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NASTRAN MODEL OF A LARGE FLEXIBLE SWING-WING BOMBER

**Volume II: NASTRAN Model Development—Horizontal Stabilizer,
Vertical Stabilizer, and Nacelle Structures**

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W. D. Mock, R. A. Latham, and E. D. Tisher

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NASTRAN MODEL OF A LARGE FLEXIBLE SWING-WING BOMBER

**Volume II: NASTRAN Model Development—Horizontal Stabilizer,
Vertical Stabilizer, and Nacelle Structures**

W. D. Mock, R. A. Latham, and E. D. Tisher
Rockwell International
Los Angeles Division
Los Angeles, California

Prepared for Dryden Flight Research Facility
under Contract NAS4-2348



National Aeronautics and
Space Administration

1982

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NASTRAN MODEL OF A LARGE FLEXIBLE SWING-WING BOMBER

Volume II: NASTRAN Model Development—Horizontal Stabilizer, Vertical Stabilizer, and Nacelle Structures

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SUMMARY

This report describes the development and validation of the NASTRAN models of the B-1 aircraft No. 2 (A/C-2) horizontal stabilizer, vertical stabilizer, and nacelle structure. These three NASTRAN model substructures will be utilized as part of the total aircraft structural model. The remaining structural components subsequently will be modeled for the assembly of the total aircraft NASTRAN model. The intent is to utilize the NASTRAN model computed stiffness matrix in conjunction with the FLEXSTAB program for aeroelastic analysis. The application of these advanced programs on a large flexible aircraft that has accumulated flight data will add to the technology base for future transport aircraft.

During this contract phase, the NASTRAN model plans for the horizontal stabilizer, vertical stabilizer, and nacelle structure were expanded in detail to generate the NASTRAN model for each of these substructures. The grid point coordinates were coded for each element. The material properties and sizing data for each element were specified.

Each substructure model was thoroughly checked out for continuity, connectivity, and constraints. These substructures were processed for structural influence coefficients (SIC) point loadings and the deflections were compared to those computed for the aircraft detail models. Finally, a demonstration and validation processing of these substructures was accomplished using the NASTRAN finite element program installed at NASA/DFRC facility. The bulk data decks, stiffness matrices, and SIC output data were delivered to NASA DFRC.

INTRODUCTION

A/C-2 (figure 1) is being employed in the airloads survey flight test program. This aircraft has undergone extensive ground testing to calibrate the

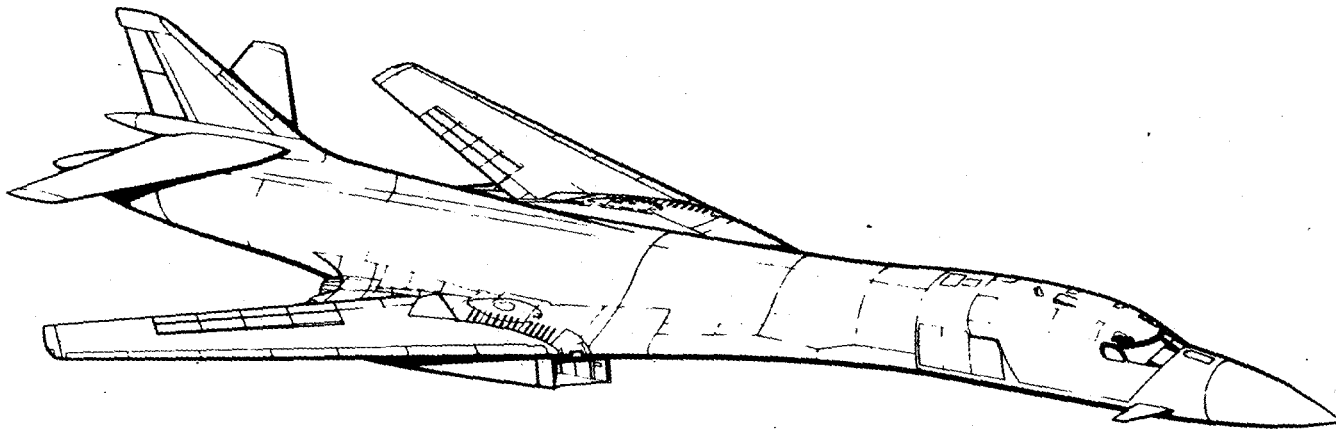


Figure 1. - B-1 aircraft.

strain gages utilized in the airloads survey. The aircraft provides a reasonable simulation of a future transport aircraft since it employs the large flexible structure (figure 2) envisioned in future transport designs.

The airloads data gathered during the flight test program can be utilized in the evaluation of NASA computer programs recently developed to enhance the analytical techniques of predicting aeroelastic response of large flexible aircraft. These analytical techniques include computerized structural analysis programs such as NASTRAN and FLEXSTAB.

Since the B-1 development program involves all experimental tests needed to correlate the analytical predictions with actual measured results, detailed plans for constructing a NASTRAN structural model of the B-1 airframe, suitable for use on the NASA/DFRC Cyber computer, were initiated. This model is of minimum complexity to give satisfactory flexibility characteristics for the FLEXSTAB aeroelastic analysis. Included in this model are the control surfaces, the control system stiffness, and the secondary leading edge and trailing edge structure. During this contract phase, the detailed plans for constructing a NASTRAN structure model for three substructures were implemented. The plans were expanded in detail to generate the NASTRAN model for the horizontal stabilizer, vertical stabilizer, and nacelle structure. Grid point coordinates for each substructure were coded for each element and the material properties and sizing data were specified. The bulk data for each substructure were thoroughly checked using interactive graphics techniques. The data were evaluated for continuity, connectivity, and constraints. In addition, the SIC point loadings were applied to compute the deflections which were compared with the aircraft-computed deflections. A demonstration and validation processing of these NASTRAN model substructures was accomplished using the NASTRAN finite element program installed on the NASA/DFRC Cyber computer.

AIRCRAFT DESCRIPTION

The B-1 aircraft is a prototype long-range supersonic bomber with the capability of high-speed flight at low altitude. Configuration dimensions and general arrangement are presented in figure A-1. The aircraft utilizes a blended wing-body concept with variable-sweep wings, a single vertical stabilizer with a three-section (upper, intermediate, and lower) rudder, and horizontal stabilizers which operate independently to provide both pitch and roll control. The variable-sweep (15 to 67.5 degrees) wing, equipped with slats, spoilers (which also function as speed brakes), and flaps, provides the aircraft with a highly versatile operating envelope. Canted vanes, mounted on each side of the forward fuselage, are part of the structural modal control system which reduces structural bending oscillations in the vertical and lateral axes.

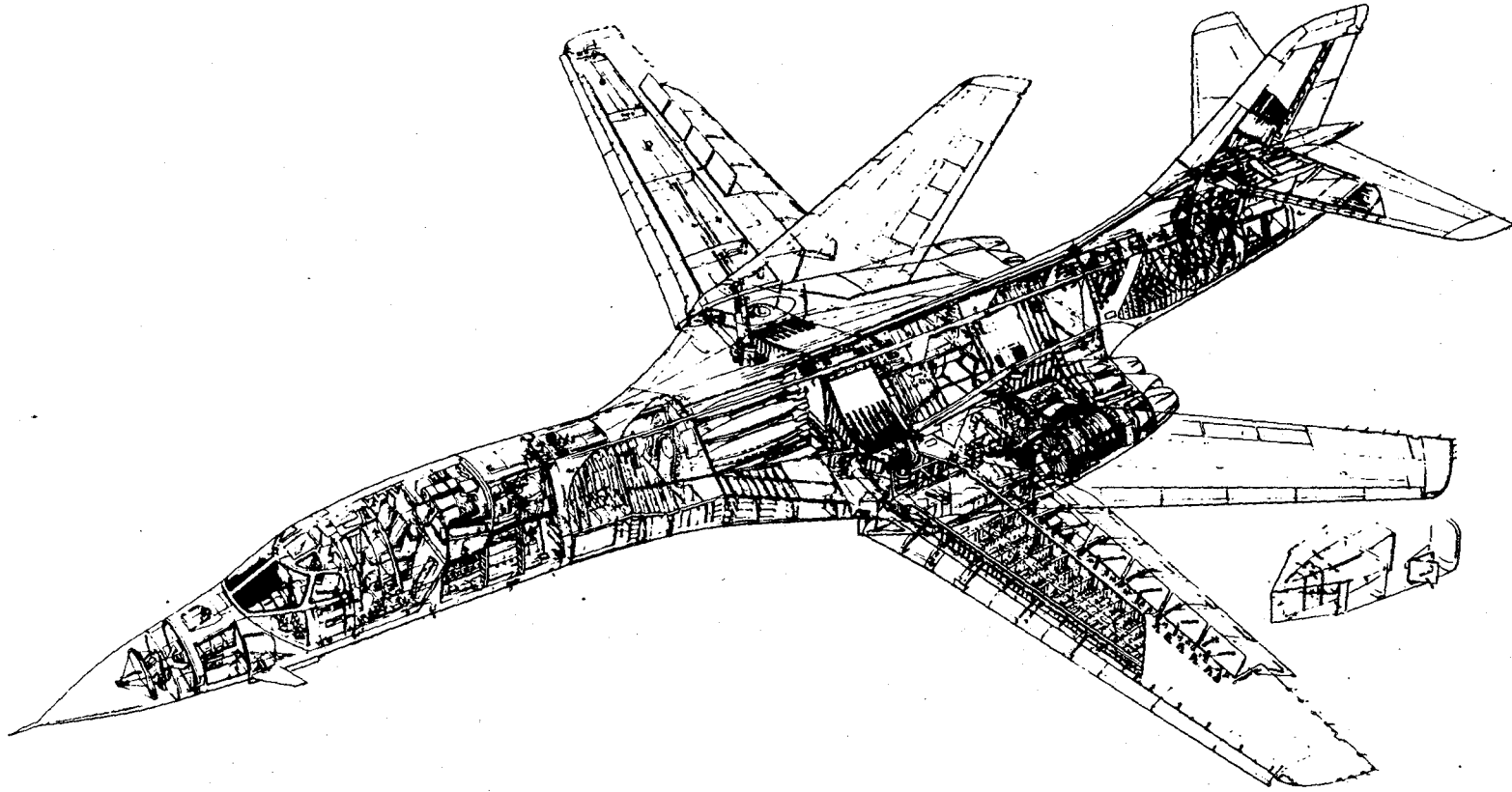


Figure 2. - Structural breakdown.

The aircraft is powered by four YF1-1-GE-100 dual-rotor augmented turbofan engines in the 30,000-pound-thrust class. The engines are mounted in twin nacelles below the wing, approximately at the left and right wing pivot points. For supersonic speeds, an air induction control system varies the internal geometry of the nacelle inlet ducts to maintain the required airflow to the engines for all flight conditions.

Horizontal Stabilizer

The horizontal stabilizer (figure A-2) consists of left and right slab panels attached to a steel spindle projecting out of the aft fuselage stub structure. Both left and right panels rotate on bearings and are independently controlled in order for the stabilizer to provide pitch and roll control of the aircraft. Each panel consists of a main structural box, a leading edge assembly, a trailing edge assembly, a tip assembly, an aerodynamics chord plane seal at the inboard end, and an air seal around the spindle.

Vertical Stabilizer

The vertical stabilizer consists of the main box structure, leading edge assembly, tip assembly, and trailing edge structure (figure A-3). The main box assembly supports the two upper rudder segments. Routing tunnels are provided in enclosed areas of the main box structure for electrical and cooling lines required to support avionics and antenna equipment in the tip and leading edge components. The rudder consists of three segments. The upper two segments are attached to the vertical stabilizer through power hinge fittings and are actuated by hydraulic motors in the horizontal stabilizer actuator fairing. The lower rudder segment is supported by conventional hinge fittings and is actuated by linear actuators between the rudder and aft fuselage structure.

The vertical stabilizer is attached to the aft fuselage principally through a double-shear attachment provided on the horizontal stabilizer spindle fitting. The vertical stabilizer is mechanically attached to the spindle fitting by close-tolerance, high-strength bolts.

Nacelle

The nacelle is constructed of aluminum alloy, titanium alloy, stainless steel, and fiber glass laminates. The structure is semimonocoque consisting of skins, frames, longerons, and a honeycomb sandwich duct (figure A-4). Each nacelle is fabricated in two major sections, the forward section and the engine compartment.

The forward section consists of the inlet section, the duct assembly, the ramps, and the center beam. The inlet section consists of the center splitter wedge and the upper and lower leading edges. Portions of the upper and lower leading edges are porous for boundary layer control. The duct assemblies consist of engine air intake ducts supported by frames and stringers and covered with an external skin. In the forward area, the duct wall is covered with aluminum-machined skin. The intermediate and aft duct walls are covered with fiber glass honeycomb sandwich. The inboard wall of the duct is made up of a fixed duct and movable ramps which provide for a variable-geometry system for air induction control. The center beam consists of four main longerons, interconnecting shear panels, appropriate frames, and the forward nacelle attach point, and is the primary vertical bending member of the nacelle.

The engine compartment consists of the principal firewall bulkhead, the structure between the two engines, the primary engine attach points, and the aft nacelle attach points. Large hinged engine access doors are provided to complete the engine enclosure. Construction is frame, skin, and longeron.

The nacelle is attached to the aircraft at four points. The forward attach point is a single fitting on the top of the centerbeam structure, which is connected to the wing-pivot pin through a ball joint. The other three attach points are in the engine section in line with the rear engine support. They consist of links, two vertical and one horizontal, which connect the nacelle to the heavy support frame extending from the aft intermediate fuselage.

NASTRAN MODELS

The detailed plans for the finite element modeling of the A/C-2 structure intended for use with the NASA/COSMIC release of NASTRAN level 16.0 on the NASA/DFRC Cyber computer constrains the model to the minimum complexity to give satisfactory flexibility characteristics for FLEXSTAB aeroelastic analysis.

The NASTRAN model plans specify seven substructures consisting of the following:

- (1) Horizontal stabilizer; leading edge, and trailing edge
- (2) Vertical stabilizer; leading edge, and rudders
- (3) Nacelle structure
- (4) Wing outer panel, flaps, slats, and outboard transition ribs
- (5) Forward fuselage structure

(6) Aft fuselage structure, wing carry-through structure (WCTS), and inboard transition lugs

(7) Overwing and underwing fairings

In addition to modeling the A/C-2 airframe structure to represent the flexibility characteristics, the model was designed to provide stress data at the airload survey strain gage locations for each component. In these regions, the model complexity was increased to provide the desired accuracy. In some regions, the complexity was dictated by the NASTRAN aspect ratio constraints. During this contract phase, the NASTRAN model plans for the horizontal stabilizer, vertical stabilizer, and nacelle structure were implemented to generate the NASTRAN model for each of these substructures. The description of these models, which have been demonstrated and validated on the NASA/DFRC Cyber computer system, is presented in this report.

Horizontal Stabilizer Model

The NASTRAN model of the horizontal stabilizer structure is configured to be representative of the A/C-2 horizontal stabilizer structure. The upper and lower cover skins are defined using membrane elements. The spars and ribs are represented by rods and shear panel elements. Bar elements are utilized where the skin cover nodes require stabilization for loading applied normal to the surface. The model coordinates extend to include the secondary leading edge, trailing edge, and tip structure not previously shown in the initial NASTRAN model plans. A summary of the NASTRAN elements used in the assembly of the horizontal stabilizer model is presented in table I.

The NASTRAN model diagrams for the horizontal stabilizer structure are presented in figures C-1 through C-27. The node numbers and element numbers are shown on these diagrams. The model complexity has been increased at airloads survey strain gage locations to provide stress recovery data. These strain gages were calibrated during the A/C-2 proof and calibration tests. The locations of the gages are indicated on the nodal diagrams.

The NASTRAN model bulk data identifying the coordinates and elements sizing are presented on pages 77 through 131. A description of these bulk data is presented on pages 23 through 40 for each element type utilized.

The Airloads Research Study NASTRAN model was thoroughly checked out for continuity, connectivity, and constraints, using interactive graphics shown in figure C-28. This model was then processed for the loading applied at each SIC point (figure C-29) with the model constrained at the inboard and outboard bearing points and the actuation system. The deflections computed for these SIC loadings were compared with those computed for the A/C-2 horizontal

TABLE I. - ARS NASTRAN MODEL STATISTICS

Description of substructure	NASTRAN model elements					
	No. of grids	Rods	Bars	Shear panels	Membranes	Plates
Horizontal stabilizer	535	892	86	299	565	0
Vertical stabilizer	309	398	20	227	165	0
Nacelle	317	405	201	288	37	44
Element	NASTRAN nomenclature					
Rod	= CONROD					
Bar	= CBAR					
Shear panel	= CSHEAR					
Membrane	= CQDMEM2 and CTRMEM					
Plate	= CQUAD1 and CTRIAL					

stabilizer detailed finite element model with identical constraints.

The comparison of these computed deflections along the front spar is shown in figure C-30. The deflections are compared at SIC points 1, 6, 11, 16, 21, 26, 31, 36, and 41 for unit loads applied at SIC points 11, 21, 31, and 41. A similar comparison of the deflections computed along the rear spar is presented in figure C-31. These deflections are plotted at SIC points 4, 9, 14, 19, 24, 29, 34, 39, and 44 along the rear spar for unit loads applied at SIC points 14, 24, 34, and 44. Deflections along the ribs were also compared with those obtained from A/C-2 influence coefficients data. Figure C-32 presents the computed deflections along butt plane 102.14 and 164.18 as compared with the rigid root A/C-2 influence coefficient data. Figure C-33 presents the NASTRAN horizontal stabilizer model deflections at butt plane 216.19 and 258.75 versus A/C-2 influence coefficient values.

Vertical Stabilizer Model

The NASTRAN model of the vertical stabilizer structure is configured to be representative of the A/C-2 vertical stabilizer structure. The cover skins are defined using membrane elements. The spars and ribs are represented by rods and shear panel elements. Bar elements are used for the tail cone frames and where skin cover nodes require stabilization, the model coordinates extend to include the secondary leading edge and tip structure. The rudder actuator mechanism is simulated to provide the stiffness characteristics of the actuator under applied load. A summary of the NASTRAN elements used in the assembly of the vertical stabilizer model is presented in table I.

The NASTRAN model diagrams for the vertical stabilizer structure are presented in figures D-1 through D-19. The node numbers and element numbers are shown on these diagrams. The model complexity was increased at the airloads survey strain gage locations, near the vertical tail root region, to provide stress data. The strain gage locations are indicated on the nodal point diagram for the model.

The NASTRAN model bulk data identifying the coordinates and element sizing are presented on pages 161 through 190. A description of these bulk data is presented on pages 23 through 40 for each element type utilized.

The Airloads Research Study NASTRAN model was thoroughly checked out for continuity, connectivity, and constraints, using interactive graphics shown in figure D-20. This model was then processed for the loading applied at each SIC point (figure D-21) with the model constrained at the rear spar attachment to the fuselage supporting structure. The deflections computed for these SIC loadings were compared with those computed for the A/C-2 vertical stabilizer detailed finite element model with identical constraints.

The comparison of these computed deflections along the rear spar is shown in figure D-22. These deflections are compared at SIC points 18, 25, 32, 39, 46, and 53 for unit loads applied at SIC points 32, 46, and 53. A similar comparison of the deflections computed along the front spar is presented in figure D-23. The deflections are compared for SIC points 23, 30, 37, 44, and 51 for unit loads at SIC points 37, 44, and 51. Deflections of the NASTRAN model were also compared with those of the A/C-2 influence coefficients along the horizontal direction. Figure D-24 presents the computed deflections for SIC points located along the $Z = 80.67$ axis compared to the rigid-root A/C-2 influence coefficient data. Additional NASTRAN vertical stabilizer model deflections for SIC points along the $Z = 167.18$ are presented in figure D-25.

Nacelle Model

The NASTRAN model of the nacelle structure is configured to provide a suitable stiffness representation of the A/C-2 nacelle structure. The inlet duct liner walls have been consolidated with the exterior aerodynamic surfaces and adjustments have been made to the sizing of the structural members to provide an overall simulation of the nacelle structural stiffness characteristics. The coordinates of the nacelle model encompass the exterior mold lines to provide loading surfaces for aerodynamic pressures.

The nacelle model is constructed with rod, bar, shear panel, membrane, and plate elements. The nacelle shell surface is defined by shear panel elements connecting to the rod elements that represent the axial load-carrying members. The frame structure is defined by rod elements for the cap members with shear panel elements simulating the frame webs. Bar elements are utilized for nacelle frame structure where bending capability is required. Plate elements are used to define the access doors. A statistical summary of the element type used in the nacelle NASTRAN model is presented in table I.

The NASTRAN model diagrams for the nacelle structure are presented in figures E-1 through E-34. The node numbers and element numbers are shown on these diagrams.

The NASTRAN model bulk data identifying the coordinates and element sizing are presented on pages 236 through 267. A description of these bulk data is presented on pages 23 through 40 for each element type utilized.

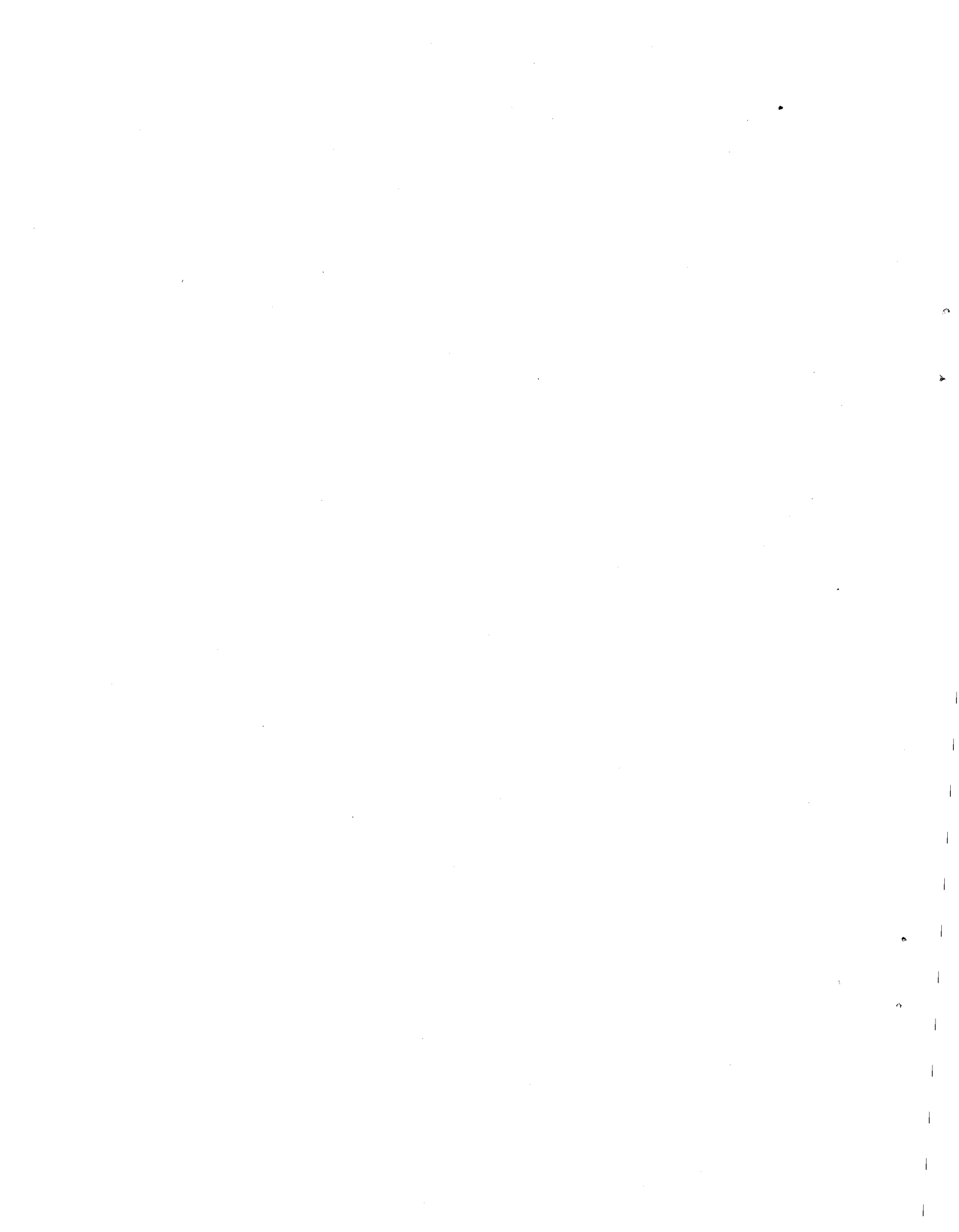
The Airloads Research Study NASTRAN model was thoroughly checked out for continuity, connectivity, and constraints, using interactive graphics shown in figures E-35 through E-39. This model was then processed for loading applied at each SIC point (figure E-40 and table II) with the model supported at the forward and aft attach points. The deflections computed for typical SIC loadings are shown in figures E-41 and E-42.

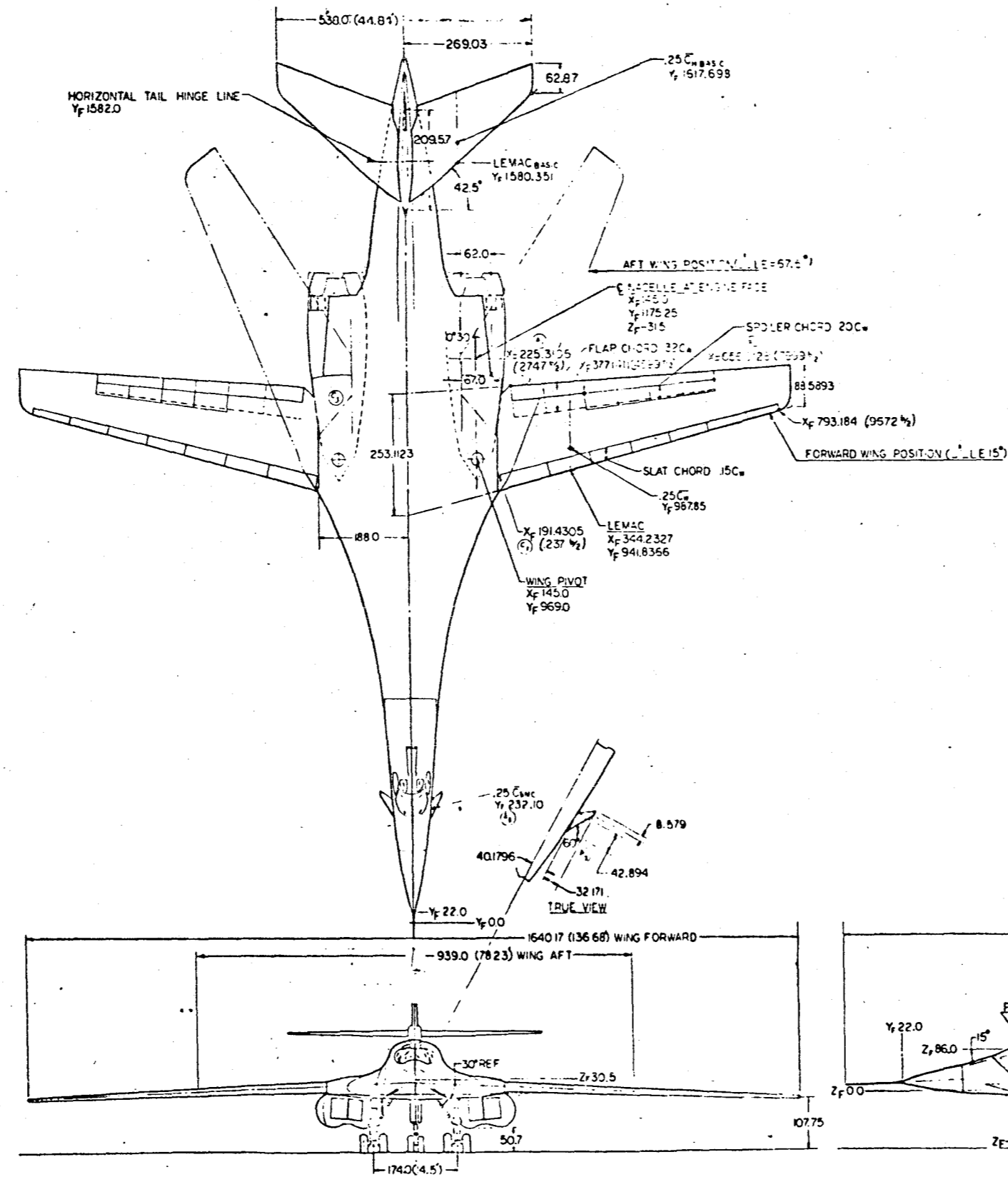
BULK DATA

The NASTRAN model coordinates, sizing, material properties, and loading data are presented in the NASTRAN program input format. Since these data are identified by column numbers for each element type, excerpts of the NASTRAN User's Manual are included. The format of the sorted bulk data for each element type is presented on pages through . This format is applicable to the NASTRAN model bulk data presented herein for each substructure.

Appendix A

FIGURES USING ENGINEERING UNITS





GEOMETRIC DATA

ITEM	WING	HORIZONTAL TAIL TOTAL	VERTICAL TAIL TOTAL	STRUCTURAL MODE CONTROL
AREA ~ SQ. FT.	1946.0 (1946 REF)	509.0	247.4	11.5
ASPECT RATIO	9.5	3.14	3.95	2.5
TAPER RATIO	35	30	30	20
THICKNESS RATIO	REF LINES DRAWN	REF: M/D 2/14	REF: M/D 2/14	.05
AIRFOIL SECTION	VA69-1902 DB-21			65-005
LEADING EDGE SWEEP	15.0°	67.5°	42.5°	45° AT .25C
DIHEDRAL ANGLE	-.94	0°	0°	-30.0°
INCIDENCE ANGLE	0°	0°	0°	DEFL ± 20.0°
MAC LENGTH - INCHES	194.053	149.385	188.954	29.55
MAC LOCATION	344.2327	110.373	84.825	12.510 TRUE

CONTROL SURFACE DATA

ITEM	FLAP	SPOILER	SLAT	RUDDER	HORIZ TAIL
TYPE	SINGLE-SLOTTED	UPPER SURFACE ONLY	POWERED		ALL MOVABLE
AREA - SQ FEET	310.38	115.0	187.62	60.6	474.5
DEFLECTION	25°	0° TO 70° UP	20.0°	FLAP ON 120° FLAP UP 140°	RTN ± 20.0°

LANDING GEAR DATA

ITEM	MAIN	AUXILIARY
TIRE SIZE & TYPE	C44.5x16.0-21 TWIN TANDEM	35x11.5-16 TWIN
PLY RATING	24	24
ROLLING RADIUS - INCHES	18.4	14.79
FLAT RADIUS - INCHES	13.6	11.3
STRUT - TOTAL STROKE - IN	16.5	22.0
STRUT - STATIC TO COMPRESSED	3.5	7.0

PROPULSION DATA

FOUR 100% SIZE GENERAL ELECTRIC YF101 - GE-100 ENGINES
 2-D VARIABLE RAMP INLETS - CAPTURE AREA = 1441 SQ. IN. PER ENGINE

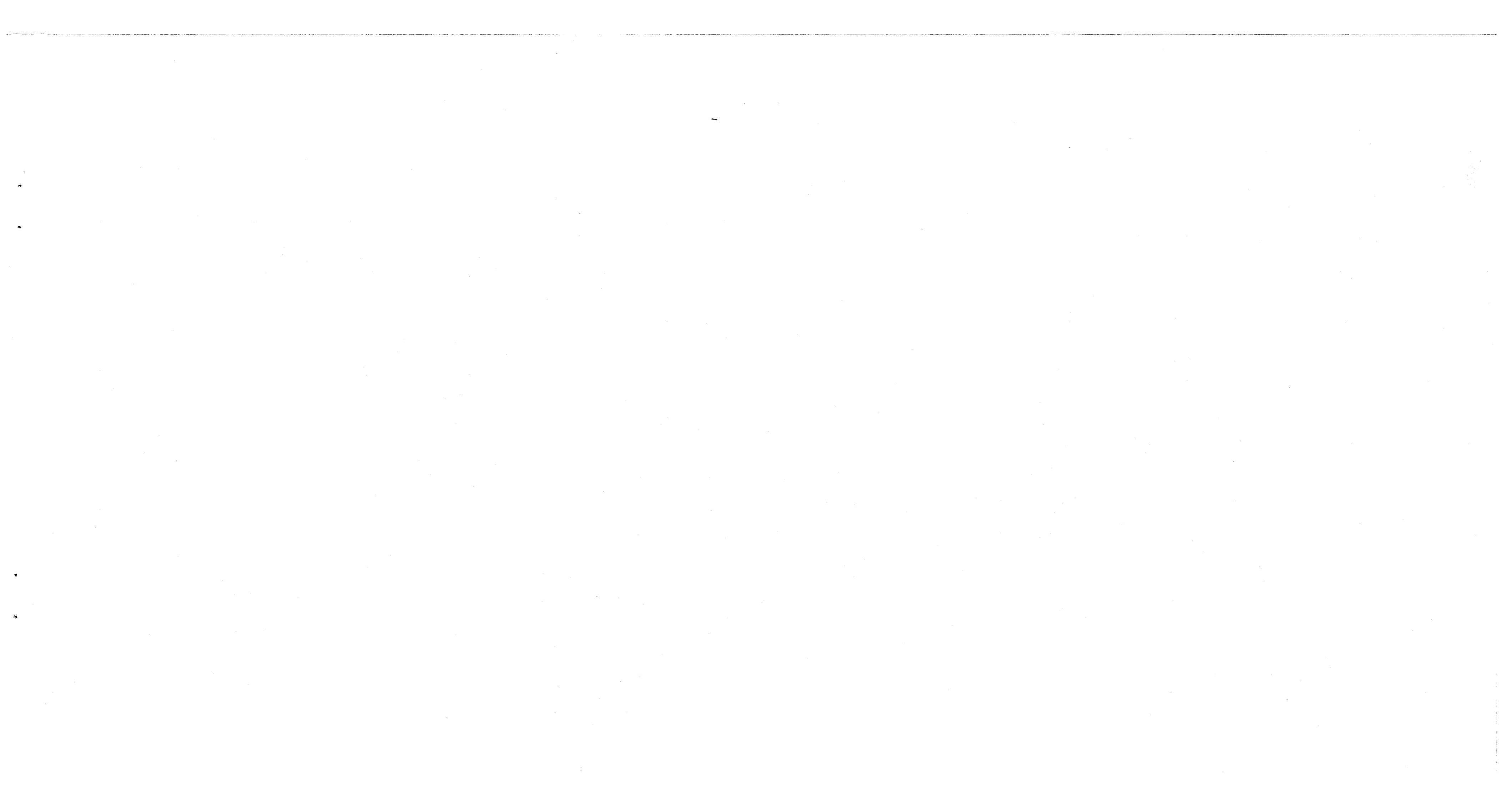
WEIGHT DATA

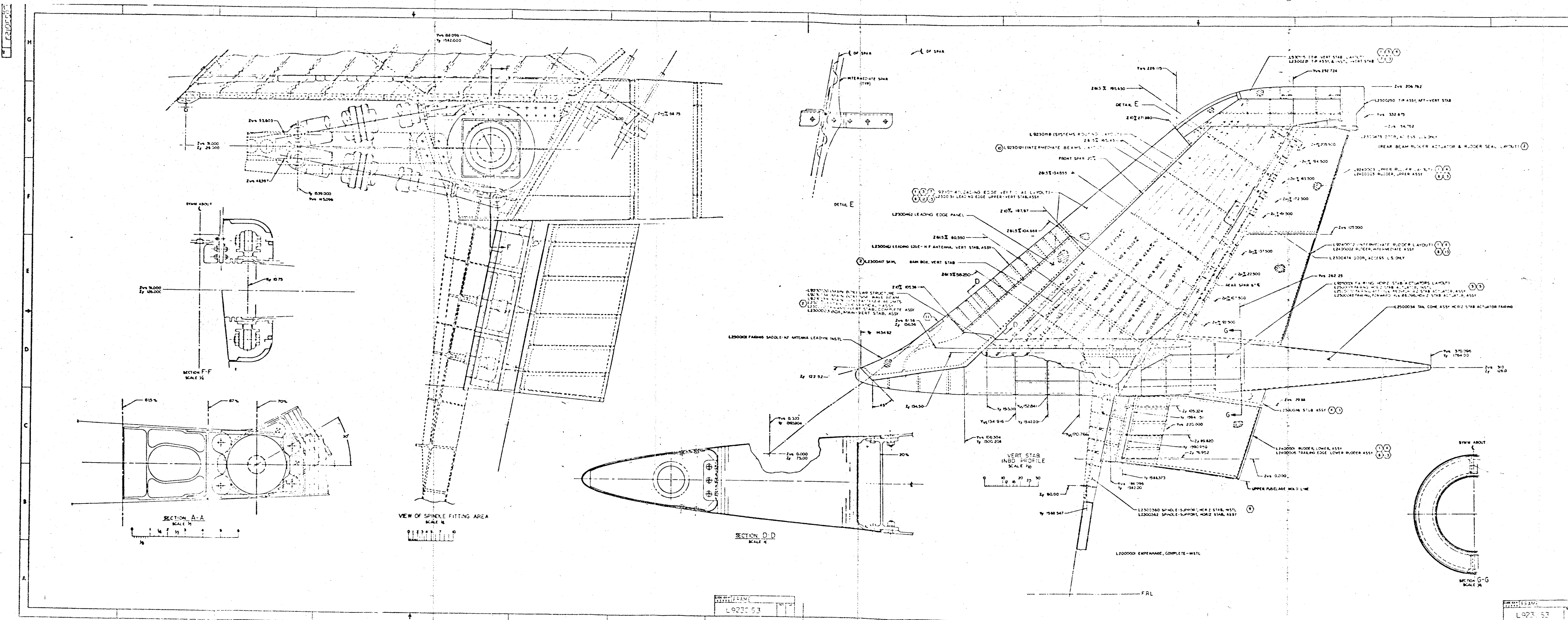
AIRCRAFT EMPTY WEIGHT	~ LB =	SEE SDW CODE 12-B-7
DESIGN USEFUL LOAD	~ LB =	SEE SDW CODE 12-B-1
DESIGN GROSS WEIGHT-TAXI	~ LB =	360,000
MAXIMUM GROSS WEIGHT	~ LB =	390,000

ITEM	DESCRIPTION	REVISION
1	REVISION	
2	REVISION	
3	REVISION	
4	REVISION	
5	REVISION	
6	REVISION	
7	REVISION	
8	REVISION	
9	REVISION	
10	REVISION	

GENERAL ARRANGEMENT THREE
 VIEW ROUTE A1 / 101 & 2

Figure A-1. - General arrangement - RDT&E A/C-1 and -2.





