112	335
6484	5		134	149	446		156	166	497		105	112	335
6484	6		15				9				7		
6484	12		3979	3993	11980		985	995	2984		1179	1186	3559
6484	13		3979	3993	11980		985	995	2984		1179	1186	3559
6484	14		2152	2166	6499		1948	1957	5871		2343	2350	7051
6484	15		2152	2166	6499		1948	1957	5871		2343	2350	7051
6486	2		414	446	1337		280	297	890		206	220	660
6486	3		414	446	1337		280	297	890		206	220	660
6486	4		352	384	1151		187	203	610		160	174	521
6486	5		352	384	1151		187	203	610		160	174	521
6486	6		32				17				14		
6486	12		2236	2268	6803		939	956	2867		1067	1081	3244
6486	13		2236	2268	6803		939	956	2867		1067	1081	3244
6486	14		4119	4151	12453		2338	2355	7064		1820	1834	5502
6486	15		4119	4151	12453		2338	2355	7064		1820	1834	5502
6479	2		507	535	1606		306	321	963		228	239	718
6479	3		507	535	1606		306	321	963		228	239	718
6479	4		121	149	448		148	163	490		105	117	350
6479	5		121	149	448		148	163	490		105	117	350
6479	6		29				15				12		
6479	12		7043	7071	21214		1470	1485	4456		981	993	2979
6479	13		7043	7071	21214		1470	1485	4456		981	993	2979
6479	14		2295	2323	6970		1733	1748	5244		1365	1377	4130
6479	15		2295	2323	6970		1733	1748	5244		1365	1377	4130
6485	2		202	216	647		96	103	310		74	78	235
6485	3		202	216	647		96	103	310		74	78	235
6485	4		150	164	491		130	137	412		103	107	322
6485	5		150	164	491		130	137	412		103	107	322
6485	6		14				7				5		
6485	12		2776	2790	8369		974	981	2943		1320	1325	3974
6485	13		2776	2790	8369		974	981	2943		1320	1325	3974
6485	14		2431	2445	7335		2230	2237	6712		2255	2260	6780
6485	15		2431	2445	7335		2230	2237	6712		2255	2260	6780

6480	2		134	180	541		36	47	140		35	44	132
6480	3		134	180	541		36	47	140		35	44	132
6480	4		95	142	425		75	85	255		67	76	229
6480	5		95	142	425		75	85	255		67	76	229
6480	6		46				10				9		
6480	12		7190	7236	21709		1197	1208	3623		999	1007	3022
6480	13		7190	7236	21709		1197	1208	3623		999	1007	3022
6480	14		5498	5545	16634		1116	1126	3378		1319	1328	3984
6480	15		5498	5545	16634		1116	1126	3378		1319	1328	3984

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	200	617	1852	101	335	1004	54	439	1318
10065	5	309			191			264		
10065	7	359			183			260		
10065	10	193	587	1762	132	322	967	79	449	1348
10065	12	356			147			275		
10065	14	302			183			254		
10066	3	140	492	1476	76	257	771	33	330	990
10066	5	147			70			123		
10066	7	349			184			248		
10066	10	148	490	1469	123	281	842	48	354	1062
10066	12	212			56			133		
10066	14	308			188			260		
10070	3	156	547	1641	80	337	1011	54	371	1114
10070	5	252			229			206		
10070	7	339			167			229		
10070	10	169	526	1578	68	298	895	35	360	1081
10070	12	229			172			185		
10070	14	325			171			239		
10071	3	201	589	1767	90	339	1017	90	429	1287
10071	5	201			169			222		
10071	7	388			206			265		
10071	10	217	554	1663	64	307	921	56	400	1199
10071	12	185			142			196		
10071	14	353			200			265		
10113	3	118	667	2002	106	486	1457	48	556	1669
10113	5	641			429			550		
10113	7	121			147			55		
10113	10	91	827	2480	100	503	1510	47	544	1631
10113	12	782			438			534		

10113	14		182				162				70		
10058	3		91	679	2037		93	460	1380		37	488	1464
10058	5		625				386				477		
10058	7		178				165				69		
10058	10		76	870	2611		93	486	1457		33	536	1607
10058	12		837				415				524		
10058	14		163				167				75		
10097	3		1239	1557	4670		147	188	565		292	376	1128
10097	5		271				89				121		
10097	7		640				65				147		
10097	10		604	836	2509		61	145	436		165	248	745
10097	12		414				100				161		
10097	14		313				62				86		
10092	3		1972	2024	6071		243	271	812		497	567	1702
10092	5		767				116				242		
10092	7		254				65				151		
10092	10		1513	1562	4686		154	223	669		336	468	1403
10092	12		660				81				186		
10092	14		210				99				193		
10108	3		74	611	1832		101	365	1095		38	580	1739
10108	5		559				314				550		
10108	7		166				116				127		
10108	10		83	602	1806		109	360	1079		36	451	1352
10108	12		524				290				420		
10108	14		201				133				113		
10062	3		241	362	1086		199	243	728		61	344	1033
10062	5		282				175				317		
10062	7		98				54				88		
10062	10		170	375	1126		160	276	829		64	423	1269
10062	12		255				186				306		
10062	14		157				102				205		
10067	3		167	523	1570		145	344	1031		38	176	527
10067	5		307				210				89		
10067	7		278				163				110		
10067	10		108	450	1349		109	331	993		35	229	686
10067	12		269				211				119		
10067	14		248				163				146		

SIDEMOUNT
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
9376	10	62	765	2294	88	1143	3429	170	2412	7237
9376	12	756			1125			2360		
9376	14	77			139			343		
9376	3	108	590	1771	161	938	2815	378	2142	6425
9376	5	589			937			2141		
9376	7	25			35			20		
9377	10	257	1007	3022	191	1464	4392	417	3230	9691
9377	12	633			967			2166		
9377	14	530			796			1731		
9377	3	69	610	1830	47	942	2826	186	2085	6256
9377	5	364			577			1222		
9377	7	365			571			1280		
9378	10	79	862	2585	140	1234	3703	269	2650	7951
9378	12	726			968			2060		
9378	14	326			540			1185		
9378	3	140	666	1997	249	972	2916	585	2114	6343
9378	5	520			676			1514		
9378	7	277			463			958		
9335	10	281	482	1446	414	687	2062	879	1516	4548
9335	12	108			204			335		
9335	14	274			363			867		
9335	3	145	344	1032	210	557	1670	470	1222	3666
9335	5	184			233			602		
9335	7	179			335			683		
9337	10	267	454	1361	416	751	2253	913	1645	4936
9337	12	256			397			905		
9337	14	192			344			737		

9337	3		298	568	1705		426	808	2423		927	1785	5355
9337	5		269				427				923		
9337	7		285				381				860		
8523	10		937	1053	3160		1226	1495	4486		1970	2412	7236
8523	12		762				1454				2227		
8523	14		184				105				286		
8523	3		429	822	2466		1537	1787	5360		2706	3036	9108
8523	5		546				1262				2314		
8523	7		329				361				488		
8524	10		564	971	2913		937	1466	4398		1658	2418	7254
8524	12		871				1229				2045		
8524	14		202				354				533		
8524	3		628	862	2587		1414	1619	4858		2229	2785	8355
8524	5		492				1578				2742		
8524	7		294				92				154		
10778	10		328	919	2756		1344	1616	4849		2367	2600	7800
10778	12		606				1498				2356		
10778	14		429				180				239		
10778	3		1194	1340	4021		1545	1698	5095		2493	2794	8383
10778	5		758				1295				2335		
10778	7		292				249				372		
10779	10		189	330	991		417	497	1491		779	860	2579
10779	12		120				213				265		
10779	14		172				150				219		
10779	3		433	445	1335		906	919	2758		1467	1490	4471
10779	5		58				160				367		
10779	7		67				100				163		
7509	10		645	771	2313		338	458	1373		722	851	2552
7509	12		230				122				249		
7509	14		262				200				278		
7509	3		342	881	2644		212	502	1506		351	943	2829
7509	5		273				153				300		
7509	7		573				318				617		
7510	10		396	769	2307		240	510	1530		428	776	2328
7510	12		183				87				227		
7510	14		468				338				437		

7510	3		545	1292	3875		302	735	2206		572	1424	4273
7510	5		142				130				114		
7510	7		926				512				1056		
7511	10		1002	1007	3022		578	596	1788		1066	1069	3208
7511	12		831				504				896		
7511	14		30				40				23		
7511	3		2188	2240	6719		1293	1333	3999		2361	2415	7246
7511	5		225				127				257		
7511	7		324				219				344		
7512	10		82	546	1637		42	364	1093		82	564	1691
7512	12		168				192				149		
7512	14		419				236				447		
7512	3		1280	1781	5343		761	1023	3070		1393	1963	5889
7512	5		385				180				475		
7512	7		837				471				921		
7877	10		424	1223	3670		303	987	2960		169	471	1413
7877	12		464				404				166		
7877	14		779				631				303		
7877	3		360	1476	4428		222	1151	3453		190	669	2007
7877	5		381				294				140		
7877	7		1105				892				503		
7977	10		399	432	1296		116	208	625		109	161	484
7977	12		197				191				115		
7977	14		88				40				49		
7977	3		79	988	2964		67	781	2342		47	420	1259
7977	5		741				567				318		
7977	7		474				390				194		
7406	10		2099	2172	6516		1675	1725	5175		2080	2159	6478
7406	12		137				127				99		
7406	14		384				282				404		
7406	3		2104	2198	6595		1658	1732	5197		1968	2022	6066
7406	5		108				105				121		
7406	7		443				349				321		
7407	10		1931	2265	6794		1556	1821	5462		1633	1974	5921
7407	12		695				476				570		
7407	14		724				596				691		

7407	3		1797	2185	6554		1400	1712	5136		1742	2181	6544
7407	5		694				433				725		
7407	7		760				632				801		
7408	10		618	2784	8353		438	2040	6120		517	2671	8013
7408	12		2640				1934				2519		
7408	14		560				412				571		
7408	3		499	2686	8058		323	1961	5882		275	2198	6595
7408	5		2598				1900				2170		
7408	7		439				316				232		
7409	10		3492	3540	10621		2579	2633	7900		3311	3327	9981
7409	12		3111				2329				2825		
7409	14		143				129				90		
7409	3		3522	3612	10836		2609	2667	8001		3123	3411	10233
7409	5		3224				2419				3124		
7409	7		187				120				287		
7410	10		2129	3300	9900		1667	2603	7810		2015	2853	8558
7410	12		3264				2589				2827		
7410	14		204				115				147		
7410	3		2199	3396	10188		1710	2657	7972		2135	3557	10670
7410	5		3343				2634				3501		
7410	7		252				150				281		
8996	10		505	1163	3489		958	1124	3372		1005	1182	3547
8996	12		467				733				881		
8996	14		677				255				231		
8996	3		227	1143	3429		692	999	2996		710	857	2572
8996	5		514				340				207		
8996	7		759				449				310		
8997	10		307	1521	4562		833	1744	5231		840	1691	5073
8997	12		684				1394				1490		
8997	14		1008				565				414		
8997	3		278	1461	4383		1085	1772	5315		1088	1702	5107
8997	5		240				705				618		
8997	7		1202				856				816		
9253	10		66	254	763		180	417	1252		185	490	1471
9253	12		126				325				350		
9253	14		156				148				207		

9253	3		170	442	1326		568	701	2104		631	788	2364
9253	5		122				387				615		
9253	7		295				204				165		
9257	10		167	357	1070		511	536	1608		503	564	1693
9257	12		244				72				182		
9257	14		146				106				154		
9257	3		259	456	1369		935	953	2858		940	965	2895
9257	5		122				573				712		
9257	7		257				82				80		
7845	10		1046	1332	3997		599	880	2639		870	967	2902
7845	12		181				271				254		
7845	14		574				413				263		
7845	3		514	559	1676		575	602	1807		308	331	992
7845	5		107				134				207		
7845	7		142				112				53		
7846	10		433	1441	4323		569	1371	4114		433	1658	4974
7846	12		950				541				1465		
7846	14		703				816				487		
7846	3		653	1203	3609		490	1000	2999		275	458	1375
7846	5		128				105				208		
7846	7		769				675				214		
7653	10		662	698	2093		686	719	2158		843	894	2683
7653	12		572				605				728		
7653	14		67				62				92		
7653	3		1875	1936	5809		1967	2031	6094		2379	2458	7374
7653	5		86				92				96		
7653	7		337				353				431		
7654	10		111	477	1430		108	495	1484		155	611	1832
7654	12		125				126				158		
7654	14		359				378				454		
7654	3		1215	1643	4930		1277	1723	5169		1536	2075	6226
7654	5		187				188				201		
7654	7		790				827				1005		
7655	10		297	1256	3767		288	1316	3948		364	1568	4704
7655	12		845				892				1053		
7655	14		628				660				787		