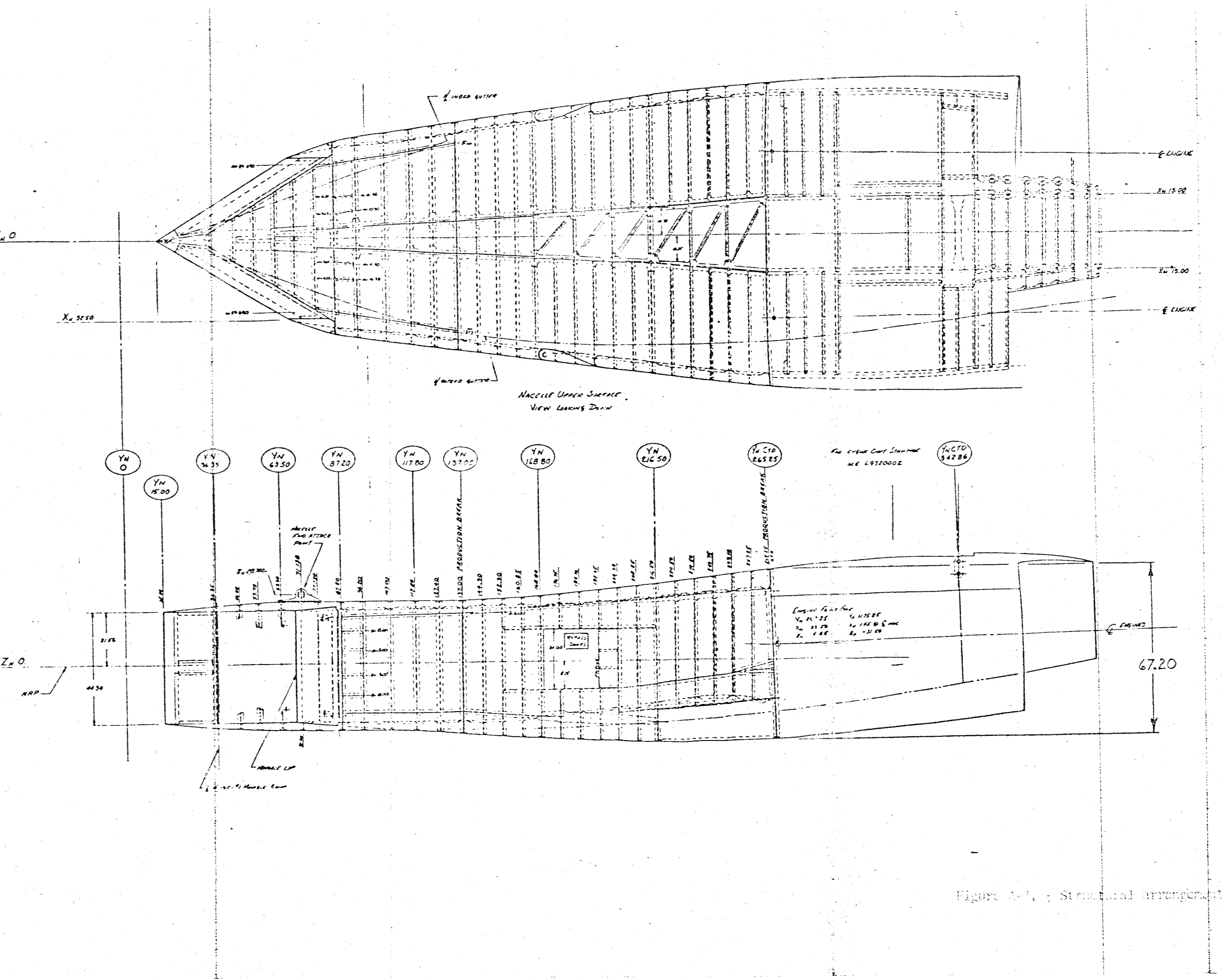
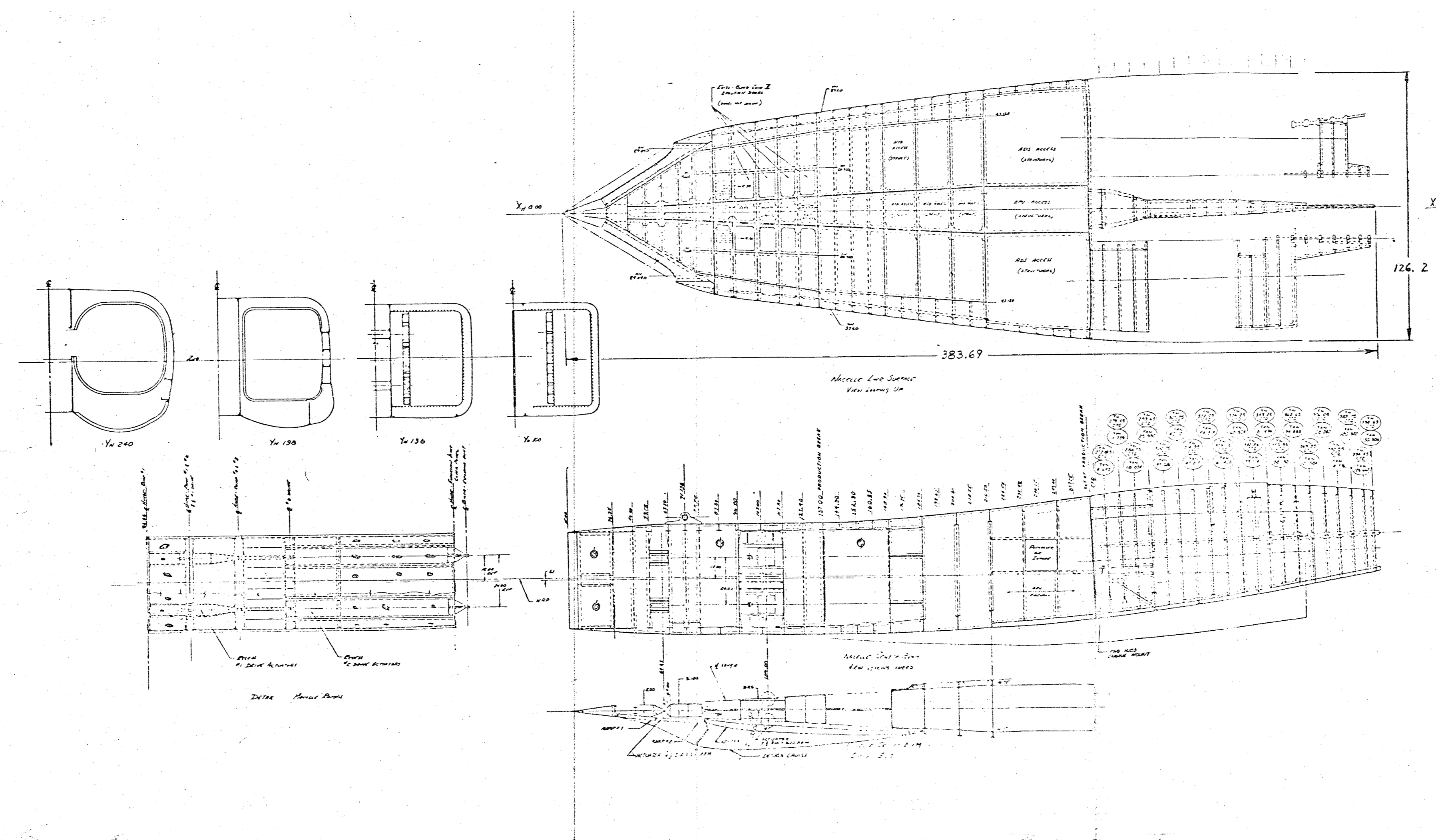
- MATERIAL CODE**
- ① 2024-T3 AL SHEET (30 X 250 X .04)
 - ② 2024-T3 AL SHEET (50 X 250 X .04)
 - ③ 2024-T3 AL SHEET (50 X 250 X .04)
 - ④ 2024-T3 AL SHEET (50 X 250 X .04)
 - ⑤ 2024-T3 AL SHEET (50 X 250 X .04)
 - ⑥ 2024-T3 AL SHEET (50 X 250 X .04)
 - ⑦ 2024-T3 AL SHEET (50 X 250 X .04)
 - ⑧ 2024-T3 AL SHEET (50 X 250 X .04)
 - ⑨ 2024-T3 AL SHEET (50 X 250 X .04)
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 - ⑪ 2024-T3 AL SHEET (50 X 250 X .04)
 - ⑫ 2024-T3 AL SHEET (50 X 250 X .04)
 - ⑬ 2024-T3 AL SHEET (50 X 250 X .04)
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 - ⑮ 2024-T3 AL SHEET (50 X 250 X .04)
 - ⑯ 2024-T3 AL SHEET (50 X 250 X .04)
 - ⑰ 2024-T3 AL SHEET (50 X 250 X .04)
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 - ⑲ 2024-T3 AL SHEET (50 X 250 X .04)
 - ⑳ 2024-T3 AL SHEET (50 X 250 X .04)
 - ㉑ 2024-T3 AL SHEET (50 X 250 X .04)
 - ㉒ 2024-T3 AL SHEET (50 X 250 X .04)
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 - ㊾ 2024-T3 AL SHEET (50 X 250 X .04)
 - ㊿ 2024-T3 AL SHEET (50 X 250 X .04)

GEOMETRIC & CONTROL SPACE DATA

ITEM	REF. DIM.	BUDDER
AREA - SQ. FT.	1414	80.9
PERIMETER - IN.	1000	80.9
THICKNESS - IN.	0.04	80.9
AMOUNT - SECTION	25 X 25 X 1/2	80.9
SECTION - TYPE	25 X 25 X 1/2	80.9
SECTION - DIM.	25 X 25 X 1/2	80.9
SECTION - AREA	25 X 25 X 1/2	80.9
SECTION - PERIMETER	25 X 25 X 1/2	80.9
SECTION - THICKNESS	25 X 25 X 1/2	80.9
SECTION - WEIGHT	25 X 25 X 1/2	80.9
SECTION - DETECTION	25 X 25 X 1/2	80.9

DATE	1973 03
BY	143930
CHECKED	143930
APPROVED	143930
SCALE	AS SHOWN
TITLE	VERT STAB ARRANGEMENT
PROJECT	55-B-C-13
WORK CENTER	143930
REVISIONS	

Figure A-3. Vertical stabilizer structural arrangement. 17/18



REVISIONS

A	REVISIONS
B	REVISIONS
C	REVISIONS
D	REVISIONS

Figure 1-1. Structural arrangement - nacelle external compression inlet (continued)

STRUCTURAL ARRANGEMENT

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Appendix B

NASTRAN MODEL BULK DATA FORMAT



BULK DATA DECK

Input Data Card CBAR Simple Beam Element Connection

Description: Defines a simple beam element (BAR) of the structural model.

Format and Example:

1	2	3	4	5	6	7	8	9	10
CBAR	EID	PID	GA	GB	X1,GO	X2	X3	F	abc
CBAR	2	39	7	3	13			2	123
+bc	PA	PB	Z1A	Z2A	Z3A	Z1B	Z2B	Z3B	
+23		513							

Field

Contents

- EID Unique element identification number (Integer > 0)
- PID Identification number of a PBAR property card (Default is EID unless BARØR card has nonzero entry in field 3) (Integer > 0 or blank*)
- GA,GB Grid point identification numbers of connection points (Integer > 0; GA ≠ GB)
- X1,X2,X3 Components of vector \vec{v} , at end a, (figure 1(a) on page 1.3-15) measured at end a, parallel to the components of the displacement coordinate system for GA, to determine (with the vector from end a to end b) the orientation of the element coordinate system for the bar element (Real, $X1^2 + X2^2 + X3^2 > 0$ or blank*, see below).
- GO Grid point identification number to optionally supply X1, X2, X3 (integer > 0 or blank*) (see below)
- F Flag to specify the nature of fields 6-8 as follows:

	6	7	8
F = blank*			
F = 1	X1	X2	X3
F = 2	GO	blank/0	blank/0

- PA,PB Pin flags for bar ends a and b, respectively, that are used to insure that the bar cannot resist a force or moment corresponding to the pin flag at that respective end of the bar. (Up to 5 of the unique digits 1-6 anywhere in the field with no imbedded blanks; integer > 0) (These degree of freedom codes refer to the element forces and not global forces. The bar must have stiffness associated with the pin flag. For example, if pin flag 4 is specified, the bar must have a value for J, the torsional constant.)
- Z1A,Z2A,Z3A Components of offset vectors \vec{w}_a and \vec{w}_b , respectively, (see figure 1(a), page 1.3-15) in displacement coordinate systems at points GA and GB, respectively. (Real or blank)

- Remarks:
1. Element identification numbers must be unique with respect to all other element identification numbers.
 2. For an explanation of bar element geometry, see Section 1.3.2.
 3. Zero (0) must be used in fields 7 and 8 in order to override entries in these fields associated with F = 1 in field 9 on a BARØR card.
 4. If there are no pin flags or offsets, the continuation card may be omitted.

BULK DATA DECK

Input Data Card CØNRØD Rod Element Property and Connection

Description: Defines a rod element of the structural model without reference to a property card.

Format and Example:

1	2	3	4	5	6	7	8	9	10
CØNRØD	EID	G1	G2	MID	A	J	C	NSM	
CØNRØD	2	16	17	23	2.69				

Field

Contents

EID Unique element identification number (Integer > 0)
 G1, G2 Grid point identification numbers of connection points (Integer > 0; G1 ≠ G2)
 MID Material identification number (Integer > 0)
 A Area of rod (Real)
 J Torsional constant (Real)
 C Coefficient for torsional stress determination (Real)
 NSM Nonstructural mass per unit length (Real)

- Remarks:
1. Element identification numbers must be unique with respect to all other element identification numbers.
 2. For structural problems, CØNRØD cards may only reference MAT1 material cards.
 3. For heat transfer problems, CØNRØD cards may only reference MAT4 or MAT5 material cards.

BULK DATA DECK

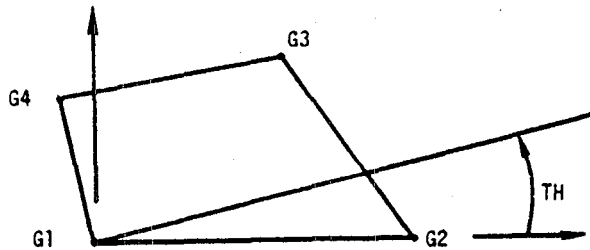
Input Data Card QDMMEM2 Quadrilateral Element Connection

Description: Defines a quadrilateral membrane element (QDMMEM2) of the structural model consisting of four nonoverlapping TRMEM elements.

Format and Example:

1	2	3	4	5	6	7	8	9	10
QDMMEM2	EID	PID	G1	G2	G3	G4	TH		
QDMMEM2	72	13	13	14	15	16	29.2		

<u>Field</u>	<u>Contents</u>
EID	Element identification number (Integer > 0)
PID	Identification number of a PQDMMEM2 property card (Default is EID) (Integer > 0)
G1,G2,G3,G4	Grid point identification numbers of connection points (Integer > 0; G1 ≠ G2 ≠ G3 ≠ G4)
TH	Material property orientation angle in degrees (Real) The sketch below gives the sign convention for TH



- Remarks:
1. Element identification numbers must be unique with respect to all other element identification numbers.
 2. Grid points G1 through G4 must be ordered consecutively around the perimeter of the element.
 3. All interior angles must be less than 180 degrees.

BULK DATA DECK

input Data Card CQUAD1 Quadrilateral Element Connection

Description: Defines a quadrilateral membrane and bending element (QUAD1) of the structural model.

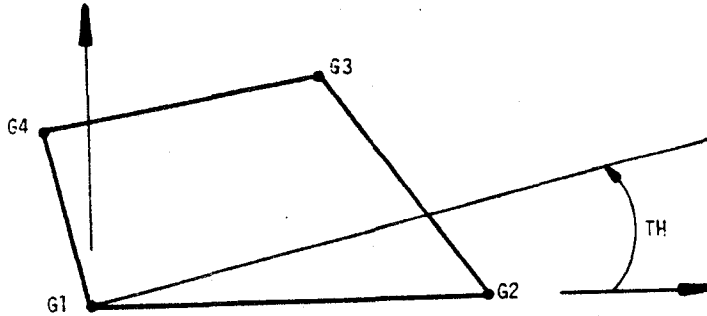
Format and Example:

1	2	3	4	5	6	7	8	9	10
CQUAD1	EID	PID	G1	G2	G3	G4	TH		
CQUAD1	72	13	13	14	15	16	29.2		

Field

Contents

EID Element identification number (Integer > 0)
 PID Identification number of a PQUAD1 property card (Default is EID) (Integer > 0)
 G1,G2,G3,G4 Grid point identification numbers of connection points (Integer > 0;
 G1 ≠ G2 ≠ G3 ≠ G4)
 TH Material property orientation angle in degrees (Real)
 The sketch below gives the sign convention for TH.



- Remarks:
1. Element identification numbers must be unique with respect to all other element identification numbers.
 2. Grid points G1 thru G4 must be ordered consecutively around the perimeter of the element.
 3. All interior angles must be less than 180°.

BULK DATA DECK

Input Data Card CSHEAR Shear Panel Element Connection

Description: Defines a shear panel element (SHEAR) of the structural model.

Format and Example:

	1	2	3	4	5	6	7	8	9	10
CSHEAR	EID	PID	G1	G2	G3	G4				
CSHEAR	3	6	1	5	3	7				

Field

Contents

EID Element identification number (Integer > 0)
 PID Identification number of a PSHEAR property card (Default is EID) (Integer > 0)
 G1, G2, G3, G4 Grid point identification numbers of connection points (Integer > 0;
 G1 ≠ G2 ≠ G3 ≠ G4)

- Remarks:
1. Element identification numbers must be unique with respect to all other element identification numbers.
 2. Grid points G1 thru G4 must be ordered consecutively around the perimeter of the element.
 3. All interior angles must be less than 180°.

BULK DATA DECK

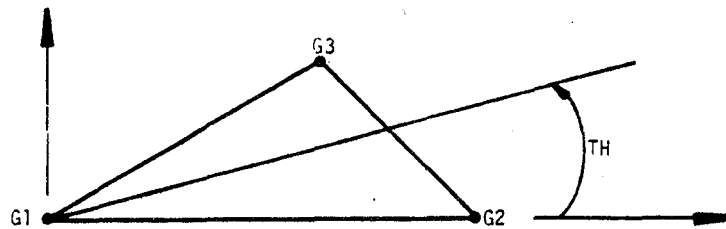
Input Data Card CTRIA1 Triangular Element Connection

Description: Defines a triangular membrane and bending element (TRIA1) of the structural model.

Format and Example:

1	2	3	4	5	6	7	8	9	10
CTRIA1	EID	PID	G1	G2	G3	TH			
CTRIA1	16	2	12	1	3	16.2			

<u>Field</u>	<u>Contents</u>
EID	Element identification number (Integer > 0)
PID	Identification number of a PTRIA1 property card (Default is EID) (Integer > 0)
G1,G2,G3	Grid point identification numbers of connection points (Integer > 0; G1 ≠ G2 ≠ G3)
TH	Material property orientation angle in degrees (Real) - The sketch below gives the sign convention for TH.



- Remarks:
1. Element identification numbers must be unique with respect to all other element identification numbers.
 2. Interior angles must be less than 180°.

BULK DATA DECK

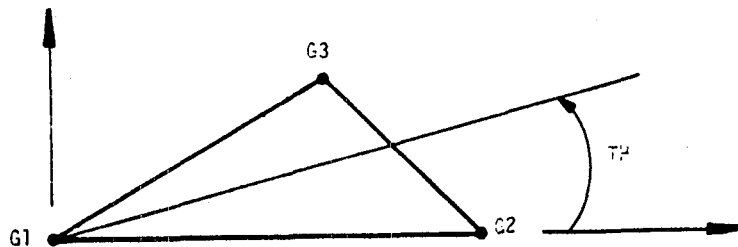
Input Data Card CTRMEM Triangular Element Connection

Description: Defines a triangular membrane element (TRMEM) of the structural model.

Format and Example:

	1	2	3	4	5	6	7	8	9	10
CTRMEM	EID	PID	G1	G2	G3	TH				
CTRMEM	16	2	12	1	3	16.3				

<u>Field</u>	<u>Contents</u>
EID	Element identification number (Integer > 0)
PID	Identification number of a PTRMEM property card (Default is EID) (Integer > 0)
G1,G2,G3	Grid point identification numbers of connection points (Integer > 0; G1 ≠ G2 ≠ G3)
TH	Material property orientation angle in degrees (Real) - The sketch below gives the sign convention for TH.



- Remarks:
1. Element identification numbers must be unique with respect to all other element identification numbers.
 2. Interior angles must be less than 180°.

BULK DATA DECK

Input Data Card FØRCE Static Load

Description: Defines a static load at a grid point by specifying a vector.

Format and Example:

1	2	3	4	5	6	7	8	9	10
FØRCE	SID	G	CID	F	N1	N2	N3		
FØRCE	2	5	6	2.9	0.0	1.0	0.0		

Field

Contents

SID	Load set identification number (Integer > 0)
G	Grid point identification number (Integer > 0)
CID	Coordinate system identification number (Integer ≥ 0)
F	Scale factor (Real)
N1,N2,N3	Components of Vector measured in coordinate system defined by CID (Real; N1 ² + N2 ² + N3 ² > 0.0)

Remarks: 1. The static load applied to grid point G is given by

$$\vec{f} = F \vec{N}$$

where \vec{N} is the vector defined in fields 6, 7 and 8.

2. Load sets must be selected in the Case Control Deck (LOAD=SID) to be used by NASTRAN.
3. A CID of zero references the basic coordinate system.

BULK DATA DECK

Input Data Card GRAV Gravity Vector

Description: Used to define gravity vectors for use in determining gravity loading for the structural model.

Format and Example:

	1	2	3	4	5	6	7	8	9	10
GRAV	SID	CID	G	N1	N2	N3				
GRAV	1	3	32.2	0.0	0.0	-1.0				

<u>Field</u>	<u>Contents</u>
SID	Set identification number (Integer > 0)
CID	Coordinate system identification number (Integer ≥ 0)
G	Gravity vector scale factor (Real)
N1, N2, N3	Gravity vector components (Real; $N1^2 + N2^2 + N3^2 > 0.0$)

Remarks: 1. The gravity vector is defined by

$$\vec{g} = G \cdot (N1, N2, N3).$$

2. A CID of zero references the basic coordinate system.
3. Gravity loads may be combined with "simple loads" (e.g., FORCE, MOMENT) only by specification on a LOAD card. That is, the SID on a GRAV card may not be the same as that on a simple load card.
4. Load sets must be selected in the Case Control Deck (LOAD=SID) to be used by NASTRAN.

BULK DATA DECK

Input Data Card GRID Grid Point

Description: Defines the location of a geometric grid point of the structural model, the directions of its displacement, and its permanent single-point constraints.

Format and Example:

1	2	3	4	5	6	7	8	9	10
GRID	ID	CP	X1	X2	X3	CD	PS	X	
GRID	2	3	1.0	2.0	3.0		316		

Field

Contents

ID Grid point identification number (0<Integer<999999)

CP Identification number of coordinate system in which the location of the grid point is defined (Integer ≥ 0 or blank*).

X1,X2,X3 Location of the grid point in coordinate system CP (Real)

CD Identification number of coordinate system in which displacements, degrees of freedom, constraints, and solution vectors are defined at the grid point (Integer ≥ 0 or blank*).

PS Permanent single-point constraints associated with grid point (any of the digits 1-6 with no imbedded blanks) (Integer ≥ 0 or blank*).

- Remarks:
1. All grid point identification numbers must be unique with respect to all other structural, scalar, and fluid points.
 2. The meaning of X1, X2 and X3 depend on the type of coordinate system, CP, as follows: (see CØRD_ card descriptions)

Type	X1	X2	X3
Rectangular	X	Y	Z
Cylindrical	R	Ø(degrees)	Z
Spherical	R	Ø(degrees)	φ(degrees)

3. The collection of all CD coordinate systems defined on all GRID cards is called the Global Coordinate System. All degrees-of-freedom, constraints, and solution vectors are expressed in the Global Coordinate System.

* See the GRDSET card for default options for fields 3, 7 and 8.

BULK DATA DECK

Input Data Card MAT1 Material Property Definition

Description: Defines the material properties for linear, temperature-independent, isotropic materials.

Format and Example:

1	2	3	4	5	6	7	8	9	10
MAT1	MID	E	G	NU	RHØ	A	TREF	GE	+abc
MAT1	17	3.+7	1.9+7		4.28	0.19	5.37+2	0.23	ABC
+abc	ST	SC	SS						
+BC	20.+4	15.+4	12.+4						

<u>Field</u>	<u>Contents</u>
MID	Material identification number (Integer > 0)
E	Young's modulus (Real \geq 0.0 or blank)
G	Shear modulus (Real \geq 0.0 or blank)
NU	Poisson's ratio (-1.0 < Real \leq 0.5 or blank)
RHØ	Mass density (Real)
A	Thermal expansion coefficient (Real)
TREF	Thermal expansion reference temperature (Real)
GE	Structural element damping coefficient (Real)
ST, SC, SS	Stress limits for tension, compression and shear (Real) (Required for Property Optimization calculations; otherwise optional if margins of safety are desired.)

- Remarks:
- One of E or G must be positive (i.e., either $E > 0.0$ or $G > 0.0$ or both E and G may be > 0.0).
 - If any one of E, G or NU is blank, it will be computed to satisfy the identity $E = 2(1+NU)G$; otherwise, values supplied by the user will be used.
 - The material identification number must be unique for all MAT1, MAT2 and MAT3 cards.
 - MAT1 materials may be made temperature dependent by use of the MATT1 card.
 - The mass density, RHØ, will be used to automatically compute mass for all structural elements except the two-dimensional bending only elements TRBSC, TRPLT and QDPLT.
 - If E and NU or G and NU are both blank they will be both given the value 0.0.
 - Weight density may be used in field 6 if the value $\frac{1}{g}$ is entered on the PARAM card WTMASS, where g is the acceleration of gravity.
 - Solid elements must not have NU equal to 0.5.

BULK DATA DECK

Input Data Card PBAR Simple Beam Property

Description: Defines the properties of a simple beam (bar) which is used to create bar elements via the CBAR card.

Format and Example:

1	2	3	4	5	6	7	8	9	10
PBAR	PID	MID	A	I1	I2	J	NSM	 	abc
PBAR	39	6	2.9		5.97				123
+bc	C1	C2	D1	D2	E1	E2	F1	F2	def
+23			2.0	4.0					
+ef	K1	K2	I12						

<u>Field</u>	<u>Contents</u>
PID	Property identification number (Integer > 0)
MID	Material identification number (Integer > 0)
A	Area of bar cross-section (Real)
I1, I2, I12	Area moments of inertia (Real, $I_1 I_2 \geq I_{12}^2$)
J	Torsional constant (Real)
NSM	Nonstructural mass per unit length (Real)
K1, K2	Area factor for shear (Real)
Ci, Di, Ei, Fi	Stress recovery coefficients (Real)

- Remarks:
1. For structural problems, PBAR cards may only reference MAT1 material cards.
 2. See Section 1.3.2 for a discussion of bar element geometry.
 3. For heat transfer problems, PBAR cards may only reference MAT4 or MAT5 material cards.

BULK DATA DECK

Input Data Card PQDMEM2

Quadrilateral Membrane Property

Description: Used to define the properties of a quadrilateral membrane. Referenced by the CQDMEM2 card. No bending properties are included.

Format and Example:

1	2	3	4	5	6	7	8	9	10
PQDMEM2	PID	MID	T	NSM	PID	MID	T	NSM	
PQDMEM2	235	2	0.5	0.0					

<u>Field</u>	<u>Contents</u>
PID	Property identification number (Integer > 0)
MID	Material identification number (Integer > 0)
T	Thickness of membrane (Real > 0.0)
NSM	Nonstructural mass per unit area (Real)

- Remarks:
1. All PQDMEM2 cards must have unique property identification numbers.
 2. One or two quadrilateral membrane properties may be defined on a single card.

BULK DATA DECK

Input Data Card PQUAD1 General Quadrilateral Element Property

Description: Defines the properties of a general quadrilateral element of the structural model, including bending, membrane, and transverse shear effects. Referenced by the CQUAD1 card.

Format and Example:

1	2	3	4	5	6	7	8	9	10
PQUAD1	PID	MID1	T1	MID2	I	MID3	T3	NSM	abc
PQUAD1	32	16	2.98	9	6.45	16	5.29	5.32	WXYZ1
+bc	Z1	Z2							
+XYZ1	0.09	-0.06							

<u>Field</u>	<u>Contents</u>
PID	Property identification number (Integer > 0)
MID1	Material identification number for membrane (Integer ≥ 0)
T1	Membrane thickness (Real)
MID2	Material identification number for bending (Integer ≥ 0)
I	Area moment of inertia per unit width (Real)
MID3	Material identification number for transverse shear (Integer ≥ 0)
T3	Transverse shear thickness (Real)
NSM	Nonstructural mass per unit area (Real)
Z1, Z2	Fiber distances for stress computation, positive according to the right-hand sequence defined on the CQUAD1 card (Real)

- Remarks:
1. All PQUAD1 cards must have unique property identification numbers.
 2. If T3 is zero, the element is assumed to be rigid in transverse shear.
 3. The membrane thickness, T1, is used to compute the structural mass for this element.

BULK DATA DECK

Input Data Card PSHEAR Shear Panel Property

Description: Defines the elastic properties of a shear panel. Referenced by the CSHEAR card.

Format and Example:

1	2	3	4	5	6	7	8	9	10
PSHEAR	PID	MID	T	NSM	PID	MID	T	NSM	
PSHEAR	13	2	4.9	16.2	14	6	4.9	14.7	

<u>Field</u>	<u>Contents</u>
PID	Property identification number (Integer > 0)
MID	Material identification number (Integer > 0)
T	Thickness of shear panel (Real ≠ 0.0)
NSM	Nonstructural mass per unit area (Real)

- Remarks:
1. All PSHEAR cards must have unique identification numbers.
 2. PSHEAR cards may only reference MAT1 material cards.
 3. One or two shear panel properties may be defined on a single card.

BULK DATA DECK

Input Data Card PTRIAL General Triangular Element Property

Description: Defines the properties of a general triangular element of the structural model, including bending, membrane and transverse shear effects. Referenced by the CTRIAL card.

Format and Example:

1	2	3	4	5	6	7	8	9	10
PTRIAL	PID	MID1	T1	MID2	I	MID3	T3	NSM	abc
PTRIAL	32	16	2.98	9	6.45	16	5.29	6.32	QED
+bc	Z1	Z2							
+ED									

<u>Field</u>	<u>Contents</u>
PID	Property identification number (Integer > 0)
MID1	Material identification number for membrane (Integer ≥ 0)
T1	Membrane thickness (Real)
MID2	Material identification number for bending (Integer ≥ 0)
I	Area of moment of inertia per unit width (Real)
MID3	Bending material identification number for transverse shear (Integer ≥ 0)
T3	Transverse shear thickness (Real)
NSM	Nonstructural mass per unit area (Real)
Z1, Z2	Fiber distances for stress calculations, positive according to the right-hand sequence defined on the CTRIAL card (Real)

- Remarks:
1. All PTRIAL cards must have unique property identification numbers.
 2. If T3 is zero, the element is assumed to be rigid in transverse shear.
 3. The membrane thickness, T1, is used to compute the structural mass for this element.

BULK DATA DECK

Input Data Card PTRMEM Triangular Membrane Property

Description: Used to define the properties of a triangular membrane element. Referenced by the CTRMEM card. No bending properties are included.

Format and Example:

1	2	3	4	5	6	7	8	9	10
PTRMEM	PID	MID	T	NSM	PID	MID	T	NSM	
PTRMEM	17	23	4.25	0.2					

<u>Field</u>	<u>Contents</u>
PID	Property identification number (Integer > 0)
MID	Material identification number (Integer > 0)
T	Membrane thickness (Real > 0.0)
NSM	Nonstructural mass per unit area (Real)

- Remarks:
1. All PTRMEM cards must have unique property identification numbers.
 2. One or two triangular membrane properties may be defined on a single card.

BULK DATA DECK

Input Data Card SPC1 Single-Point Constraint

Description: Defines sets of single-point constraints.

Format and Example:

1	2	3	4	5	6	7	8	9	10
SPC1	SID	C	G1	G2	G3	G4	G5	G6	abc
SPC1	3	2	1	3	10	9	8	5	A30
+bc	G7	G8	G9	-etc.-					
+BC	2	8							

Alternate Form

SPC1	SID	C	GID1	"THRU"	GID2				
SPC1	313	12456	6	THRU	32				

<u>Field</u>	<u>Contents</u>
SID	Identification number of single-point constraint set (Integer > 0)
C	Component number (Any unique combination of the digits 1-6 (with no inbedded blanks) when point identification numbers are grid points; must be null if point identification numbers are scalar points)
Gi, GIDi	Grid or scalar point identification numbers (Integer > 0)

- Remarks:
- Note that enforced displacements are not available via this card. As many continuation cards as desired may appear when "THRU" is not used.
 - A coordinate referenced on this card may not appear as a dependent coordinate in a multipoint constraint relation, nor may it be referenced on a SPC, OMIT, OMIT1, SUPORT card.
 - Single-point constraint sets must be selected in the Case Control Deck (SPC=SID) to be used by NASTRAN.
 - SPC degrees of freedom may be redundantly specified as permanent constraints on the GRID card.
 - All grid points referenced by GID1 thru GID2 must exist.

Appendix C

NASTRAN MODEL HORIZONTAL STABILIZER



HORIZONTAL STABILIZER MODEL

Four-digit grid numbering scheme

<u>Item</u>	<u>Rib No.</u>	<u>Spar No.</u>
Grid numbers =	XX	YY

Five-digit CONROD and bar element numbering scheme

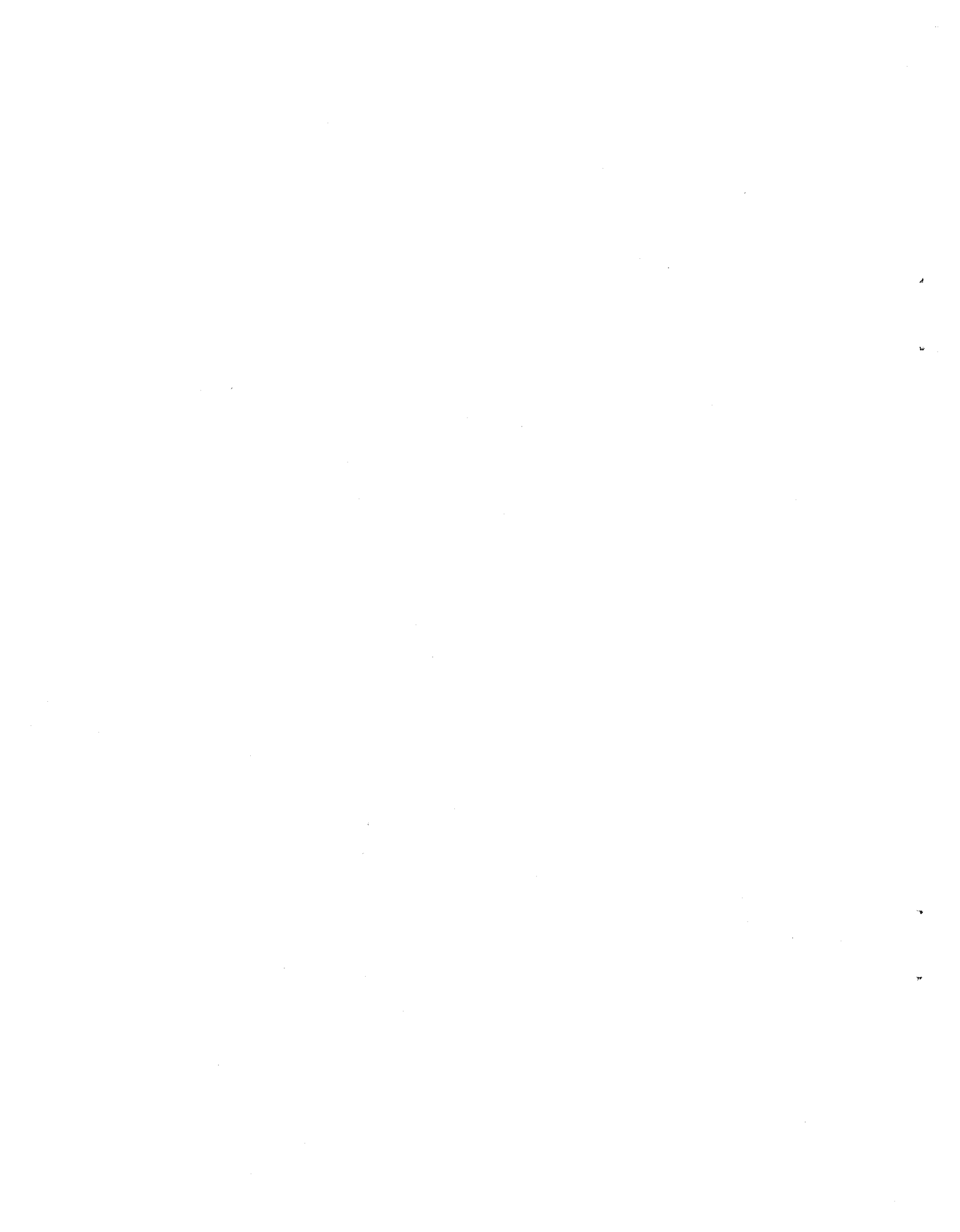
<u>Item</u>	<u>Orientations</u>	<u>Rib No.</u>	<u>Spar No.</u>
Spars	Blank	XX	YY
Ribs	1	XX	YY
Rods normal to surface	3	XX	YY
Diagonal rods	5	XX	YY

Six-digit shear panel and membrane element numbering scheme

<u>Item</u>	<u>Orientations</u>	<u>Shape*</u>	<u>Rib No.</u>	<u>Spar No.</u>
Rib webs	1	W	XX	YY
Cover skins	2	W	XX	YY
Spar webs	3	W	XX	YY

*W=0 - quadrilateral
 W=1 - triangular

← Lowest grid no.
 of panel when
 possible



Upper surface grid numbers (shown)

Note: Lower surface grid numbers =
upper surface number +50.

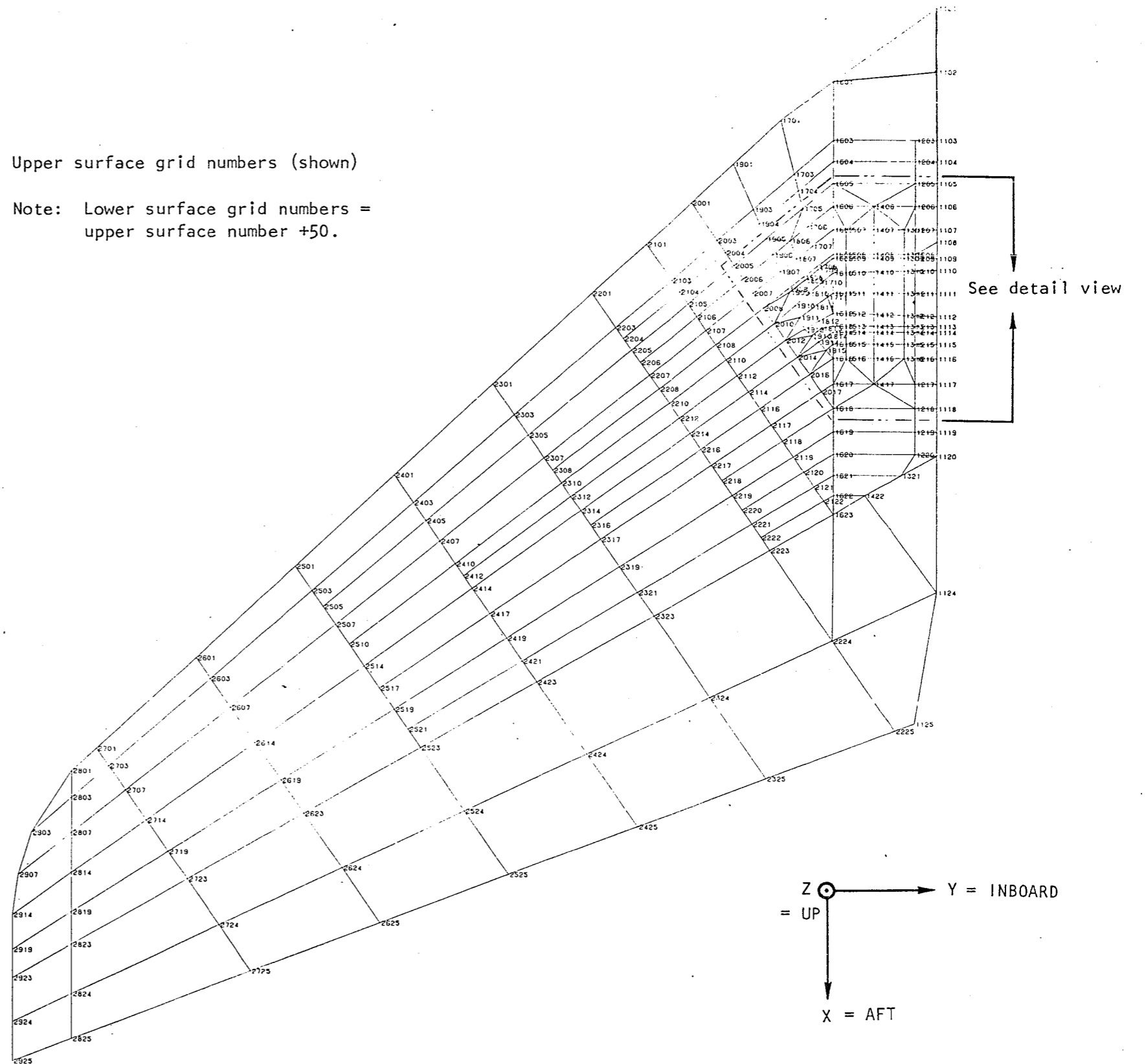


Figure C-1. - Airloads research study - B-1 horizontal stabilizer NASTRAN model.

Upper surface panel identification numbers (shown)

Notes: Lower surface panel ID number = Upper surface ID number +50.

M2 = CQDMEM2 (quadrilateral membrane)
TM = CTMEM (triangular membrane)

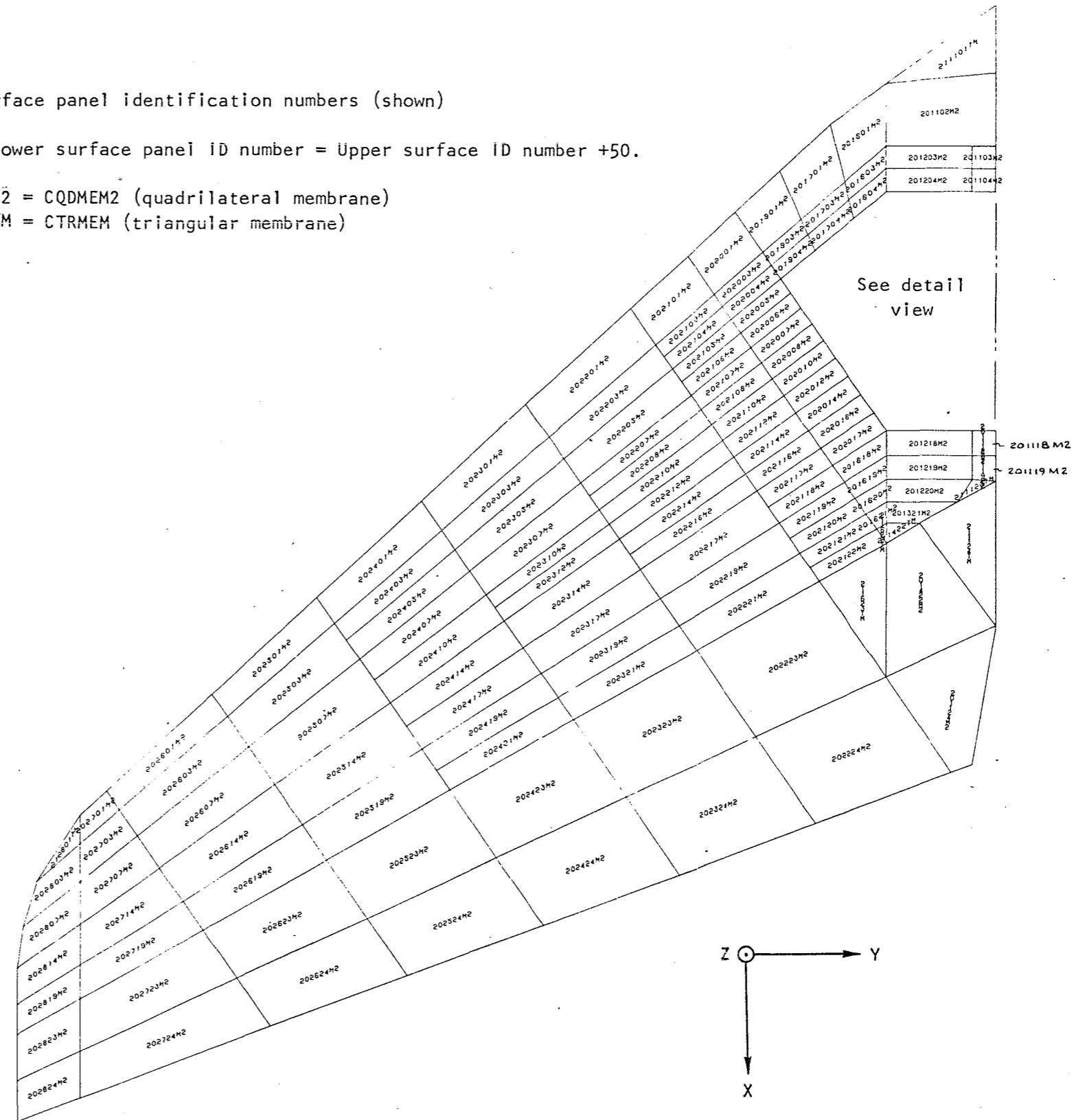


Figure C-2. - Airloads research study - B-1 horizontal stabilizer NASTRAN model.

Spar identification numbers

Note: SH = CSHEAR (shear panel)

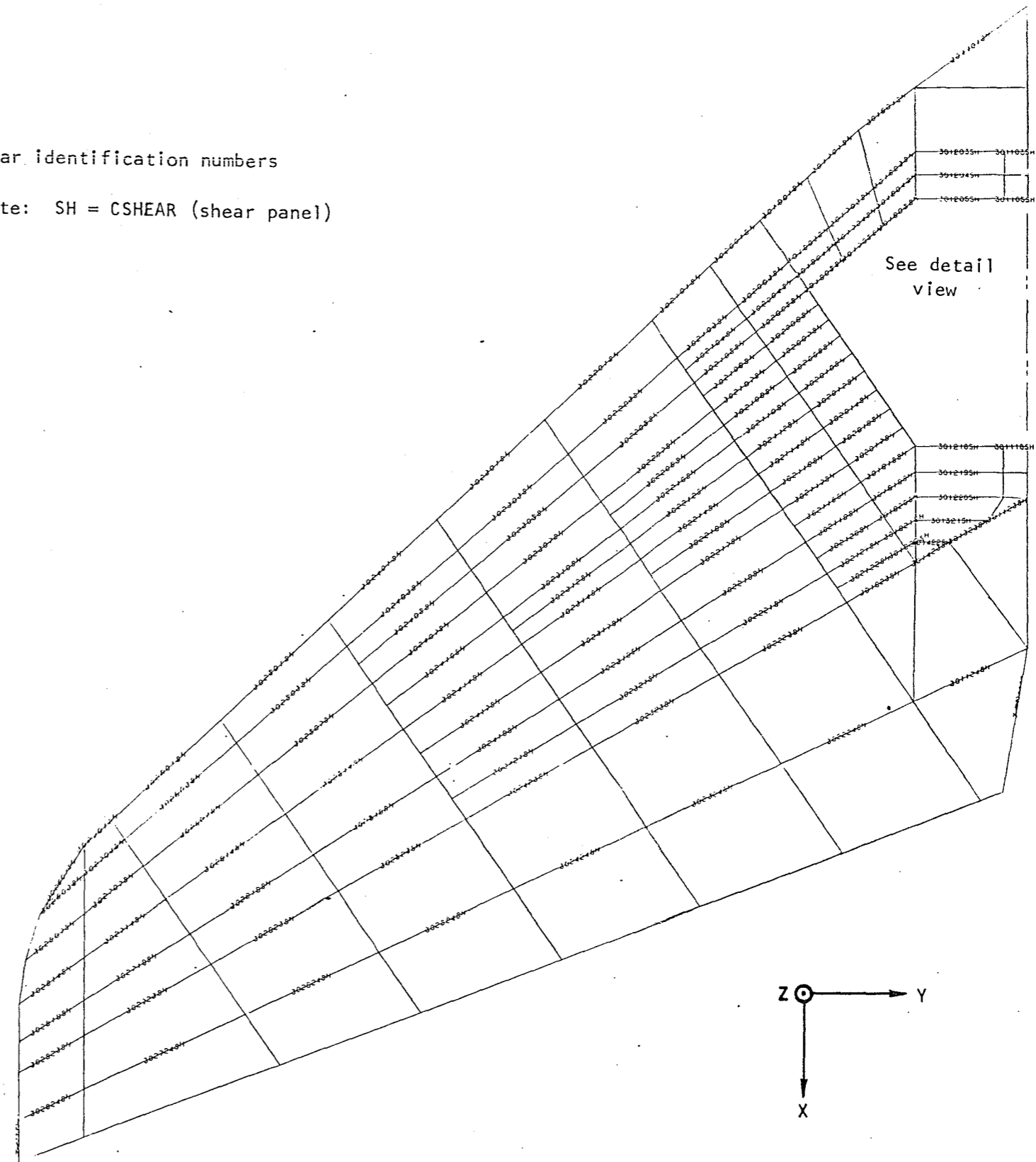


Figure C-3. - Airloads research study - B-1 horizontal stabilizer NASTRAN model.

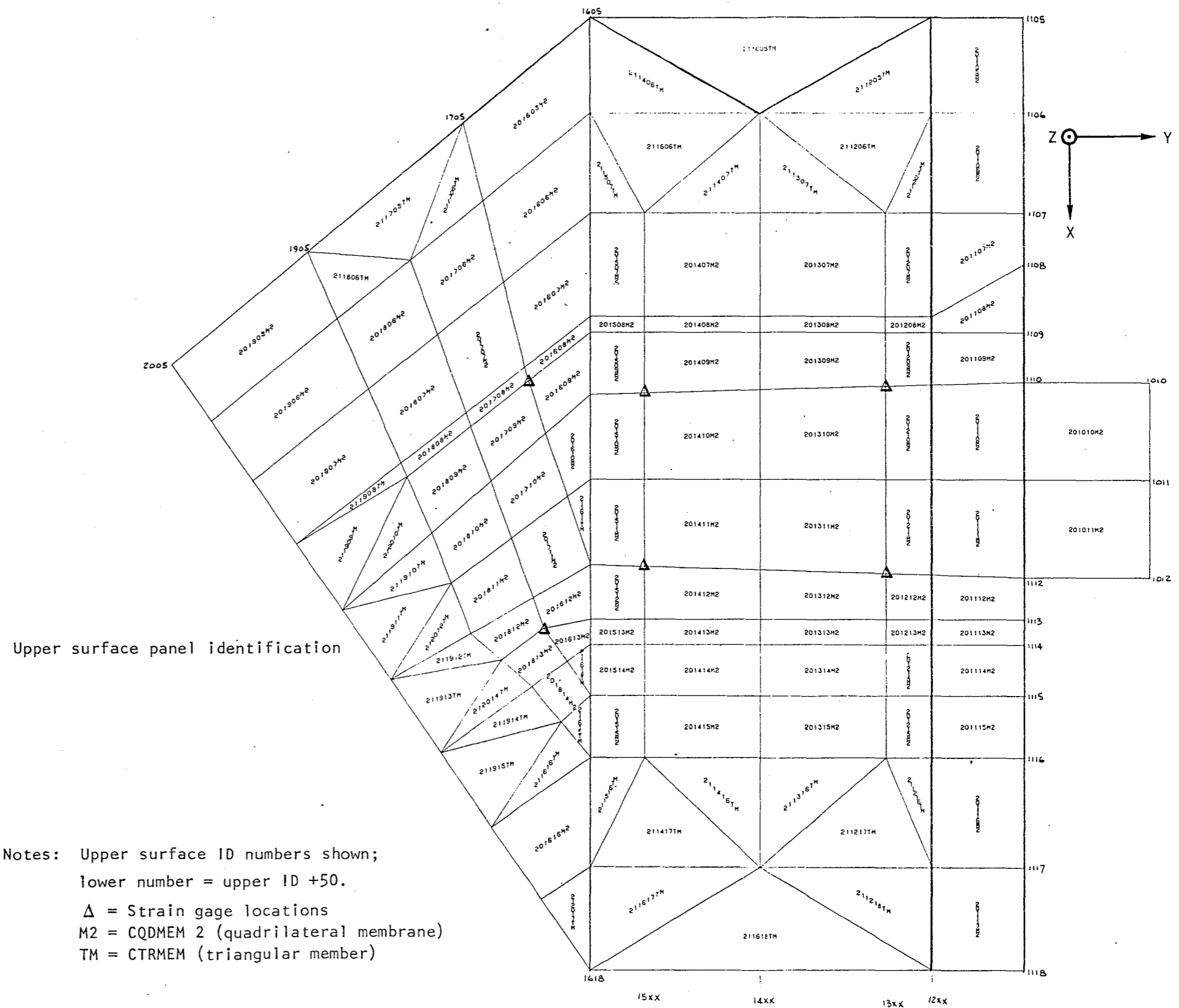


Figure C-4. - Airloads research study - B-1 horizontal stabilizer model spindle region detail.

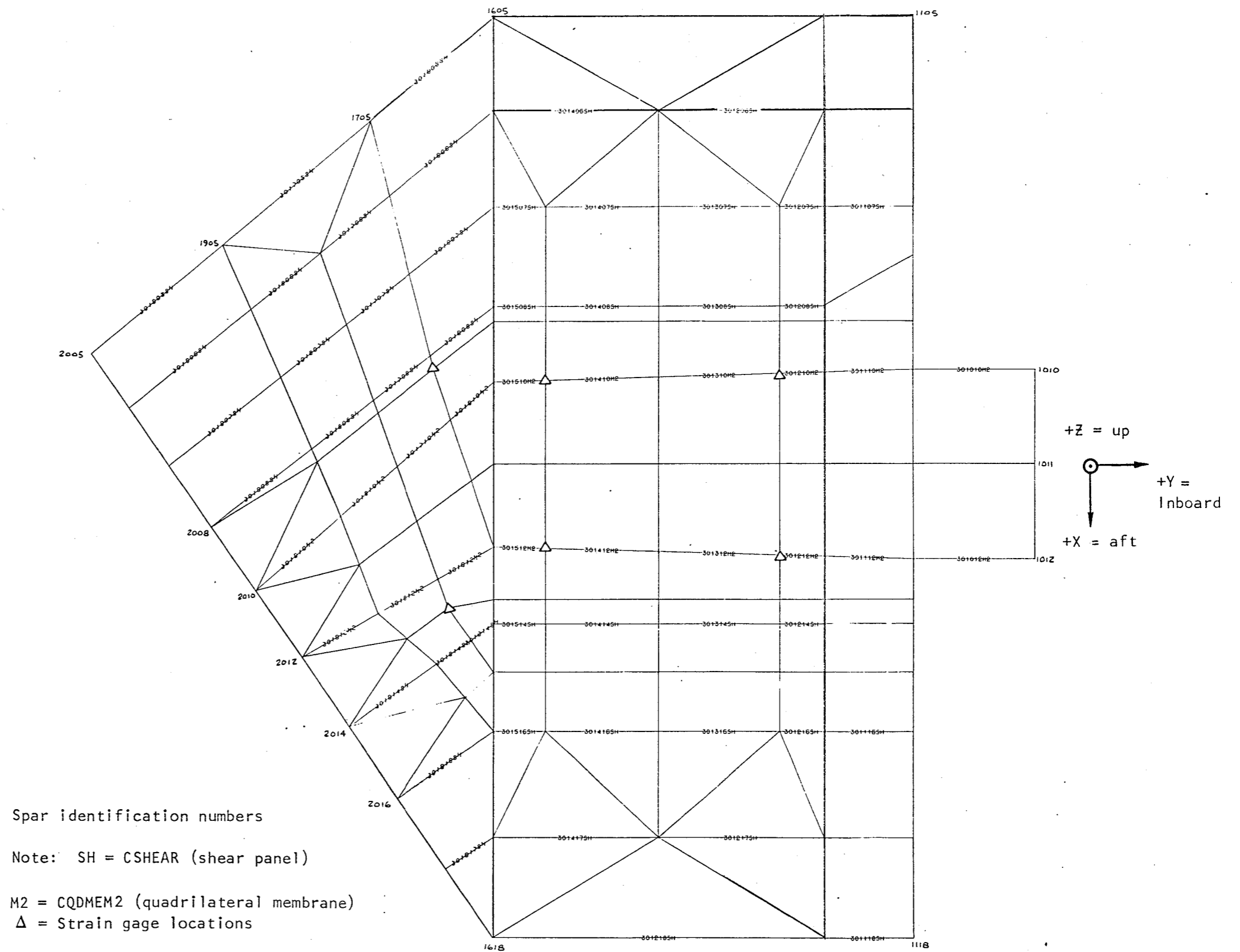


Figure C-5. - Airloads research study - B-1 horizontal stabilizer NASTRAN model spindle region detail.

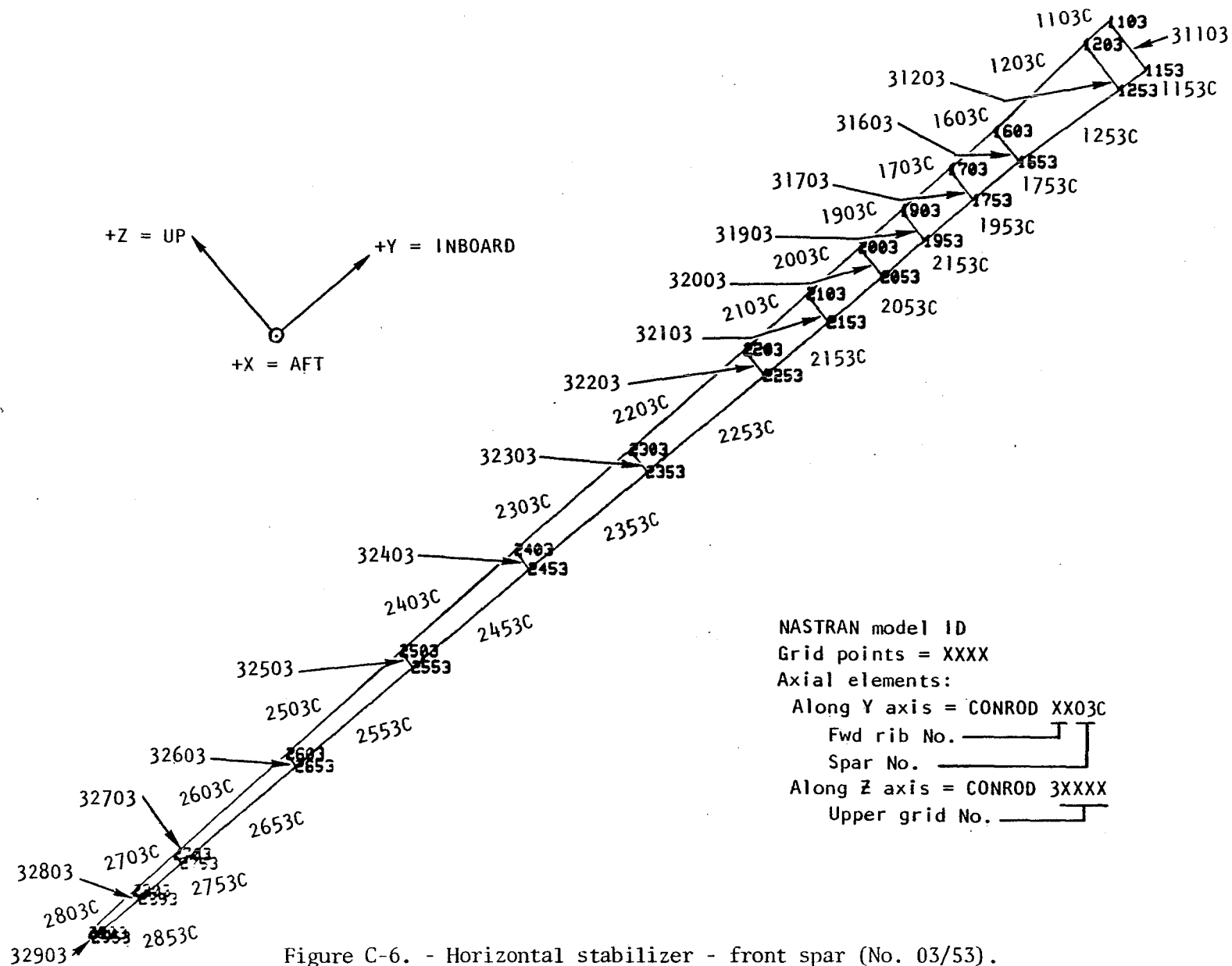


Figure C-6. - Horizontal stabilizer - front spar (No. 03/53).

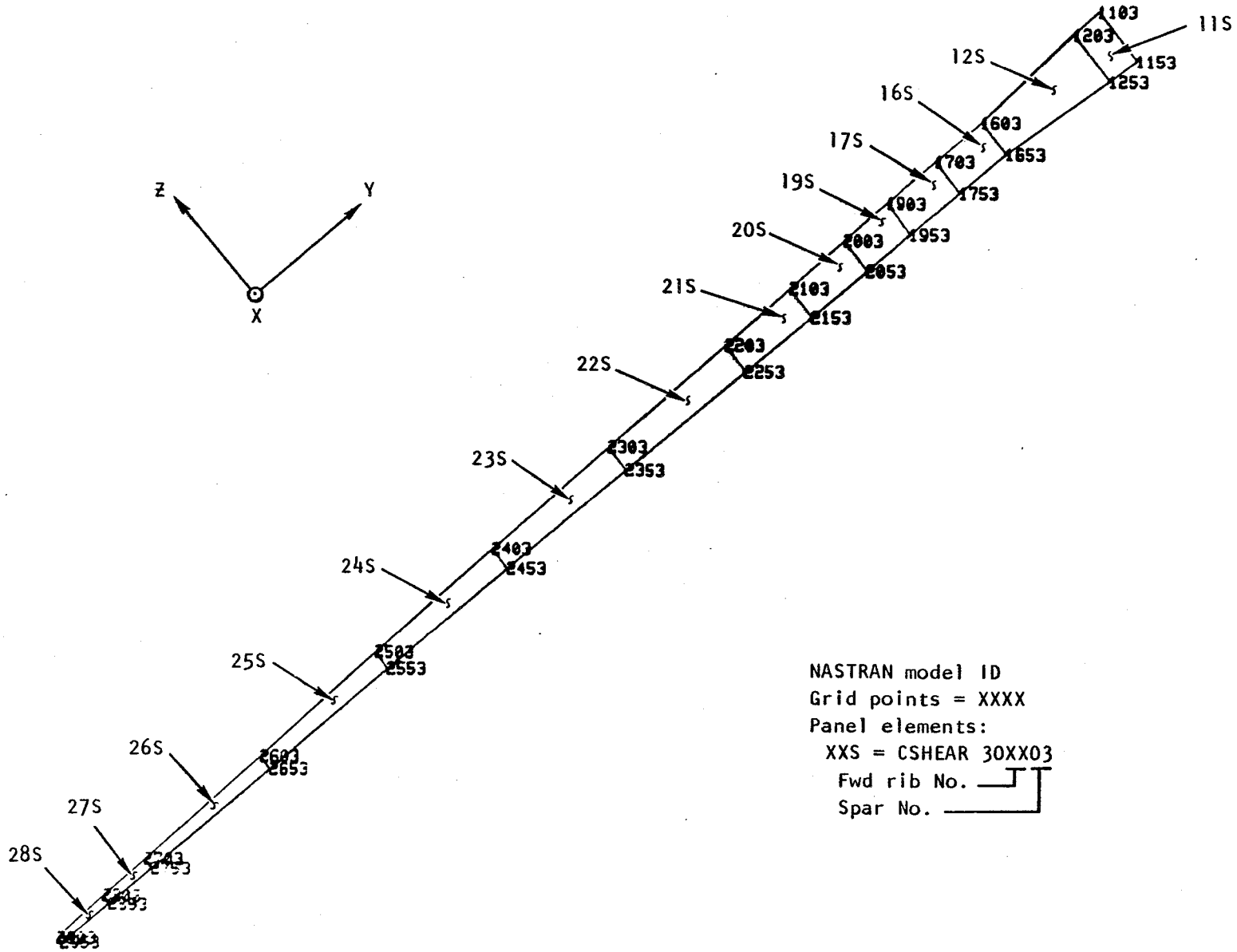


Figure C-7. - Horizontal stabilizer - front spar (No. 03).

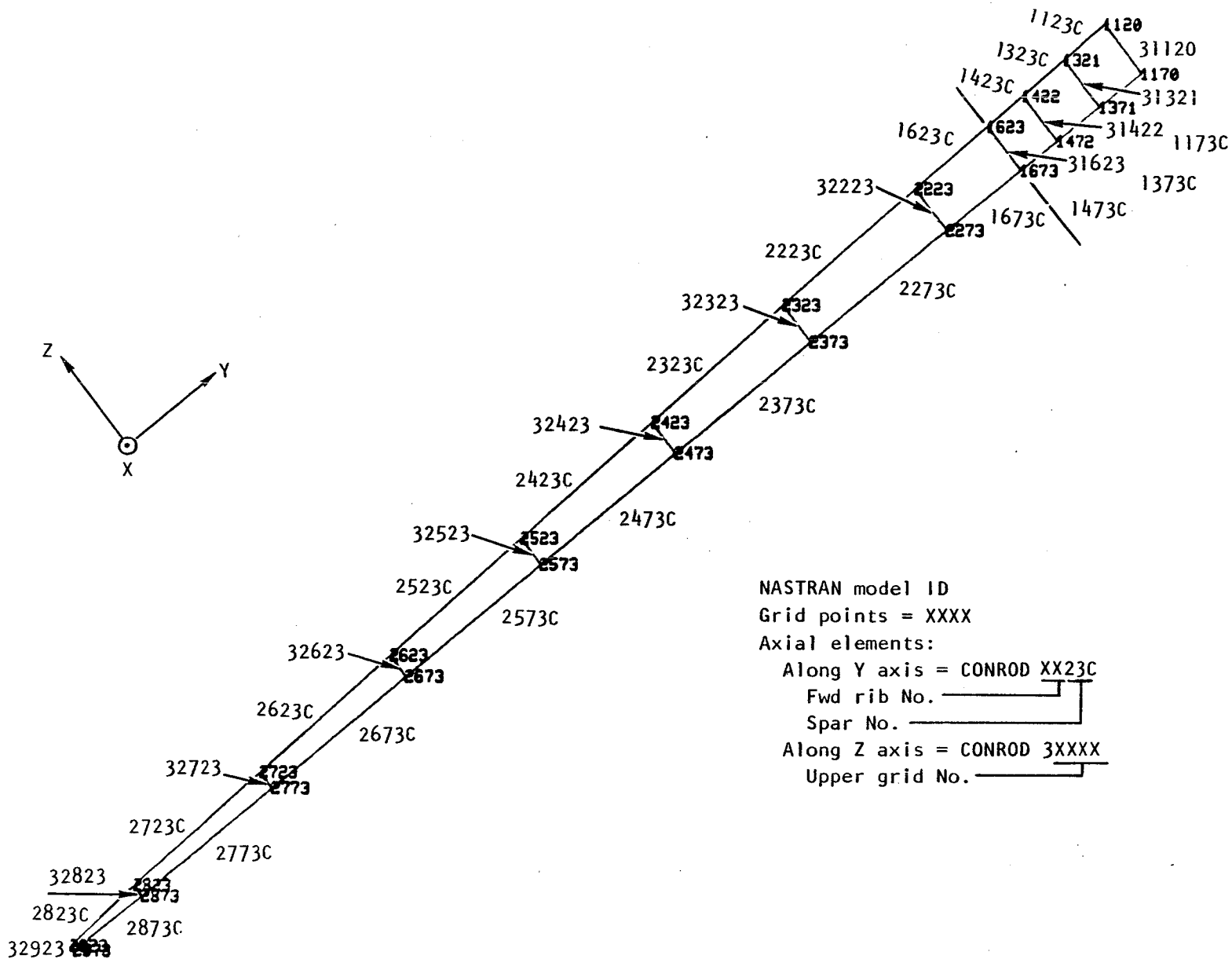


Figure C-8. - Horizontal stabilizer - rear spar (No. 23/73).

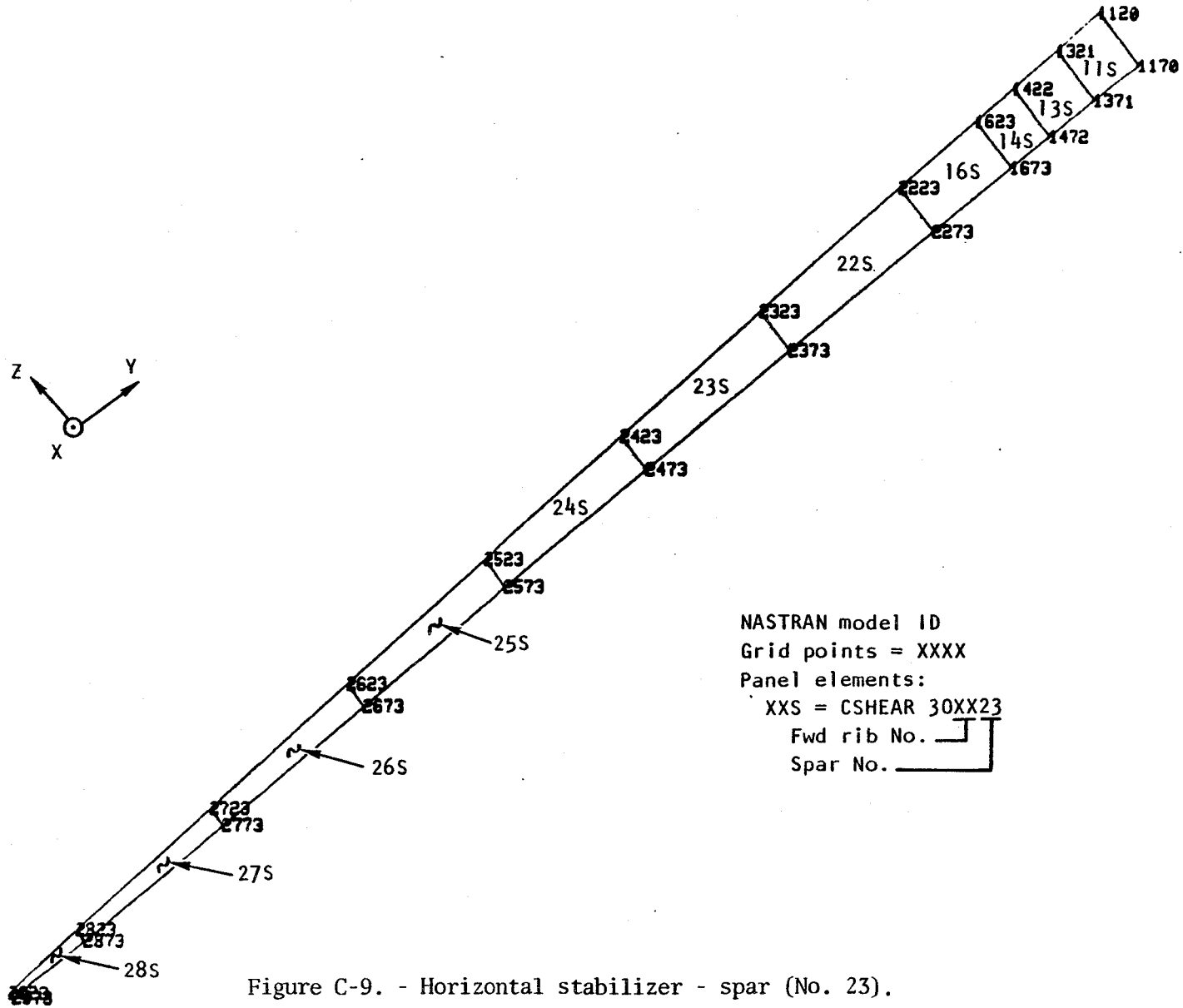
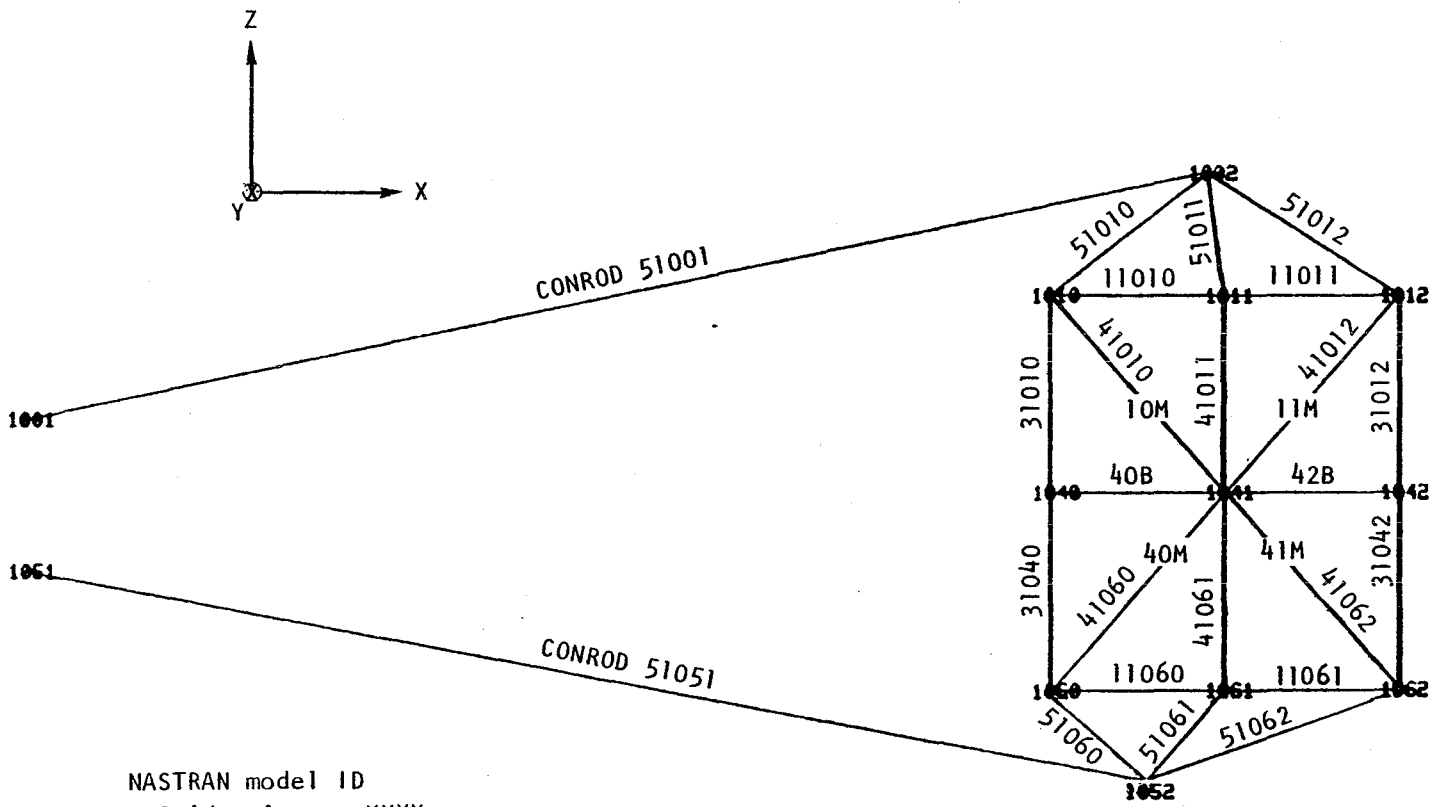
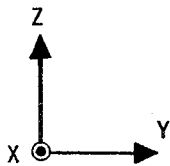
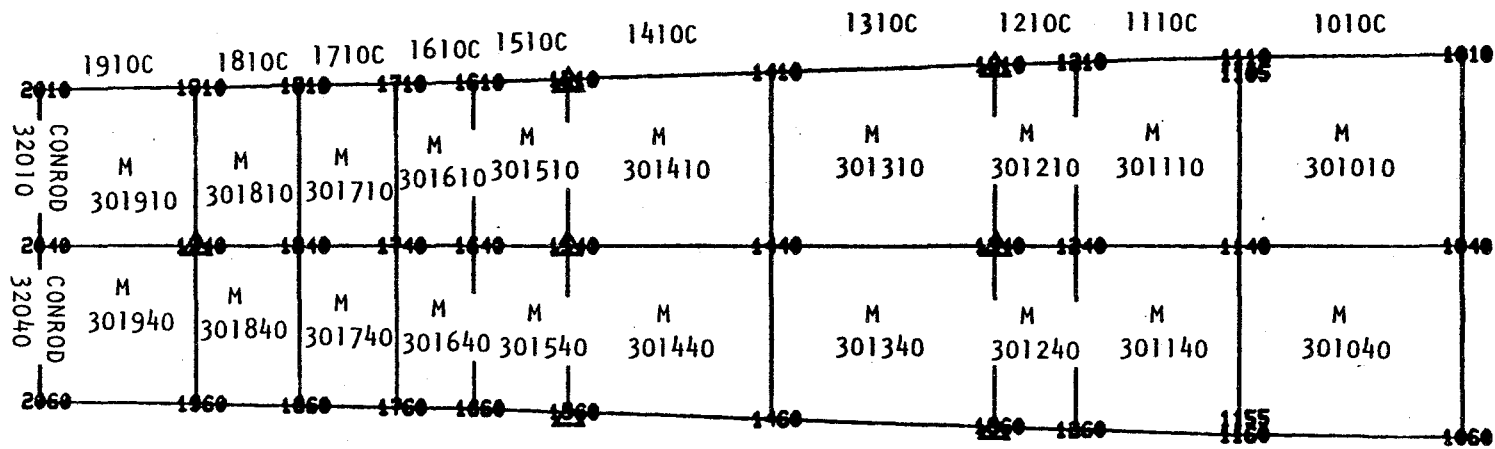


Figure C-9. - Horizontal stabilizer - spar (No. 23).