7655	3		746	1316	3947		773	1365	4094		960	1707	5121
7655	5		416				429				552		
7655	7		716				744				929		
7788	10		137	972	2915		149	998	2995		180	1255	3765
7788	12		963				988				1244		
7788	14		83				93				108		
7788	3		154	1186	3559		151	1243	3729		201	1494	4482
7788	5		1035				1092				1295		
7788	7		396				406				507		
7789	10		50	906	2719		19	933	2798		52	1143	3430
7789	12		176				187				214		
7789	14		791				826				1007		
7789	3		526	2042	6125		533	2132	6395		668	2601	7802
7789	5		1361				1420				1741		
7789	7		1016				1067				1289		
7790	10		155	531	1594		165	561	1682		183	673	2018
7790	12		42				53				59		
7790	14		429				448				548		
7790	3		1254	1627	4882		1305	1694	5082		1608	2078	6234
7790	5		208				186				270		
7790	7		727				766				922		
9694	10		238	579	1738		573	1030	3089		230	413	1240
9694	12		367				465				223		
9694	14		269				508				187		
9694	3		532	661	1984		798	1120	3359		352	501	1504
9694	5		126				409				264		
9694	7		263				478				189		
9695	10		173	346	1037		345	756	2268		135	353	1058
9695	12		329				674				192		
9695	14		53				184				187		
9695	3		140	757	2270		242	1189	3566		104	583	1749
9695	5		689				1125				530		
9695	7		204				245				160		
7785	10		142	976	2927		135	1014	3043		166	1241	3722
7785	12		282				269				365		
7785	14		760				809				970		

7785	3		138	570	1709		137	586	1759		169	713	2138
7785	5		213				244				263		
7785	7		392				392				495		
7513	10		162	1477	4430		143	932	2795		130	1520	4560
7513	12		1086				673				1123		
7513	14		716				451				742		
7513	3		461	1139	3417		281	643	1929		536	1298	3895
7513	5		522				263				617		
7513	7		647				371				720		

SIDEMOUNT
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
11487	2	97	233	698	86	424	1273	101	671	2012
11487	3	425	561	1682	327	666	1997	421	990	2971
11487	4	425	561	1682	327	666	1997	421	990	2971
11487	5	97	233	698	86	424	1273	101	671	2012
11487	6	136			338			570		
11487	12	248	384	1153	155	494	1481	172	742	2225
11487	13	163	299	898	134	472	1417	192	762	2287
11487	14	163	299	898	134	472	1417	192	762	2287
11487	15	248	384	1153	155	494	1481	172	742	2225

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	559	595	1785	458	470	1409	220	230	689
4742	12	563			462			222		
4742	14	34			10			8		
4742	3	606	614	1843	477	482	1445	230	235	706
4742	5	544			470			226		
4742	7	24			7			7		
4654	10	567	627	1882	478	512	1535	221	239	717
4654	12	594			481			223		
4654	14	45			32			17		
4654	3	563	655	1966	485	518	1555	225	242	725
4654	5	644			499			232		
4654	7	33			25			13		
4121	10	638	1921	5763	256	685	2056	258	731	2194
4121	12	1897			666			719		
4121	14	176			92			77		
4121	3	612	1943	5828	246	678	2033	242	731	2192
4121	5	1921			664			725		
4121	7	171			78			51		
4122	10	1962	1972	5917	668	673	2020	729	731	2194
4122	12	726			244			250		
4122	14	111			49			36		
4122	3	1993	2002	6005	687	694	2082	744	747	2241
4122	5	919			306			302		
4122	7	99			50			36		
3988	10	470	1336	4007	170	552	1655	117	346	1037
3988	12	1303			542			336		
3988	14	167			59			47		

3988	3		453	1350	4051		200	534	1602		115	339	1018
3988	5		1289				523				326		
3988	7		235				61				55		
4005	10		266	551	1653		115	241	724		72	194	583
4005	12		383				204				143		
4005	14		219				69				80		
4005	3		171	490	1469		69	219	656		62	143	430
4005	5		368				166				111		
4005	7		197				89				51		
3865	10		500	878	2635		236	347	1041		132	312	936
3865	12		720				238				281		
3865	14		245				110				75		
3865	3		352	674	2021		165	236	708		128	266	799
3865	5		655				217				260		
3865	7		78				37				29		
3868	10		433	662	1985		187	280	841		125	269	806
3868	12		656				273				266		
3868	14		36				26				20		
3868	3		574	736	2208		250	308	925		189	287	861
3868	5		720				293				284		
3868	7		51				30				16		
3989	10		106	379	1137		67	270	810		64	257	770
3989	12		328				221				211		
3989	14		118				100				93		
3989	3		81	274	822		37	180	541		44	152	457
3989	5		185				114				111		
3989	7		131				97				67		
3972	10		87	535	1606		71	340	1019		60	320	960
3972	12		470				313				309		
3972	14		170				84				54		
3972	3		198	554	1663		124	335	1006		127	289	867
3972	5		389				275				268		
3972	7		242				113				59		
4139	10		961	2481	7442		576	1480	4441		444	1207	3621
4139	12		2470				1478				1203		
4139	14		125				42				53		

4139	3		1050	2574	7721		603	1538	4615		460	1256	3768
4139	5		2515				1510				1235		
4139	7		298				162				128		
4140	10		879	2441	7324		526	1462	4386		450	1213	3639
4140	12		2433				1459				1212		
4140	14		116				57				34		
4140	3		776	2493	7479		476	1502	4506		422	1245	3735
4140	5		2456				1470				1216		
4140	7		254				181				154		
3821	10		956	968	2904		588	591	1772		497	498	1494
3821	12		653				379				273		
3821	14		60				22				19		
3821	3		871	879	2637		536	539	1618		473	474	1423
3821	5		502				279				184		
3821	7		55				28				19		
3822	10		864	872	2615		499	500	1501		413	416	1249
3822	12		327				126				138		
3822	14		65				24				27		
3822	3		939	999	2996		548	565	1694		448	464	1391
3822	5		384				160				119		
3822	7		192				83				73		
* ELEMENTS 3865, 3868, 3821, 3822 2024-T4 FTY=40000 PSI													

UPPER REFLECTOR
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
4180	2	366	378	1133	174	184	552	148	154	463
4180	3	380	392	1176	341	351	1052	257	263	790
4180	4	1858	1870	5610	2321	2331	6992	1574	1581	4742
4180	5	1797	1810	5429	2160	2170	6509	1457	1463	4390
4180	6	12			10			6		
4180	12	8	20	61	8	17	52	4	10	31
4180	13	17	29	87	16	25	76	8	14	43
4180	14	110	122	366	100	109	328	50	57	170
4180	15	102	114	341	92	101	304	46	53	158
4181	2	506	517	1551	302	310	929	210	216	647
4181	3	620	632	1896	493	501	1504	340	345	1036
4181	4	1983	1995	5984	2542	2550	7651	1774	1780	5339
4181	5	1745	1757	5270	2309	2317	6950	1616	1621	4864
4181	6	11			8			5		
4181	12	8	20	59	8	16	47	5	10	31
4181	13	16	27	81	15	23	70	10	16	47
4181	14	97	109	327	99	107	320	67	72	216
4181	15	90	101	304	91	99	297	61	67	201

Appendix E

RANDOM VIBRATION ACCELERATIONS & DISPLACEMENTS

(7 PERCENT CRITICAL DAMPING Q=7)

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

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
LARGE MASS	11911	X	3414	8.84	1.00	0	0.00	0.00	0	0.00	0.00
LOWER BASEPLATE	1001	X	3442	8.92	1.01	2801	7.26	0.82	1010	2.62	0.30
	1172	X	2983	7.72	0.87	2921	7.57	0.86	4189	10.85	1.23
	1019	X	3602	9.33	1.06	3086	7.99	0.90	1467	3.80	0.43
	1205	X	2917	7.56	0.85	3485	9.03	1.02	2021	5.23	0.59
	1124	X	2999	7.77	0.88	1342	3.48	0.39	3360	8.70	0.98
LOWER MOTOR MOUNT	1001	X	3442	8.92	1.01	2801	7.26	0.82	1010	2.62	0.30
	1172	X	2983	7.72	0.87	2921	7.57	0.86	4189	10.85	1.23
	2663	X	3398	8.80	1.00	2640	6.84	0.77	4182	10.83	1.22
	2875	X	3643	9.44	1.07	2322	6.01	0.68	1003	2.60	0.29
	2855	X	8937	23.15	2.62	3251	8.42	0.95	3537	9.16	1.04
	2861	X	5403	14.00	1.58	3199	8.28	0.94	2126	5.51	0.62
	2888	X	2720	7.05	0.80	3093	8.01	0.91	6464	16.74	1.89
	2892	X	2583	6.69	0.76	1866	4.83	0.55	4802	12.44	1.41
	2896	X	2723	7.05	0.80	2633	6.82	0.77	5989	15.51	1.75
	2884	X	2758	7.14	0.81	3599	9.32	1.05	6594	17.08	1.93
UPPER MOTOR MOUNT	1578	X	3222	8.34	0.94	1685	4.36	0.49	804	2.08	0.24
	1569	X	3093	8.01	0.91	1675	4.34	0.49	2274	5.89	0.67
	2710	X	9192	23.81	2.69	2278	5.90	0.67	2669	6.91	0.78
	2779	X	10854	28.11	3.18	2492	6.45	0.73	2350	6.09	0.69
	2783	X	3425	8.87	1.00	2101	5.44	0.62	853	2.21	0.25
	2764	X	3454	8.95	1.01	2075	5.37	0.61	1451	3.76	0.42
	2696	X	2114	5.48	0.62	2414	6.25	0.71	8620	22.33	2.52
	2700	X	2090	5.41	0.61	1595	4.13	0.47	5194	13.45	1.52
	2704	X	2063	5.34	0.60	1908	4.94	0.56	5771	14.95	1.69
	2692	X	2126	5.51	0.62	2586	6.70	0.76	7177	18.59	2.10

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	3184	8.25	0.93	2311	5.99	0.68	1146	2.97	0.34
	1608	X	3125	8.09	0.92	2069	5.36	0.61	873	2.26	0.26
	1191	X	2965	7.68	0.87	1933	5.01	0.57	1253	3.25	0.37
	1005	X	3442	8.92	1.01	1696	4.39	0.50	768	1.99	0.23
	1979	X	928	2.40	0.27	2086	5.40	0.61	11441	29.63	3.35
	1970	X	2271	5.88	0.67	1053	2.73	0.31	4502	11.66	1.32
	1973	X	869	2.25	0.25	2151	5.57	0.63	7279	18.85	2.13
	1976	X	1916	4.96	0.56	751	1.94	0.22	4479	11.60	1.31
	1885	X	7343	19.02	2.15	1951	5.05	0.57	797	2.06	0.23
	1961	X	2994	7.75	0.88	2088	5.41	0.61	1236	3.20	0.36
	1963	X	3446	8.93	1.01	2313	5.99	0.68	1221	3.16	0.36
LOWER AFT PANEL	1315	X	3265	8.46	0.96	3661	9.48	1.07	2340	6.06	0.69
	1215	X	3166	8.20	0.93	3552	9.20	1.04	1493	3.87	0.44
	1019	X	3602	9.33	1.06	3086	7.99	0.90	1467	3.80	0.43
	1205	X	2917	7.56	0.85	3485	9.03	1.02	2021	5.23	0.59
	1260	X	3933	10.19	1.15	3584	9.28	1.05	1876	4.86	0.55
UPPER BASEPLATE	1455	X	3184	8.25	0.93	2311	5.99	0.68	1146	2.97	0.34
	1608	X	3125	8.09	0.92	2069	5.36	0.61	873	2.26	0.26
	1468	X	3166	8.20	0.93	3590	9.30	1.05	1575	4.08	0.46
	1458	X	3265	8.46	0.96	3856	9.99	1.13	2535	6.57	0.74
UPPER FRONT PANEL	1375	X	3216	8.33	0.94	946	2.45	0.28	1282	3.32	0.38
	1528	X	3290	8.52	0.96	943	2.44	0.28	436	1.13	0.13
	1993	X	5359	13.88	1.57	2270	5.88	0.66	1525	3.95	0.45
	2124	X	3226	8.36	0.95	2338	6.06	0.68	382	0.99	0.11
	2047	X	968	2.51	0.28	1856	4.81	0.54	5068	13.13	1.48
	2037	X	2350	6.09	0.69	1116	2.89	0.33	5324	13.79	1.56
	2050	X	997	2.58	0.29	2236	5.79	0.65	6189	16.03	1.81
	2060	X	2065	5.35	0.60	818	2.12	0.24	4048	10.49	1.19
	2078	X	10729	27.79	3.14	1091	2.82	0.32	640	1.66	0.19