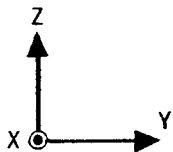
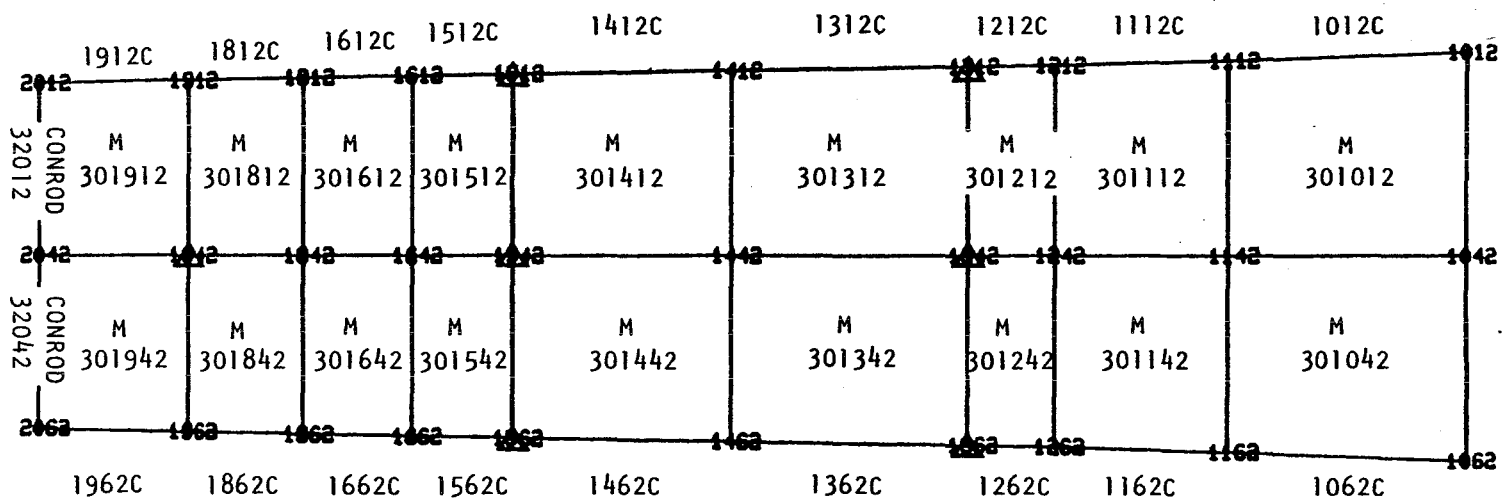
NASTRAN model ID
 Grid points = XXXX
 Axial elements:
 XXXXX = CONROD XXXXX
 XXB = CBAR 410XX
 Panel elements:
 XXM = CQDMEM2 1010XX

Figure C-10. - Horizontal stabilizer - actuator arms.



NASTRAN model ID
 Grid points = XXXX
 Axial elements:
 XXXXC = CONROD XXXX
 Panel elements:
 MXXXXX = CQDMEM2 XXXXXX
 Note: Δ = Strain gage location

Figure C-11. - Horizontal stabilizer - forward edge of spindle housing.



NASTRAN model ID
 Grid points = XXXX
 Axial elements:
 XXXXC = CONROD XXXX
 Panel elements:
 MXXXXXX = CQDMEM2 XXXXXX
 Note: Δ = Strain gage location

Figure C-12. - Horizontal stabilizer - aft edge of spindle housing.

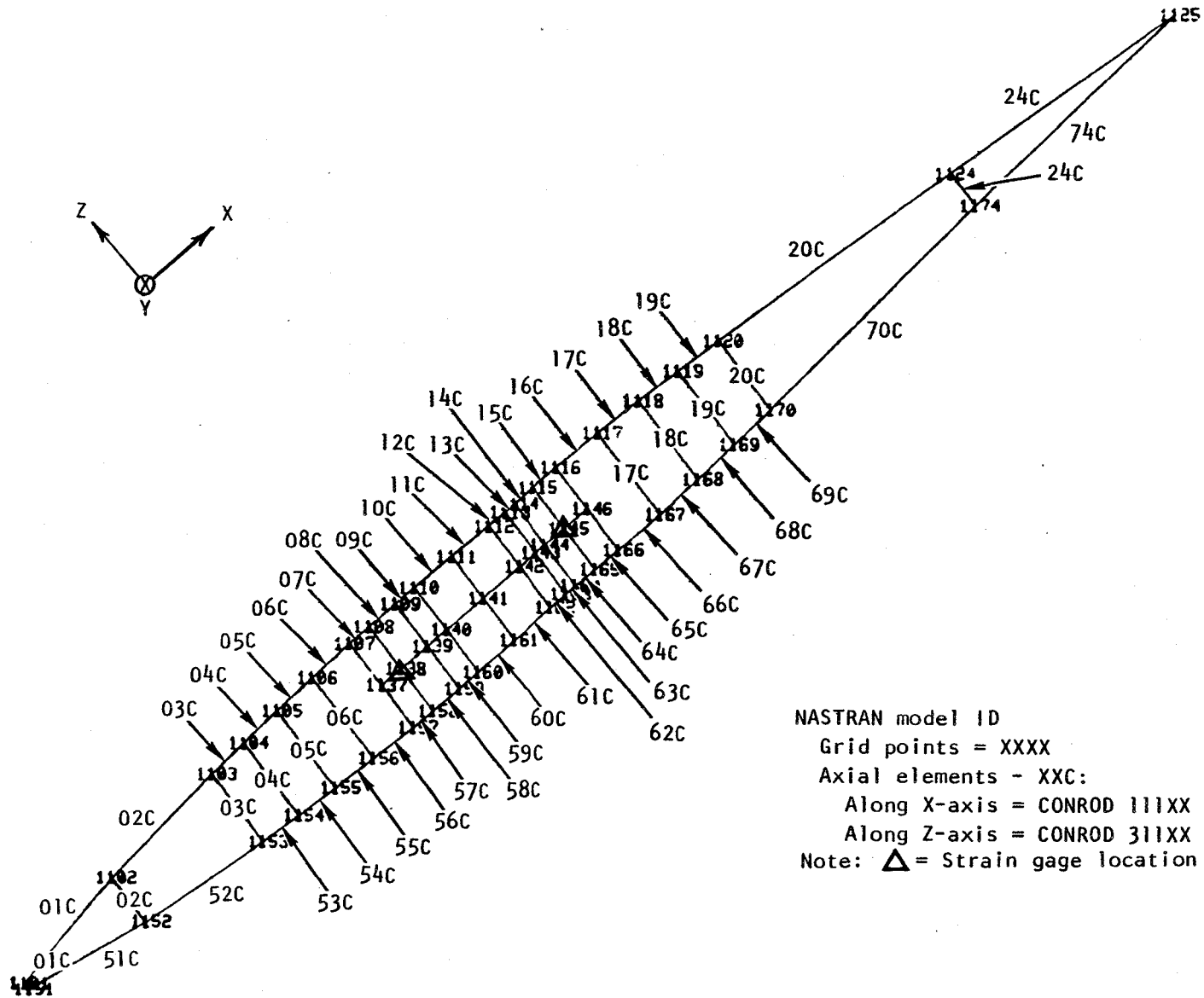


Figure C-13. - Horizontal stabilizer - rib No. 11.

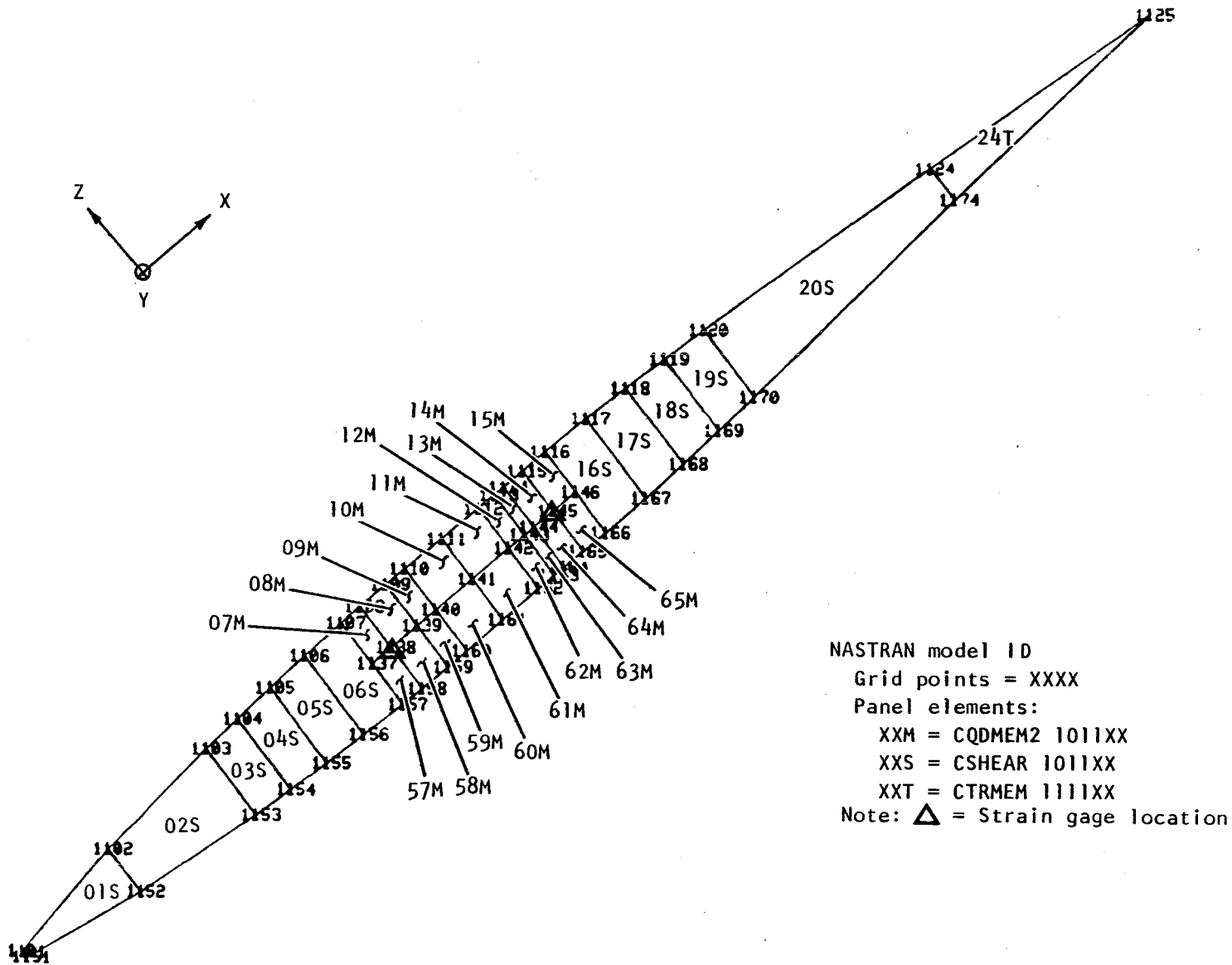


Figure C-14. - Horizontal stabilizer - rib No. 11.

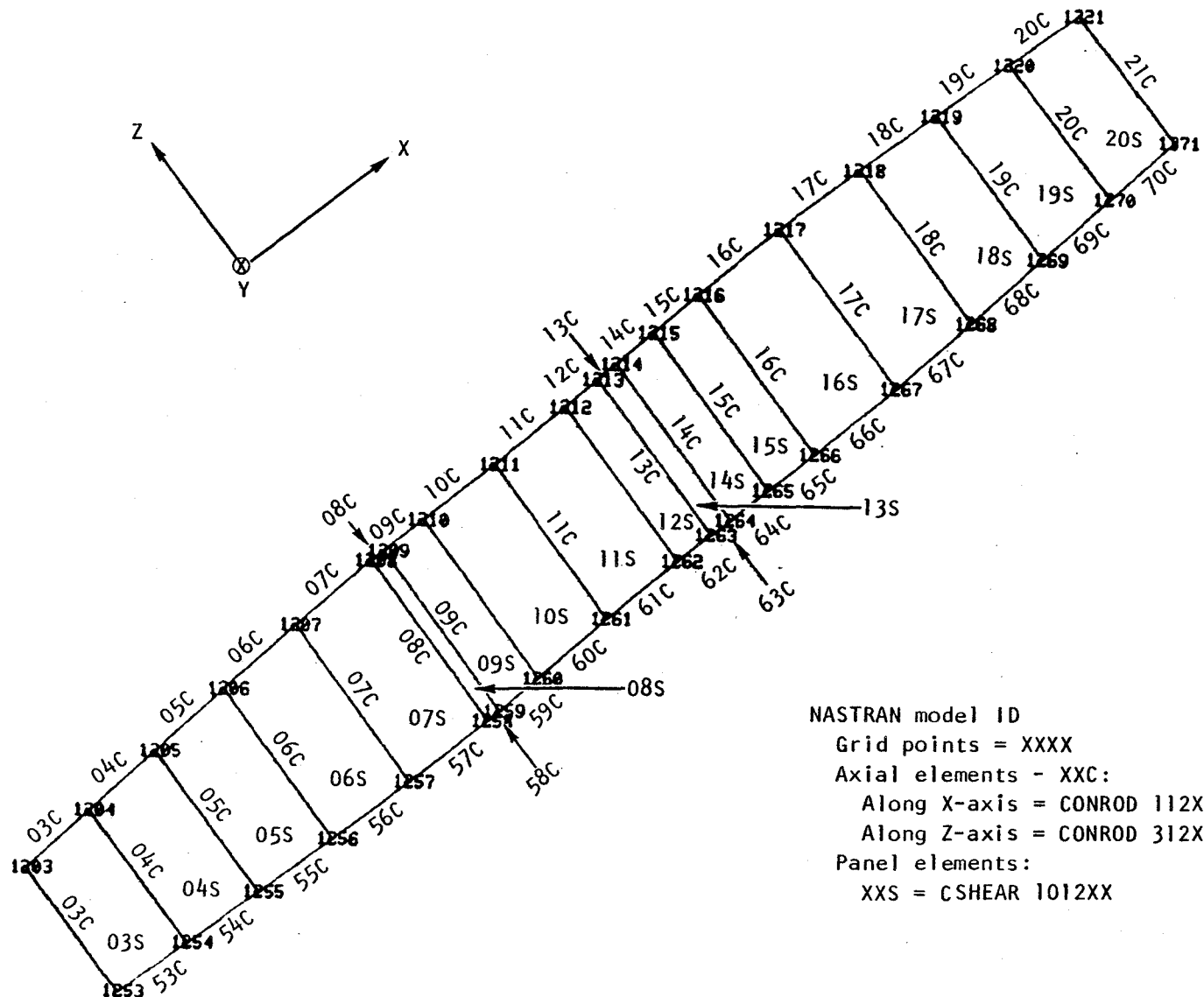
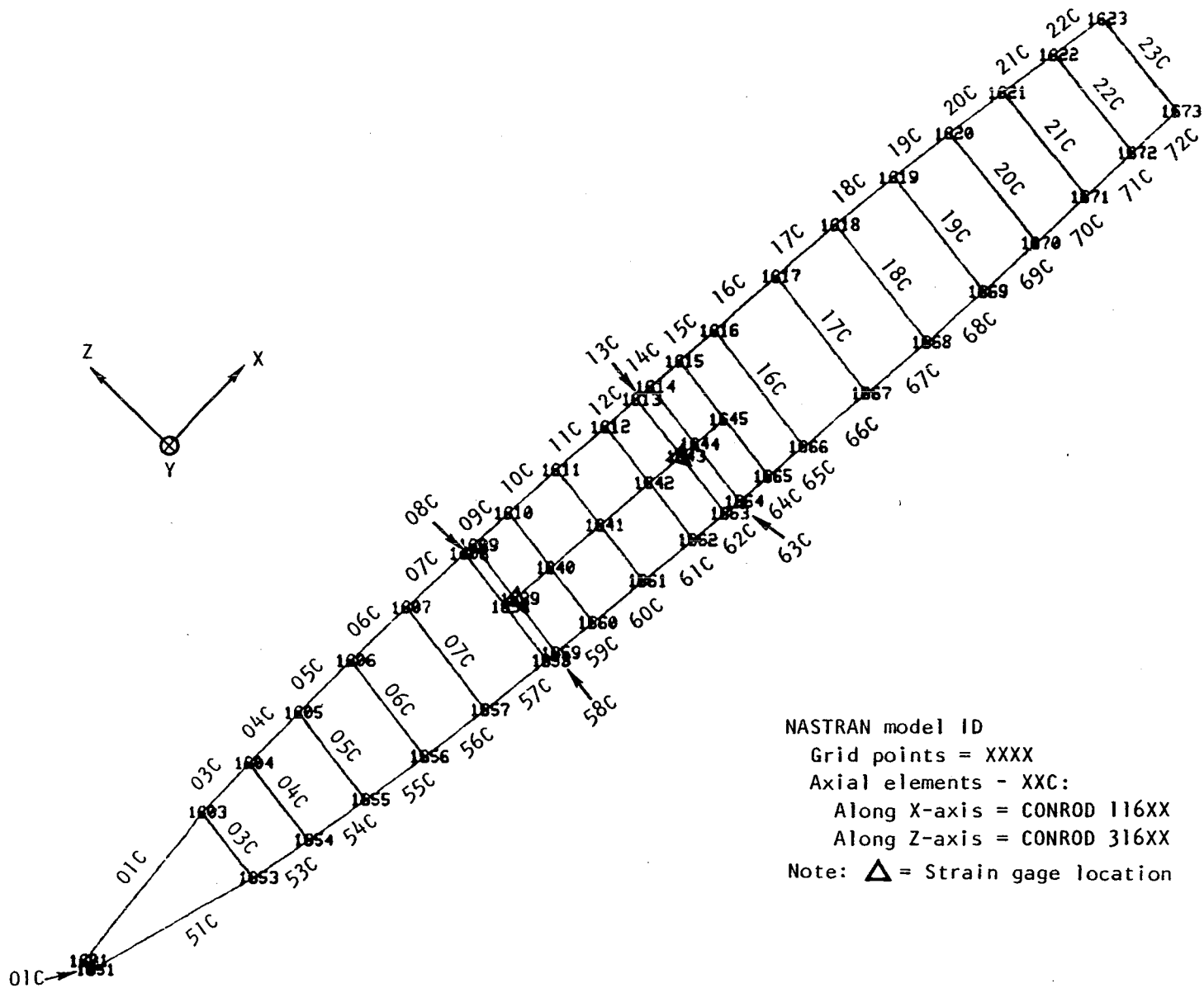


Figure C-15. - Horizontal stabilizer - rib No. 12.



NASTRAN model ID
 Grid points = XXXX
 Axial elements - XXC:
 Along X-axis = CONROD 116XX
 Along Z-axis = CONROD 316XX
 Note: Δ = Strain gage location

Figure C-16. - Horizontal stabilizer - rib No. 16.

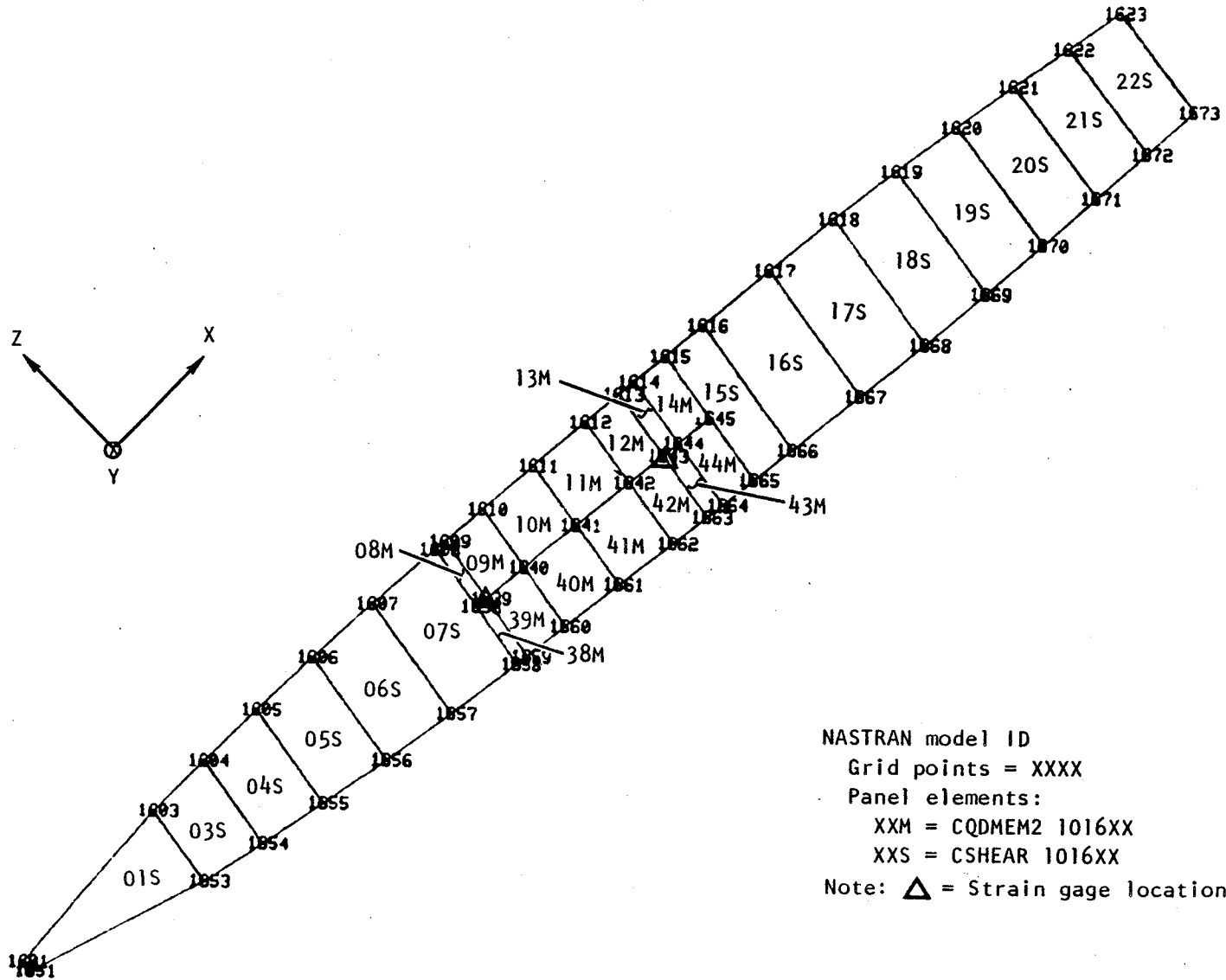


Figure C-17. - Horizontal stabilizer - rib No. 16.

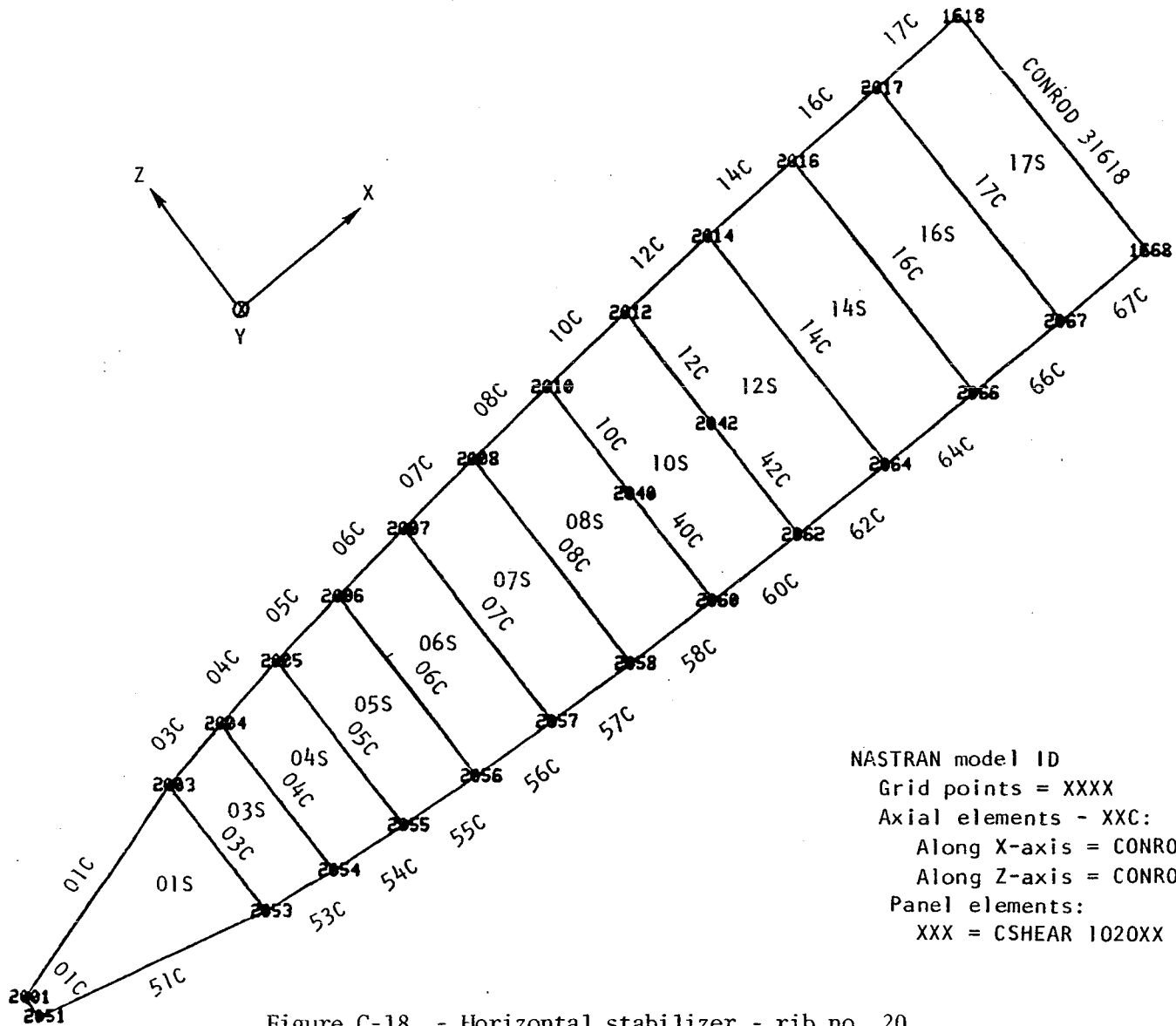


Figure C-18. - Horizontal stabilizer - rib no. 20.

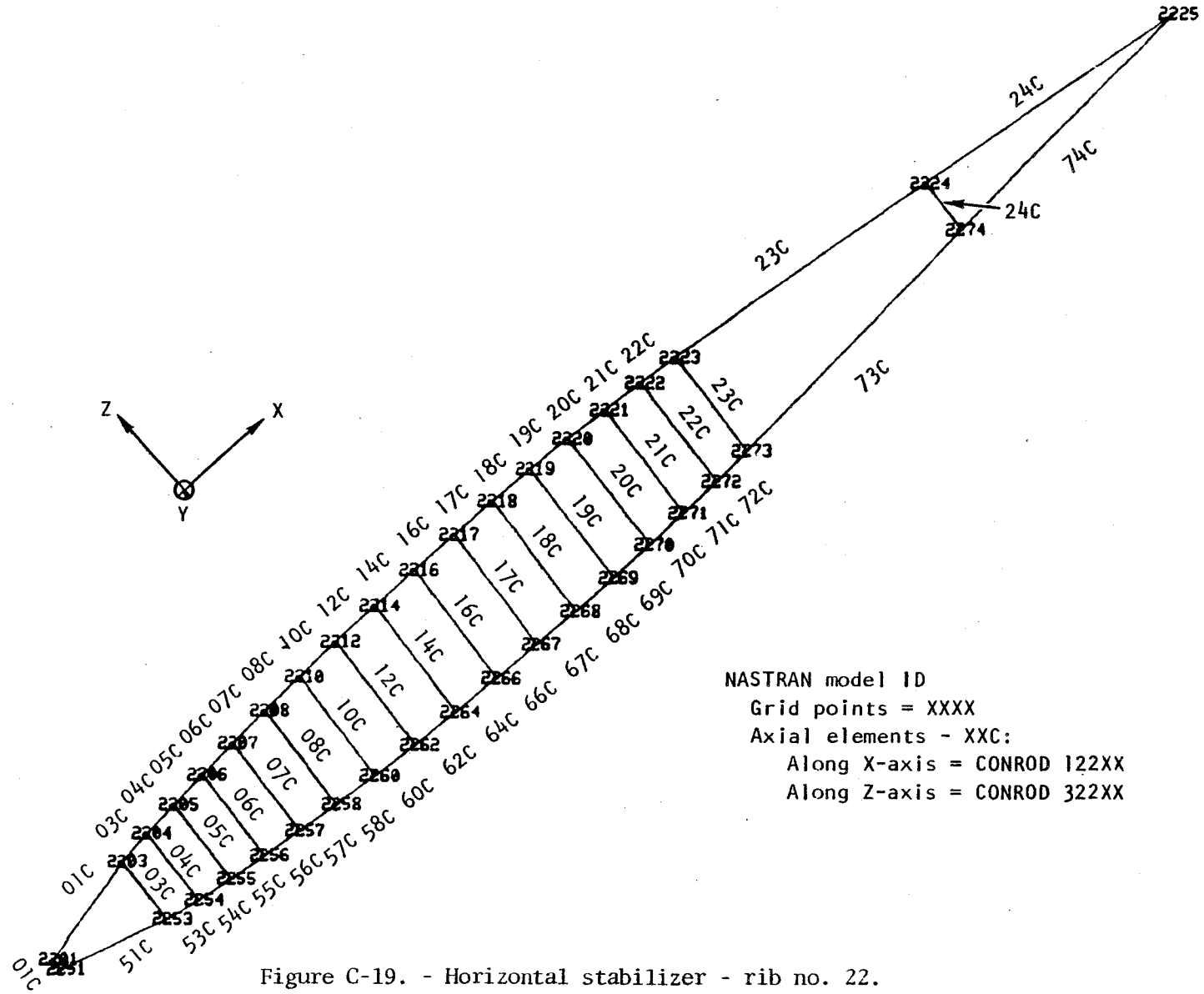


Figure C-19. - Horizontal stabilizer - rib no. 22.

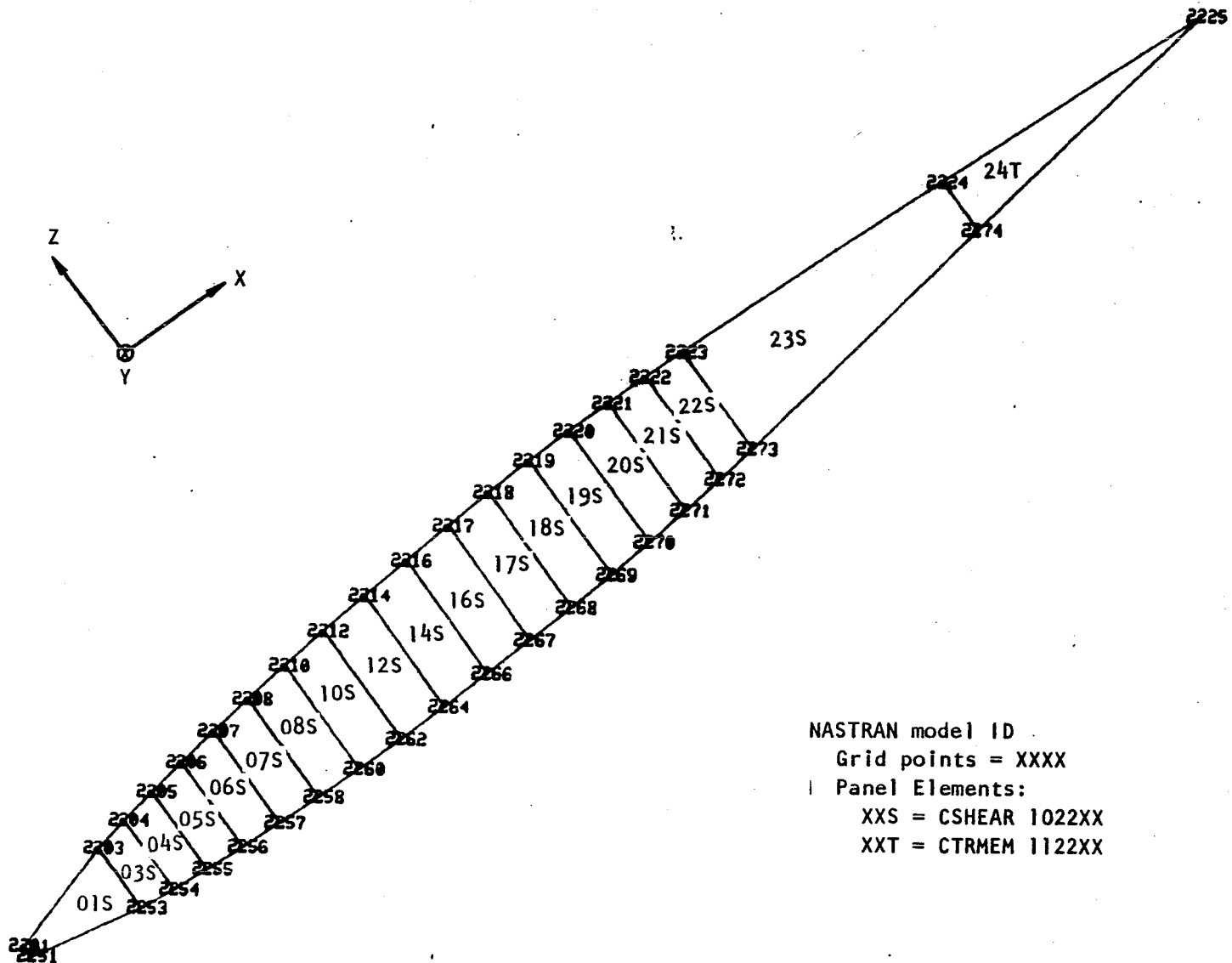


Figure C-20. Horizontal stabilizer - rib No. 22.