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	3166	8.20	0.93	3590	9.30	1.05	1575	4.08	0.46
	1458	X	3265	8.46	0.96	3856	9.99	1.13	2535	6.57	0.74
	2210	X	5362	13.89	1.57	2930	7.59	0.86	2753	7.13	0.81
	2240	X	3158	8.18	0.92	2949	7.64	0.86	1469	3.80	0.43
	2218	X	3120	8.08	0.91	3850	9.97	1.13	2282	5.91	0.67
	2223	X	3589	9.30	1.05	3761	9.74	1.10	1916	4.96	0.56
	2219	X	5584	14.46	1.64	3647	9.45	1.07	2320	6.01	0.68
	2224	X	6362	16.48	1.86	3593	9.31	1.05	1931	5.00	0.57
LOWER SHELF	1826	X	4032	10.44	1.18	2429	6.29	0.71	1480	3.83	0.43
	1828	X	4059	10.51	1.19	2021	5.24	0.59	1705	4.42	0.50
	1777	X	3778	9.78	1.11	2413	6.25	0.71	2757	7.14	0.81
	1779	X	3777	9.78	1.11	2019	5.23	0.59	2346	6.08	0.69
	1744	X	3539	9.17	1.04	2984	7.73	0.87	2302	5.96	0.67
	1767	X	3582	9.28	1.05	1324	3.43	0.39	2016	5.22	0.59
	1671	X	3258	8.44	0.95	1469	3.81	0.43	1582	4.10	0.46
	1641	X	3169	8.21	0.93	1894	4.91	0.55	1380	3.57	0.40
	1703	X	3370	8.73	0.99	1284	3.33	0.38	2372	6.14	0.69
	1699	X	3322	8.60	0.97	1697	4.40	0.50	1790	4.64	0.52
	1647	X	3286	8.51	0.96	2559	6.63	0.75	2859	7.41	0.84
	1631	X	3266	8.46	0.96	1995	5.17	0.58	1897	4.91	0.56
	1842	X	4092	10.60	1.20	3230	8.36	0.95	1273	3.30	0.37
	1776	X	3739	9.68	1.10	2643	6.85	0.77	2814	7.29	0.82
	1800	X	3798	9.84	1.11	1575	4.08	0.46	1803	4.67	0.53
	1827	X	4115	10.66	1.21	2270	5.88	0.66	1537	3.98	0.45
	1732	X	3481	9.02	1.02	1962	5.08	0.57	2907	7.53	0.85
	1718	X	3386	8.77	0.99	1499	3.88	0.44	1767	4.58	0.52
	1783	X	3671	9.51	1.08	1363	3.53	0.40	1698	4.40	0.50
	1853	X	4054	10.50	1.19	1298	3.36	0.38	661	1.71	0.19
	1858	X	4084	10.58	1.20	1828	4.74	0.54	937	2.43	0.27
	1805	X	3718	9.63	1.09	1416	3.67	0.41	2595	6.72	0.76
	1625	X	3308	8.57	0.97	3551	9.20	1.04	1902	4.93	0.56
	1694	X	3355	8.69	0.98	2883	7.47	0.84	2792	7.23	0.82

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	X	3521	9.12	1.03	2709	7.02	0.79	829	2.15	0.24
	2577	X	3515	9.10	1.03	2037	5.28	0.60	416	1.08	0.12
	2547	X	3245	8.40	0.95	2915	7.55	0.85	2887	7.48	0.85
	2551	X	3235	8.38	0.95	2260	5.85	0.66	1588	4.11	0.47
	2520	X	3135	8.12	0.92	2712	7.03	0.79	3086	7.99	0.90
	2525	X	3129	8.10	0.92	2042	5.29	0.60	1156	2.99	0.34
	2469	X	3085	7.99	0.90	2044	5.30	0.60	2194	5.68	0.64
	2464	X	3077	7.97	0.90	2721	7.05	0.80	3244	8.40	0.95
	2489	X	3067	7.94	0.90	3205	8.30	0.94	4427	11.47	1.30
	2420	X	3170	8.21	0.93	3571	9.25	1.05	4644	12.03	1.36
	2426	X	3172	8.22	0.93	2887	7.48	0.85	2987	7.74	0.87
	2355	X	3549	9.19	1.04	3448	8.93	1.01	3092	8.01	0.91
	2360	X	3506	9.08	1.03	2892	7.49	0.85	2355	6.10	0.69
	2300	X	3959	10.25	1.16	3293	8.53	0.96	2352	6.09	0.69
	2323	X	3893	10.08	1.14	2276	5.90	0.67	2228	5.77	0.65
	2318	X	3887	10.07	1.14	2733	7.08	0.80	2233	5.78	0.65
	2275	X	4200	10.88	1.23	3212	8.32	0.94	2182	5.65	0.64
	2241	X	4600	11.91	1.35	2737	7.09	0.80	2039	5.28	0.60
	2442	X	3118	8.08	0.91	2570	6.66	0.75	3016	7.81	0.88
LOWER RIGHT FRONT SUP	1176	X	2953	7.65	0.86	1925	4.99	0.56	1217	3.15	0.36
	1963	X	3446	8.93	1.01	2313	5.99	0.68	1221	3.16	0.36
	1172	X	2983	7.72	0.87	2921	7.57	0.86	4189	10.85	1.23
	2663	X	3398	8.80	1.00	2640	6.84	0.77	4182	10.83	1.22
	2661	X	3036	7.86	0.89	10225	26.48	2.99	2487	6.44	0.73
LOWER RIGHT PANEL	1379	X	3120	8.08	0.91	1845	4.78	0.54	1214	3.15	0.36
	1191	X	2965	7.68	0.87	1933	5.01	0.57	1253	3.25	0.37
	1205	X	2917	7.56	0.85	3485	9.03	1.02	2021	5.23	0.59
	1315	X	3265	8.46	0.96	3661	9.48	1.07	2340	6.06	0.69
	1455	X	3184	8.25	0.93	2311	5.99	0.68	1146	2.97	0.34

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	X	4226	10.95	1.24	1840	4.76	0.54	1278	3.31	0.37
	1569	X	3093	8.01	0.91	1675	4.34	0.49	2274	5.89	0.67
	2691	X	4279	11.08	1.25	1923	4.98	0.56	2532	6.56	0.74
	1519	X	3103	8.04	0.91	953	2.47	0.28	1283	3.32	0.38
	2679	X	3586	9.29	1.05	4827	12.50	1.41	1439	3.73	0.42
UPPER RIGHT PANEL	1457	X	3265	8.46	0.96	3772	9.77	1.10	2451	6.35	0.72
	2154	X	3983	10.32	1.17	4146	10.74	1.21	2040	5.28	0.60
	2130	X	3953	10.24	1.16	6378	16.52	1.87	1524	3.95	0.45
	1345	X	3250	8.42	0.95	2311	5.99	0.68	1887	4.89	0.55
	1365	X	3221	8.34	0.94	1053	2.73	0.31	1385	3.59	0.41
	2210	X	5362	13.89	1.57	2930	7.59	0.86	2753	7.13	0.81
	1993	X	5359	13.88	1.57	2270	5.88	0.66	1525	3.95	0.45
	1375	X	3216	8.33	0.94	946	2.45	0.28	1282	3.32	0.38
TOP PANEL	11025	X	4470	11.58	1.31	2408	6.24	0.71	4146	10.74	1.21
	11038	X	4498	11.65	1.32	3023	7.83	0.89	1403	3.63	0.41
	11175	X	3315	8.59	0.97	3465	8.97	1.01	1392	3.61	0.41
	11170	X	13686	35.45	4.01	3438	8.90	1.01	1712	4.43	0.50
	2627	X	3132	8.11	0.92	1414	3.66	0.41	4491	11.63	1.32
	11128	X	9914	25.68	2.90	3424	8.87	1.00	1485	3.85	0.43
	2210	X	5362	13.89	1.57	2930	7.59	0.86	2753	7.13	0.81
	1993	X	5359	13.88	1.57	2270	5.88	0.66	1525	3.95	0.45
LEFT PANEL	3243	X	3029	7.85	0.89	7622	19.74	2.23	870	2.25	0.25
	3251	X	3084	7.99	0.90	4148	10.74	1.22	557	1.44	0.16
	1001	X	3442	8.92	1.01	2801	7.26	0.82	1010	2.62	0.30
	1019	X	3602	9.33	1.06	3086	7.99	0.90	1467	3.80	0.43
	1608	X	3125	8.09	0.92	2069	5.36	0.61	873	2.26	0.26
	2124	X	3226	8.36	0.95	2338	6.06	0.68	382	0.99	0.11
	2240	X	3158	8.18	0.92	2949	7.64	0.86	1469	3.80	0.43

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 LEFT SHIELD	1878	X	3630	9.40	1.06	1836	4.76	0.54	798	2.07	0.23
	2829	X	3558	9.22	1.04	2214	5.73	0.65	991	2.57	0.29
	1840	X	3861	10.00	1.13	1918	4.97	0.56	794	2.06	0.23
	2831	X	3701	9.59	1.08	2466	6.39	0.72	1682	4.36	0.49
	2913	X	3599	9.32	1.05	1634	4.23	0.48	2741	7.10	0.80
LOWER RIGHT SHIELD	1938	X	3429	8.88	1.00	2200	5.70	0.64	1070	2.77	0.31
	2835	X	3586	9.29	1.05	2640	6.84	0.77	3511	9.09	1.03
	2901	X	3419	8.86	1.00	2459	6.37	0.72	2546	6.60	0.75
	1963	X	3446	8.93	1.01	2313	5.99	0.68	1221	3.16	0.36
	2663	X	3398	8.80	1.00	2640	6.84	0.77	4182	10.83	1.22
UPPER LEFT SHIELD	2119	X	3403	8.81	1.00	1917	4.97	0.56	404	1.05	0.12
	2083	X	3084	7.99	0.90	2032	5.26	0.60	606	1.57	0.18
	2763	X	3251	8.42	0.95	1963	5.09	0.58	850	2.20	0.25
	2760	X	3276	8.48	0.96	2023	5.24	0.59	1466	3.80	0.43
	2933	X	3157	8.18	0.92	1591	4.12	0.47	3256	8.43	0.95
UPPER RIGHT SHIELD	2010	X	4154	10.76	1.22	1835	4.75	0.54	1239	3.21	0.36
	2918	X	4378	11.34	1.28	1926	4.99	0.56	2472	6.40	0.72
	1998	X	4226	10.95	1.24	1840	4.76	0.54	1278	3.31	0.37
	2691	X	4279	11.08	1.25	1923	4.98	0.56	2532	6.56	0.74
LOWER CARD CAGE	3673	X	4905	12.70	1.44	3065	7.94	0.90	2411	6.24	0.71
	3662	X	4459	11.55	1.31	5562	14.41	1.63	2008	5.20	0.59
	3671	X	5927	15.35	1.74	3047	7.89	0.89	2746	7.11	0.80
	3660	X	5961	15.44	1.75	5474	14.18	1.60	5809	15.05	1.70
	3655	X	2915	7.55	0.85	3196	8.28	0.94	1715	4.44	0.50
	3650	X	3359	8.70	0.98	3091	8.01	0.91	2529	6.55	0.74
	1179	X	2933	7.60	0.86	1582	4.10	0.46	1904	4.93	0.56
	1084	X	3141	8.13	0.92	1439	3.73	0.42	1970	5.10	0.58
	3735	X	5218	13.51	1.53	6652	17.23	1.95	1792	4.64	0.52
	3730	X	4920	12.74	1.44	3366	8.72	0.99	1635	4.23	0.48
	3764	X	4520	11.71	1.32	6264	16.22	1.83	1797	4.65	0.53

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	3663	9.49	1.07	7289	18.88	2.14	2605	6.75	0.76
	3708	X	3560	9.22	1.04	5099	13.21	1.49	2070	5.36	0.61
	3753	X	3454	8.95	1.01	2133	5.53	0.62	1895	4.91	0.56
LOWER CARD CAGE CARDS	4845	X	6395	16.56	1.87	2910	7.54	0.85	3731	9.66	1.09
	4822	X	4624	11.98	1.35	3655	9.47	1.07	1686	4.37	0.49
	4826	X	5710	14.79	1.67	4999	12.95	1.46	10601	27.46	3.11
	4813	X	2885	7.47	0.85	5447	14.11	1.60	10733	27.80	3.14
	4817	X	3476	9.00	1.02	1910	4.95	0.56	1657	4.29	0.49
	4777	X	3461	8.96	1.01	1905	4.93	0.56	1733	4.49	0.51
	4725	X	6562	17.00	1.92	2725	7.06	0.80	1594	4.13	0.47
	4765	X	6627	17.17	1.94	2916	7.55	0.85	1564	4.05	0.46
UPPER CARD CAGE	1469	X	3212	8.32	0.94	2958	7.66	0.87	1769	4.58	0.52
	1509	X	3181	8.24	0.93	1055	2.73	0.31	1476	3.82	0.43
	1514	X	3071	7.95	0.90	1050	2.72	0.31	5229	13.54	1.53
	1474	X	3188	8.26	0.93	2962	7.67	0.87	5024	13.01	1.47
	3372	X	4095	10.61	1.20	4535	11.75	1.33	1893	4.90	0.55
	3381	X	4673	12.10	1.37	4546	11.77	1.33	5026	13.02	1.47
	3404	X	4766	12.34	1.40	4054	10.50	1.19	5318	13.77	1.56
	3395	X	4228	10.95	1.24	4006	10.38	1.17	1690	4.38	0.50
	2249	X	4504	11.67	1.32	3011	7.80	0.88	2112	5.47	0.62
	2448	X	3096	8.02	0.91	2996	7.76	0.88	3517	9.11	1.03
	3369	X	4329	11.21	1.27	4144	10.73	1.21	3242	8.40	0.95
UPPER CARD CAGE CARDS	11836	X	4202	10.88	1.23	3802	9.85	1.11	4366	11.31	1.28
	11251	X	4635	12.01	1.36	3725	9.65	1.09	5465	14.16	1.60
	11829	X	3189	8.26	0.93	2498	6.47	0.73	4425	11.46	1.30
	11203	X	3224	8.35	0.94	1753	4.54	0.51	5641	14.61	1.65
	11879	X	11250	29.14	3.30	2910	7.54	0.85	4791	12.41	1.40
	11312	X	11105	28.76	3.25	2835	7.34	0.83	4746	12.29	1.39