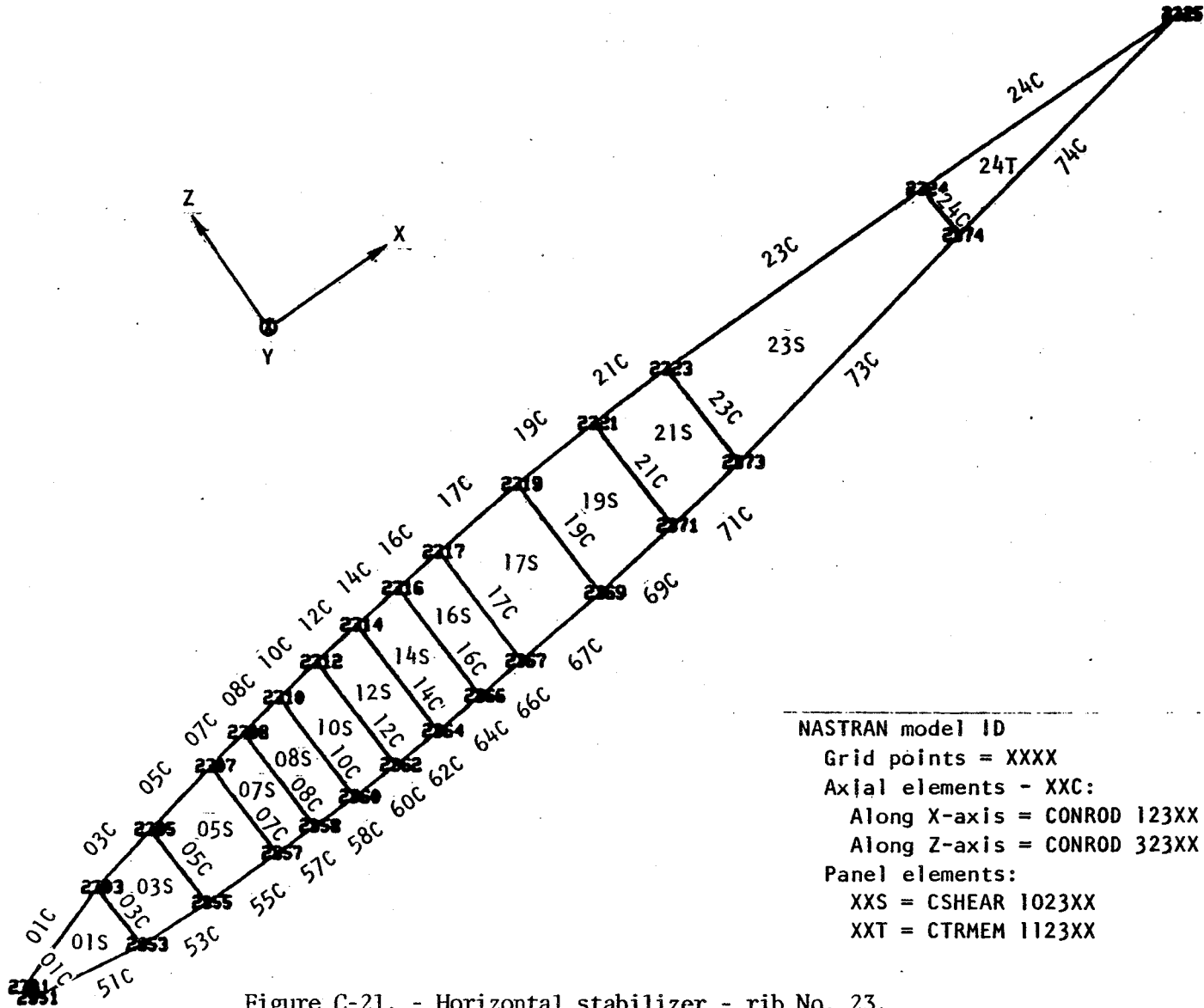


Figure C-21. - Horizontal stabilizer - rib No. 23.

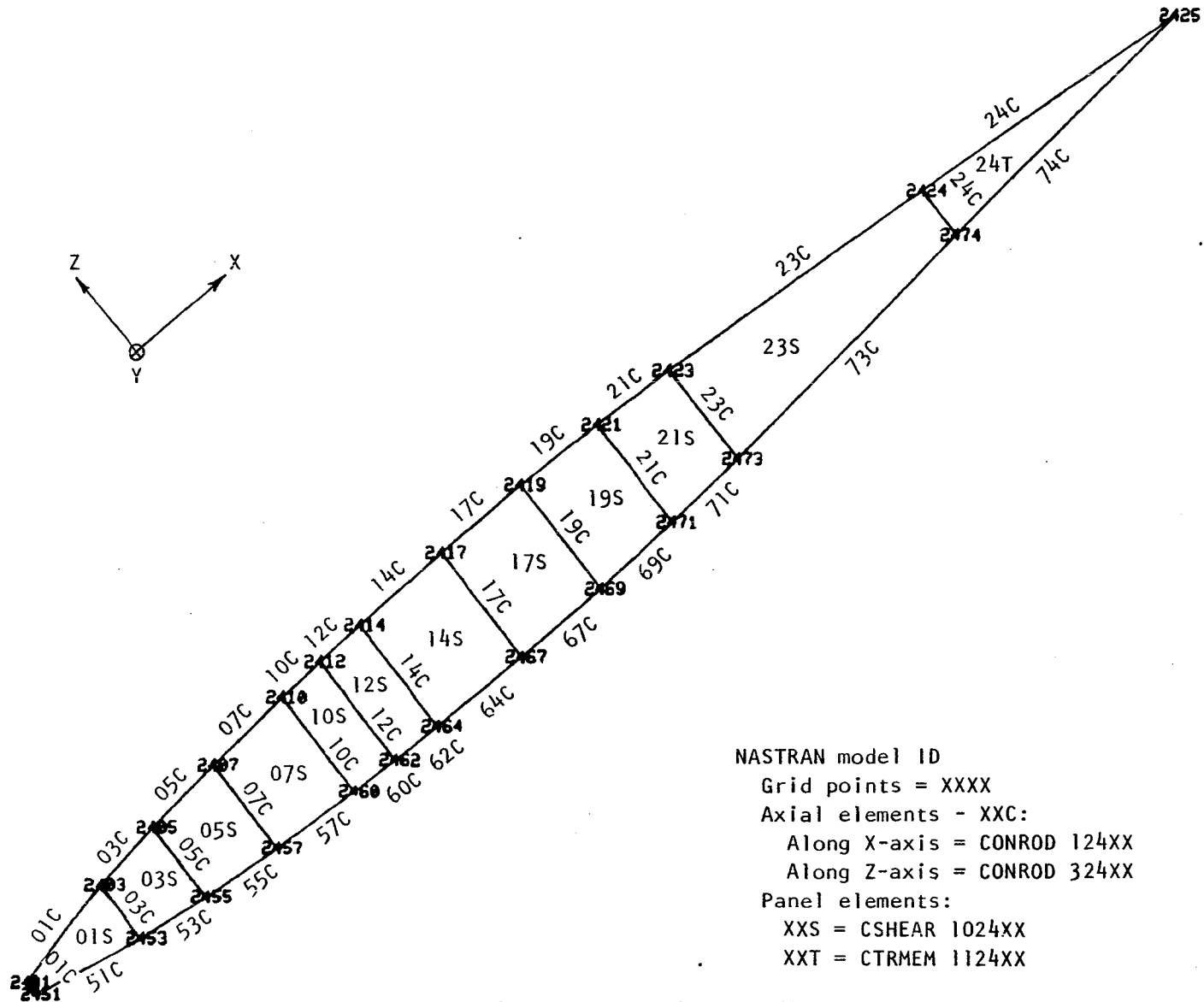


Figure C-22. - Horizontal stabilizer - rib No. 24.

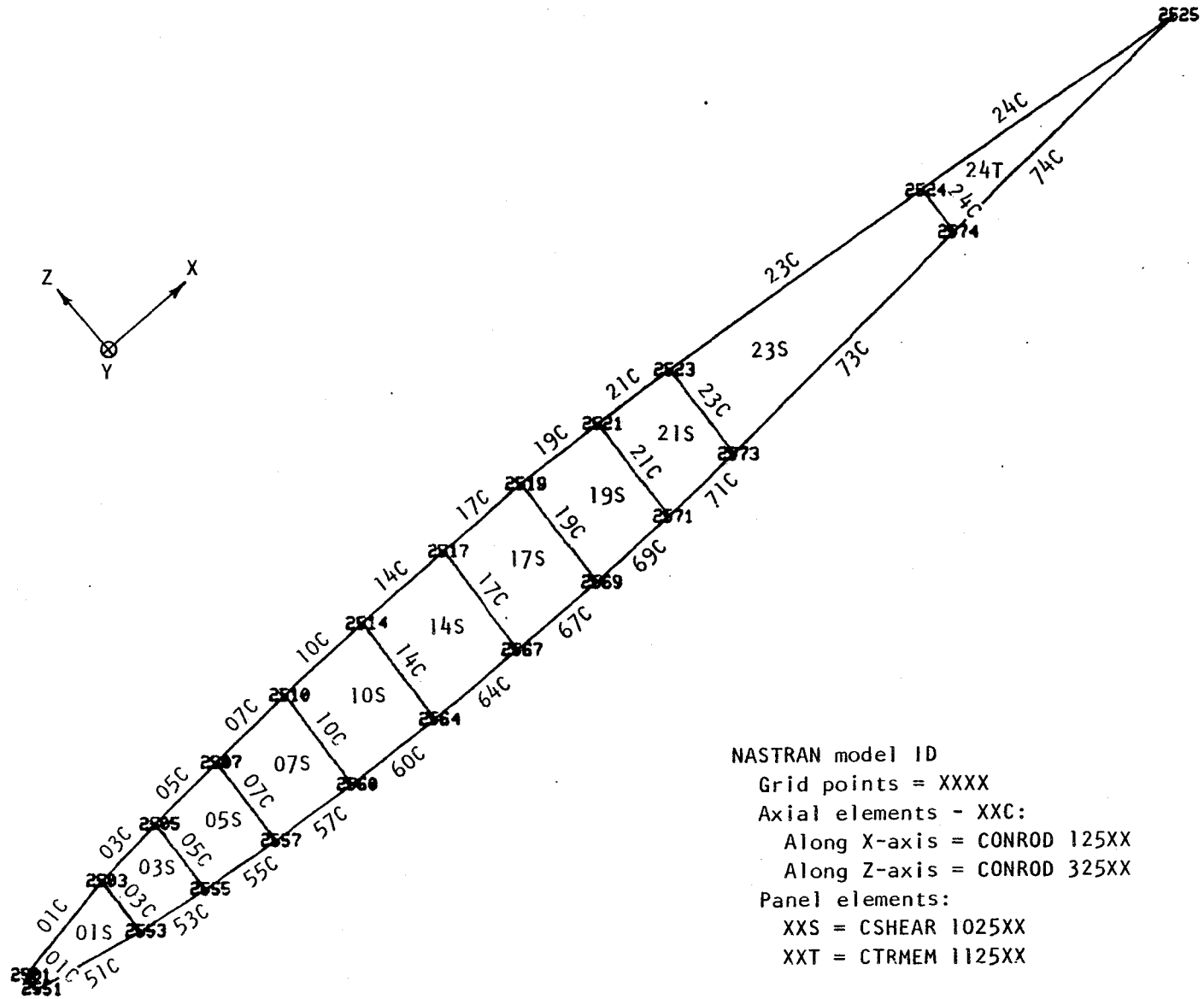


Figure C-23. - Horizontal stabilizer - rib No. 25.

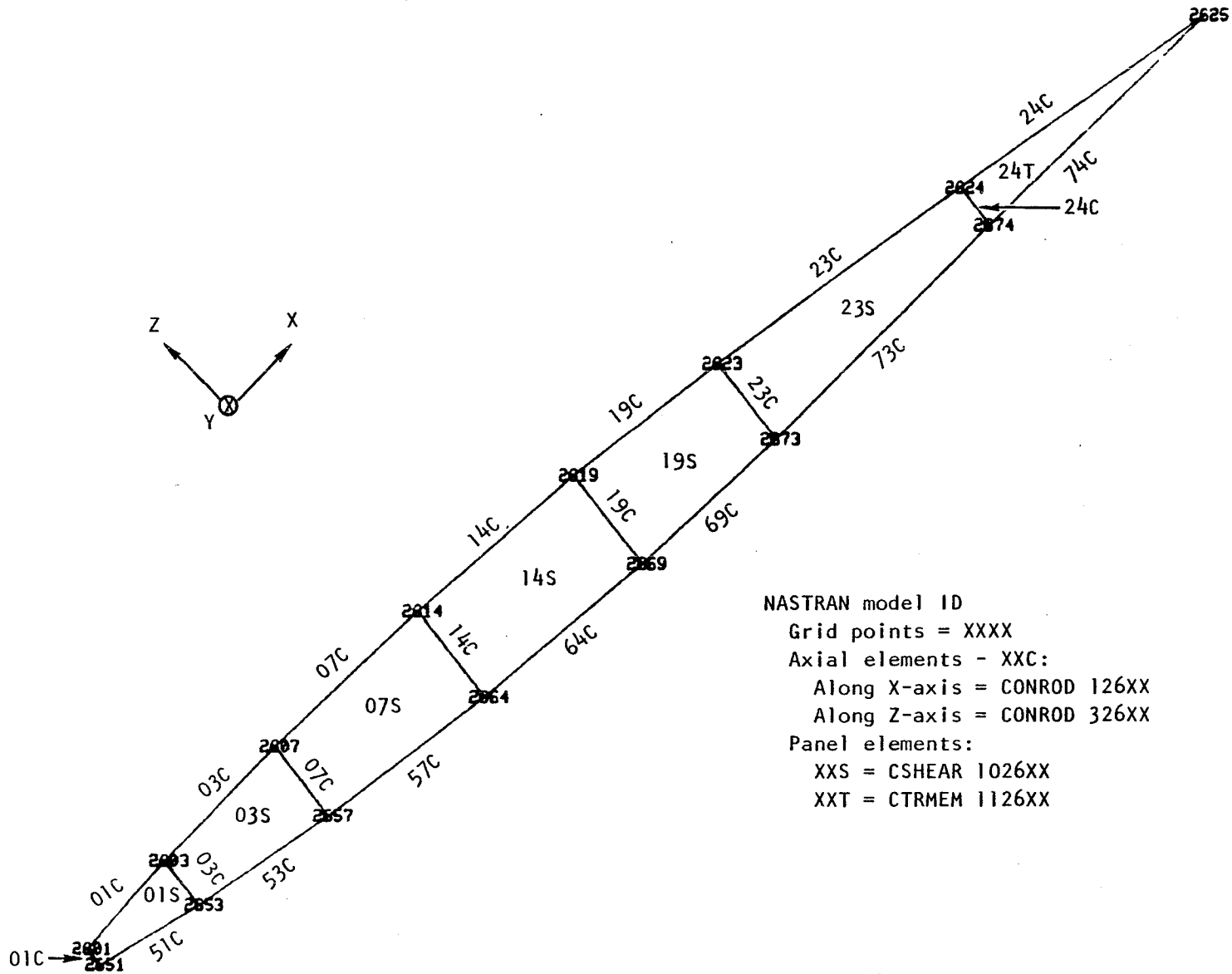


Figure C-24. - Horizontal stabilizer - rib No. 26.

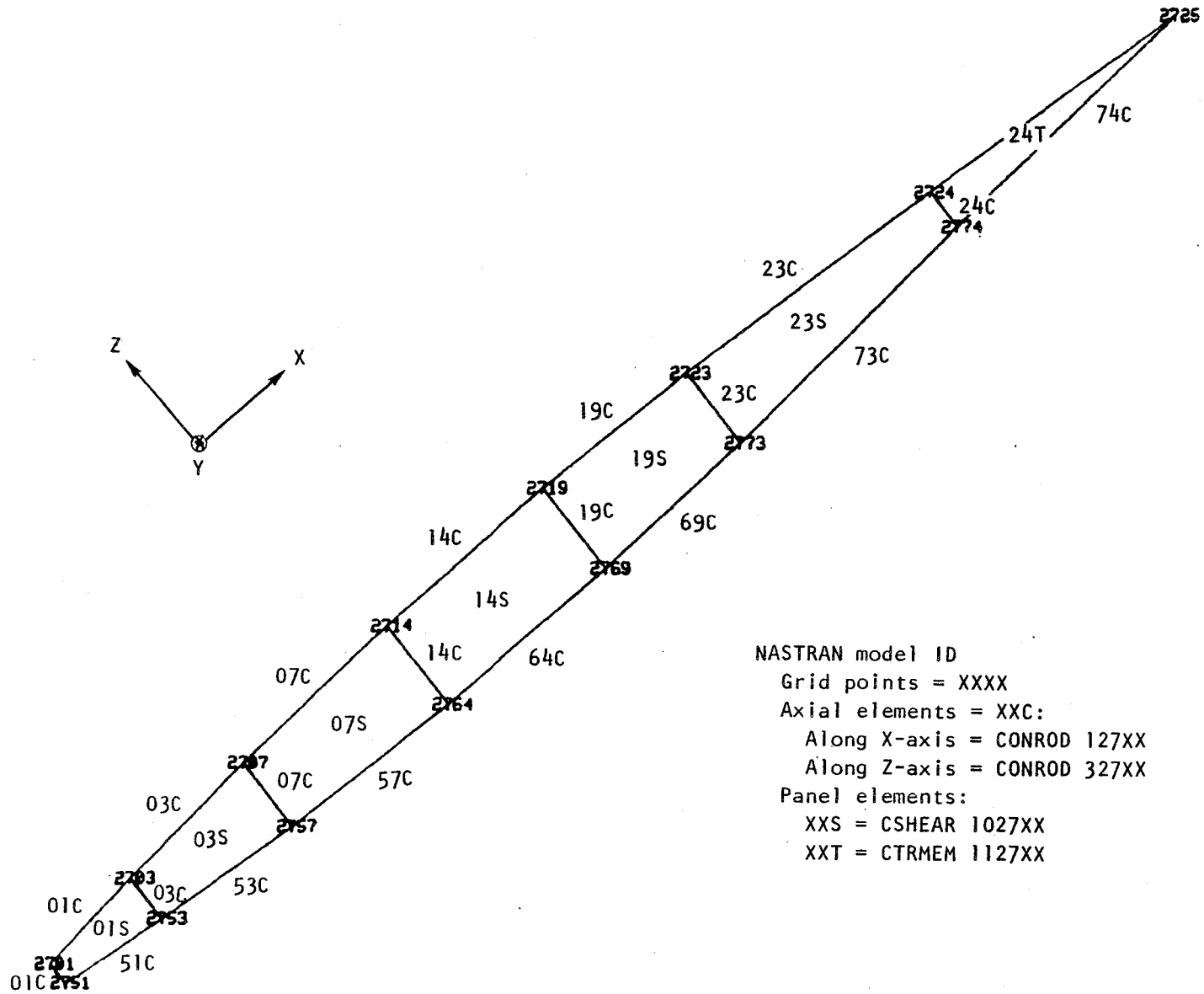


Figure C-25. - Horizontal stabilizer - rib No. 27.

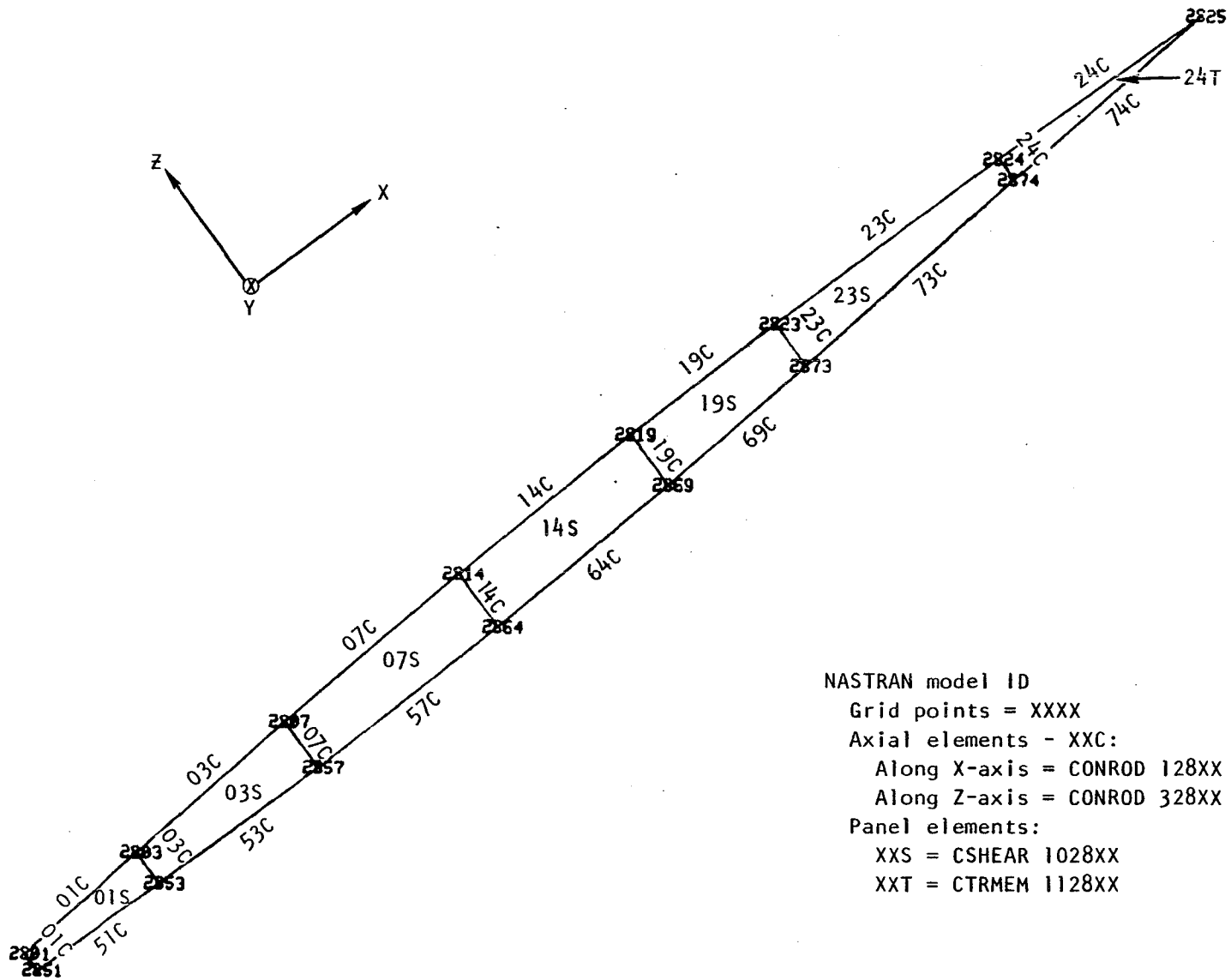


Figure C-26. Horizontal stabilizer - rib No. 28.

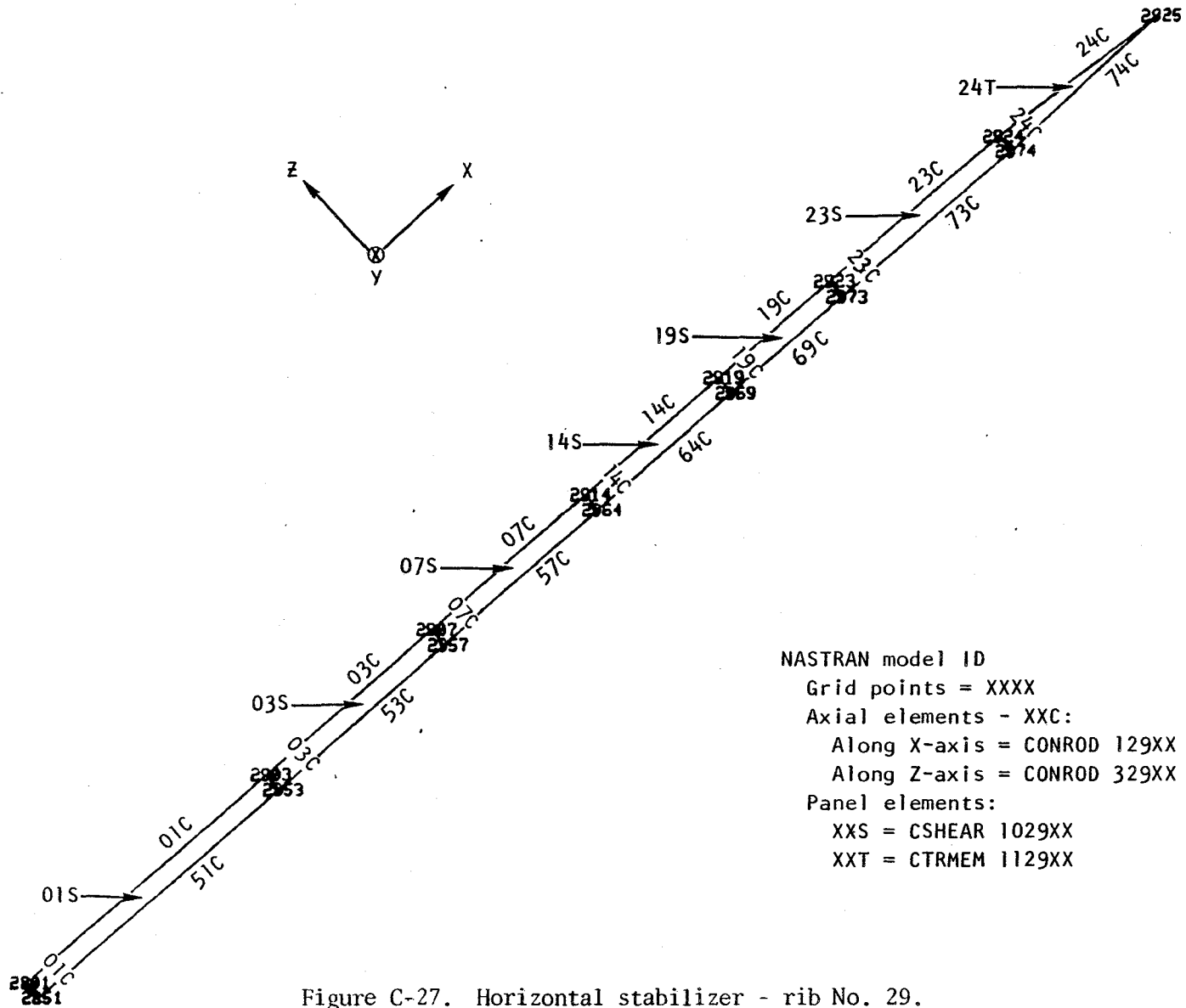


Figure C-27. Horizontal stabilizer - rib No. 29.

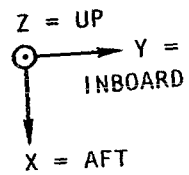
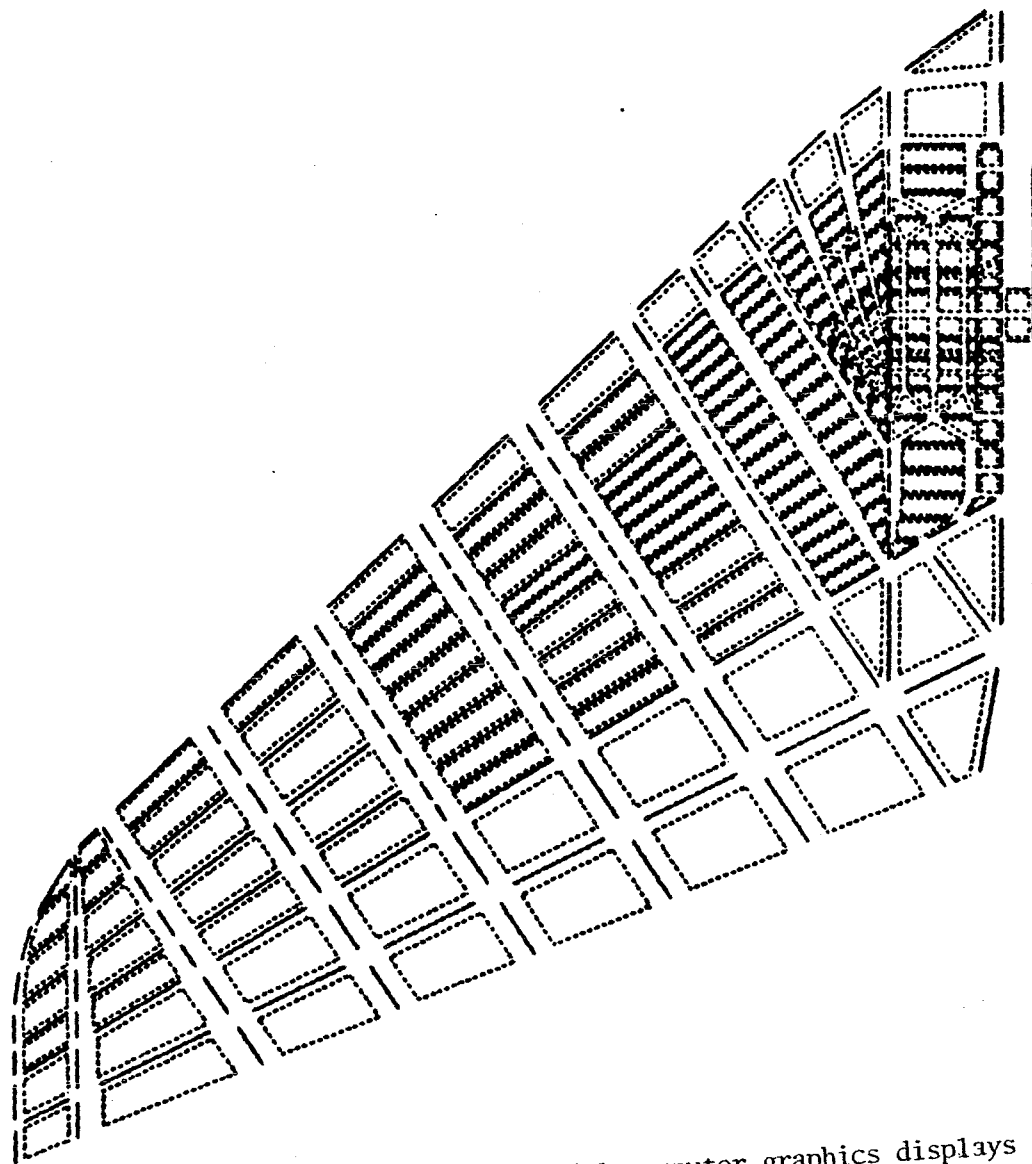


Figure C-28. - Horizontal stabilizer NASTRAN model computer graphics displays of elements.

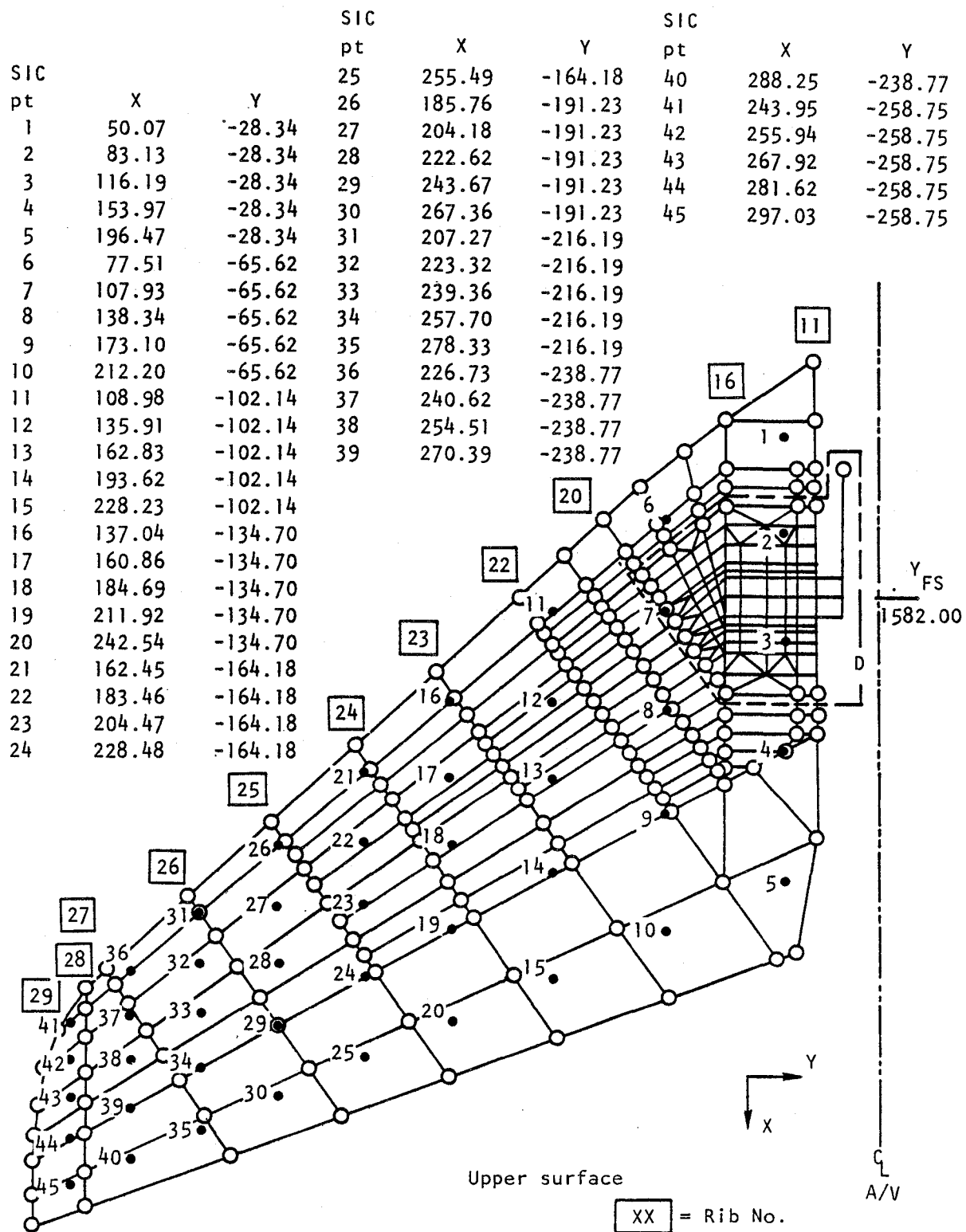


Figure C-29. - Horizontal stabilizer structural influence coefficient (SIC) points.

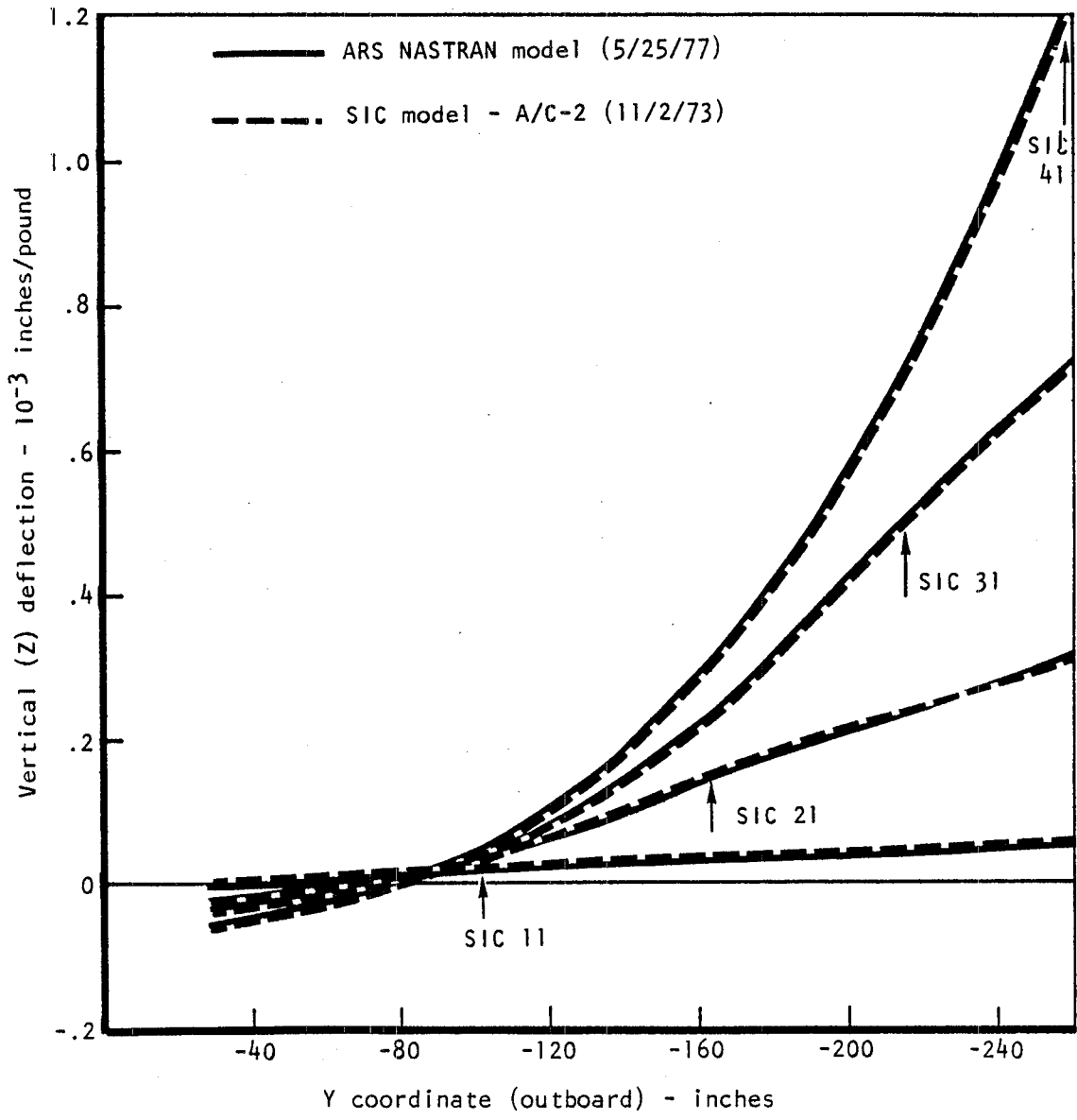


Figure C-30. - Horizontal stabilizer deflections for unit SIC applied load along front spar.