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	X	3892	10.08	1.14	2096	5.43	0.61	1097	2.84	0.32
	1929	X	7299	18.91	2.14	2052	5.32	0.60	1001	2.59	0.29
	2812	X	9865	25.55	2.89	2557	6.62	0.75	2227	5.77	0.65
	2810	X	5315	13.77	1.56	2542	6.58	0.74	1690	4.38	0.49
	1892	X	7814	20.24	2.29	1884	4.88	0.55	786	2.03	0.23
	1908	X	5500	14.24	1.61	1901	4.92	0.56	843	2.18	0.25
	2814	X	3563	9.23	1.04	2665	6.90	0.78	3195	8.28	0.94
	2815	X	4205	10.89	1.23	2644	6.85	0.77	3691	9.56	1.08
	3006	X	6896	17.86	2.02	5899	15.28	1.73	6896	17.86	2.02
	3036	X	4152	10.75	1.22	6203	16.07	1.82	7775	20.14	2.28
UPPER WARMLOAD	2009	X	4193	10.86	1.23	1539	3.99	0.45	1273	3.30	0.37
	2033	X	4491	11.63	1.32	1536	3.98	0.45	1129	2.92	0.33
	2080	X	4737	12.27	1.39	1449	3.75	0.42	646	1.67	0.19
	2056	X	4812	12.46	1.41	1485	3.85	0.43	801	2.07	0.23
	2939	X	4224	10.94	1.24	1780	4.61	0.52	1498	3.88	0.44
	2941	X	4744	12.29	1.39	2315	6.00	0.68	2928	7.58	0.86
	2738	X	4086	10.58	1.20	1832	4.74	0.54	2450	6.35	0.72
	2739	X	4784	12.39	1.40	1835	4.75	0.54	2274	5.89	0.67
	2976	X	4632	12.00	1.36	4143	10.73	1.21	2908	7.53	0.85
	2945	X	4228	10.95	1.24	3601	9.33	1.05	1647	4.27	0.48
LOWER REFLECTOR	4662	X	5087	13.18	1.49	2777	7.19	0.81	3346	8.67	0.98
	4085	X	3413	8.84	1.00	2769	7.17	0.81	2746	7.11	0.80
	4087	X	3633	9.41	1.06	3534	9.15	1.04	3035	7.86	0.89
	4176	X	6002	15.54	1.76	12456	32.26	3.65	11457	29.67	3.36
	4096	X	23713	61.42	6.95	19403	50.25	5.68	22987	59.54	6.73
POWER CNTRL/MON BKT	5591	X	6492	16.81	1.90	3010	7.80	0.88	1771	4.59	0.52
	5600	X	7444	19.28	2.18	3286	8.51	0.96	1771	4.59	0.52
	5590	X	5388	13.95	1.58	3505	9.08	1.03	1780	4.61	0.52
	11803	X	6581	17.04	1.93	26606	68.91	7.79	5519	14.29	1.62

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	X	6654	17.23	1.95	5422	14.04	1.59	3592	9.30	1.05
	6204	X	10018	25.95	2.93	5183	13.43	1.52	4072	10.55	1.19
PWR CNTRL/MON STANDOFF	6247	X	3569	9.24	1.05	5535	14.34	1.62	4451	11.53	1.30
	6015	X	7632	19.77	2.24	5642	14.61	1.65	3441	8.91	1.01
	5932	X	3159	8.18	0.93	5738	14.86	1.68	3485	9.03	1.02
	5999	X	6719	17.40	1.97	4902	12.70	1.44	3636	9.42	1.06
RADIATOR PANEL	10963	X	13685	35.45	4.01	3459	8.96	1.01	2276	5.89	0.67
	10968	X	3313	8.58	0.97	3349	8.67	0.98	1471	3.81	0.43
	10974	X	7713	19.98	2.26	1475	3.82	0.43	1356	3.51	0.40
	10969	X	8409	21.78	2.46	1464	3.79	0.43	1210	3.13	0.35
	10917	X	6153	15.94	1.80	1761	4.56	0.52	1667	4.32	0.49
SIDEMOUNT	8313	X	3414	8.84	1.00	0	0.00	0.00	0	0.00	0.00
	8229	X	3318	8.59	0.97	163	0.42	0.05	233	0.60	0.07
	7796	X	3424	8.87	1.00	252	0.65	0.07	59	0.15	0.02
	7840	X	3414	8.84	1.00	0	0.00	0.00	0	0.00	0.00
	8178	X	2373	6.15	0.70	2073	5.37	0.61	2580	6.68	0.76
	9338	X	3591	9.30	1.05	1482	3.84	0.43	1093	2.83	0.32
	9576	X	3414	8.84	1.00	0	0.00	0.00	0	0.00	0.00
	7508	X	3403	8.81	1.00	1195	3.09	0.35	36	0.09	0.01
	7240	X	3414	8.84	1.00	0	0.00	0.00	0	0.00	0.00
	9642	X	3182	8.24	0.93	284	0.73	0.08	132	0.34	0.04
UPPER REFLECTOR	4629	X	7623	19.74	2.23	3197	8.28	0.94	3683	9.54	1.08
	4399	X	4607	11.93	1.35	2148	5.56	0.63	2134	5.53	0.63
	4401	X	4997	12.94	1.46	2462	6.38	0.72	3005	7.78	0.88
	4490	X	8004	20.73	2.34	9369	24.27	2.74	10662	27.62	3.12
	4410	X	24553	63.59	7.19	18831	48.77	5.52	27398	70.96	8.03

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

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
LARGE MASS	11911	Y	0	0.00	0.00	3414	8.84	1.00	0	0.00	0.00
LOWER BASEPLATE	1001	Y	497	1.29	0.15	5483	14.20	1.61	735	1.90	0.22
	1172	Y	2008	5.20	0.59	5671	14.69	1.66	4215	10.92	1.23
	1019	Y	606	1.57	0.18	4068	10.54	1.19	1325	3.43	0.39
	1205	Y	1689	4.38	0.49	4377	11.34	1.28	2849	7.38	0.83
	1124	Y	1409	3.65	0.41	4587	11.88	1.34	5346	13.85	1.57
LOWER MOTOR MOUNT	1001	Y	497	1.29	0.15	5483	14.20	1.61	735	1.90	0.22
	1172	Y	2008	5.20	0.59	5671	14.69	1.66	4215	10.92	1.23
	2663	Y	1743	4.51	0.51	6207	16.08	1.82	4260	11.03	1.25
	2875	Y	575	1.49	0.17	5917	15.33	1.73	742	1.92	0.22
	2855	Y	3240	8.39	0.95	7532	19.51	2.21	3708	9.60	1.09
	2861	Y	1839	4.76	0.54	7494	19.41	2.19	2182	5.65	0.64
	2888	Y	2818	7.30	0.83	7329	18.98	2.15	1563	4.05	0.46
	2892	Y	6314	16.35	1.85	1719	4.45	0.50	2919	7.56	0.85
	2896	Y	2735	7.09	0.80	6006	15.56	1.76	1397	3.62	0.41
	2884	Y	6649	17.22	1.95	3850	9.97	1.13	3072	7.96	0.90
UPPER MOTOR MOUNT	1578	Y	643	1.67	0.19	4688	12.14	1.37	930	2.41	0.27
	1569	Y	1806	4.68	0.53	4719	12.22	1.38	3155	8.17	0.92
	2710	Y	3817	9.89	1.12	3887	10.07	1.14	3373	8.74	0.99
	2779	Y	3778	9.79	1.11	3798	9.84	1.11	2889	7.48	0.85
	2783	Y	1464	3.79	0.43	3591	9.30	1.05	911	2.36	0.27
	2764	Y	1370	3.55	0.40	3892	10.08	1.14	1690	4.38	0.49
	2696	Y	2546	6.59	0.75	3826	9.91	1.12	2893	7.49	0.85
	2700	Y	3909	10.12	1.14	1835	4.75	0.54	2755	7.14	0.81
	2704	Y	2507	6.49	0.73	4185	10.84	1.23	3122	8.09	0.91
	2692	Y	3974	10.29	1.16	3241	8.39	0.95	3126	8.10	0.92

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	1853	4.80	0.54	4747	12.29	1.39	3053	7.91	0.89
	1608	Y	868	2.25	0.25	4357	11.28	1.28	1501	3.89	0.44
	1191	Y	2123	5.50	0.62	5419	14.03	1.59	2775	7.19	0.81
	1005	Y	492	1.27	0.14	5110	13.24	1.50	1435	3.72	0.42
	1979	Y	2332	6.04	0.68	5335	13.82	1.56	3511	9.09	1.03
	1970	Y	5615	14.54	1.64	2357	6.11	0.69	2027	5.25	0.59
	1973	Y	1945	5.04	0.57	4851	12.56	1.42	2920	7.56	0.86
	1976	Y	4852	12.57	1.42	1983	5.14	0.58	1218	3.15	0.36
	1885	Y	2109	5.46	0.62	4998	12.95	1.46	1599	4.14	0.47
	1961	Y	1443	3.74	0.42	5559	14.40	1.63	2792	7.23	0.82
	1963	Y	1781	4.61	0.52	5710	14.79	1.67	2819	7.30	0.83
LOWER AFT PANEL	1315	Y	2131	5.52	0.62	3942	10.21	1.15	3138	8.13	0.92
	1215	Y	470	1.22	0.14	3856	9.99	1.13	1244	3.22	0.36
	1019	Y	606	1.57	0.18	4068	10.54	1.19	1325	3.43	0.39
	1205	Y	1689	4.38	0.49	4377	11.34	1.28	2849	7.38	0.83
	1260	Y	1391	3.60	0.41	4350	11.27	1.27	2128	5.51	0.62
UPPER BASEPLATE	1455	Y	1853	4.80	0.54	4747	12.29	1.39	3053	7.91	0.89
	1608	Y	868	2.25	0.25	4357	11.28	1.28	1501	3.89	0.44
	1468	Y	470	1.22	0.14	3795	9.83	1.11	1267	3.28	0.37
	1458	Y	2131	5.52	0.62	3929	10.18	1.15	3196	8.28	0.94
UPPER FRONT PANEL	1375	Y	2020	5.23	0.59	4427	11.47	1.30	3449	8.93	1.01
	1528	Y	476	1.23	0.14	4248	11.00	1.24	901	2.33	0.26
	1993	Y	3098	8.02	0.91	3655	9.47	1.07	3559	9.22	1.04
	2124	Y	1516	3.93	0.44	3714	9.62	1.09	897	2.32	0.26
	2047	Y	2480	6.42	0.73	4099	10.62	1.20	3049	7.90	0.89
	2037	Y	4202	10.88	1.23	2957	7.66	0.87	3900	10.10	1.14
	2050	Y	2490	6.45	0.73	3885	10.06	1.14	7528	19.50	2.21
	2060	Y	4105	10.63	1.20	2036	5.27	0.60	3763	9.75	1.10
	2078	Y	9674	25.06	2.83	3977	10.30	1.16	1633	4.23	0.48

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	Y	470	1.22	0.14	3795	9.83	1.11	1267	3.28	0.37
	1458	Y	2131	5.52	0.62	3929	10.18	1.15	3196	8.28	0.94
	2210	Y	3114	8.07	0.91	3619	9.37	1.06	3384	8.76	0.99
	2240	Y	1500	3.88	0.44	3576	9.26	1.05	1265	3.28	0.37
	2218	Y	1511	3.91	0.44	3882	10.05	1.14	2605	6.75	0.76
	2223	Y	1150	2.98	0.34	3831	9.92	1.12	1960	5.08	0.57
	2219	Y	1719	4.45	0.50	3573	9.25	1.05	2633	6.82	0.77
	2224	Y	1025	2.66	0.30	3546	9.18	1.04	1963	5.08	0.57
LOWER SHELF	1826	Y	707	1.83	0.21	5060	13.11	1.48	2438	6.31	0.71
	1828	Y	716	1.86	0.21	5246	13.59	1.54	3973	10.29	1.16
	1777	Y	905	2.34	0.26	5055	13.09	1.48	4421	11.45	1.30
	1779	Y	906	2.35	0.27	5242	13.58	1.54	5524	14.31	1.62
	1744	Y	1188	3.08	0.35	4771	12.36	1.40	2313	5.99	0.68
	1767	Y	1051	2.72	0.31	5611	14.53	1.64	3176	8.23	0.93
	1671	Y	1707	4.42	0.50	5511	14.28	1.61	3329	8.62	0.98
	1641	Y	1824	4.72	0.53	5946	15.40	1.74	3507	9.08	1.03
	1703	Y	1471	3.81	0.43	5743	14.87	1.68	6510	16.86	1.91
	1699	Y	1522	3.94	0.45	5376	13.92	1.57	2050	5.31	0.60
	1647	Y	1779	4.61	0.52	4979	12.90	1.46	4917	12.74	1.44
	1631	Y	1923	4.98	0.56	5234	13.56	1.53	3277	8.49	0.96
	1842	Y	639	1.66	0.19	4618	11.96	1.35	1087	2.82	0.32
	1776	Y	946	2.45	0.28	4944	12.80	1.45	3487	9.03	1.02
	1800	Y	895	2.32	0.26	5463	14.15	1.60	4855	12.58	1.42
	1827	Y	681	1.76	0.20	5138	13.31	1.50	2763	7.16	0.81
	1732	Y	1238	3.21	0.36	5255	13.61	1.54	4914	12.73	1.44
	1718	Y	1384	3.59	0.41	5480	14.19	1.61	2339	6.06	0.69
	1783	Y	974	2.52	0.29	5579	14.45	1.63	3614	9.36	1.06
	1853	Y	745	1.93	0.22	5615	14.54	1.64	1020	2.64	0.30
	1858	Y	959	2.48	0.28	5076	13.15	1.49	1574	4.08	0.46
	1805	Y	867	2.24	0.25	5595	14.49	1.64	1992	5.16	0.58
	1625	Y	2002	5.19	0.59	4539	11.76	1.33	2820	7.30	0.83
	1694	Y	1516	3.93	0.44	4832	12.52	1.42	3693	9.57	1.08

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	Y	1326	3.43	0.39	4588	11.88	1.34	822	2.13	0.24
	2577	Y	1357	3.51	0.40	4295	11.12	1.26	882	2.28	0.26
	2547	Y	1331	3.45	0.39	4645	12.03	1.36	2852	7.39	0.84
	2551	Y	1334	3.45	0.39	4434	11.48	1.30	1645	4.26	0.48
	2520	Y	1383	3.58	0.41	4593	11.90	1.35	3238	8.39	0.95
	2525	Y	1376	3.56	0.40	4300	11.14	1.26	1424	3.69	0.42
	2469	Y	1605	4.16	0.47	4302	11.14	1.26	2144	5.55	0.63
	2464	Y	1631	4.22	0.48	4603	11.92	1.35	3115	8.07	0.91
	2489	Y	1504	3.89	0.44	4711	12.20	1.38	4649	12.04	1.36
	2420	Y	1830	4.74	0.54	4746	12.29	1.39	4685	12.14	1.37
	2426	Y	1828	4.73	0.54	4640	12.02	1.36	2744	7.11	0.80
	2355	Y	2195	5.68	0.64	4724	12.24	1.38	3140	8.13	0.92
	2360	Y	2163	5.60	0.63	4647	12.04	1.36	2365	6.13	0.69
	2300	Y	2465	6.39	0.72	4709	12.20	1.38	2776	7.19	0.81
	2323	Y	2434	6.30	0.71	4402	11.40	1.29	3373	8.74	0.99
	2318	Y	2423	6.27	0.71	4631	12.00	1.36	2839	7.35	0.83
	2275	Y	2603	6.74	0.76	4701	12.18	1.38	2913	7.54	0.85
	2241	Y	2814	7.29	0.82	4634	12.00	1.36	3430	8.88	1.00
	2442	Y	1734	4.49	0.51	4575	11.85	1.34	2664	6.90	0.78
LOWER RIGHT FRONT SUP	1176	Y	2008	5.20	0.59	5409	14.01	1.58	2758	7.14	0.81
	1963	Y	1781	4.61	0.52	5710	14.79	1.67	2819	7.30	0.83
	1172	Y	2008	5.20	0.59	5671	14.69	1.66	4215	10.92	1.23
	2663	Y	1743	4.51	0.51	6207	16.08	1.82	4260	11.03	1.25
	2661	Y	1084	2.81	0.32	10269	26.60	3.01	2314	5.99	0.68
LOWER RIGHT PANEL	1379	Y	1953	5.06	0.57	4879	12.64	1.43	3424	8.87	1.00
	1191	Y	2123	5.50	0.62	5419	14.03	1.59	2775	7.19	0.81
	1205	Y	1689	4.38	0.49	4377	11.34	1.28	2849	7.38	0.83
	1315	Y	2131	5.52	0.62	3942	10.21	1.15	3138	8.13	0.92
	1455	Y	1853	4.80	0.54	4747	12.29	1.39	3053	7.91	0.89

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	Y	1610	4.17	0.47	4187	10.84	1.23	3294	8.53	0.96
	1569	Y	1806	4.68	0.53	4719	12.22	1.38	3155	8.17	0.92
	2691	Y	1615	4.18	0.47	4152	10.75	1.22	3264	8.45	0.96
	1519	Y	1877	4.86	0.55	4428	11.47	1.30	3294	8.53	0.96
	2679	Y	1673	4.33	0.49	27282	70.66	7.99	3199	8.29	0.94
UPPER RIGHT PANEL	1457	Y	2131	5.52	0.62	3934	10.19	1.15	3170	8.21	0.93
	2154	Y	2508	6.50	0.73	6105	15.81	1.79	3388	8.78	0.99
	2130	Y	2521	6.53	0.74	10172	26.35	2.98	3463	8.97	1.01
	1345	Y	2113	5.47	0.62	4096	10.61	1.20	3277	8.49	0.96
	1365	Y	2037	5.28	0.60	4363	11.30	1.28	3414	8.84	1.00
	2210	Y	3114	8.07	0.91	3619	9.37	1.06	3384	8.76	0.99
	1993	Y	3098	8.02	0.91	3655	9.47	1.07	3559	9.22	1.04
	1375	Y	2020	5.23	0.59	4427	11.47	1.30	3449	8.93	1.01
TOP PANEL	11025	Y	1697	4.40	0.50	3700	9.58	1.08	3083	7.98	0.90
	11038	Y	1672	4.33	0.49	3590	9.30	1.05	1159	3.00	0.34
	11175	Y	547	1.42	0.16	3903	10.11	1.14	1243	3.22	0.36
	11170	Y	3640	9.43	1.07	3898	10.10	1.14	1098	2.84	0.32
	2627	Y	1937	5.02	0.57	3479	9.01	1.02	4555	11.80	1.33
	11128	Y	3284	8.51	0.96	3461	8.96	1.01	1138	2.95	0.33
	2210	Y	3114	8.07	0.91	3619	9.37	1.06	3384	8.76	0.99
	1993	Y	3098	8.02	0.91	3655	9.47	1.07	3559	9.22	1.04
LEFT PANEL	3243	Y	611	1.58	0.18	16655	43.14	4.88	970	2.51	0.28
	3251	Y	736	1.91	0.22	18379	47.60	5.38	901	2.33	0.26
	1001	Y	497	1.29	0.15	5483	14.20	1.61	735	1.90	0.22
	1019	Y	606	1.57	0.18	4068	10.54	1.19	1325	3.43	0.39
	1608	Y	868	2.25	0.25	4357	11.28	1.28	1501	3.89	0.44
	2124	Y	1516	3.93	0.44	3714	9.62	1.09	897	2.32	0.26
	2240	Y	1500	3.88	0.44	3576	9.26	1.05	1265	3.28	0.37

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 LEFT SHIELD	1878	Y	535	1.39	0.16	4823	12.49	1.41	1416	3.67	0.41
	2829	Y	515	1.33	0.15	5606	14.52	1.64	725	1.88	0.21
	1840	Y	835	2.16	0.24	5036	13.04	1.47	1775	4.60	0.52
	2831	Y	1409	3.65	0.41	6003	15.55	1.76	1518	3.93	0.44
	2913	Y	732	1.90	0.21	5575	14.44	1.63	2095	5.43	0.61
LOWER RIGHT SHIELD	1938	Y	2150	5.57	0.63	5600	14.50	1.64	2552	6.61	0.75
	2835	Y	1753	4.54	0.51	6171	15.98	1.81	3699	9.58	1.08
	2901	Y	1824	4.72	0.53	6112	15.83	1.79	2782	7.21	0.81
	1963	Y	1781	4.61	0.52	5710	14.79	1.67	2819	7.30	0.83
	2663	Y	1743	4.51	0.51	6207	16.08	1.82	4260	11.03	1.25
UPPER LEFT SHIELD	2119	Y	1275	3.30	0.37	4033	10.45	1.18	908	2.35	0.27
	2083	Y	1423	3.69	0.42	4199	10.88	1.23	1610	4.17	0.47
	2763	Y	1204	3.12	0.35	3831	9.92	1.12	910	2.36	0.27
	2760	Y	1449	3.75	0.42	3931	10.18	1.15	1677	4.34	0.49
	2933	Y	1241	3.21	0.36	4054	10.50	1.19	3360	8.70	0.98
UPPER RIGHT SHIELD	2010	Y	1547	4.01	0.45	4183	10.83	1.23	3177	8.23	0.93
	2918	Y	1638	4.24	0.48	4149	10.75	1.22	3156	8.18	0.92
	1998	Y	1610	4.17	0.47	4187	10.84	1.23	3294	8.53	0.96
	2691	Y	1615	4.18	0.47	4152	10.75	1.22	3264	8.45	0.96
LOWER CARD CAGE	3673	Y	1823	4.72	0.53	4514	11.69	1.32	3196	8.28	0.94
	3662	Y	1405	3.64	0.41	4960	12.85	1.45	2819	7.30	0.83
	3671	Y	3061	7.93	0.90	4489	11.63	1.31	3725	9.65	1.09
	3660	Y	3487	9.03	1.02	5001	12.95	1.46	5468	14.16	1.60
	3655	Y	1673	4.33	0.49	4329	11.21	1.27	3111	8.06	0.91
	3650	Y	1070	2.77	0.31	4236	10.97	1.24	3256	8.43	0.95
	1179	Y	2008	5.20	0.59	4916	12.73	1.44	3374	8.74	0.99
	1084	Y	1038	2.69	0.30	4834	12.52	1.42	2725	7.06	0.80
	3735	Y	1576	4.08	0.46	10662	27.62	3.12	2580	6.68	0.76
	3730	Y	1350	3.50	0.40	11536	29.88	3.38	3693	9.57	1.08
	3764	Y	1765	4.57	0.52	10259	26.57	3.01	2685	6.95	0.79

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	971	2.51	0.28	12442	32.23	3.64	2905	7.52	0.85
	3708	Y	924	2.39	0.27	12429	32.19	3.64	2577	6.67	0.75
	3753	Y	1178	3.05	0.35	13611	35.25	3.99	2875	7.45	0.84
LOWER CARD CAGE CARDS	4845	Y	2083	5.39	0.61	4470	11.58	1.31	2654	6.87	0.78
	4822	Y	1434	3.71	0.42	4670	12.10	1.37	3259	8.44	0.95
	4826	Y	3231	8.37	0.95	4933	12.78	1.45	5120	13.26	1.50
	4813	Y	1846	4.78	0.54	5137	13.31	1.50	5114	13.24	1.50
	4817	Y	1056	2.74	0.31	4628	11.99	1.36	3110	8.06	0.91
	4777	Y	1058	2.74	0.31	4667	12.09	1.37	3070	7.95	0.90
	4725	Y	1291	3.34	0.38	4403	11.41	1.29	2567	6.65	0.75
	4765	Y	1252	3.24	0.37	4498	11.65	1.32	2631	6.81	0.77
UPPER CARD CAGE	1469	Y	2076	5.38	0.61	4012	10.39	1.18	3077	7.97	0.90
	1509	Y	1993	5.16	0.58	4363	11.30	1.28	3434	8.89	1.01
	1514	Y	1132	2.93	0.33	4299	11.13	1.26	7040	18.23	2.06
	1474	Y	1134	2.94	0.33	4005	10.37	1.17	6604	17.10	1.93
	3372	Y	2594	6.72	0.76	5106	13.23	1.50	3228	8.36	0.95
	3381	Y	2538	6.57	0.74	5119	13.26	1.50	6599	17.09	1.93
	3404	Y	2687	6.96	0.79	6322	16.37	1.85	7143	18.50	2.09
	3395	Y	2622	6.79	0.77	6276	16.25	1.84	3502	9.07	1.03
	2249	Y	2764	7.16	0.81	4679	12.12	1.37	3265	8.46	0.96
	2448	Y	1693	4.38	0.50	4659	12.07	1.36	3439	8.91	1.01
	3369	Y	2459	6.37	0.72	5284	13.69	1.55	3106	8.04	0.91
UPPER CARD CAGE CARDS	11836	Y	2623	6.79	0.77	5436	14.08	1.59	6525	16.90	1.91
	11251	Y	2579	6.68	0.76	5642	14.61	1.65	7410	19.19	2.17
	11829	Y	2024	5.24	0.59	5124	13.27	1.50	6606	17.11	1.93
	11203	Y	1169	3.03	0.34	4256	11.02	1.25	7655	19.83	2.24
	11879	Y	2585	6.70	0.76	5104	13.22	1.50	6902	17.88	2.02
	11312	Y	2586	6.70	0.76	5184	13.43	1.52	6695	17.34	1.96