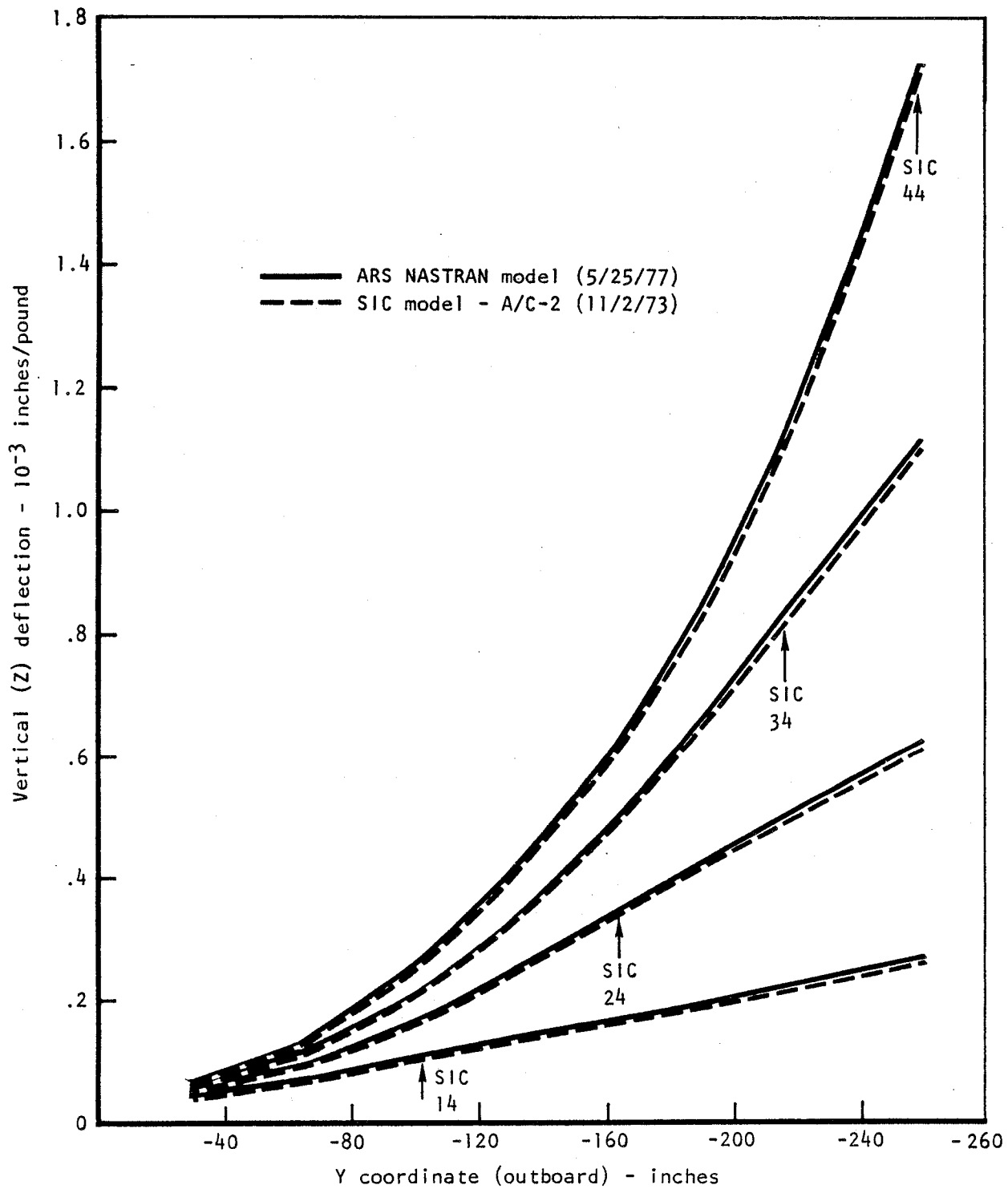


Figure C-31. - Horizontal stabilizer deflections for unit SIC applied load along rear spar.

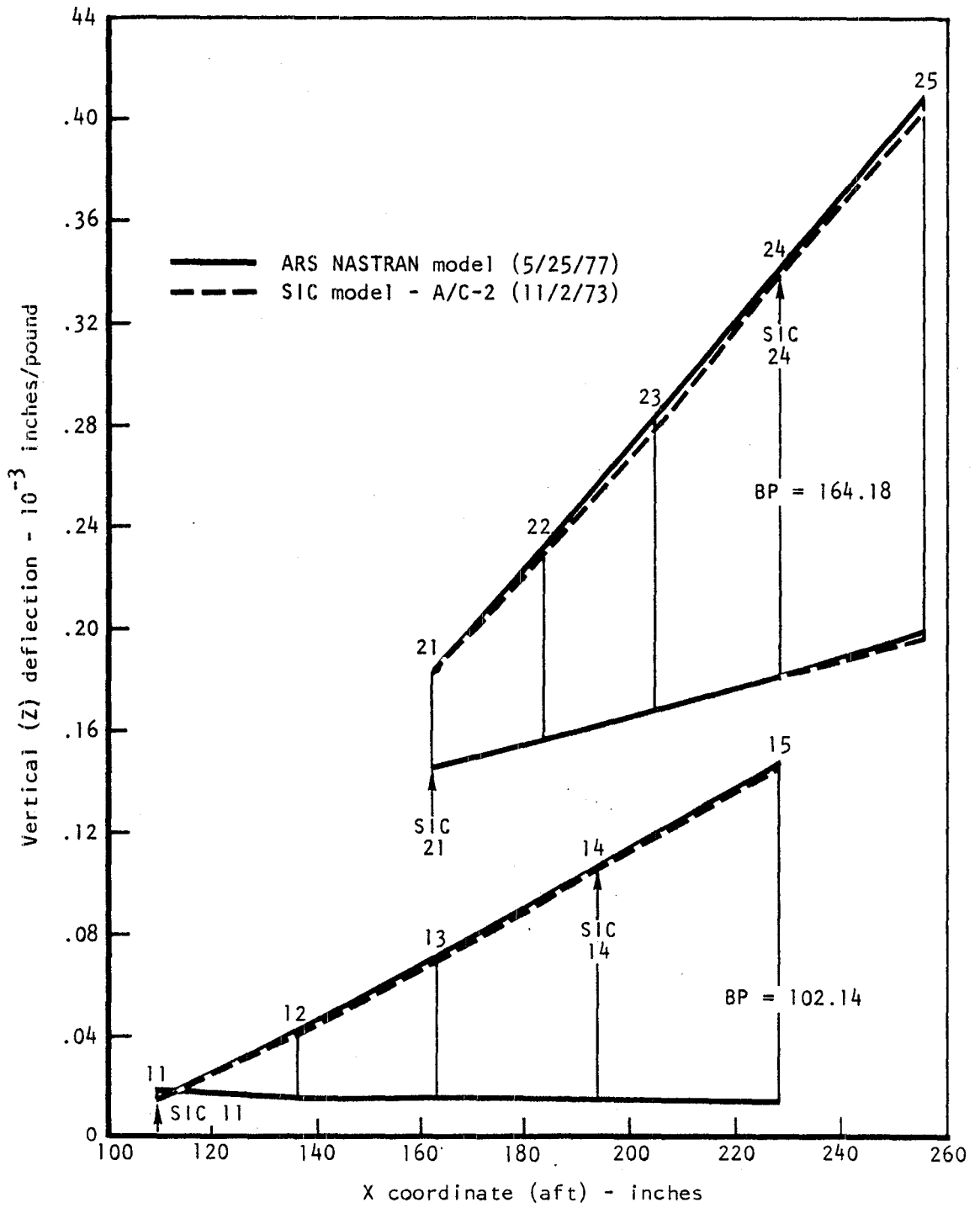


Figure C-32. - Horizontal stabilizer deflections for SIC applied loads at butt planes.

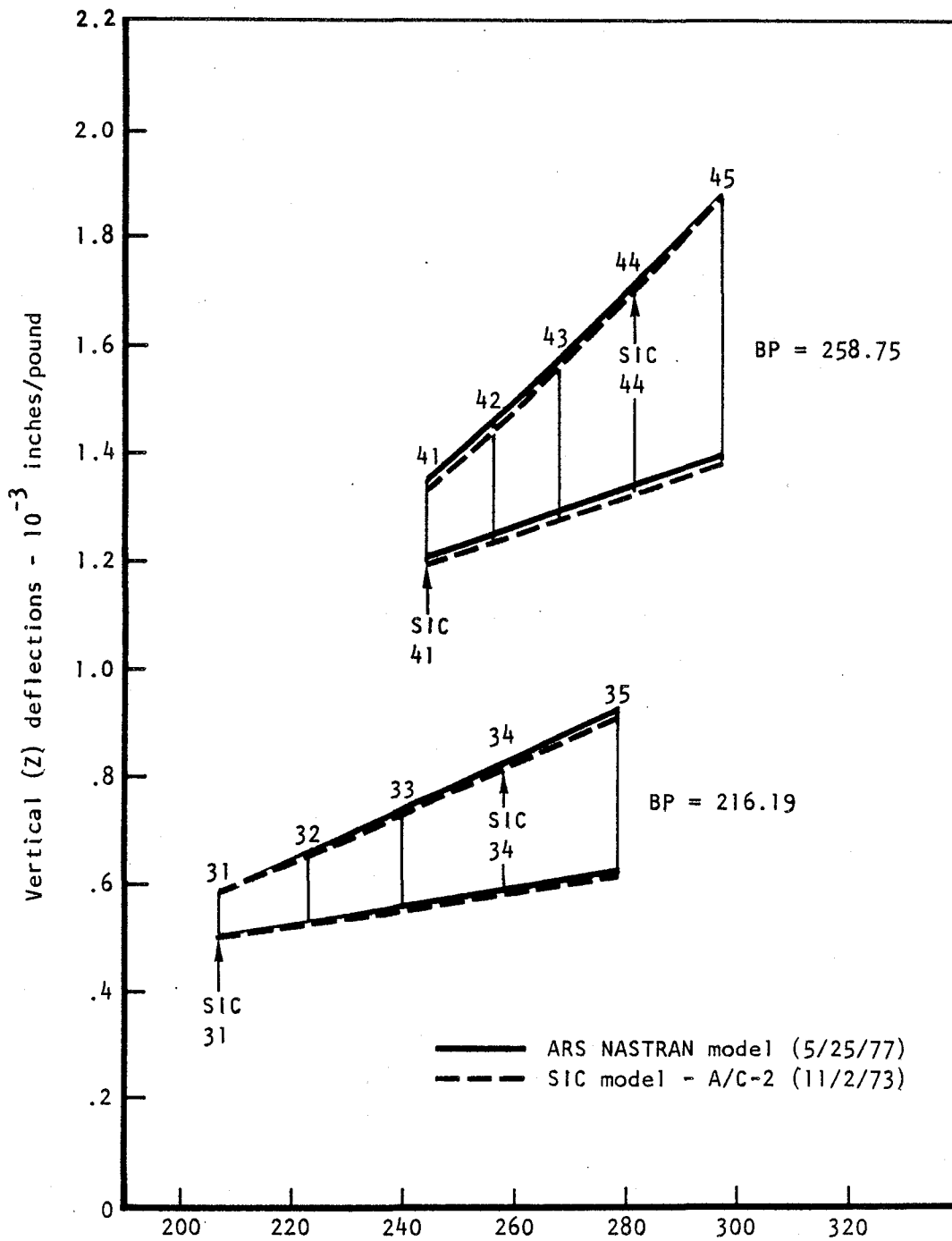


Figure C-33. - Horizontal stabilizer deflections for SIC applied loads at butt planes.

Airloads Research Study - Horizontal Stabilizer

S O R T E D B U L K D A T A E C H O

CARD COUNT	1	2	3	4	5	6	7	8	9	10
1-	CBAR	11308	1010	1308	1309	1358			2	
2-	CBAR	11309	1010	1309	1310	1359			2	11309
3-	+11309		456							
4-	CBAR	11310	1010	1310	1311	1360			2	
5-	CBAR	11311	1010	1311	1312	1361			2	11311
6-	+11311		456							
7-	CBAR	11312	1010	1312	1313	1362			2	
8-	CBAR	11313	1010	1313	1314	1363			2	11313
9-	+11313		456							
10-	CBAR	11314	1010	1314	1315	1364			2	
11-	CBAR	11315	1010	1315	1316	1365			2	
12-	CBAR	11358	1010	1358	1359	1308			2	
13-	CBAR	11359	1010	1359	1360	1309			2	11359
14-	+11359		456							
15-	CBAR	11360	1010	1360	1361	1310			2	
16-	CBAR	11361	1010	1361	1362	1311			2	11361
17-	+11361		456							
18-	CBAR	11362	1010	1362	1363	1312			2	
19-	CBAR	11363	1010	1363	1364	1313			2	11363
20-	+11363		456							
21-	CBAR	11364	1010	1364	1365	1314			2	
22-	CBAR	11365	1010	1365	1366	1315			2	
23-	CBAR	11408	1010	1408	1409	1458			2	
24-	CBAR	11409	1010	1409	1410	1459			2	11409
25-	+11409		456							
26-	CBAR	11410	1010	1410	1411	1460			2	
27-	CBAR	11411	1010	1411	1412	1461			2	11411
28-	+11411		456							
29-	CBAR	11412	1010	1412	1413	1462			2	
30-	CBAR	11413	1010	1413	1414	1463			2	11413
31-	+11413		456							
32-	CBAR	11414	1010	1414	1415	1464			2	
33-	CBAR	11415	1010	1415	1416	1465			2	
34-	CBAR	11458	1010	1458	1459	1408			2	
35-	CBAR	11459	1010	1459	1460	1409			2	11459
36-	+11459		456							
37-	CBAR	11460	1010	1460	1461	1410			2	
38-	CBAR	11461	1010	1461	1462	1411			2	11461
39-	+11461		456							
40-	CBAR	11462	1010	1462	1463	1412			2	
41-	CBAR	11463	1010	1463	1464	1413			2	11463
42-	+11463		456							
43-	CBAR	11464	1010	1464	1465	1414			2	
44-	CBAR	11465	1010	1465	1466	1415			2	
45-	CBAR	11508	1010	1508	1509	1558			2	
46-	CBAR	11509	1010	1509	1510	1559			2	11509
47-	+11509		456							
48-	CBAR	11510	1010	1510	1511	1560			2	
49-	CBAR	11511	1010	1511	1512	1561			2	11511
50-	+11511		456							

Airloads Research Study - Horizontal Stabilizer

		SORTED BULK DATA ECHO									
CARD		1	2	3	4	5	6	7	8	9	10
COUNT											
51-	CBAR	11512	1010	1512	1513	1562				2	
52-	CBAR	11513	1010	1513	1514	1563				2	11513
53-	+11513		456								
54-	CBAR	11514	1010	1514	1515	1564				2	
55-	CBAR	11515	1010	1515	1516	1565				2	
56-	CBAR	11559	1010	1558	1559	1508				2	
57-	CBAR	11559	1010	1559	1560	1509				2	11559
58-	+11559		456								
59-	CBAR	11550	1010	1560	1561	1510				2	
60-	CBAR	11551	1010	1561	1562	1511				2	11561
61-	+11561		456								
62-	CBAR	11552	1010	1562	1563	1512				2	
63-	CBAR	11553	1010	1563	1564	1513				2	11563
64-	+11563		456								
65-	CBAR	11554	1010	1564	1565	1514				2	
66-	CBAR	11555	1010	1565	1566	1515				2	
67-	CBAR	11709	1010	1708	1709	1758				2	
68-	CBAR	11709	1010	1709	1710	1759				2	11709
69-	+11709		456								
70-	CBAR	11710	1010	1710	1711	1760				2	
71-	CBAR	11711	1010	1711	1612	1761				2	
72-	CBAR	11758	1010	1758	1759	1708				2	
73-	CBAR	11759	1010	1759	1760	1709				2	11759
74-	+11759		456								
75-	CBAR	11750	1010	1760	1761	1710				2	
76-	CBAR	11751	1010	1761	1662	1711				2	
77-	CBAR	11808	1010	1808	1809	1858				2	
78-	CBAR	11809	1010	1809	1810	1859				2	11809
79-	+11809		456								
80-	CBAR	11810	1010	1810	1811	1860				2	
81-	CBAR	11811	1010	1811	1812	1861				2	11811
82-	+11811		456								
83-	CBAR	11812	1010	1812	1813	1862				2	
84-	CBAR	11813	1010	1813	1814	1863				2	
85-	CBAR	11858	1010	1858	1859	1808				2	
86-	CBAR	11859	1010	1859	1860	1809				2	11859
87-	+11859		456								
88-	CBAR	11860	1010	1860	1861	1810				2	
89-	CBAR	11861	1010	1861	1862	1811				2	11861
90-	+11861		456								
91-	CBAR	11852	1010	1862	1863	1812				2	
92-	CBAR	11853	1010	1863	1864	1813				2	
93-	CBAR	11909	1010	1908	1909	1958				2	
94-	CBAR	11909	1010	1909	1910	1959				2	11909
95-	+11909		456								
96-	CBAR	11910	1010	1910	1911	1960				2	
97-	CBAR	11911	1010	1911	1912	1961				2	11911
98-	+11911		456								
99-	CBAR	11912	1010	1912	1913	1962				2	
100-	CBAR	11913	1010	1913	1914	1963				2	11913

Airloads Research Study - Horizontal Stabilizer

SORTED BULK DATA ECHO

CARD COUNT	1	2	3	4	5	6	7	8	9	10
101-	+11913		456							
102-	CBAR	11914	1010	1914	1915	1964			2	
103-	C9AR	11915	1010	1915	1616	1965			2	
104-	C3AR	11950	1010	1950	1959	1900			2	
105-	CBAR	11959	1010	1959	1960	1909			2	11959
106-	+11959		456							
107-	CBAR	11950	1010	1960	1961	1910			2	
108-	CRAR	11961	1010	1961	1962	1911			2	11961
109-	+11961		456							
110-	CBAR	11952	1010	1962	1963	1912			2	
111-	CBAR	11953	1010	1963	1964	1913			2	11963
112-	+11963		456							
113-	C3AR	11954	1010	1964	1965	1914			2	
114-	CBAR	11955	1010	1965	1666	1915			2	
115-	CBAR	41040	21000	1040	1041	1141			2	
116-	CBAR	41042	21000	1042	1041	1141			2	
117-	CONROD	1101	1101	1601	1	.086				
118-	CONROD	1103	1103	1203	1	.707				
119-	CONROD	1105	1105	1205	2	.093				
120-	CONROD	1107	1107	1207	2	.129				
121-	CONROD	1110	1110	1210	2	1.660				
122-	CONROD	1112	1112	1212	2	.223				
123-	CONROD	1115	1116	1216	2	.165				
124-	CONROD	1118	1118	1218	2	.092				
125-	CONROD	1123	1120	1321	1	.756				
126-	CONROD	1151	1151	1651	1	.086				
127-	CONROD	1153	1153	1253	1	.707				
128-	CONROD	1155	1155	1255	2	.093				
129-	CONROD	1157	1157	1257	2	.129				
130-	CONROD	1160	1160	1260	2	1.660				
131-	CONROD	1162	1162	1262	2	.223				
132-	CONROD	1165	1166	1266	2	.165				
133-	CONROD	1168	1168	1268	2	.092				
134-	CONROD	1173	1170	1371	1	.756				
135-	CONROD	1203	1203	1603	1	.686				
136-	CONROD	1204	1204	1604	2	.142				
137-	CONROD	1205	1205	1605	2	.232				
138-	CONROD	1206	1206	1406	2	.027				
139-	CONROD	1207	1207	1307	2	.034				
140-	CONROD	1208	1208	1308	2	.034				
141-	CONROD	1210	1210	1310	2	1.210				
142-	CONROD	1212	1212	1312	2	.349				
143-	CONROD	1214	1214	1314	2	.135				
144-	CONROD	1215	1216	1316	2	.071				
145-	CONROD	1217	1217	1417	2	.060				
146-	CONROD	1218	1218	1618	2	.038				
147-	CONROD	1219	1219	1619	2	.026				
148-	CONROD	1220	1220	1620	2	.023				
149-	CONROD	1253	1253	1653	1	.686				
150-	CONROD	1254	1254	1654	2	.142				

SORTED BULK DATA ECHO

CARD COUNT	1	2	3	4	5	6	7	8	9	10
151-	CONROD	1255	1255	1655	2	.232				
152-	CONROD	1256	1256	1456	2	.027				
153-	CONROD	1257	1257	1357	2	.034				
154-	CONROD	1258	1258	1358	2	.034				
155-	CONROD	1260	1260	1360	2	1.210				
156-	CONROD	1262	1262	1362	2	.349				
157-	CONROD	1264	1264	1364	2	.135				
158-	CONROD	1265	1266	1366	2	.071				
159-	CONROD	1267	1267	1467	2	.060				
160-	CONROD	1268	1268	1668	2	.038				
161-	CONROD	1269	1269	1669	2	.026				
162-	CONROD	1270	1270	1670	2	.023				
163-	CONROD	1307	1307	1407	2	.034				
164-	CONROD	1308	1308	1408	2	.034				
165-	CONROD	1310	1310	1410	2	1.210				
166-	CONROD	1312	1312	1412	2	.450				
167-	CONROD	1314	1314	1414	2	.105				
168-	CONROD	1316	1316	1416	2	.064				
169-	CONROD	1321	1321	1621	2	.023				
170-	CONROD	1323	1323	1422	1	.720				
171-	CONROD	1357	1357	1457	2	.034				
172-	CONROD	1358	1358	1458	2	.034				
173-	CONROD	1360	1360	1460	2	1.210				
174-	CONROD	1362	1362	1462	2	.450				
175-	CONROD	1364	1364	1464	2	.105				
176-	CONROD	1366	1366	1466	2	.064				
177-	CONROD	1371	1371	1671	2	.023				
178-	CONROD	1373	1371	1472	1	.720				
179-	CONROD	1405	1406	1606	2	.027				
180-	CONROD	1407	1407	1507	2	.034				
181-	CONROD	1408	1408	1508	2	.034				
182-	CONROD	1410	1410	1510	2	1.220				
183-	CONROD	1412	1412	1512	2	.651				
184-	CONROD	1414	1414	1514	2	.076				
185-	CONROD	1415	1416	1516	2	.059				
186-	CONROD	1417	1417	1617	2	.060				
187-	CONROD	1422	1422	1622	2	.016				
188-	CONROD	1423	1422	1623	1	.684				
189-	CONROD	1455	1456	1656	2	.027				
190-	CONROD	1457	1457	1557	2	.034				
191-	CONROD	1458	1458	1558	2	.034				
192-	CONROD	1460	1460	1560	2	1.220				
193-	CONROD	1462	1462	1562	2	.651				
194-	CONROD	1464	1464	1564	2	.076				
195-	CONROD	1465	1466	1566	2	.059				
196-	CONROD	1467	1467	1667	2	.060				
197-	CONROD	1472	1472	1672	2	.016				
198-	CONROD	1473	1472	1673	1	.684				
199-	CONROD	1507	1507	1607	2	.034				
200-	CONROD	1508	1508	1608	2	.034				

Airloads Research Study - Horizontal Stabilizer

S O R T E D B U L K D A T A E C H O

CARD COUNT	.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
201-	CONROD	1510		1510		1610		2				1.220									
202-	CONROD	1512		1512		1612		2				.751									
203-	CONROD	1514		1514		1614		2				.068									
204-	CONROD	1515		1516		1616		2				.053									
205-	CONROD	1557		1557		1657		2				.034									
206-	CONROD	1558		1558		1658		2				.034									
207-	CONROD	1560		1560		1660		2				1.220									
208-	CONROD	1562		1562		1662		2				.751									
209-	CONROD	1564		1564		1664		2				.068									
210-	CONROD	1565		1566		1666		2				.053									
211-	CONROD	1601		1601		1701		1				.212									
212-	CONROD	1603		1603		1703		1				.637									
213-	CONROD	1604		1604		1704		2				.014									
214-	CONROD	1605		1605		1705		2				.014									
215-	CONROD	1605		1606		1706		2				.023									
216-	CONROD	1607		1607		1707		2				.026									
217-	CONROD	1608		1608		1708		2				.042									
218-	CONROD	1610		1610		1710		2				.041									
219-	CONROD	1612		1612		1812		2				.052									
220-	CONROD	1614		1614		1814		2				.038									
221-	CONROD	1615		1616		2016		2				.037									
222-	CONROD	1617		1617		2017		2				.028									
223-	CONROD	1618		1618		2118		2				.029									
224-	CONROD	1619		1619		2119		2				.023									
225-	CONROD	1620		1620		2120		2				.017									
226-	CONROD	1621		1621		2121		2				.017									
227-	CONROD	1622		1622		2122		2				.012									
228-	CONROD	1623		1623		2223		1				.698									
229-	CONROD	1651		1651		1751		1				.212									
230-	CONROD	1653		1653		1753		1				.637									
231-	CONROD	1654		1654		1754		2				.014									
232-	CONROD	1655		1655		1755		2				.014									
233-	CONROD	1655		1656		1756		2				.023									
234-	CONROD	1657		1657		1757		2				.026									
235-	CONROD	1658		1658		1758		2				.042									
236-	CONROD	1660		1660		1760		2				.041									
237-	CONROD	1662		1662		1862		2				.052									
238-	CONROD	1664		1664		1864		2				.038									
239-	CONROD	1665		1666		2066		2				.037									
240-	CONROD	1667		1667		2067		2				.028									
241-	CONROD	1668		1668		2168		2				.029									
242-	CONROD	1669		1669		2169		2				.023									
243-	CONROD	1670		1670		2170		2				.017									
244-	CONROD	1671		1671		2171		2				.017									
245-	CONROD	1672		1672		2172		2				.012									
246-	CONROD	1673		1673		2273		1				.698									
247-	CONROD	1701		1701		1901		1				.207									
248-	CONROD	1703		1703		1903		1				.605									
249-	CONROD	1704		1704		1904		2				.014									
250-	CONROD	1705		1705		1905		2				.014									

Airloads Research Study - Horizontal Stabilizer

SORTED BULK DATA ECHO

CARD COUNT	1	2	3	4	5	6	7	8	9	10
251-	CONR CD	1705	1706	1806	2	.023				
252-	CONROD	1707	1707	1807	2	.026				
253-	CONROD	1708	1708	1808	2	.041				
254-	CONROD	1710	1710	1810	2	.041				
255-	CONROD	1751	1751	1951	1	.207				
256-	CONROD	1753	1753	1953	1	.605				
257-	CONROD	1754	1754	1954	2	.014				
258-	CONROD	1755	1755	1955	2	.014				
259-	CONROD	1756	1756	1856	2	.023				
260-	CONROD	1757	1757	1857	2	.026				
261-	CONROD	1758	1758	1858	2	.041				
262-	CONROD	1760	1760	1860	2	.041				
263-	CONROD	1806	1806	1906	2	.023				
264-	CONR CD	1807	1807	1907	2	.026				
265-	CONROD	1808	1808	1908	2	.040				
266-	CONR CD	1810	1810	1910	2	.040				
267-	CONROD	1812	1812	1912	2	.052				
268-	CONROD	1814	1814	1914	2	.038				
269-	CONROD	1855	1856	1956	2	.023				
270-	CONROD	1857	1857	1957	2	.026				
271-	CONROD	1858	1858	1958	2	.040				
272-	CONROD	1860	1860	1960	2	.040				
273-	CONROD	1862	1862	1962	2	.052				
274-	CONROD	1864	1864	1964	2	.038				
275-	CONROD	1901	1901	2001	1	.202				
276-	CONROD	1903	1903	2003	1	.585				
277-	CONROD	1904	1904	2004	2	.014				
278-	CONROD	1905	1905	2005	2	.014				
279-	CONROD	1906	1906	2006	2	.023				
280-	CONROD	1907	1907	2007	2	.026				
281-	CONROD	1908	1908	2008	2	.039				
282-	CONROD	1910	1910	2010	2	.038				
283-	CONROD	1912	1912	2012	2	.049				
284-	CONROD	1914	1914	2014	2	.038				
285-	CONR CD	1951	1951	2051	1	.202				
286-	CONROD	1953	1953	2053	1	.585				
287-	CONROD	1954	1954	2054	2	.014				
288-	CONROD	1955	1955	2055	2	.014				
289-	CONROD	1956	1956	2056	2	.023				
290-	CONROD	1957	1957	2057	2	.026				
291-	CONROD	1958	1958	2058	2	.039				
292-	CONROD	1960	1960	2060	2	.038				
293-	CONROD	1962	1962	2062	2	.049				
294-	CONROD	1964	1964	2064	2	.038				
295-	CONROD	2001	2001	2101	1	.193				
296-	CONROD	2003	2003	2103	1	.561				
297-	CONROD	2004	2004	2104	2	.014				
298-	CONROD	2005	2005	2105	2	.014				
299-	CONROD	2006	2006	2106	2	.026				
300-	CONROD	2007	2007	2107	2	.026				

Airloads Research Study - Horizontal Stabilizer

S O R T E D B U L K D A T A E C H O

CARD COUNT	1	2	3	4	5	6	7	8	9	10
301-	CONR CD	2008	2008	2108	2	.032				
302-	CONROD	2010	2010	2110	2	.031				
303-	CONROD	2012	2012	2112	2	.035				
304-	CONROD	2014	2014	2114	2	.031				
305-	CONROD	2015	2016	2116	2	.030				
306-	CONROD	2017	2017	2117	2	.032				
307-	CONROD	2051	2051	2151	1	.193				
308-	CONROD	2053	2053	2153	1	.561				
309-	CONR CD	2054	2054	2154	2	.014				
310-	CONR OD	2055	2055	2155	2	.014				
311-	CONROD	2055	2056	2156	2	.020				
312-	CONROD	2057	2057	2157	2	.026				
313-	CONROD	2058	2058	2158	2	.032				
314-	CONROD	2060	2060	2160	2	.031				
315-	CONROD	2062	2062	2162	2	.035				
316-	CONROD	2064	2064	2164	2	.031				
317-	CONR OD	2066	2066	2166	2	.030				
318-	CONR CD	2067	2067	2167	2	.032				
319-	CONR CD	2101	2101	2201	1	.187				
320-	CONROD	2103	2103	2203	1	.534				
321-	CONR CD	2104	2104	2204	2	.014				
322-	CONR OD	2105	2105	2205	2	.014				
323-	CONROD	2105	2106	2206	2	.018				
324-	CONROD	2107	2107	2207	2	.026				
325-	CONROD	2108	2108	2208	2	.029				
326-	CONROD	2110	2110	2210	2	.030				
327-	CONROD	2112	2112	2212	2	.032				
328-	CONROD	2114	2114	2214	2	.029				
329-	CONROD	2115	2116	2216	2	.029				
330-	CONR OD	2117	2117	2217	2	.030				
331-	CONROD	2118	2118	2218	2	.029				
332-	CONR CD	2119	2119	2219	2	.023				
333-	CONROD	2120	2120	2220	2	.017				
334-	CONROD	2121	2121	2221	2	.017				
335-	CONROD	2122	2122	2222	2	.012				
336-	CONROD	2151	2151	2251	1	.187				
337-	CONROD	2153	2153	2253	1	.534				
338-	CONROD	2154	2154	2254	2	.014				
339-	CONROD	2155	2155	2255	2	.014				
340-	CONROD	2155	2156	2256	2	.018				
341-	CONR CD	2157	2157	2257	2	.026				
342-	CONROD	2158	2158	2258	2	.029				
343-	CONROD	2160	2160	2260	2	.030				
344-	CONROD	2162	2162	2262	2	.032				
345-	CONROD	2164	2164	2264	2	.029				
346-	CONR CD	2165	2166	2266	2	.029				
347-	CONR OD	2167	2167	2267	2	.030				
348-	CONROD	2168	2168	2268	2	.029				
349-	CONROD	2169	2169	2269	2	.023				
350-	CONROD	2170	2170	2270	2	.017				

Airloads Research Study - Horizontal Stabilizer

SORTED BULK DATA ECHO

CARD COUNT	. 1	.. 2	.. 3	.. 4	.. 5	.. 6	.. 7	.. 8	.. 9	.. 10
351-	CONROD	2171	2171	2271	2	.017				
352-	CONR CD	2172	2172	2272	2	.012				
353-	CONROD	2201	2201	2301	1	.171				
354-	CONROD	2203	2203	2303	1	.530				
355-	CONR CD	2205	2205	2305	2	.028				
356-	CONROD	2207	2207	2307	2	.032				
357-	CONR CD	2208	2208	2308	2	.027				
358-	CONROD	2210	2210	2310	2	.026				
359-	CONROD	2212	2212	2312	2	.027				
360-	CONROD	2214	2214	2314	2	.025				
361-	CONROD	2216	2216	2316	2	.025				
362-	CONR OD	2217	2217	2317	2	.039				
363-	CONR OD	2219	2219	2319	2	.041				
364-	CONR OD	2221	2221	2321	2	.031				
365-	CONROD	2223	2223	2323	1	.689				
366-	CONR OD	2251	2251	2351	1	.171				
367-	CONROD	2253	2253	2353	1	.530				
368-	CONROD	2255	2255	2355	2	.028				
369-	CONR OD	2257	2257	2357	2	.032				
370-	CONROD	2258	2258	2358	2	.027				
371-	CONR OD	2260	2260	2360	2	.026				
372-	CONR OD	2262	2262	2362	2	.027				
373-	CONR OD	2264	2264	2364	2	.025				
374-	CONR OD	2265	2266	2366	2	.025				
375-	CONROD	2267	2267	2367	2	.039				
376-	CONROD	2269	2269	2369	2	.841				
377-	CONR OD	2271	2271	2371	2	.031				
378-	CONROD	2273	2273	2373	1	.689				
379-	CONR OD	2301	2301	2401	1	.153				
380-	CONROD	2303	2303	2403	1	.540				
381-	CONROD	2305	2305	2405	2	.025				
382-	CONR CD	2307	2307	2407	2	.031				
383-	CONR CD	2310	2310	2410	2	.026				
384-	CONR OD	2312	2312	2412	2	.017				
385-	CONROD	2314	2314	2414	2	.025				
386-	CONROD	2317	2317	2417	2	.036				
387-	CONR CD	2319	2319	2419	2	.033				
388-	CONR CD	2321	2321	2421	2	.028				
389-	CONROD	2323	2323	2423	1	.649				
390-	CONROD	2351	2351	2451	1	.153				
391-	CONR OD	2353	2353	2453	1	.540				
392-	CONROD	2355	2355	2455	2	.025				
393-	CONROD	2357	2357	2457	2	.031				
394-	CONROD	2360	2360	2460	2	.026				
395-	CONROD	2362	2362	2462	2	.017				
396-	CONROD	2364	2364	2464	2	.025				
397-	CONR OD	2367	2367	2467	2	.036				
398-	CONR OD	2369	2369	2469	2	.033				
399-	CONR OD	2371	2371	2471	2	.028				
400-	CONR OD	2373	2373	2473	1	.649				

S O R T E D B U L K D A T A E C H O

CARD COUNT	.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
401-	CONROD	2401		2401		2501		1				.136									
402-	CONROD	2403		2403		2503		1				.548									
403-	CONROD	2405		2405		2505		2				.024									
404-	CONROD	2407		2407		2507		2				.024									
405-	CONROD	2410		2410		2510		2				.027									
406-	CONROD	2414		2414		2514		2				.026									
407-	CONROD	2417		2417		2517		2				.027									
408-	CONROD	2419		2419		2519		2				.026									
409-	CONROD	2421		2421		2521		2				.025									
410-	CONROD	2423		2423		2523		1				.669									
411-	CONROD	2451		2451		2551		1				.136									
412-	CONROD	2453		2453		2553		1				.548									
413-	CONROD	2455		2455		2555		2				.024									
414-	CONROD	2457		2457		2557		2				.024									
415-	CONROD	2460		2460		2560		2				.027									
416-	CONROD	2464		2464		2564		2				.026									
417-	CONROD	2467		2467		2567		2				.027									
418-	CONROD	2469		2469		2569		2				.026									
419-	CONROD	2471		2471		2571		2				.025									
420-	CONROD	2473		2473		2573		1				.669									
421-	CONROD	2501		2501		2601		1				.118									
422-	CONROD	2503		2503		2603		1				.533									
423-	CONROD	2507		2507		2607		2				.048									
424-	CONROD	2514		2514		2614		2				.048									
425-	CONROD	2519		2519		2619		2				.048									
426-	CONROD	2523		2523		2623		1				.668									
427-	CONROD	2551		2551		2651		1				.118									
428-	CONROD	2553		2553		2653		1				.533									
429-	CONROD	2557		2557		2657		2				.048									
430-	CONROD	2564		2564		2664		2				.048									
431-	CONROD	2569		2569		2669		2				.048									
432-	CONROD	2573		2573		2673		1				.668									
433-	CONROD	2601		2601		2701		1				.101									
434-	CONROD	2603		2603		2703		1				.453									
435-	CONROD	2607		2607		2707		2				.024									
436-	CONROD	2614		2614		2714		2				.048									
437-	CONROD	2619		2619		2719		2				.036									
438-	CONROD	2623		2623		2723		1				.573									
439-	CONROD	2651		2651		2751		1				.101									
440-	CONROD	2653		2653		2753		1				.453									
441-	CONROD	2657		2657		2757		2				.024									
442-	CONROD	2664		2664		2764		2				.048									
443-	CONROD	2669		2669		2769		2				.036									
444-	CONROD	2673		2673		2773		1				.573									
445-	CONROD	2701		2701		2801		1				.085									
446-	CONROD	2703		2703		2803		1				.377									
447-	CONROD	2707		2707		2807		2				.024									
448-	CONROD	2714		2714		2814		2				.024									
449-	CONROD	2719		2719		2819		2				.024									
450-	CONROD	2723		2723		2823		1				.469									

Airloads Research Study - Horizontal Stabilizer

SORTED BULK DATA ECHO

CARD COUNT	1	2	3	4	5	6	7	8	9	10
451-	CONROD	2751	2751	2851	1	.085				
452-	CONROD	2753	2753	2853	1	.377				
453-	CONROD	2757	2757	2857	2	.024				
454-	CONROD	2764	2764	2864	2	.024				
455-	CONROD	2769	2769	2869	2	.024				
456-	CONROD	2773	2773	2873	1	.469				
457-	CONROD	2801	2801	2903	1	.045				
458-	CONROD	2803	2803	2903	1	.045				
459-	CONROD	2807	2807	2907	4	.045				
460-	CONROD	2814	2814	2914	4	.001				
461-	CONROD	2819	2819	2919	4	.001				
462-	CONROD	2823	2823	2923	1	.670				
463-	CONROD	2851	2851	2953	1	.045				
464-	CONROD	2853	2853	2953	1	.045				
465-	CONROD	2857	2857	2957	4	.045				
466-	CONROD	2864	2864	2964	4	.001				
467-	CONROD	2869	2869	2969	4	.001				
468-	CONROD	2873	2873	2973	1	.670				
469-	CONROD	11010	1010	1011	2	2.0				
470-	CONROD	11011	1011	1012	2	2.0				
471-	CONROD	11050	1050	1061	2	2.0				
472-	CONROD	11051	1051	1062	2	2.0				
473-	CONROD	11101	1101	1102	4	.446				
474-	CONROD	11102	1102	1103	4	.446				
475-	CONROD	11103	1103	1104	2	.017				
476-	CONROD	11104	1104	1105	2	.017				
477-	CONROD	11105	1105	1106	2	.017				
478-	CONROD	11106	1106	1107	2	.017				
479-	CONROD	11107	1107	1108	2	.017				
480-	CONROD	11108	1108	1109	2	.149				
481-	CONROD	11109	1109	1110	2	.149				
482-	CONROD	11110	1110	1111	2	.001				
483-	CONROD	11111	1111	1112	2	.001				
484-	CONROD	11112	1112	1113	2	.507				
485-	CONROD	11113	1113	1114	2	.507				
486-	CONROD	11114	1114	1115	2	.391				
487-	CONROD	11115	1115	1116	2	.391				
488-	CONROD	11116	1116	1117	2	.102				
489-	CONROD	11117	1117	1118	2	.038				
490-	CONROD	11118	1118	1119	2	.034				
491-	CONROD	11119	1119	1120	2	.032				
492-	CONROD	11120	1120	1124	4	.034				
493-	CONROD	11124	1124	1125	4	.033				
494-	CONROD	11151	1151	1152	4	.446				
495-	CONROD	11152	1152	1153	4	.446				
496-	CONROD	11153	1153	1154	2	.017				
497-	CONROD	11154	1154	1155	2	.017				
498-	CONROD	11155	1155	1156	2	.017				
499-	CONROD	11156	1156	1157	2	.017				
500-	CONROD	11157	1157	1158	2	.017				