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	3822	9.90	1.12	5565	14.41	1.63	2612	6.77	0.77
	1929	Y	4964	12.86	1.45	5489	14.22	1.61	2494	6.46	0.73
	2812	Y	8406	21.77	2.46	5758	14.91	1.69	2053	5.32	0.60
	2810	Y	3413	8.84	1.00	5675	14.70	1.66	1381	3.58	0.40
	1892	Y	5702	14.77	1.67	5222	13.52	1.53	1856	4.81	0.54
	1908	Y	5154	13.35	1.51	5288	13.70	1.55	2103	5.45	0.62
	2814	Y	8322	21.55	2.44	5963	15.44	1.75	3281	8.50	0.96
	2815	Y	1592	4.12	0.47	6008	15.56	1.76	3807	9.86	1.12
	3006	Y	4755	12.31	1.39	12098	31.33	3.54	7094	18.37	2.08
	3036	Y	2886	7.48	0.85	14874	38.53	4.36	10554	27.34	3.09
UPPER WARMLOAD	2009	Y	1662	4.30	0.49	4189	10.85	1.23	3227	8.36	0.95
	2033	Y	2439	6.32	0.71	4174	10.81	1.22	2865	7.42	0.84
	2080	Y	3909	10.12	1.14	4005	10.37	1.17	1706	4.42	0.50
	2056	Y	6604	17.11	1.93	4069	10.54	1.19	2074	5.37	0.61
	2939	Y	3952	10.24	1.16	4205	10.89	1.23	1726	4.47	0.51
	2941	Y	2458	6.37	0.72	4829	12.51	1.41	6913	17.90	2.02
	2738	Y	1764	4.57	0.52	4274	11.07	1.25	3176	8.23	0.93
	2739	Y	2369	6.14	0.69	4270	11.06	1.25	2852	7.39	0.84
	2976	Y	4273	11.07	1.25	9454	24.49	2.77	5282	13.68	1.55
	2945	Y	1719	4.45	0.50	6335	16.41	1.86	8691	22.51	2.55
LOWER REFLECTOR	4662	Y	2248	5.82	0.66	7374	19.10	2.16	2711	7.02	0.79
	4085	Y	794	2.06	0.23	6605	17.11	1.93	2801	7.26	0.82
	4087	Y	982	2.54	0.29	7510	19.45	2.20	3101	8.03	0.91
	4176	Y	2367	6.13	0.69	9162	23.73	2.68	4225	10.94	1.24
	4096	Y	7434	19.26	2.18	12281	31.81	3.60	6833	17.70	2.00
POWER CNTRL/MON BKT	5591	Y	2996	7.76	0.88	3525	9.13	1.03	1709	4.43	0.50
	5600	Y	2738	7.09	0.80	3449	8.93	1.01	1705	4.42	0.50
	5590	Y	1152	2.98	0.34	3500	9.06	1.03	1711	4.43	0.50
	11803	Y	4997	12.94	1.46	14760	38.23	4.32	1944	5.04	0.57

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	5786	14.99	1.69	4390	11.37	1.29	2771	7.18	0.81
	6204	Y	5990	15.52	1.75	4511	11.68	1.32	3539	9.17	1.04
PWR CNTRL/MON STANDOFF	6247	Y	1999	5.18	0.59	4345	11.25	1.27	3823	9.90	1.12
	6015	Y	1530	3.96	0.45	4626	11.98	1.36	2902	7.52	0.85
	5932	Y	1951	5.05	0.57	4408	11.42	1.29	2833	7.34	0.83
	5999	Y	2269	5.88	0.66	4421	11.45	1.29	2937	7.61	0.86
RADIATOR PANEL	10963	Y	3640	9.43	1.07	3856	9.99	1.13	1516	3.93	0.44
	10968	Y	546	1.41	0.16	3832	9.93	1.12	1236	3.20	0.36
	10974	Y	3636	9.42	1.06	3124	8.09	0.92	1272	3.30	0.37
	10969	Y	4068	10.54	1.19	3117	8.07	0.91	792	2.05	0.23
	10917	Y	7476	19.36	2.19	3022	7.83	0.89	1208	3.13	0.35
SIDEMOUNT	8313	Y	0	0.00	0.00	3414	8.84	1.00	0	0.00	0.00
	8229	Y	240	0.62	0.07	3103	8.04	0.91	220	0.57	0.06
	7796	Y	149	0.39	0.04	3238	8.39	0.95	72	0.19	0.02
	7840	Y	0	0.00	0.00	3414	8.84	1.00	0	0.00	0.00
	8178	Y	3214	8.32	0.94	745	1.93	0.22	1693	4.38	0.50
	9338	Y	1354	3.51	0.40	2606	6.75	0.76	2050	5.31	0.60
	9576	Y	0	0.00	0.00	3414	8.84	1.00	0	0.00	0.00
	7508	Y	35	0.09	0.01	4963	12.85	1.45	43	0.11	0.01
	7240	Y	0	0.00	0.00	3414	8.84	1.00	0	0.00	0.00
	9642	Y	328	0.85	0.10	3126	8.10	0.92	273	0.71	0.08
UPPER REFLECTOR	4629	Y	7092	18.37	2.08	4613	11.95	1.35	2714	7.03	0.79
	4399	Y	2125	5.50	0.62	3974	10.29	1.16	2551	6.61	0.75
	4401	Y	2751	7.13	0.81	4449	11.52	1.30	2911	7.54	0.85
	4490	Y	3645	9.44	1.07	4766	12.35	1.40	4640	12.02	1.36
	4410	Y	11756	30.45	3.44	11646	30.17	3.41	11901	30.83	3.49

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

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
LARGE MASS	11911	Z	0	0.00	0.00	0	0.00	0.00	3414	8.84	1.00
LOWER BASEPLATE	1001	Z	346	0.90	0.10	2463	6.38	0.72	3350	8.68	0.98
	1172	Z	724	1.88	0.21	2571	6.66	0.75	4427	11.47	1.30
	1019	Z	408	1.06	0.12	2263	5.86	0.66	3417	8.85	1.00
	1205	Z	848	2.20	0.25	2456	6.36	0.72	3027	7.84	0.89
	1124	Z	575	1.49	0.17	2298	5.95	0.67	6781	17.56	1.99
LOWER MOTOR MOUNT	1001	Z	346	0.90	0.10	2463	6.38	0.72	3350	8.68	0.98
	1172	Z	724	1.88	0.21	2571	6.66	0.75	4427	11.47	1.30
	2663	Z	2509	6.50	0.73	1010	2.62	0.30	4456	11.54	1.31
	2875	Z	604	1.57	0.18	1758	4.55	0.51	3328	8.62	0.97
	2855	Z	2901	7.51	0.85	3556	9.21	1.04	3549	9.19	1.04
	2861	Z	1912	4.95	0.56	3452	8.94	1.01	2655	6.88	0.78
	2888	Z	2824	7.32	0.83	3105	8.04	0.91	1674	4.33	0.49
	2892	Z	1448	3.75	0.42	2810	7.28	0.82	1776	4.60	0.52
	2896	Z	2806	7.27	0.82	1095	2.84	0.32	2008	5.20	0.59
	2884	Z	1576	4.08	0.46	3723	9.64	1.09	2792	7.23	0.82
UPPER MOTOR MOUNT	1578	Z	417	1.08	0.12	1696	4.39	0.50	3529	9.14	1.03
	1569	Z	911	2.36	0.27	1692	4.38	0.50	2892	7.49	0.85
	2710	Z	2853	7.39	0.84	3854	9.98	1.13	3033	7.85	0.89
	2779	Z	2818	7.30	0.83	4515	11.69	1.32	2822	7.31	0.83
	2783	Z	1025	2.66	0.30	3677	9.52	1.08	3458	8.96	1.01
	2764	Z	1453	3.76	0.43	3249	8.42	0.95	3023	7.83	0.89
	2696	Z	2784	7.21	0.82	4254	11.02	1.25	1993	5.16	0.58
	2700	Z	3268	8.47	0.96	2969	7.69	0.87	1790	4.64	0.52
	2704	Z	2761	7.15	0.81	2526	6.54	0.74	1705	4.42	0.50
	2692	Z	3345	8.66	0.98	2952	7.65	0.86	2126	5.51	0.62

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	Z	973	2.52	0.28	1333	3.45	0.39	3035	7.86	0.89
	1608	Z	483	1.25	0.14	1142	2.96	0.33	3840	9.95	1.12
	1191	Z	707	1.83	0.21	2614	6.77	0.77	3356	8.69	0.98
	1005	Z	333	0.86	0.10	2306	5.97	0.68	3828	9.91	1.12
	1979	Z	3079	7.98	0.90	1698	4.40	0.50	1814	4.70	0.53
	1970	Z	1713	4.44	0.50	3145	8.14	0.92	2052	5.31	0.60
	1973	Z	3169	8.21	0.93	1354	3.51	0.40	2960	7.67	0.87
	1976	Z	1355	3.51	0.40	3356	8.69	0.98	1604	4.15	0.47
	1885	Z	714	1.85	0.21	1621	4.20	0.47	3873	10.03	1.13
	1961	Z	1057	2.74	0.31	2436	6.31	0.71	3306	8.56	0.97
	1963	Z	2601	6.74	0.76	1951	5.05	0.57	3268	8.46	0.96
LOWER AFT PANEL	1315	Z	1265	3.28	0.37	1572	4.07	0.46	3045	7.89	0.89
	1215	Z	386	1.00	0.11	1516	3.93	0.44	3435	8.90	1.01
	1019	Z	408	1.06	0.12	2263	5.86	0.66	3417	8.85	1.00
	1205	Z	848	2.20	0.25	2456	6.36	0.72	3027	7.84	0.89
	1260	Z	773	2.00	0.23	1515	3.92	0.44	2786	7.22	0.82
UPPER BASEPLATE	1455	Z	973	2.52	0.28	1333	3.45	0.39	3035	7.86	0.89
	1608	Z	483	1.25	0.14	1142	2.96	0.33	3840	9.95	1.12
	1468	Z	386	1.00	0.11	1489	3.86	0.44	3454	8.94	1.01
	1458	Z	1265	3.28	0.37	1633	4.23	0.48	3073	7.96	0.90
UPPER FRONT PANEL	1375	Z	1087	2.82	0.32	1919	4.97	0.56	3134	8.12	0.92
	1528	Z	385	1.00	0.11	1828	4.73	0.54	3440	8.91	1.01
	1993	Z	2219	5.75	0.65	3944	10.22	1.16	3270	8.47	0.96
	2124	Z	1362	3.53	0.40	3874	10.04	1.13	3510	9.09	1.03
	2047	Z	2742	7.10	0.80	2889	7.48	0.85	2243	5.81	0.66
	2037	Z	3330	8.62	0.98	2848	7.38	0.83	2961	7.67	0.87
	2050	Z	2765	7.16	0.81	3491	9.04	1.02	6397	16.57	1.87
	2060	Z	3240	8.39	0.95	2784	7.21	0.82	2954	7.65	0.87
	2078	Z	4163	10.78	1.22	1957	5.07	0.57	2995	7.76	0.88

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	Z	386	1.00	0.11	1489	3.86	0.44	3454	8.94	1.01
	1458	Z	1265	3.28	0.37	1633	4.23	0.48	3073	7.96	0.90
	2210	Z	2196	5.69	0.64	4652	12.05	1.36	3056	7.91	0.90
	2240	Z	1353	3.50	0.40	4702	12.18	1.38	3232	8.37	0.95
	2218	Z	943	2.44	0.28	1744	4.52	0.51	2798	7.25	0.82
	2223	Z	1149	2.98	0.34	1703	4.41	0.50	2931	7.59	0.86
	2219	Z	1491	3.86	0.44	2894	7.50	0.85	2806	7.27	0.82
	2224	Z	984	2.55	0.29	2850	7.38	0.83	2925	7.57	0.86
LOWER SHELF	1826	Z	619	1.60	0.18	1744	4.52	0.51	4348	11.26	1.27
	1828	Z	619	1.60	0.18	1816	4.70	0.53	5546	14.36	1.62
	1777	Z	598	1.55	0.18	1742	4.51	0.51	5791	15.00	1.70
	1779	Z	597	1.55	0.17	1815	4.70	0.53	6049	15.67	1.77
	1744	Z	655	1.70	0.19	1650	4.27	0.48	5009	12.97	1.47
	1767	Z	619	1.60	0.18	1972	5.11	0.58	5916	15.32	1.73
	1671	Z	886	2.29	0.26	1933	5.01	0.57	5212	13.50	1.53
	1641	Z	932	2.41	0.27	2051	5.31	0.60	3325	8.61	0.97
	1703	Z	768	1.99	0.22	2036	5.27	0.60	6094	15.79	1.79
	1699	Z	792	2.05	0.23	1873	4.85	0.55	7081	18.34	2.07
	1647	Z	932	2.41	0.27	1718	4.45	0.50	5877	15.22	1.72
	1631	Z	1012	2.62	0.30	1817	4.71	0.53	4809	12.46	1.41
	1842	Z	648	1.68	0.19	1606	4.16	0.47	3384	8.77	0.99
	1776	Z	602	1.56	0.18	1704	4.41	0.50	5683	14.72	1.66
	1800	Z	598	1.55	0.18	1910	4.95	0.56	6046	15.66	1.77
	1827	Z	635	1.64	0.19	1774	4.60	0.52	4875	12.63	1.43
	1732	Z	672	1.74	0.20	1821	4.72	0.53	7239	18.75	2.12
	1718	Z	729	1.89	0.21	1915	4.96	0.56	7147	18.51	2.09
	1783	Z	605	1.57	0.18	1959	5.07	0.57	5858	15.17	1.72
	1853	Z	592	1.53	0.17	1967	5.10	0.58	3754	9.72	1.10
	1858	Z	644	1.67	0.19	1531	3.97	0.45	3969	10.28	1.16
	1805	Z	588	1.52	0.17	1919	4.97	0.56	5044	13.06	1.48
	1625	Z	1068	2.77	0.31	1609	4.17	0.47	3184	8.25	0.93
	1694	Z	792	2.05	0.23	1671	4.33	0.49	5111	13.24	1.50

COMPONENT	GRID	LOAD	X-RESPONSE			Y-RESPONSE			Z-RESPONSE		
		DIR	RMS	GRMS	Q	RMS	GRMS	Q	RMS	GRMS	Q
UPPER SHELF	2572	Z	923	2.39	0.27	3392	8.79	0.99	3128	8.10	0.92
	2577	Z	916	2.37	0.27	3253	8.43	0.95	3372	8.73	0.99
	2547	Z	964	2.50	0.28	3409	8.83	1.00	3472	8.99	1.02
	2551	Z	955	2.47	0.28	3331	8.63	0.98	3655	9.47	1.07
	2520	Z	999	2.59	0.29	3396	8.79	0.99	4195	10.86	1.23
	2525	Z	994	2.57	0.29	3257	8.44	0.95	3524	9.13	1.03
	2469	Z	1151	2.98	0.34	3259	8.44	0.95	4397	11.39	1.29
	2464	Z	1117	2.89	0.33	3403	8.81	1.00	4884	12.65	1.43
	2489	Z	1061	2.75	0.31	3412	8.84	1.00	4841	12.54	1.42
	2420	Z	1184	3.07	0.35	3367	8.72	0.99	6961	18.03	2.04
	2426	Z	1185	3.07	0.35	3401	8.81	1.00	4450	11.53	1.30
	2355	Z	1339	3.47	0.39	3366	8.72	0.99	5612	14.54	1.64
	2360	Z	1323	3.43	0.39	3403	8.81	1.00	3757	9.73	1.10
	2300	Z	1477	3.83	0.43	3381	8.76	0.99	3757	9.73	1.10
	2323	Z	1475	3.82	0.43	3363	8.71	0.99	3516	9.11	1.03
	2318	Z	1455	3.77	0.43	3427	8.88	1.00	3631	9.41	1.06
	2275	Z	1552	4.02	0.45	3389	8.78	0.99	3290	8.52	0.96
	2241	Z	1670	4.33	0.49	3429	8.88	1.00	3179	8.23	0.93
	2442	Z	1156	2.99	0.34	3411	8.84	1.00	5429	14.06	1.59
LOWER RIGHT FRONT SUP	1176	Z	671	1.74	0.20	2604	6.74	0.76	3278	8.49	0.96
	1963	Z	2601	6.74	0.76	1951	5.05	0.57	3268	8.46	0.96
	1172	Z	724	1.88	0.21	2571	6.66	0.75	4427	11.47	1.30
	2663	Z	2509	6.50	0.73	1010	2.62	0.30	4456	11.54	1.31
	2661	Z	1708	4.42	0.50	5969	15.46	1.75	3408	8.83	1.00
LOWER RIGHT PANEL	1379	Z	944	2.45	0.28	2380	6.16	0.70	3281	8.50	0.96
	1191	Z	707	1.83	0.21	2614	6.77	0.77	3356	8.69	0.98
	1205	Z	848	2.20	0.25	2456	6.36	0.72	3027	7.84	0.89
	1315	Z	1265	3.28	0.37	1572	4.07	0.46	3045	7.89	0.89
	1455	Z	973	2.52	0.28	1333	3.45	0.39	3035	7.86	0.89

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	976	2.53	0.29	2827	7.32	0.83	2987	7.74	0.87
	1569	Z	911	2.36	0.27	1692	4.38	0.50	2892	7.49	0.85
	2691	Z	986	2.55	0.29	2633	6.82	0.77	2939	7.61	0.86
	1519	Z	982	2.54	0.29	1924	4.98	0.56	2991	7.75	0.88
	2679	Z	882	2.28	0.26	10332	26.76	3.03	2924	7.57	0.86
UPPER RIGHT PANEL	1457	Z	1265	3.28	0.37	1606	4.16	0.47	3061	7.93	0.90
	2154	Z	1439	3.73	0.42	5030	13.03	1.47	3146	8.15	0.92
	2130	Z	1422	3.68	0.42	6546	16.95	1.92	3118	8.08	0.91
	1345	Z	1220	3.16	0.36	1374	3.56	0.40	3106	8.04	0.91
	1365	Z	1116	2.89	0.33	1810	4.69	0.53	3125	8.09	0.92
	2210	Z	2196	5.69	0.64	4652	12.05	1.36	3056	7.91	0.90
	1993	Z	2219	5.75	0.65	3944	10.22	1.16	3270	8.47	0.96
	1375	Z	1087	2.82	0.32	1919	4.97	0.56	3134	8.12	0.92
TOP PANEL	11025	Z	2487	6.44	0.73	3863	10.01	1.13	12735	32.99	3.73
	11038	Z	2460	6.37	0.72	4805	12.45	1.41	4293	11.12	1.26
	11175	Z	450	1.16	0.13	1499	3.88	0.44	3278	8.49	0.96
	11170	Z	3569	9.25	1.05	1521	3.94	0.45	4399	11.39	1.29
	2627	Z	1224	3.17	0.36	4115	10.66	1.21	8791	22.77	2.57
	11128	Z	3055	7.91	0.89	2904	7.52	0.85	4325	11.20	1.27
	2210	Z	2196	5.69	0.64	4652	12.05	1.36	3056	7.91	0.90
	1993	Z	2219	5.75	0.65	3944	10.22	1.16	3270	8.47	0.96
LEFT PANEL	3243	Z	484	1.25	0.14	5761	14.92	1.69	3310	8.57	0.97
	3251	Z	515	1.33	0.15	8080	20.93	2.37	3478	9.01	1.02
	1001	Z	346	0.90	0.10	2463	6.38	0.72	3350	8.68	0.98
	1019	Z	408	1.06	0.12	2263	5.86	0.66	3417	8.85	1.00
	1608	Z	483	1.25	0.14	1142	2.96	0.33	3840	9.95	1.12
	2124	Z	1362	3.53	0.40	3874	10.04	1.13	3510	9.09	1.03
	2240	Z	1353	3.50	0.40	4702	12.18	1.38	3232	8.37	0.95

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 LEFT SHIELD	1878	Z	449	1.16	0.13	1380	3.57	0.40	3823	9.90	1.12
	2829	Z	468	1.21	0.14	1001	2.59	0.29	3316	8.59	0.97
	1840	Z	585	1.52	0.17	1493	3.87	0.44	3608	9.35	1.06
	2831	Z	768	1.99	0.23	1126	2.92	0.33	2860	7.41	0.84
	2913	Z	549	1.42	0.16	913	2.36	0.27	5733	14.85	1.68
LOWER RIGHT SHIELD	1938	Z	2844	7.37	0.83	1881	4.87	0.55	3077	7.97	0.90
	2835	Z	2598	6.73	0.76	1019	2.64	0.30	3596	9.31	1.05
	2901	Z	2613	6.77	0.77	1169	3.03	0.34	4386	11.36	1.28
	1963	Z	2601	6.74	0.76	1951	5.05	0.57	3268	8.46	0.96
	2663	Z	2509	6.50	0.73	1010	2.62	0.30	4456	11.54	1.31
UPPER LEFT SHIELD	2119	Z	840	2.17	0.25	3047	7.89	0.89	3441	8.91	1.01
	2083	Z	1035	2.68	0.30	3190	8.26	0.93	2965	7.68	0.87
	2763	Z	775	2.01	0.23	2998	7.77	0.88	3470	8.99	1.02
	2760	Z	1283	3.32	0.38	3046	7.89	0.89	3023	7.83	0.89
	2933	Z	958	2.48	0.28	2922	7.57	0.86	8697	22.53	2.55
UPPER RIGHT SHIELD	2010	Z	1094	2.83	0.32	2825	7.32	0.83	2933	7.60	0.86
	2918	Z	1016	2.63	0.30	2635	6.82	0.77	2888	7.48	0.85
	1998	Z	976	2.53	0.29	2827	7.32	0.83	2987	7.74	0.87
	2691	Z	986	2.55	0.29	2633	6.82	0.77	2939	7.61	0.86
LOWER CARD CAGE	3673	Z	1688	4.37	0.49	2016	5.22	0.59	4743	12.29	1.39
	3662	Z	1355	3.51	0.40	2797	7.24	0.82	5093	13.19	1.49
	3671	Z	2011	5.21	0.59	1876	4.86	0.55	5122	13.27	1.50
	3660	Z	2248	5.82	0.66	2732	7.08	0.80	5498	14.24	1.61
	3655	Z	825	2.14	0.24	2398	6.21	0.70	3523	9.12	1.03
	3650	Z	572	1.48	0.17	2378	6.16	0.70	4753	12.31	1.39
	1179	Z	731	1.89	0.21	2323	6.02	0.68	3776	9.78	1.11
	1084	Z	470	1.22	0.14	2349	6.09	0.69	5064	13.12	1.48
	3735	Z	1914	4.96	0.56	2974	7.70	0.87	4580	11.86	1.34
	3730	Z	1659	4.30	0.49	3129	8.10	0.92	6780	17.56	1.99
	3764	Z	1294	3.35	0.38	3044	7.88	0.89	5140	13.31	1.51

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	929	2.41	0.27	4514	11.69	1.32	4624	11.98	1.35
	3708	Z	847	2.19	0.25	2633	6.82	0.77	5530	14.32	1.62
	3753	Z	1044	2.70	0.31	4267	11.05	1.25	5089	13.18	1.49
LOWER CARD CAGE CARDS	4845	Z	1922	4.98	0.56	2281	5.91	0.67	5911	15.31	1.73
	4822	Z	1555	4.03	0.46	2169	5.62	0.64	5626	14.57	1.65
	4826	Z	2087	5.41	0.61	2021	5.23	0.59	7617	19.73	2.23
	4813	Z	736	1.91	0.22	3514	9.10	1.03	7651	19.82	2.24
	4817	Z	544	1.41	0.16	2404	6.23	0.70	5485	14.21	1.61
	4777	Z	540	1.40	0.16	2412	6.25	0.71	5351	13.86	1.57
	4725	Z	1633	4.23	0.48	2325	6.02	0.68	5540	14.35	1.62
	4765	Z	2122	5.50	0.62	2315	6.00	0.68	5341	13.83	1.56
UPPER CARD CAGE	1469	Z	1219	3.16	0.36	1361	3.52	0.40	4205	10.89	1.23
	1509	Z	1096	2.84	0.32	1807	4.68	0.53	3386	8.77	0.99
	1514	Z	561	1.45	0.16	1789	4.63	0.52	7031	18.21	2.06
	1474	Z	604	1.56	0.18	1371	3.55	0.40	7033	18.22	2.06
	3372	Z	1798	4.66	0.53	4493	11.64	1.32	5129	13.28	1.50
	3381	Z	5068	13.13	1.48	4467	11.57	1.31	7021	18.18	2.06
	3404	Z	5261	13.63	1.54	6162	15.96	1.80	7145	18.51	2.09
	3395	Z	1875	4.86	0.55	6109	15.82	1.79	3715	9.62	1.09
	2249	Z	1643	4.26	0.48	3408	8.83	1.00	3156	8.17	0.92
	2448	Z	1136	2.94	0.33	3399	8.80	1.00	4576	11.85	1.34
	3369	Z	4571	11.84	1.34	4628	11.99	1.36	4337	11.23	1.27
UPPER CARD CAGE CARDS	11836	Z	1866	4.83	0.55	6154	15.94	1.80	10653	27.59	3.12
	11251	Z	5044	13.07	1.48	5188	13.44	1.52	7711	19.97	2.26
	11829	Z	1260	3.26	0.37	4062	10.52	1.19	10908	28.25	3.19
	11203	Z	568	1.47	0.17	1709	4.43	0.50	7928	20.54	2.32
	11879	Z	2071	5.36	0.61	3994	10.35	1.17	8019	20.77	2.35
	11312	Z	2034	5.27	0.60	4120	10.67	1.21	7556	19.57	2.21