S O R T E D B U L K D A T A E C H O

CARD COUNT	1	2	3	4	5	6	7	8	9	10
501-	CONR CD	11158	1158	1159	2	.149				
502-	CONR CD	11159	1159	1160	2	.149				
503-	CONROD	11160	1160	1161	2	.001				
504-	CONROD	11161	1161	1162	2	.001				
505-	CONROD	11162	1162	1163	2	.507				
506-	CONROD	11163	1163	1164	2	.507				
507-	CONROD	11164	1164	1165	2	.391				
508-	CONROD	11165	1165	1166	2	.391				
509-	CONR CD	11166	1166	1167	2	.102				
510-	CONROD	11167	1167	1168	2	.038				
511-	CONROD	11168	1168	1169	2	.034				
512-	CONR OD	11169	1169	1170	2	.032				
513-	CONROD	11170	1170	1174	4	.034				
514-	CONR OD	11174	1174	1125	4	.033				
515-	CONROD	11203	1203	1204	2	.017				
516-	CONR OD	11204	1204	1205	2	.017				
517-	CONROD	11205	1205	1206	2	.017				
518-	CONROD	11206	1206	1207	2	.023				
519-	CONR OD	11207	1207	1208	2	.037				
520-	CONR OD	11208	1208	1209	2	.141				
521-	CONROD	11209	1209	1210	2	.141				
522-	CONROD	11210	1210	1211	2	.001				
523-	CONROD	11211	1211	1212	2	.001				
524-	CONROD	11212	1212	1213	2	.268				
525-	CONR CD	11213	1213	1214	2	.268				
526-	CONR CD	11214	1214	1215	2	.234				
527-	CONROD	11215	1215	1216	2	.234				
528-	CONROD	11216	1216	1217	2	.072				
529-	CONR CD	11217	1217	1218	2	.045				
530-	CONROD	11218	1218	1219	2	.032				
531-	CONR OD	11219	1219	1220	2	.026				
532-	CONROD	11220	1220	1321	2	.025				
533-	CONROD	11253	1253	1254	2	.017				
534-	CONR CD	11254	1254	1255	2	.017				
535-	CONR CD	11255	1255	1256	2	.017				
536-	CONR CD	11256	1256	1257	2	.023				
537-	CONROD	11257	1257	1258	2	.037				
538-	CONR CD	11258	1258	1259	2	.141				
539-	CONR CD	11259	1259	1260	2	.141				
540-	CONR CD	11260	1260	1261	2	.001				
541-	CONROD	11261	1261	1262	2	.001				
542-	CONROD	11262	1262	1263	2	.268				
543-	CONROD	11263	1263	1264	2	.268				
544-	CONROD	11264	1264	1265	2	.234				
545-	CONROD	11265	1265	1266	2	.234				
546-	CONROD	11266	1266	1267	2	.072				
547-	CONROD	11267	1267	1268	2	.045				
548-	CONR CD	11268	1268	1269	2	.032				
549-	CONR OD	11269	1269	1270	2	.026				
550-	CONROD	11270	1270	1371	2	.025				

SORTED BULK DATA ECHO

CARD COUNT	.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
551-	CONROD	11422		1422		1124		4				.124									
552-	CONROD	11472		1472		1174		4				.124									
553-	CONR CD	11601		1601		1603		4				.240									
554-	CONROD	11603		1603		1604		1				.240									
555-	CONROD	11604		1604		1605		1				.205									
556-	CONROD	11605		1605		1606		1				.241									
557-	CONROD	11606		1606		1607		1				.315									
558-	CONROD	11607		1607		1608		1				.647									
559-	CONROD	11608		1608		1609		1				1.052									
560-	CONROD	11609		1609		1610		1				1.052									
561-	CONR CD	11610		1610		1611		2				1.700									
562-	CONROD	11611		1611		1612		2				1.700									
563-	CONROD	11612		1612		1613		1				1.090									
564-	CONROD	11613		1613		1614		1				1.090									
565-	CONROD	11614		1614		1615		1				.685									
566-	CONROD	11615		1615		1616		1				.685									
567-	CONROD	11615		1616		1617		1				.272									
568-	CONROD	11617		1617		1618		1				.285									
569-	CONROD	11618		1618		1619		1				.295									
570-	CONROD	11619		1619		1620		1				.268									
571-	CONROD	11620		1620		1621		1				.216									
572-	CONROD	11621		1621		1622		1				.189									
573-	CONROD	11622		1622		1623		1				.185									
574-	CONROD	11623		1623		2224		4				.119									
575-	CONROD	11651		1651		1653		4				.240									
576-	CONR CD	11653		1653		1654		1				.240									
577-	CONROD	11654		1654		1655		1				.205									
578-	CONROD	11655		1655		1656		1				.241									
579-	CONROD	11656		1656		1657		1				.315									
580-	CONR CD	11657		1657		1658		1				.647									
581-	CONROD	11658		1658		1659		1				1.052									
582-	CONR CD	11659		1659		1660		1				1.052									
583-	CONR CD	11660		1660		1661		2				1.700									
584-	CONROD	11661		1661		1662		2				1.700									
585-	CONROD	11662		1662		1663		1				1.090									
586-	CONROD	11663		1663		1664		1				1.090									
587-	CONROD	11664		1664		1665		1				.685									
588-	CONROD	11665		1665		1666		1				.685									
589-	CONR CD	11666		1666		1667		1				.272									
590-	CONROD	11667		1667		1668		1				.285									
591-	CONROD	11668		1668		1669		1				.295									
592-	CONROD	11669		1669		1670		1				.268									
593-	CONROD	11670		1670		1671		1				.216									
594-	CONR CD	11671		1671		1672		1				.189									
595-	CONROD	11672		1672		1673		1				.185									
596-	CONR CD	11673		1673		2274		4				.119									
597-	CONR CD	11701		1701		1703		4				.213									
598-	CONROD	11751		1751		1753		4				.213									
599-	CONR CD	11901		1901		1903		4				.079									
500-	CONR CD	11951		1951		1953		4				.079									

Airloads Research Study - Horizontal Stabilizer

SORTED BULK DATA ECHO

CARD COUNT	1	2	3	4	5	6	7	8	9	10
601-	CONR CD	12001	2001	2003	4	.164				
602-	CONROD	12003	2003	2004	1	.156				
603-	CONROD	12004	2004	2005	1	.156				
604-	CONROD	12005	2005	2006	1	.156				
605-	CONROD	12006	2006	2007	1	.144				
606-	CONROD	12007	2007	2008	1	.144				
607-	CONROD	12008	2008	2010	1	.144				
608-	CONROD	12010	2010	2012	1	.144				
609-	CONR CD	12012	2012	2014	1	.144				
610-	CONR CD	12014	2014	2016	1	.144				
611-	CONROD	12016	2016	2017	1	.144				
612-	CONROD	12017	2017	1618	1	.129				
613-	CONROD	12051	2051	2053	4	.164				
614-	CONR CD	12053	2053	2054	1	.156				
615-	CONR CD	12054	2054	2055	1	.156				
616-	CONR CD	12055	2055	2056	1	.156				
617-	CONROD	12056	2056	2057	1	.144				
618-	CONROD	12057	2057	2058	1	.144				
619-	CONROD	12058	2058	2060	1	.144				
620-	CONR CD	12050	2060	2062	1	.144				
621-	CONR CD	12062	2062	2064	1	.144				
622-	CONR CD	12054	2064	2066	1	.144				
623-	CONROD	12066	2066	2067	1	.144				
624-	CONROD	12057	2067	1668	1	.129				
625-	CONR CD	12101	2101	2103	4	.243				
626-	CONROD	12151	2151	2153	4	.243				
627-	CONROD	12201	2201	2203	4	.427				
628-	CONROD	12203	2203	2204	1	.072				
629-	CONROD	12204	2204	2205	1	.071				
630-	CONROD	12205	2205	2206	1	.071				
631-	CONROD	12206	2206	2207	1	.080				
632-	CONROD	12207	2207	2208	1	.080				
633-	CONROD	12208	2208	2210	1	.085				
634-	CONROD	12210	2210	2212	1	.089				
635-	CONR CD	12212	2212	2214	1	.089				
636-	CONROD	12214	2214	2216	1	.094				
637-	CONROD	12216	2216	2217	1	.094				
638-	CONROD	12217	2217	2218	1	.094				
639-	CONROD	12218	2218	2219	1	.094				
640-	CONROD	12219	2219	2220	1	.094				
641-	CONROD	12220	2220	2221	1	.089				
642-	CONR CD	12221	2221	2222	1	.085				
643-	CONROD	12222	2222	2223	1	.089				
644-	CONROD	12223	2223	2224	4	.171				
645-	CONR CD	12224	2224	2225	4	.171				
646-	CONR CD	12251	2251	2253	4	.427				
647-	CONROD	12253	2253	2254	1	.072				
648-	CONROD	12254	2254	2255	1	.071				
649-	CONROD	12255	2255	2256	1	.071				
650-	CONROD	12256	2256	2257	1	.080				

Airloads Research Study - Horizontal Stabilizer

Airloads Research Study - Horizontal Stabilizer

CARD	SORTED BULK DATA ECHO									
COUNT	1	2	3	4	5	6	7	8	9	10
651-	CONROD	12257	2257	2258	1	.080				
652-	CONR CD	12258	2258	2260	1	.085				
653-	CONR CD	12250	2260	2262	1	.089				
654-	CONROD	12262	2262	2264	1	.089				
655-	CONROD	12254	2264	2266	1	.094				
656-	CONR CD	12256	2266	2267	1	.094				
657-	CONROD	12257	2267	2268	1	.094				
658-	CONROD	12268	2268	2269	1	.094				
659-	CONROD	12259	2269	2270	1	.094				
660-	CONROD	12270	2270	2271	1	.089				
661-	CONROD	12271	2271	2272	1	.085				
662-	CONROD	12272	2272	2273	1	.089				
663-	CONROD	12273	2273	2274	4	.171				
664-	CONROD	12274	2274	2225	4	.171				
665-	CONROD	12301	2301	2303	4	.564				
666-	CONROD	12303	2303	2305	1	.070				
667-	CONROD	12305	2305	2307	1	.087				
668-	CONROD	12307	2307	2308	1	.092				
669-	CONROD	12308	2308	2310	1	.092				
670-	CONR CD	12310	2310	2312	1	.097				
671-	CONROD	12312	2312	2314	1	.097				
672-	CONROD	12314	2314	2316	1	.097				
673-	CONROD	12316	2316	2317	1	.097				
674-	CONR CD	12317	2317	2319	1	.097				
675-	CONROD	12319	2319	2321	1	.092				
676-	CONR CD	12321	2321	2323	1	.087				
677-	CONROD	12323	2323	2324	4	.188				
678-	CONROD	12324	2324	2325	4	.188				
679-	CONROD	12351	2351	2353	4	.564				
680-	CONROD	12353	2353	2355	1	.070				
681-	CONROD	12355	2355	2357	1	.087				
682-	CONR CD	12357	2357	2358	1	.092				
683-	CONROD	12358	2358	2360	1	.092				
684-	CONROD	12360	2360	2362	1	.097				
685-	CONROD	12352	2362	2364	1	.097				
686-	CONROD	12354	2364	2366	1	.097				
687-	CONROD	12355	2366	2367	1	.097				
688-	CONROD	12367	2367	2369	1	.097				
689-	CONROD	12369	2369	2371	1	.092				
690-	CONR CD	12371	2371	2373	1	.087				
691-	CONR CD	12373	2373	2374	4	.188				
692-	CONR CD	12374	2374	2325	4	.188				
693-	CONROD	12401	2401	2403	4	.564				
694-	CONROD	12403	2403	2405	1	.065				
695-	CONR CD	12405	2405	2407	1	.076				
696-	CONROD	12417	2407	2410	1	.080				
697-	CONROD	12410	2410	2412	1	.075				
698-	CONROD	12412	2412	2414	1	.075				
699-	CONROD	12414	2414	2417	1	.075				
700-	CONROD	12417	2417	2419	1	.075				

S O R T E D B U L K D A T A E C H O

CARD COUNT	.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
701-	CONROD	12419		2419		2421		1		.067											
702-	CONROD	12421		2421		2423		1		.061											
703-	CONROD	12423		2423		2424		4		.188											
704-	CONROD	12424		2424		2425		4		.188											
705-	CONROD	12451		2451		2453		4		.564											
706-	CONROD	12453		2453		2455		1		.065											
707-	CONROD	12455		2455		2457		1		.076											
708-	CONROD	12457		2457		2460		1		.060											
709-	CONROD	12450		2460		2462		1		.075											
710-	CONROD	12462		2462		2464		1		.075											
711-	CONROD	12464		2464		2467		1		.075											
712-	CONROD	12467		2467		2469		1		.075											
713-	CONROD	12459		2469		2471		1		.067											
714-	CONROD	12471		2471		2473		1		.061											
715-	CONROD	12473		2473		2474		4		.188											
716-	CONROD	12474		2474		2425		4		.188											
717-	CONROD	12501		2501		2503		4		.564											
718-	CONROD	12503		2503		2505		1		.043											
719-	CONROD	12505		2505		2507		1		.052											
720-	CONROD	12507		2507		2510		1		.061											
721-	CONROD	12510		2510		2514		1		.067											
722-	CONROD	12514		2514		2517		1		.067											
723-	CONROD	12517		2517		2519		1		.064											
724-	CONROD	12519		2519		2521		1		.058											
725-	CONROD	12521		2521		2523		1		.052											
726-	CONROD	12523		2523		2524		4		.188											
727-	CONROD	12524		2524		2525		4		.188											
728-	CONROD	12551		2551		2553		4		.564											
729-	CONROD	12553		2553		2555		1		.043											
730-	CONROD	12555		2555		2557		1		.052											
731-	CONROD	12557		2557		2560		1		.061											
732-	CONROD	12560		2560		2564		1		.067											
733-	CONROD	12564		2564		2567		1		.067											
734-	CONROD	12567		2567		2569		1		.064											
735-	CONROD	12569		2569		2571		1		.058											
736-	CONROD	12571		2571		2573		1		.052											
737-	CONROD	12573		2573		2574		4		.188											
738-	CONROD	12574		2574		2525		4		.188											
739-	CONROD	12601		2601		2603		4		.564											
740-	CONROD	12603		2603		2607		1		.051											
741-	CONROD	12607		2607		2614		1		.058											
742-	CONROD	12614		2614		2619		1		.061											
743-	CONROD	12619		2619		2623		1		.052											
744-	CONROD	12623		2623		2624		4		.188											
745-	CONROD	12624		2624		2625		4		.188											
746-	CONROD	12651		2651		2653		4		.564											
747-	CONROD	12653		2653		2657		1		.051											
748-	CONROD	12657		2657		2664		1		.058											
749-	CONROD	12664		2664		2669		1		.061											
750-	CONROD	12659		2669		2673		1		.052											

Airloads Research Study - Horizontal Stabilizer

SORTED BULK DATA ECHO										
CARD COUNT	1	2	3	4	5	6	7	8	9	10
751-	CONROD	12673	2673	2674	4	.188				
752-	CONROD	12674	2674	2625	4	.188				
753-	CONROD	12701	2701	2703	4	.454				
754-	CONROD	12703	2703	2707	1	.046				
755-	CONROD	12707	2707	2714	1	.061				
756-	CONROD	12714	2714	2719	1	.064				
757-	CONROD	12719	2719	2723	1	.055				
758-	CONROD	12723	2723	2724	4	.243				
759-	CONROD	12724	2724	2725	4	.263				
760-	CONROD	12751	2751	2753	4	.454				
761-	CONROD	12753	2753	2757	1	.046				
762-	CONROD	12757	2757	2764	1	.061				
763-	CONROD	12764	2764	2769	1	.064				
764-	CONROD	12769	2769	2773	1	.055				
765-	CONROD	12773	2773	2774	4	.243				
766-	CONROD	12774	2774	2725	4	.263				
767-	CONROD	12801	2801	2803	1	.233				
768-	CONROD	12803	2803	2807	1	.210				
769-	CONROD	12807	2807	2814	1	.210				
770-	CONROD	12814	2814	2819	1	.210				
771-	CONROD	12819	2819	2823	1	.210				
772-	CONROD	12823	2823	2824	1	.118				
773-	CONROD	12824	2824	2825	1	.118				
774-	CONROD	12851	2851	2853	1	.233				
775-	CONROD	12853	2853	2857	1	.210				
776-	CONROD	12857	2857	2864	1	.210				
777-	CONROD	12864	2864	2869	1	.210				
778-	CONROD	12869	2869	2873	1	.210				
779-	CONROD	12873	2873	2874	1	.118				
780-	CONROD	12874	2874	2825	1	.118				
781-	CONROD	12903	2903	2907	1	.045				
782-	CONROD	12907	2907	2914	1	.045				
783-	CONROD	12914	2914	2919	1	.045				
784-	CONROD	12919	2919	2923	1	.045				
785-	CONROD	12923	2923	2924	1	.045				
786-	CONROD	12924	2924	2925	1	.045				
787-	CONROD	12953	2953	2957	1	.045				
788-	CONROD	12957	2957	2964	1	.045				
789-	CONROD	12964	2964	2969	1	.045				
790-	CONROD	12969	2969	2973	1	.045				
791-	CONROD	12973	2973	2974	1	.045				
792-	CONROD	12974	2974	2925	1	.045				
793-	CONROD	31010	1010	1040	2	2.0				
794-	CONROD	31012	1012	1042	2	2.0				
795-	CONROD	31040	1040	1060	2	2.0				
796-	CONROD	31042	1042	1062	2	2.0				
797-	CONROD	31101	1101	1151	1	.5				
798-	CONROD	31102	1102	1152	1	.5				
799-	CONROD	31103	1103	1153	1	.5				
800-	CONROD	31104	1104	1154	1	.3				

SORTED BULK DATA ECHO

CARD COUNT	1	2	3	4	5	6	7	8	9	10
801-	CONROD	31135	1105	1155	1	.3				
802-	CONROD	31106	1106	1156	1	.3				
803-	CONROD	31117	1117	1167	1	.3				
804-	CONROD	31118	1118	1168	1	.5				
805-	CONROD	31119	1119	1169	1	.3				
806-	CONROD	31120	1120	1170	1	.5				
807-	CONROD	31124	1124	1174	1	.5				
808-	CONROD	31203	1203	1253	1	2.0				
809-	CONROD	31204	1204	1254	1	.5				
810-	CONROD	31205	1205	1255	1	.4				
811-	CONROD	31206	1206	1256	1	.5				
812-	CONROD	31207	1207	1257	1	.3				
813-	CONROD	31208	1208	1258	1	.3				
814-	CONROD	31209	1209	1259	1	.1				
815-	CONROD	31211	1211	1261	1	.1				
816-	CONROD	31213	1213	1263	1	.1				
817-	CONROD	31214	1214	1264	1	.3				
818-	CONROD	31215	1215	1265	1	.1				
819-	CONROD	31216	1216	1266	1	.4				
820-	CONROD	31217	1217	1267	1	.3				
821-	CONROD	31218	1218	1268	1	.4				
822-	CONROD	31219	1219	1269	1	.3				
823-	CONROD	31220	1220	1270	1	.3				
824-	CONROD	31307	1307	1357	1	.2				
825-	CONROD	31308	1308	1358	1	.2				
826-	CONROD	31314	1314	1364	1	.2				
827-	CONROD	31316	1316	1366	1	.2				
828-	CONROD	31321	1321	1371	1	1.5				
829-	CONROD	31406	1406	1456	1	.2				
830-	CONROD	31407	1407	1457	1	.2				
831-	CONROD	31408	1408	1458	1	.2				
832-	CONROD	31414	1414	1464	1	.2				
833-	CONROD	31416	1416	1466	1	.2				
834-	CONROD	31417	1417	1467	1	.2				
835-	CONROD	31422	1422	1472	1	1.5				
836-	CONROD	31507	1507	1557	1	.2				
837-	CONROD	31509	1509	1559	1	.2				
838-	CONROD	31514	1514	1564	1	.2				
839-	CONROD	31516	1516	1566	1	.2				
840-	CONROD	31601	1601	1651	1	.5				
841-	CONROD	31603	1603	1653	1	4.0				
842-	CONROD	31604	1604	1654	1	2.0				
843-	CONROD	31605	1605	1655	1	1.3				
844-	CONROD	31616	1616	1666	1	1.8				
845-	CONROD	31607	1607	1657	1	1.9				
846-	CONROD	31615	1615	1665	1	2.0				
847-	CONROD	31617	1617	1667	1	1.9				
848-	CONROD	31618	1618	1668	1	1.8				
849-	CONROD	31619	1619	1669	1	1.6				
850-	CONROD	31620	1620	1670	1	1.5				

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SORTED BULK DATA ECHO										
CARD COUNT	1	2	3	4	5	6	7	8	9	10
851-	CONROD	31621	1521	1671	1	1.2				
852-	CONROD	31622	1622	1672	1	1.1				
853-	CONROD	31623	1623	1673	1	3.0				
854-	CONROD	31701	1701	1751	1	.5				
855-	CONROD	31703	1703	1753	1	.9				
856-	CONROD	31704	1704	1754	1	.2				
857-	CONROD	31705	1705	1755	1	.2				
858-	CONROD	31706	1706	1756	1	.1				
859-	CONROD	31707	1707	1757	1	.1				
860-	CONROD	31708	1708	1758	1	.1				
861-	CONROD	31806	1806	1856	1	.1				
862-	CONROD	31807	1807	1857	1	.1				
863-	CONROD	31808	1808	1858	1	.1				
864-	CONROD	31814	1814	1864	1	.1				
865-	CONROD	31901	1901	1951	1	.5				
866-	CONROD	31903	1903	1953	1	1.3				
867-	CONROD	31904	1904	1954	1	.2				
868-	CONROD	31905	1905	1955	1	.2				
869-	CONROD	31906	1906	1956	1	.1				
870-	CONROD	31907	1907	1957	1	.1				
871-	CONROD	31908	1908	1958	1	.1				
872-	CONROD	31914	1914	1964	1	.1				
873-	CONROD	32001	2001	2051	1	.5				
874-	CONROD	32003	2003	2053	1	1.5				
875-	CONROD	32004	2004	2054	1	.6				
876-	CONROD	32005	2005	2055	1	.6				
877-	CONROD	32006	2006	2056	1	.6				
878-	CONROD	32007	2007	2057	1	.7				
879-	CONROD	32008	2008	2058	1	.7				
880-	CONROD	32010	2010	2040	1	.8				
881-	CONROD	32012	2012	2042	1	.8				
882-	CONROD	32014	2014	2064	1	.8				
883-	CONROD	32015	2016	2066	1	.8				
884-	CONROD	32017	2017	2067	1	.7				
885-	CONROD	32040	2040	2060	1	.8				
886-	CONROD	32042	2042	2062	1	.8				
887-	CONROD	32101	2101	2151	1	.5				
888-	CONROD	32103	2103	2153	1	1.9				
889-	CONROD	32104	2104	2154	1	.3				
890-	CONROD	32105	2105	2155	1	.3				
891-	CONROD	32106	2106	2156	1	.3				
892-	CONROD	32107	2107	2157	1	.4				
893-	CONROD	32108	2108	2158	1	.4				
894-	CONROD	32110	2110	2160	1	.5				
895-	CONROD	32112	2112	2162	1	.5				
896-	CONROD	32114	2114	2164	1	.4				
897-	CONROD	32116	2116	2166	1	.4				
898-	CONROD	32117	2117	2167	1	.3				
899-	CONROD	32118	2118	2168	1	.3				
900-	CONROD	32119	2119	2169	1	.3				

S O R T E D B U L K D A T A E C H O

CARD COUNT	.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
981-	CONROD	32120		2120		2170		1				.3									
982-	CONROD	32121		2121		2171		1				.3									
983-	CONROD	32122		2122		2172		1				.3									
984-	CONROD	32201		2201		2251		1				1.0									
985-	CONROD	32203		2203		2253		1				3.4									
986-	CONROD	32204		2204		2254		1				.8									
987-	CONROD	32205		2205		2255		1				.8									
988-	CONROD	32206		2206		2256		1				1.0									
989-	CONROD	32207		2207		2257		1				1.0									
990-	CONROD	32208		2208		2258		1				1.0									
991-	CONROD	32210		2210		2260		1				1.1									
992-	CONROD	32212		2212		2262		1				1.1									
993-	CONROD	32214		2214		2264		1				1.1									
994-	CONROD	32216		2216		2266		1				1.1									
995-	CONROD	32217		2217		2267		1				1.0									
996-	CONROD	32218		2218		2268		1				1.0									
997-	CONROD	32219		2219		2269		1				.8									
998-	CONROD	32220		2220		2270		1				.8									
999-	CONROD	32221		2221		2271		1				.8									
920-	CONROD	32222		2222		2272		1				.7									
921-	CONROD	32223		2223		2273		1				4.0									
922-	CONROD	32224		2224		2274		1				1.3									
923-	CONROD	32301		2301		2351		1				1.2									
924-	CONROD	32303		2303		2353		1				4.4									
925-	CONROD	32305		2305		2355		1				1.5									
926-	CONROD	32307		2307		2357		1				1.5									
927-	CONROD	32308		2308		2358		1				.7									
928-	CONROD	32310		2310		2360		1				.9									
929-	CONROD	32312		2312		2362		1				.9									
930-	CONROD	32314		2314		2364		1				1.0									
931-	CONROD	32316		2316		2366		1				1.0									
932-	CONROD	32317		2317		2367		1				1.3									
933-	CONROD	32319		2319		2369		1				1.6									
934-	CONROD	32321		2321		2371		1				1.5									
935-	CONROD	32323		2323		2373		1				4.6									
936-	CONROD	32324		2324		2374		1				1.3									
937-	CONROD	32401		2401		2451		1				1.2									
938-	CONROD	32403		2403		2453		1				4.8									
939-	CONROD	32405		2405		2455		1				1.3									
940-	CONROD	32407		2407		2457		1				1.4									
941-	CONROD	32410		2410		2460		1				.9									
942-	CONROD	32412		2412		2462		1				.8									
943-	CONROD	32414		2414		2464		1				1.1									
944-	CONROD	32417		2417		2467		1				1.5									
945-	CONROD	32419		2419		2469		1				1.5									
946-	CONROD	32421		2421		2471		1				1.4									
947-	CONROD	32423		2423		2473		1				4.7									
948-	CONROD	32424		2424		2474		1				1.3									
949-	CONROD	32501		2501		2551		1				1.2									
950-	CONROD	32503		2503		2553		1				4.7									

Airloads Research Study - Horizontal Stabilizer

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CARD COUNT	1	2	3	4	5	6	7	8	9	10
951-	CONROD	32505	2505	2555	1	.9				
952-	CONROD	32507	2507	2557	1	1.4				
953-	CONROD	32510	2510	2560	1	1.4				
954-	CONROD	32514	2514	2564	1	1.4				
955-	CONROD	32517	2517	2567	1	1.4				
956-	CONROD	32519	2519	2569	1	1.4				
957-	CONROD	32521	2521	2571	1	1.4				
958-	CONROD	32523	2523	2573	1	4.9				
959-	CONROD	32524	2524	2574	1	1.3				
960-	CONROD	32601	2501	2651	1	1.2				
961-	CONROD	32603	2603	2653	1	4.6				
962-	CONROD	32607	2507	2657	1	2.3				
963-	CONROD	32614	2614	2664	1	2.9				
964-	CONROD	32619	2619	2669	1	2.8				
965-	CONROD	32623	2623	2673	1	4.9				
966-	CONROD	32624	2624	2674	1	1.3				
967-	CONROD	32701	2701	2751	1	1.2				
968-	CONROD	32703	2703	2753	1	4.0				
969-	CONROD	32707	2707	2757	1	1.3				
970-	CONROD	32714	2714	2764	1	2.3				
971-	CONROD	32719	2719	2769	1	1.8				
972-	CONROD	32723	2723	2773	1	4.8				
973-	CONROD	32724	2724	2774	1	1.3				
974-	CONROD	32801	2801	2851	1	.8				
975-	CONROD	32803	2803	2853	1	1.4				
976-	CONROD	32807	2807	2857	1	.9				
977-	CONROD	32814	2814	2864	1	.9				
978-	CONROD	32819	2819	2869	1	.9				
979-	CONROD	32823	2823	2873	1	2.4				
980-	CONROD	32824	2824	2874	1	.6				
981-	CONROD	32903	2903	2953	1	.400				
982-	CONROD	32907	2907	2957	1	.400				
983-	CONROD	32914	2914	2964	1	.400				
984-	CONROD	32919	2919	2969	1	.400				
985-	CONROD	32923	2923	2973	1	.300				
986-	CONROD	32924	2924	2974	1	.300				
987-	CONROD	41010	1010	1041	2	1.00				
988-	CONROD	41011	1011	1041	2	1.00				
989-	CONROD	41012	1012	1041	2	1.00				
990-	CONROD	41050	1060	1041	2	1.00				
991-	CONROD	41051	1061	1041	2	1.00				
992-	CONROD	41062	1062	1041	2	1.00				
993-	CONROD	41610	1610	1641	2	1.00				
994-	CONROD	41611	1611	1641	2	1.00				
995-	CONROD	41612	1612	1641	2	1.00				
996-	CONROD	41640	1640	1641	2	1.00				
997-	CONROD	41642	1642	1641	2	1.00				
998-	CONROD	41660	1660	1641	2	1.00				
999-	CONROD	41661	1661	1641	2	1.00				
1000-	CONROD	41662	1662	1641	2	1.00				

S O R T E D B U L K D A T A E C H O

CARD COUNT	.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
1001-	CONROD	51001	1001	1002	2	3,141															
1002-	CONROD	51010	1010	1002	2	2.0															
1003-	CONROD	51011	1011	1002	2	2.0															
1004-	CONROD	51012	1012	1002	2	2.0															
1005-	CONROD	51051	1051	1052	2	3,141															
1006-	CONROD	51060	1060	1052	2	2.0															
1007-	CONROD	51061	1061	1052	2	2.0															
1008-	CONROD	51062	1062	1052	2	2.0															
1009-	CQDMEM2	101010	2590	1010	1040	1041	1011														
1010-	CQDMEM2	101011	2590	1011	1041	1042	1012														
1011-	CQDMEM2	101040	2590	1040	1060	1061	1041														
1012-	CQDMEM2	101041	2590	1041	1061	1062	1042														
1013-	CQDMEM2	101107	2017	1107	1137	1138	1108														
1014-	CQDMEM2	101108	2030	1108	1138	1139	1109														
1015-	CQDMEM2	101109	2030	1109	1139	1140	1110														
1016-	CQDMEM2	101110	2013	1110	1140	1141	1111														
1017-	CQDMEM2	101111	2013	1111	1141	1142	1112														
1018-	CQDMEM2	101112	2140	1112	1142	1143	1113														
1019-	CQDMEM2	101113	2140	1113	1143	1144	1114														
1020-	CQDMEM2	101114	2020	1114	1144	1145	1115														
1021-	CQDMEM2	101115	2020	1115	1145	1146	1116														
1022-	CQDMEM2	101137	2017	1137	1157	1158	1138														
1023-	CQDMEM2	101138	2030	1138	1158	1159	1139														
1024-	CQDMEM2	101139	2030	1139	1159	1160	1140														
1025-	CQDMEM2	101140	2013	1140	1160	1161	1141														
1026-	CQDMEM2	101141	2013	1141	1161	1162	1142														
1027-	CQDMEM2	101142	2140	1142	1162	1163	1143														
1028-	CQDMEM2	101143	2140	1143	1163	1164	1144														
1029-	CQDMEM2	101144	2020	1144	1164	1165	1145														
1030-	CQDMEM2	101145	2020	1145	1165	1166	1146														
1031-	CQDMEM2	101508	1140	1608	1638	1639	1609														
1032-	CQDMEM2	101509	1140	1609	1639	1640	1610														
1033-	CQDMEM2	101510	2590	1610	1640	1641	1611														
1034-	CQDMEM2	101511	2590	1611	1641	1642	1612														
1035-	CQDMEM2	101512	1135	1612	1642	1643	1613														
1036-	CQDMEM2	101613	1135	1613	1643	1644	1614														
1037-	CQDMEM2	101614	1126	1614	1644	1645	1615														
1038-	CQDMEM2	101639	1140	1638	1658	1659	1639														
1039-	CQDMEM2	101539	1140	1639	1659	1660	1640														
1040-	CQDMEM2	101540	2590	1640	1660	1661	1641														
1041-	CQDMEM2	101541	2590	1641	1661	1662	1642														
1042-	CQDMEM2	101542	1135	1642	1662	1663	1643														
1043-	CQDMEM2	101643	1135	1643	1663	1664	1644														
1044-	CQDMEM2	101544	1126	1644	1664	1665	1645														
1045-	CQDMEM2	201010	21000	1010	1110	1111	1011														
1046-	CQDMEM2	201011	21000	1011	1111	1112	1012														
1047-	CQDMEM2	201050	21000	1060	1160	1161	1061														
1048-	CQDMEM2	201061	21000	1061	1161	1162	1062														
1049-	CQDMEM2	201102	4027	1102	1601	1603	1103														
1050-	CQDMEM2	201103	1200	1103	1203	1204	1104														

SORTED BULK DATA ECHO

CARD COUNT	1	2	3	4	5	6	7	8	9	10
1051-	CQDMEM2	201104	1215	1104	1204	1205	1105			
1052-	CQDMEM2	201105	1235	1105	1205	1206	1106			
1053-	CQDMEM2	201105	1260	1106	1206	1207	1107			
1054-	CQDMEM2	201107	1260	1107	1207	1208	1108			
1055-	CQDMEM2	201108	1260	1108	1208	1209	1109			
1056-	CQDMEM2	201109	1260	1109	1209	1210	1110			
1057-	CQDMEM2	201110	1781	1110	1210	1211	1111			
1058-	CQDMEM2	201111	11294	1111	1211	1212	1112			
1059-	CQDMEM2	201112	11168	1112	1212	1213	1113			
1060-	CQDMEM2	201113	11168	1113	1213	1214	1114			
1061-	CQDMEM2	201114	1833	1114	1214	1215	1115			
1062-	CQDMEM2	201115	1833	1115	1215	1216	1116			
1063-	CQDMEM2	201115	1315	1116	1216	1217	1117			
1064-	CQDMEM2	201117	1280	1117	1217	1218	1118			
1065-	CQDMEM2	201118	1250	1118	1218	1219	1119			
1066-	CQDMEM2	201119	1229	1119	1219	1220	1120			
1067-	CQDMEM2	201124	4027	1124	2224	2225	1125			
1068-	CQDMEM2	201152	4027	1152	1651	1653	1153			
1069-	CQDMEM2	201153	1200	1153	1253	1254	1154			
1070-	CQDMEM2	201154	1215	1154	1254	1255	1155			
1071-	CQDMEM2	201155	1235	1155	1255	1256	1156			
1072-	CQDMEM2	201156	1260	1156	1256	1257	1157			
1073-	CQDMEM2	201157	1260	1157	1257	1258	1158			
1074-	CQDMEM2	201158	1260	1158	1258	1259	1159			
1075-	CQDMEM2	201159	1260	1159	1259	1260	1160			
1076-	CQDMEM2	201160	1781	1160	1260	1261	1161			
1077-	CQDMEM2	201161	11294	1161	1261	1262	1162			
1078-	CQDMEM2	201162	11168	1162	1262	1263	1163			
1079-	CQDMEM2	201163	11168	1163	1263	1264	1164			
1080-	CQDMEM2	201164	1833	1164	1264	1265	1165			
1081-	CQDMEM2	201165	1833	1165	1265	1266	1166			
1082-	CQDMEM2	201165	1315	1166	1266	1267	1167			
1083-	CQDMEM2	201167	1280	1167	1267	1268	1168			
1084-	CQDMEM2	201168	1250	1168	1268	1269	1169			
1085-	CQDMEM2	201159	1229	1169	1269	1270	1170			
1086-	CQDMEM2	201174	4027	1174	2274	2225	1125			
1087-	CQDMEM2	201203	1200	1203	1603	1604	1204			
1088-	CQDMEM2	201204	1215	1204	1604	1605	1205			
1089-	CQDMEM2	201207	1280	1207	1307	1308	1208			
1090-	CQDMEM2	201208	1300	1208	1308	1309	1209			
1091-	CQDMEM2	201209	1300	1209	1309	1310	1210			
1092-	CQDMEM2	201210	1666	1210	1310	1311	1211			
1093-	CQDMEM2	201211	11262	1211	1311	1312	1212			
1094-	CQDMEM2	201212	1856	1212	1312	1313	1213			
1095-	CQDMEM2	201213	1856	1213	1313	1314	1214			
1096-	CQDMEM2	201214	1695	1214	1314	1315	1215			
1097-	CQDMEM2	201215	1695	1215	1315	1316	1216			
1098-	CQDMEM2	201218	1250	1218	1618	1619	1219			
1099-	CQDMEM2	201219	1233	1219	1619	1620	1220			
1100-	CQDMEM2	201220	1220	1220	1620	1621	1321			