COMPONENT	GRID	LOAD	X-RESPONSE			Y-RESPONSE			Z-RESPONSE		
		DIR	RMS	GRMS	Q	RMS	GRMS	Q	RMS	GRMS	Q
LOWER WARMLOAD	1945	Z	4350	11.27	1.27	2103	5.45	0.62	3097	8.02	0.91
	1929	Z	3608	9.34	1.06	2072	5.37	0.61	3015	7.81	0.88
	2812	Z	2407	6.23	0.70	1411	3.66	0.41	2652	6.87	0.78
	2810	Z	917	2.37	0.27	1374	3.56	0.40	2798	7.25	0.82
	1892	Z	1517	3.93	0.44	1937	5.02	0.57	3567	9.24	1.04
	1908	Z	1936	5.02	0.57	1976	5.12	0.58	3263	8.45	0.96
	2814	Z	6130	15.88	1.80	1473	3.81	0.43	3193	8.27	0.94
	2815	Z	2856	7.40	0.84	1468	3.80	0.43	3768	9.76	1.10
	3006	Z	1195	3.10	0.35	3687	9.55	1.08	4244	10.99	1.24
	3036	Z	3920	10.15	1.15	6292	16.30	1.84	5599	14.50	1.64
UPPER WARMLOAD	2009	Z	955	2.47	0.28	2549	6.60	0.75	2959	7.66	0.87
	2033	Z	1587	4.11	0.46	2537	6.57	0.74	2814	7.29	0.82
	2080	Z	1905	4.93	0.56	2418	6.26	0.71	2907	7.53	0.85
	2056	Z	3615	9.36	1.06	2460	6.37	0.72	2774	7.19	0.81
	2939	Z	1674	4.34	0.49	2248	5.82	0.66	2952	7.65	0.86
	2941	Z	1581	4.10	0.46	2383	6.17	0.70	4103	10.63	1.20
	2738	Z	922	2.39	0.27	2278	5.90	0.67	2893	7.49	0.85
	2739	Z	1334	3.45	0.39	2282	5.91	0.67	2780	7.20	0.81
	2976	Z	1801	4.66	0.53	7101	18.39	2.08	3932	10.18	1.15
	2945	Z	1023	2.65	0.30	3351	8.68	0.98	4466	11.57	1.31
LOWER REFLECTOR	4662	Z	4576	11.85	1.34	1665	4.31	0.49	3001	7.77	0.88
	4085	Z	1241	3.21	0.36	1560	4.04	0.46	2828	7.33	0.83
	4087	Z	1522	3.94	0.45	2107	5.46	0.62	3049	7.90	0.89
	4176	Z	2317	6.00	0.68	5854	15.16	1.71	4398	11.39	1.29
	4096	Z	5120	13.26	1.50	7699	19.94	2.26	5768	14.94	1.69
POWER CNTRL/MON BKT	5591	Z	5231	13.55	1.53	4447	11.52	1.30	3016	7.81	0.88
	5600	Z	7412	19.20	2.17	3712	9.61	1.09	3022	7.83	0.89
	5590	Z	3124	8.09	0.92	2935	7.60	0.86	3054	7.91	0.89
	11803	Z	5649	14.63	1.65	29332	75.97	8.59	7219	18.70	2.11

COMPONENT	GRID	LOAD	X-RESPONSE			Y-RESPONSE			Z-RESPONSE		
		DIR	RMS	GRMS	Q	RMS	GRMS	Q	RMS	GRMS	Q
POWER CNTRL/MON PWB	5878	Z	3771	9.77	1.10	6855	17.76	2.01	4727	12.24	1.38
	6204	Z	5190	13.44	1.52	4027	10.43	1.18	4366	11.31	1.28
PWR CNTRL/MON STANDOFF	6247	Z	1496	3.87	0.44	7429	19.24	2.18	4342	11.25	1.27
	6015	Z	1556	4.03	0.46	3427	8.88	1.00	4614	11.95	1.35
	5932	Z	1559	4.04	0.46	7616	19.73	2.23	4521	11.71	1.32
	5999	Z	3960	10.26	1.16	4811	12.46	1.41	4592	11.89	1.35
RADIATOR PANEL	10963	Z	3570	9.25	1.05	1528	3.96	0.45	3791	9.82	1.11
	10968	Z	449	1.16	0.13	1529	3.96	0.45	3389	8.78	0.99
	10974	Z	3113	8.06	0.91	964	2.50	0.28	3402	8.81	1.00
	10969	Z	4784	12.39	1.40	948	2.46	0.28	3333	8.63	0.98
	10917	Z	2363	6.12	0.69	996	2.58	0.29	3423	8.87	1.00
SIDEMOUNT	8313	Z	0	0.00	0.00	0	0.00	0.00	3414	8.84	1.00
	8229	Z	271	0.70	0.08	304	0.79	0.09	3349	8.67	0.98
	7796	Z	76	0.20	0.02	183	0.47	0.05	3388	8.77	0.99
	7840	Z	0	0.00	0.00	0	0.00	0.00	3414	8.84	1.00
	8178	Z	3870	10.02	1.13	2577	6.67	0.75	2011	5.21	0.59
	9338	Z	978	2.53	0.29	2077	5.38	0.61	4061	10.52	1.19
	9576	Z	0	0.00	0.00	0	0.00	0.00	3414	8.84	1.00
	7508	Z	102	0.26	0.03	993	2.57	0.29	3404	8.82	1.00
	7240	Z	0	0.00	0.00	0	0.00	0.00	3414	8.84	1.00
	9642	Z	720	1.86	0.21	354	0.92	0.10	3391	8.78	0.99
UPPER REFLECTOR	4629	Z	3348	8.67	0.98	3251	8.42	0.95	2851	7.39	0.84
	4399	Z	1299	3.36	0.38	3351	8.68	0.98	2805	7.27	0.82
	4401	Z	1792	4.64	0.53	4053	10.50	1.19	3258	8.44	0.95
	4490	Z	2539	6.58	0.74	6234	16.15	1.83	5539	14.35	1.62
	4410	Z	5342	13.84	1.56	6921	17.93	2.03	6221	16.11	1.82

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

COMPONENT	GRID	GRID	ΔX-DEFLECTION			ΔX-DEFLECTION			ΔX-DEFLECTION		
				X-LOAD			Y-LOAD			Z-LOAD	
			GAP	1Σ ΔX	3Σ ΔX	GAP	1Σ ΔX	3Σ ΔX	GAP	1Σ ΔX	3Σ ΔX
LOWER CARD CAGE	4808	4848	0.037	0.00027	0.00080	0.037	0.00173	0.00519	0.037	0.00057	0.00170
CIRCUIT CARDS	4809	4849		0.00031	0.00094		0.00082	0.00246		0.00023	0.00068
	4810	4850		0.00014	0.00043		0.00032	0.00097		0.00009	0.00027
	4811	4851		0.00008	0.00025		0.00028	0.00085		0.00007	0.00022
	4812	4852		0.00007	0.00020		0.00022	0.00067		0.00007	0.00021
	4803	4843		0.00034	0.00101		0.00176	0.00528		0.00040	0.00121
	4804	4844		0.00034	0.00102		0.00080	0.00239		0.00027	0.00080
	4805	4845		0.00015	0.00046		0.00042	0.00126		0.00014	0.00041
	4806	4846		0.00009	0.00026		0.00030	0.00091		0.00009	0.00026
	4807	4847		0.00006	0.00019		0.00022	0.00065		0.00008	0.00023
	4828	4868		0.00117	0.00350		0.00056	0.00169		0.00020	0.00061
	4829	4869		0.00829	0.02488		0.00244	0.00733		0.00299	0.00898
	4830	4870		0.00303	0.00908		0.00103	0.00310		0.00119	0.00358
	4831	4871		0.00443	0.01329		0.00192	0.00575		0.00139	0.00416
	4832	4872		0.00284	0.00852		0.00088	0.00263		0.00052	0.00155
	4823	4863		0.00282	0.00846		0.00098	0.00294		0.00088	0.00263
	4824	4864		0.00720	0.02161		0.00197	0.00590		0.00165	0.00495
	4825	4865		0.00134	0.00402		0.00088	0.00265		0.00120	0.00361
	4826	4866		0.00161	0.00483		0.00110	0.00331		0.00151	0.00452
	4827	4867		0.00178	0.00533		0.00096	0.00287		0.00049	0.00148

METSAT RANDOM VIBRATION DISPLACEMENTS - RATTLESPACE AT THE UPPER 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
UPPER CARD CAGE	11300	11867	0.137	0.00060	0.00180	0.137	0.00018	0.00053	0.137	0.00035	0.00104
CIRCUIT CARDS	11301	11868		0.00044	0.00131		0.00012	0.00036		0.00023	0.00068
	11302	11869		0.00028	0.00083		0.00011	0.00034		0.00016	0.00049
	11303	11870		0.00015	0.00046		0.00012	0.00035		0.00016	0.00049
	11304	11871		0.00012	0.00037		0.00010	0.00029		0.00017	0.00052
	11305	11872		0.00015	0.00044		0.00009	0.00026		0.00016	0.00049
	11306	11873		0.00012	0.00036		0.00008	0.00024		0.00012	0.00037
	11307	11874		0.00007	0.00020		0.00008	0.00023		0.00009	0.00027
	11308	11875		0.00078	0.00235		0.00014	0.00041		0.00037	0.00111
	11309	11876		0.00060	0.00179		0.00012	0.00037		0.00026	0.00077
	11310	11877		0.00042	0.00125		0.00014	0.00043		0.00020	0.00060
	11311	11878		0.00025	0.00075		0.00014	0.00041		0.00018	0.00055
	11312	11879		0.00015	0.00046		0.00012	0.00036		0.00018	0.00055
	11313	11880		0.00014	0.00042		0.00012	0.00035		0.00018	0.00053
	11314	11881		0.00012	0.00036		0.00011	0.00032		0.00014	0.00042
	11315	11882		0.00010	0.00031		0.00011	0.00034		0.00010	0.00030
	11316	11883		0.00068	0.00205		0.00020	0.00059		0.00038	0.00113
	11317	11884		0.00054	0.00161		0.00019	0.00057		0.00029	0.00087
	11318	11885		0.00040	0.00119		0.00019	0.00056		0.00023	0.00068
	11319	11886		0.00026	0.00077		0.00015	0.00045		0.00018	0.00053
	11320	11887		0.00018	0.00053		0.00013	0.00038		0.00017	0.00052
	11321	11888		0.00016	0.00047		0.00014	0.00042		0.00017	0.00052
	11322	11889		0.00013	0.00038		0.00012	0.00036		0.00014	0.00043
	11323	11890		0.00007	0.00021		0.00007	0.00022		0.00008	0.00025

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Report Documentation Page

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13. ABSTRACT (Maximum 200 words)

This is the METSAT Stress Analysis Report for the Integrated Advanced Microwave Sounding Unit-A (AMSU-A) A1.

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J. Kirk	28 Aug 96		

APPROVAL SIGNATURES	DEPT. NO.	DATE
Responsible Engineer (R. Heffner) R Heffner	8611	8-28-96
Technical Director/Program Office (R. Hauerwaas) R V Hauerwaas	4001	8/28/96
Performance Assurance (R. Taylor) R M Taylor	5331	8/29/96
Configuration Management (J. Cavanaugh) J Cavanaugh	8611	8/29/96

By my signature, I certify the above document has been reviewed by me and concurs with the technical requirements related to my area of responsibility.

RELEASE (Data Center) FINAL

Please return this sheet and the reproducible master to the Data Center (119/8651), ext. 2231.

Electronic Systems Plant

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