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SORTED BULK DATA ECHO

CARD COUNT	1	2	3	4	5	6	7	8	9	10
1101-	CQDMEM2	201253	1200	1253	1653	1654	1254			
1102-	CQDMEM2	201254	1215	1254	1654	1655	1255			
1103-	CQDMEM2	201257	1280	1257	1357	1358	1258			
1104-	CQDMEM2	201258	1300	1258	1358	1359	1259			
1105-	CQDMEM2	201259	1300	1259	1359	1360	1260			
1106-	CQDMEM2	201260	1666	1260	1360	1361	1261			
1107-	CQDMEM2	201261	11262	1261	1361	1362	1262			
1108-	CQDMEM2	201262	1856	1262	1362	1363	1263			
1109-	CQDMEM2	201263	1856	1263	1363	1364	1264			
1110-	CQDMEM2	201264	1695	1264	1364	1365	1265			
1111-	CQDMEM2	201265	1695	1265	1365	1366	1266			
1112-	CQDMEM2	201268	1250	1268	1668	1669	1269			
1113-	CQDMEM2	201269	1233	1269	1669	1670	1270			
1114-	CQDMEM2	201270	1220	1270	1670	1671	1371			
1115-	CQDMEM2	201307	1280	1307	1407	1408	1308			
1116-	CQDMEM2	201308	1300	1308	1408	1409	1309			
1117-	CQDMEM2	201309	1300	1309	1409	1410	1310			
1118-	CQDMEM2	201310	1592	1310	1410	1411	1311			
1119-	CQDMEM2	201311	1997	1311	1411	1412	1312			
1120-	CQDMEM2	201312	1687	1312	1412	1413	1313			
1121-	CQDMEM2	201313	1687	1313	1413	1414	1314			
1122-	CQDMEM2	201314	1574	1314	1414	1415	1315			
1123-	CQDMEM2	201315	1568	1315	1415	1416	1316			
1124-	CQDMEM2	201321	1208	1321	1621	1622	1422			
1125-	CQDMEM2	201357	1280	1357	1457	1458	1358			
1126-	CQDMEM2	201358	1300	1358	1458	1459	1359			
1127-	CQDMEM2	201359	1300	1359	1459	1460	1360			
1128-	CQDMEM2	201360	1592	1360	1460	1461	1361			
1129-	CQDMEM2	201361	1997	1361	1461	1462	1362			
1130-	CQDMEM2	201362	1687	1362	1462	1463	1363			
1131-	CQDMEM2	201363	1687	1363	1463	1464	1364			
1132-	CQDMEM2	201364	1574	1364	1464	1465	1365			
1133-	CQDMEM2	201365	1568	1365	1465	1466	1366			
1134-	CQDMEM2	201371	1208	1371	1671	1672	1472			
1135-	CQDMEM2	201407	1280	1407	1507	1508	1408			
1136-	CQDMEM2	201408	1300	1408	1508	1509	1409			
1137-	CQDMEM2	201409	1300	1409	1509	1510	1410			
1138-	CQDMEM2	201410	1455	1410	1510	1511	1411			
1139-	CQDMEM2	201411	1480	1411	1511	1512	1412			
1140-	CQDMEM2	201412	1350	1412	1512	1513	1413			
1141-	CQDMEM2	201413	1350	1413	1513	1514	1414			
1142-	CQDMEM2	201414	1332	1414	1514	1515	1415			
1143-	CQDMEM2	201415	1332	1415	1515	1516	1416			
1144-	CQDMEM2	201422	4027	1422	1623	2224	1124			
1145-	CQDMEM2	201457	1280	1457	1557	1558	1458			
1146-	CQDMEM2	201458	1300	1458	1558	1559	1459			
1147-	CQDMEM2	201459	1300	1459	1559	1560	1460			
1148-	CQDMEM2	201460	1455	1460	1560	1561	1461			
1149-	CQDMEM2	201461	1480	1461	1561	1562	1462			
1150-	CQDMEM2	201462	1350	1462	1562	1563	1463			

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SORTED BULK DATA ECHO

CARD COUNT	1	2	3	4	5	6	7	8	9	10
1151-	CQDMEM2	201463	1350	1463	1563	1564	1464			
1152-	CQDMEM2	201464	1332	1464	1564	1565	1465			
1153-	CQDMEM2	201465	1332	1465	1565	1566	1466			
1154-	CQDMEM2	201472	4027	1472	1673	2274	1174			
1155-	CQDMEM2	201507	1280	1507	1607	1608	1508			
1156-	CQDMEM2	201508	1300	1508	1608	1609	1509			
1157-	CQDMEM2	201509	1300	1509	1609	1610	1510			
1158-	CQDMEM2	201510	1473	1510	1610	1611	1511			
1159-	CQDMEM2	201511	1512	1511	1611	1612	1512			
1160-	CQDMEM2	201512	1350	1512	1612	1613	1513			
1161-	CQDMEM2	201513	1350	1513	1613	1614	1514			
1162-	CQDMEM2	201514	1332	1514	1614	1615	1515			
1163-	CQDMEM2	201515	1332	1515	1615	1616	1516			
1164-	CQDMEM2	201557	1280	1557	1657	1658	1558			
1165-	CQDMEM2	201559	1300	1558	1658	1659	1559			
1166-	CQDMEM2	201559	1300	1559	1659	1660	1560			
1167-	CQDMEM2	201560	1473	1560	1660	1661	1561			
1168-	CQDMEM2	201561	1512	1561	1661	1662	1562			
1169-	CQDMEM2	201562	1350	1562	1662	1663	1563			
1170-	CQDMEM2	201563	1350	1563	1663	1664	1564			
1171-	CQDMEM2	201564	1332	1564	1664	1665	1565			
1172-	CQDMEM2	201565	1332	1565	1665	1666	1566			
1173-	CQDMEM2	201501	4027	1601	1701	1703	1603			
1174-	CQDMEM2	201503	1200	1603	1703	1704	1604			
1175-	CQDMEM2	201604	1213	1604	1704	1705	1605			
1176-	CQDMEM2	201605	1246	1605	1705	1706	1606			
1177-	CQDMEM2	201605	1256	1606	1706	1707	1607			
1178-	CQDMEM2	201607	1278	1607	1707	1708	1608			
1179-	CQDMEM2	201608	1290	1608	1708	1709	1609			
1180-	CQDMEM2	201609	1290	1609	1709	1710	1610			
1181-	CQDMEM2	201610	1477	1610	1710	1711	1611			
1182-	CQDMEM2	201612	1405	1612	1812	1813	1613			
1183-	CQDMEM2	201613	1405	1613	1813	1814	1614			
1184-	CQDMEM2	201615	1300	1616	2016	2017	1617			
1185-	CQDMEM2	201618	1193	1618	2118	2119	1619			
1186-	CQDMEM2	201619	1198	1619	2119	2120	1620			
1187-	CQDMEM2	201620	1198	1620	2120	2121	1621			
1188-	CQDMEM2	201621	1190	1621	2121	2122	1622			
1189-	CQDMEM2	201551	4027	1651	1751	1753	1653			
1190-	CQDMEM2	201653	1200	1653	1753	1754	1654			
1191-	CQDMEM2	201654	1213	1654	1754	1755	1655			
1192-	CQDMEM2	201655	1246	1655	1755	1756	1656			
1193-	CQDMEM2	201655	1256	1656	1756	1757	1657			
1194-	CQDMEM2	201657	1278	1657	1757	1758	1658			
1195-	CQDMEM2	201658	1290	1658	1758	1759	1659			
1196-	CQDMEM2	201659	1290	1659	1759	1760	1660			
1197-	CQDMEM2	201660	1477	1660	1760	1761	1661			
1198-	CQDMEM2	201662	1405	1662	1862	1863	1663			
1199-	CQDMEM2	201663	1405	1663	1863	1864	1664			
1200-	CQDMEM2	201665	1300	1666	2066	2067	1667			

S O R T E D B U L K D A T A E C H O

CARD COUNT	1	2	3	4	5	6	7	8	9	10
1201-	CQDMEM2	201668	1193	1668	2168	2169	1669			
1202-	CQDMEM2	201669	1198	1669	2169	2170	1670			
1203-	CQDMEM2	201570	1198	1670	2170	2171	1671			
1204-	CQDMEM2	201571	1190	1671	2171	2172	1672			
1205-	CQDMEM2	201701	4027	1701	1901	1903	1703			
1206-	CQDMEM2	201703	1190	1703	1903	1904	1704			
1207-	CQDMEM2	201704	1203	1704	1904	1905	1705			
1208-	CQDMEM2	201705	1246	1706	1806	1807	1707			
1209-	CQDMEM2	201707	1268	1707	1807	1808	1708			
1210-	CQDMEM2	201708	1290	1708	1808	1809	1709			
1211-	CQDMEM2	201709	1290	1709	1809	1810	1710			
1212-	CQDMEM2	201710	1477	1710	1810	1811	1711			
1213-	CQDMEM2	201711	1430	1711	1811	1812	1612			
1214-	CQDMEM2	201751	4027	1751	1951	1953	1753			
1215-	CQDMEM2	201753	1190	1753	1953	1954	1754			
1216-	CQDMEM2	201754	1203	1754	1954	1955	1755			
1217-	CQDMEM2	201755	1246	1756	1856	1857	1757			
1218-	CQDMEM2	201757	1268	1757	1857	1858	1758			
1219-	CQDMEM2	201758	1290	1758	1858	1859	1759			
1220-	CQDMEM2	201759	1290	1759	1859	1860	1760			
1221-	CQDMEM2	201750	1477	1760	1860	1861	1761			
1222-	CQDMEM2	201761	1430	1761	1861	1862	1662			
1223-	CQDMEM2	201805	1240	1806	1906	1907	1807			
1224-	CQDMEM2	201807	1260	1807	1907	1908	1808			
1225-	CQDMEM2	201808	1278	1808	1908	1909	1809			
1226-	CQDMEM2	201809	1278	1809	1909	1910	1810			
1227-	CQDMEM2	201810	1417	1810	1910	1911	1811			
1228-	CQDMEM2	201811	1417	1811	1911	1912	1812			
1229-	CQDMEM2	201812	1405	1812	1912	1913	1813			
1230-	CQDMEM2	201813	1405	1813	1913	1914	1814			
1231-	CQDMEM2	201814	1327	1814	1914	1915	1615			
1232-	CQDMEM2	201855	1240	1856	1956	1957	1857			
1233-	CQDMEM2	201857	1260	1857	1957	1958	1858			
1234-	CQDMEM2	201858	1278	1858	1958	1959	1859			
1235-	CQDMEM2	201859	1278	1859	1959	1960	1860			
1236-	CQDMEM2	201860	1417	1860	1960	1961	1861			
1237-	CQDMEM2	201861	1417	1861	1961	1962	1862			
1238-	CQDMEM2	201862	1405	1862	1962	1963	1863			
1239-	CQDMEM2	201863	1405	1863	1963	1964	1864			
1240-	CQDMEM2	201864	1327	1864	1964	1965	1665			
1241-	CQDMEM2	201901	4027	1901	2001	2003	1903			
1242-	CQDMEM2	201903	1180	1903	2003	2004	1904			
1243-	CQDMEM2	201904	1190	1904	2004	2005	1905			
1244-	CQDMEM2	201905	1205	1905	2005	2006	1906			
1245-	CQDMEM2	201905	1227	1906	2006	2007	1907			
1246-	CQDMEM2	201907	1242	1907	2007	2008	1908			
1247-	CQDMEM2	201951	4027	1951	2051	2053	1953			
1248-	CQDMEM2	201953	1180	1953	2053	2054	1954			
1249-	CQDMEM2	201954	1190	1954	2054	2055	1955			
1250-	CQDMEM2	201955	1205	1955	2055	2056	1956			

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CARD	SORTED BULK DATA ECHO									
COUNT	1	2	3	4	5	6	7	8	9	10
1251-	CQDMEM2	201955	1227	1956	2056	2057	1957			
1252-	CQDMEM2	201957	1242	1957	2057	2058	1958			
1253-	CQDMEM2	202001	4027	2001	2101	2103	2003			
1254-	CQDMEM2	202003	1195	2003	2103	2104	2004			
1255-	CQDMEM2	202004	1200	2004	2104	2105	2005			
1256-	CQDMEM2	202005	1200	2005	2105	2106	2006			
1257-	CQDMEM2	202005	1208	2006	2106	2107	2007			
1258-	CQDMEM2	202007	1208	2007	2107	2108	2008			
1259-	CQDMEM2	202008	1203	2008	2108	2110	2010			
1260-	CQDMEM2	202010	1198	2010	2110	2112	2012			
1261-	CQDMEM2	202012	1190	2012	2112	2114	2014			
1262-	CQDMEM2	202014	1188	2014	2114	2116	2016			
1263-	CQDMEM2	202016	1184	2016	2116	2117	2017			
1264-	CQDMEM2	202017	1190	2017	2117	2118	1618			
1265-	CQDMEM2	202051	4027	2051	2151	2153	2053			
1266-	CQDMEM2	202053	1195	2053	2153	2154	2054			
1267-	CQDMEM2	202054	1200	2054	2154	2155	2055			
1268-	CQDMEM2	202055	1200	2055	2155	2156	2056			
1269-	CQDMEM2	202055	1208	2056	2156	2157	2057			
1270-	CQDMEM2	202057	1208	2057	2157	2158	2058			
1271-	CQDMEM2	202058	1203	2058	2158	2160	2060			
1272-	CQDMEM2	202060	1198	2060	2160	2162	2062			
1273-	CQDMEM2	202062	1190	2062	2162	2164	2064			
1274-	CQDMEM2	202064	1188	2064	2164	2166	2066			
1275-	CQDMEM2	202065	1184	2066	2166	2167	2067			
1276-	CQDMEM2	202067	1190	2067	2167	2168	1668			
1277-	CQDMEM2	202101	4027	2101	2201	2203	2103			
1278-	CQDMEM2	202103	1156	2103	2203	2204	2104			
1279-	CQDMEM2	202104	1162	2104	2204	2205	2105			
1280-	CQDMEM2	202105	1170	2105	2205	2206	2106			
1281-	CQDMEM2	202106	1180	2106	2206	2207	2107			
1282-	CQDMEM2	202107	1190	2107	2207	2208	2108			
1283-	CQDMEM2	202109	1200	2108	2208	2210	2110			
1284-	CQDMEM2	202110	1208	2110	2210	2212	2112			
1285-	CQDMEM2	202112	1218	2112	2212	2214	2114			
1286-	CQDMEM2	202114	1220	2114	2214	2216	2116			
1287-	CQDMEM2	202116	1220	2116	2216	2217	2117			
1288-	CQDMEM2	202117	1224	2117	2217	2218	2118			
1289-	CQDMEM2	202118	1215	2118	2218	2219	2119			
1290-	CQDMEM2	202119	1203	2119	2219	2220	2120			
1291-	CQDMEM2	202120	1188	2120	2220	2221	2121			
1292-	CQDMEM2	202121	1173	2121	2221	2222	2122			
1293-	CQDMEM2	202122	1168	2122	2222	2223	1623			
1294-	CQDMEM2	202151	4027	2151	2251	2253	2153			
1295-	CQDMEM2	202153	1156	2153	2253	2254	2154			
1296-	CQDMEM2	202154	1162	2154	2254	2255	2155			
1297-	CQDMEM2	202155	1170	2155	2255	2256	2156			
1298-	CQDMEM2	202155	1180	2156	2256	2257	2157			
1299-	CQDMEM2	202157	1190	2157	2257	2258	2158			
1300-	CQDMEM2	202159	1200	2158	2258	2260	2160			

SORTED BULK DATA ECHO

CARD COUNT	.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
1301-	CQDMEM2	202160	1208	2160	2260	2262	2162														
1302-	CQDMEM2	202162	1218	2162	2262	2264	2164														
1303-	CQDMEM2	202164	1220	2164	2264	2266	2166														
1304-	CQDMEM2	202166	1220	2166	2266	2267	2167														
1305-	CQDMEM2	202167	1224	2167	2267	2268	2168														
1306-	CQDMEM2	202168	1215	2168	2268	2269	2169														
1307-	CQDMEM2	202169	1203	2169	2269	2270	2170														
1308-	CQDMEM2	202170	1188	2170	2270	2271	2171														
1309-	CQDMEM2	202171	1173	2171	2271	2272	2172														
1310-	CQDMEM2	202172	1168	2172	2272	2273	1673														
1311-	CQDMEM2	202201	4027	2201	2301	2303	2203														
1312-	CQDMEM2	202203	1162	2203	2303	2305	2205														
1313-	CQDMEM2	202205	1173	2205	2305	2307	2207														
1314-	CQDMEM2	202207	1173	2207	2307	2308	2208														
1315-	CQDMEM2	202208	1188	2208	2308	2310	2210														
1316-	CQDMEM2	202210	1195	2210	2310	2312	2212														
1317-	CQDMEM2	202212	1205	2212	2312	2314	2214														
1318-	CQDMEM2	202214	1205	2214	2314	2316	2216														
1319-	CQDMEM2	202215	1208	2216	2316	2317	2217														
1320-	CQDMEM2	202217	1205	2217	2317	2319	2219														
1321-	CQDMEM2	202219	1188	2219	2319	2321	2221														
1322-	CQDMEM2	202221	1168	2221	2321	2323	2223														
1323-	CQDMEM2	202223	4027	2223	2323	2324	2224														
1324-	CQDMEM2	202224	4027	2224	2324	2325	2225														
1325-	CQDMEM2	202251	4027	2251	2351	2353	2253														
1326-	CQDMEM2	202253	1162	2253	2353	2355	2255														
1327-	CQDMEM2	202255	1173	2255	2355	2357	2257														
1328-	CQDMEM2	202257	1173	2257	2357	2358	2258														
1329-	CQDMEM2	202258	1188	2258	2358	2360	2260														
1330-	CQDMEM2	202260	1195	2260	2360	2362	2262														
1331-	CQDMEM2	202262	1205	2262	2362	2364	2264														
1332-	CQDMEM2	202264	1205	2264	2364	2366	2266														
1333-	CQDMEM2	202266	1208	2266	2366	2367	2267														
1334-	CQDMEM2	202267	1205	2267	2367	2369	2269														
1335-	CQDMEM2	202269	1188	2269	2369	2371	2271														
1336-	CQDMEM2	202271	1168	2271	2371	2373	2273														
1337-	CQDMEM2	202273	4027	2273	2373	2374	2274														
1338-	CQDMEM2	202274	4027	2274	2374	2325	2225														
1339-	CQDMEM2	202301	4027	2301	2401	2403	2303														
1340-	CQDMEM2	202303	1182	2303	2403	2405	2305														
1341-	CQDMEM2	202305	1188	2305	2405	2407	2307														
1342-	CQDMEM2	202307	1195	2307	2407	2410	2310														
1343-	CQDMEM2	202310	1205	2310	2410	2412	2312														
1344-	CQDMEM2	202312	1208	2312	2412	2414	2314														
1345-	CQDMEM2	202314	1208	2314	2414	2417	2317														
1346-	CQDMEM2	202317	1208	2317	2417	2419	2319														
1347-	CQDMEM2	202319	1198	2319	2419	2421	2321														
1348-	CQDMEM2	202321	1182	2321	2421	2423	2323														
1349-	CQDMEM2	202323	4027	2323	2423	2424	2324														
1350-	CQDMEM2	202324	4027	2324	2424	2425	2325														

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SORTED BULK DATA ECHO

CARD COUNT	1	2	3	4	5	6	7	8	9	10
1351-	CQDMEM2	202351	4027	2351	2451	2453	2353			
1352-	CQDMEM2	202353	1182	2353	2453	2455	2355			
1353-	CQDMEM2	202355	1188	2355	2455	2457	2357			
1354-	CQDMEM2	202357	1195	2357	2457	2460	2360			
1355-	CQDMEM2	202360	1205	2360	2460	2462	2362			
1356-	CQDMEM2	202362	1208	2362	2462	2464	2364			
1357-	CQDMEM2	202364	1208	2364	2464	2467	2367			
1358-	CQDMEM2	202367	1208	2367	2467	2469	2369			
1359-	CQDMEM2	202369	1198	2369	2469	2471	2371			
1360-	CQDMEM2	202371	1182	2371	2471	2473	2373			
1361-	CQDMEM2	202373	4027	2373	2473	2474	2374			
1362-	CQDMEM2	202374	4027	2374	2474	2425	2325			
1363-	CQDMEM2	202401	4027	2401	2501	2503	2403			
1364-	CQDMEM2	202403	1218	2403	2503	2505	2405			
1365-	CQDMEM2	202405	1218	2405	2505	2507	2407			
1366-	CQDMEM2	202407	1222	2407	2507	2510	2410			
1367-	CQDMEM2	202410	1229	2410	2510	2514	2414			
1368-	CQDMEM2	202414	1229	2414	2514	2517	2417			
1369-	CQDMEM2	202417	1229	2417	2517	2519	2419			
1370-	CQDMEM2	202419	1222	2419	2519	2521	2421			
1371-	CQDMEM2	202421	1213	2421	2521	2523	2423			
1372-	CQDMEM2	202423	4027	2423	2523	2524	2424			
1373-	CQDMEM2	202424	4027	2424	2524	2525	2425			
1374-	CQDMEM2	202451	4027	2451	2551	2553	2453			
1375-	CQDMEM2	202453	1218	2453	2553	2555	2455			
1376-	CQDMEM2	202455	1218	2455	2555	2557	2457			
1377-	CQDMEM2	202457	1222	2457	2557	2560	2460			
1378-	CQDMEM2	202460	1229	2460	2560	2564	2464			
1379-	CQDMEM2	202464	1229	2464	2564	2567	2467			
1380-	CQDMEM2	202467	1229	2467	2567	2569	2469			
1381-	CQDMEM2	202469	1222	2469	2569	2571	2471			
1382-	CQDMEM2	202471	1213	2471	2571	2573	2473			
1383-	CQDMEM2	202473	4027	2473	2573	2574	2474			
1384-	CQDMEM2	202474	4027	2474	2574	2525	2425			
1385-	CQDMEM2	202501	4027	2501	2601	2603	2503			
1386-	CQDMEM2	202503	1238	2503	2603	2607	2507			
1387-	CQDMEM2	202507	1238	2507	2607	2614	2514			
1388-	CQDMEM2	202514	1238	2514	2614	2619	2519			
1389-	CQDMEM2	202519	1235	2519	2619	2623	2523			
1390-	CQDMEM2	202523	4027	2523	2623	2624	2524			
1391-	CQDMEM2	202524	4027	2524	2624	2625	2525			
1392-	CQDMEM2	202551	4027	2551	2651	2653	2553			
1393-	CQDMEM2	202553	1238	2553	2653	2657	2557			
1394-	CQDMEM2	202557	1238	2557	2657	2664	2564			
1395-	CQDMEM2	202564	1238	2564	2664	2669	2569			
1396-	CQDMEM2	202559	1235	2569	2669	2673	2573			
1397-	CQDMEM2	202573	4027	2573	2673	2674	2574			
1398-	CQDMEM2	202574	4027	2574	2674	2625	2525			
1399-	CQDMEM2	202501	4027	2601	2701	2703	2603			
1400-	CQDMEM2	202503	1198	2603	2703	2707	2607			

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CARD COUNT	.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
1401-	CQDMEM2	202507	1198	2607	2707	2714	2614														
1402-	CQDMEM2	202514	1198	2614	2714	2719	2619														
1403-	CQDMEM2	202519	1205	2619	2719	2723	2623														
1404-	CQDMEM2	202623	4027	2623	2723	2724	2624														
1405-	CQDMEM2	202624	4027	2624	2724	2725	2625														
1406-	CQDMEM2	202651	4027	2651	2751	2753	2653														
1407-	CQDMEM2	202653	1198	2653	2753	2757	2657														
1408-	CQDMEM2	202657	1198	2657	2757	2764	2664														
1409-	CQDMEM2	202664	1198	2664	2764	2769	2669														
1410-	CQDMEM2	202669	1205	2669	2769	2773	2673														
1411-	CQDMEM2	202573	4027	2673	2773	2774	2674														
1412-	CQDMEM2	202574	4027	2674	2774	2725	2625														
1413-	CQDMEM2	202701	4027	2701	2801	2803	2703														
1414-	CQDMEM2	202703	1145	2703	2803	2807	2707														
1415-	CQDMEM2	202707	1145	2707	2807	2814	2714														
1416-	CQDMEM2	202714	1145	2714	2814	2819	2719														
1417-	CQDMEM2	202719	1145	2719	2819	2823	2723														
1418-	CQDMEM2	202723	4027	2723	2823	2824	2724														
1419-	CQDMEM2	202724	4027	2724	2824	2825	2725														
1420-	CQDMEM2	202751	4027	2751	2851	2853	2753														
1421-	CQDMEM2	202753	1145	2753	2853	2857	2757														
1422-	CQDMEM2	202757	1145	2757	2857	2864	2764														
1423-	CQDMEM2	202764	1145	2764	2864	2869	2769														
1424-	CQDMEM2	202759	1145	2759	2859	2873	2773														
1425-	CQDMEM2	202773	4027	2773	2873	2874	2774														
1426-	CQDMEM2	202774	4027	2774	2874	2825	2725														
1427-	CQDMEM2	202803	1125	2803	2903	2907	2807														
1428-	CQDMEM2	202807	1125	2807	2907	2914	2814														
1429-	CQDMEM2	202814	1125	2814	2914	2919	2819														
1430-	CQDMEM2	202819	1125	2819	2919	2923	2823														
1431-	CQDMEM2	202823	1027	2823	2923	2924	2824														
1432-	CQDMEM2	202824	1027	2824	2924	2925	2825														
1433-	CQDMEM2	202853	1125	2853	2953	2957	2857														
1434-	CQDMEM2	202857	1125	2857	2957	2964	2864														
1435-	CQDMEM2	202864	1125	2864	2964	2969	2869														
1436-	CQDMEM2	202869	1125	2869	2969	2973	2873														
1437-	CQDMEM2	202873	1027	2873	2973	2974	2874														
1438-	CQDMEM2	202874	1027	2874	2974	2925	2825														
1439-	CQDMEM2	301010	2500	1010	1110	1140	1040														
1440-	CQDMEM2	301012	2500	1012	1112	1142	1042														
1441-	CQDMEM2	301040	2500	1040	1140	1160	1060														
1442-	CQDMEM2	301042	2500	1042	1142	1162	1062														
1443-	CQDMEM2	301110	2190	1110	1210	1240	1140														
1444-	CQDMEM2	301112	2106	1112	1212	1242	1142														
1445-	CQDMEM2	301140	2190	1140	1240	1260	1160														
1446-	CQDMEM2	301142	2106	1142	1242	1262	1162														
1447-	CQDMEM2	301210	2232	1210	1310	1340	1240														
1448-	CQDMEM2	301212	2140	1212	1312	1342	1242														
1449-	CQDMEM2	301240	2232	1240	1340	1360	1260														
1450-	CQDMEM2	301242	2140	1242	1342	1362	1262														

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SORTED BULK DATA ECHO

CARD COUNT	1	2	3	4	5	6	7	8	9	10
1451-	CQDMEM2	301310	2237	1310	1410	1440	1340			
1452-	CQDMEM2	301312	2146	1312	1412	1442	1342			
1453-	CQDMEM2	301340	2237	1340	1440	1460	1360			
1454-	CQDMEM2	301342	2146	1342	1442	1462	1362			
1455-	CQDMEM2	301410	2241	1410	1510	1540	1440			
1456-	CQDMEM2	301412	2152	1412	1512	1542	1442			
1457-	CQDMEM2	301440	2241	1440	1540	1560	1460			
1458-	CQDMEM2	301442	2152	1442	1542	1562	1462			
1459-	CQDMEM2	301510	2250	1510	1610	1640	1540			
1460-	CQDMEM2	301512	2156	1512	1612	1642	1542			
1461-	CQDMEM2	301540	2250	1540	1640	1660	1560			
1462-	CQDMEM2	301542	2156	1542	1642	1662	1562			
1463-	CQDMEM2	301510	2020	1610	1710	1740	1640			
1464-	CQDMEM2	301612	2023	1612	1812	1842	1642			
1465-	CQDMEM2	301640	2020	1640	1740	1760	1660			
1466-	CQDMEM2	301642	2023	1642	1842	1862	1662			
1467-	CQDMEM2	301710	2020	1710	1810	1840	1740			
1468-	CQDMEM2	301740	2020	1740	1840	1860	1760			
1469-	CQDMEM2	301810	2020	1810	1910	1940	1840			
1470-	CQDMEM2	301812	2023	1812	1912	1942	1842			
1471-	CQDMEM2	301840	2020	1840	1940	1960	1860			
1472-	CQDMEM2	301842	2023	1842	1942	1962	1862			
1473-	CQDMEM2	301910	2020	1910	2010	2040	1940			
1474-	CQDMEM2	301912	2023	1912	2012	2042	1942			
1475-	CQDMEM2	301940	2020	1940	2040	2060	1960			
1476-	CQDMEM2	301942	2023	1942	2042	2062	1962			
1477-	CSHEAR	101101	4107	1101	1151	1152	1102			
1478-	CSHEAR	101102	4107	1102	1152	1153	1103			
1479-	CSHEAR	101103	2013	1103	1153	1154	1104			
1480-	CSHEAR	101104	2013	1104	1154	1155	1105			
1481-	CSHEAR	101105	2017	1105	1155	1156	1106			
1482-	CSHEAR	101105	2017	1106	1156	1157	1107			
1483-	CSHEAR	101115	2023	1116	1166	1167	1117			
1484-	CSHEAR	101117	2023	1117	1167	1168	1118			
1485-	CSHEAR	101118	2020	1118	1168	1169	1119			
1486-	CSHEAR	101119	2020	1119	1169	1170	1120			
1487-	CSHEAR	101120	4107	1120	1170	1174	1124			
1488-	CSHEAR	101203	2013	1203	1253	1254	1204			
1489-	CSHEAR	101204	2013	1204	1254	1255	1205			
1490-	CSHEAR	101205	2017	1205	1255	1256	1206			
1491-	CSHEAR	101205	2017	1206	1256	1257	1207			
1492-	CSHEAR	101207	2023	1207	1257	1258	1208			
1493-	CSHEAR	101208	2023	1208	1258	1259	1209			
1494-	CSHEAR	101209	2023	1209	1259	1260	1210			
1495-	CSHEAR	101210	2013	1210	1260	1261	1211			
1496-	CSHEAR	101211	2013	1211	1261	1262	1212			
1497-	CSHEAR	101212	2085	1212	1262	1263	1213			
1498-	CSHEAR	101213	2085	1213	1263	1264	1214			
1499-	CSHEAR	101214	2023	1214	1264	1265	1215			
1500-	CSHEAR	101215	2023	1215	1265	1266	1216			

S O R T E D B U L K D A T A E C H O

CARD COUNT	.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
1501-	CSHEAR	101215	2020	1216	1266	1267	1217														
1502-	CSHEAR	101217	2017	1217	1267	1268	1218														
1503-	CSHEAR	101218	2013	1218	1268	1269	1219														
1504-	CSHEAR	101219	2013	1219	1269	1270	1220														
1505-	CSHEAR	101220	2013	1220	1270	1371	1321														
1506-	CSHEAR	101422	1060	1422	1472	1174	1124														
1507-	CSHEAR	101501	1028	1601	1651	1653	1603														
1508-	CSHEAR	101503	1090	1603	1653	1654	1604														
1509-	CSHEAR	101504	1096	1604	1654	1655	1605														
1510-	CSHEAR	101505	1103	1605	1655	1656	1606														
1511-	CSHEAR	101505	1112	1606	1656	1657	1607														
1512-	CSHEAR	101607	1115	1607	1657	1658	1608														
1513-	CSHEAR	101615	1126	1615	1665	1666	1616														
1514-	CSHEAR	101615	1115	1616	1666	1667	1617														
1515-	CSHEAR	101517	1103	1617	1667	1668	1618														
1516-	CSHEAR	101518	1103	1618	1668	1669	1619														
1517-	CSHEAR	101519	1095	1619	1669	1670	1620														
1518-	CSHEAR	101520	1085	1620	1670	1671	1621														
1519-	CSHEAR	101521	1080	1621	1671	1672	1622														
1520-	CSHEAR	101522	1080	1622	1672	1673	1623														
1521-	CSHEAR	101523	1060	1623	1673	2274	2224														
1522-	CSHEAR	102001	1077	2001	2051	2053	2003														
1523-	CSHEAR	102003	1090	2003	2053	2054	2004														
1524-	CSHEAR	102004	1090	2004	2054	2055	2005														
1525-	CSHEAR	102005	1090	2005	2055	2056	2006														
1526-	CSHEAR	102005	1090	2006	2056	2057	2007														
1527-	CSHEAR	102007	1090	2007	2057	2058	2008														
1528-	CSHEAR	102008	1090	2008	2058	2060	2010														
1529-	CSHEAR	102010	1090	2010	2060	2062	2012														
1530-	CSHEAR	102012	1090	2012	2062	2064	2014														
1531-	CSHEAR	102014	1090	2014	2064	2066	2016														
1532-	CSHEAR	102016	1090	2016	2066	2067	2017														
1533-	CSHEAR	102017	1080	2017	2067	1668	1618														
1534-	CSHEAR	102201	1113	2201	2251	2253	2203														
1535-	CSHEAR	102203	1050	2203	2253	2254	2204														
1536-	CSHEAR	102204	1056	2204	2254	2255	2205														
1537-	CSHEAR	102205	1056	2205	2255	2256	2206														
1538-	CSHEAR	102205	1063	2206	2256	2257	2207														
1539-	CSHEAR	102207	1063	2207	2257	2258	2208														
1540-	CSHEAR	102209	1067	2208	2258	2260	2210														
1541-	CSHEAR	102210	1070	2210	2260	2262	2212														
1542-	CSHEAR	102212	1070	2212	2262	2264	2214														
1543-	CSHEAR	102214	1075	2214	2264	2266	2216														
1544-	CSHEAR	102216	1075	2216	2266	2267	2217														
1545-	CSHEAR	102217	1075	2217	2267	2268	2218														
1546-	CSHEAR	102218	1075	2218	2268	2269	2219														
1547-	CSHEAR	102219	1075	2219	2269	2270	2220														
1548-	CSHEAR	102220	1070	2220	2270	2271	2221														
1549-	CSHEAR	102221	1067	2221	2271	2272	2222														
1550-	CSHEAR	102222	1063	2222	2272	2273	2223														

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CARD COUNT	1	2	3	4	5	6	7	8	9	10
1551-	CSHEAR	102223	1175	2223	2273	2274	2224			
1552-	CSHEAR	102301	1135	2301	2351	2353	2303			
1553-	CSHEAR	102303	1048	2303	2353	2355	2305			
1554-	CSHEAR	102305	1060	2305	2355	2357	2307			
1555-	CSHEAR	102307	1063	2307	2357	2358	2308			
1556-	CSHEAR	102308	1063	2308	2358	2360	2310			
1557-	CSHEAR	102310	1067	2310	2360	2362	2312			
1558-	CSHEAR	102312	1067	2312	2362	2364	2314			
1559-	CSHEAR	102314	1067	2314	2364	2366	2316			
1560-	CSHEAR	102316	1067	2316	2366	2367	2317			
1561-	CSHEAR	102317	1067	2317	2367	2369	2319			
1562-	CSHEAR	102319	1063	2319	2369	2371	2321			
1563-	CSHEAR	102321	1060	2321	2371	2373	2323			
1564-	CSHEAR	102323	1135	2323	2373	2374	2324			
1565-	CSHEAR	102401	1135	2401	2451	2453	2403			
1566-	CSHEAR	102403	1043	2403	2453	2455	2405			
1567-	CSHEAR	102405	1050	2405	2455	2457	2407			
1568-	CSHEAR	102407	1056	2407	2457	2460	2410			
1569-	CSHEAR	102410	1056	2410	2460	2462	2412			
1570-	CSHEAR	102412	1056	2412	2462	2464	2414			
1571-	CSHEAR	102414	1056	2414	2464	2467	2417			
1572-	CSHEAR	102417	1056	2417	2467	2469	2419			
1573-	CSHEAR	102419	1050	2419	2469	2471	2421			
1574-	CSHEAR	102421	1045	2421	2471	2473	2423			
1575-	CSHEAR	102423	1135	2423	2473	2474	2424			
1576-	CSHEAR	102501	1135	2501	2551	2553	2503			
1577-	CSHEAR	102503	1032	2503	2553	2555	2505			
1578-	CSHEAR	102505	1038	2505	2555	2557	2507			
1579-	CSHEAR	102507	1045	2507	2557	2560	2510			
1580-	CSHEAR	102510	1050	2510	2560	2564	2514			
1581-	CSHEAR	102514	1050	2514	2564	2567	2517			
1582-	CSHEAR	102517	1048	2517	2567	2569	2519			
1583-	CSHEAR	102519	1043	2519	2569	2571	2521			
1584-	CSHEAR	102521	1038	2521	2571	2573	2523			
1585-	CSHEAR	102523	1135	2523	2573	2574	2524			
1586-	CSHEAR	102501	1135	2601	2651	2653	2603			
1587-	CSHEAR	102503	1038	2603	2653	2657	2607			
1588-	CSHEAR	102507	1043	2607	2657	2664	2614			
1589-	CSHEAR	102514	1045	2614	2664	2669	2619			
1590-	CSHEAR	102519	1038	2619	2669	2673	2623			
1591-	CSHEAR	102623	1135	2623	2673	2674	2624			
1592-	CSHEAR	102701	1090	2701	2751	2753	2703			
1593-	CSHEAR	102703	1034	2703	2753	2757	2707			
1594-	CSHEAR	102707	1045	2707	2757	2764	2714			
1595-	CSHEAR	102714	1048	2714	2764	2769	2719			
1596-	CSHEAR	102719	1041	2719	2769	2773	2723			
1597-	CSHEAR	102723	1100	2723	2773	2774	2724			
1598-	CSHEAR	102801	1115	2801	2851	2853	2803			
1599-	CSHEAR	102803	1063	2803	2853	2857	2807			
1600-	CSHEAR	102807	1063	2807	2857	2864	2814			

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SORTED BULK DATA ECHO

CARD COUNT	1	2	3	4	5	6	7	8	9	10
1601-	CSHEAR	102814	1063	2814	2864	2869	2819			
1602-	CSHEAR	102819	1063	2819	2869	2873	2823			
1603-	CSHEAR	102823	1112	2823	2873	2874	2824			
1604-	CSHEAR	102903	1170	2903	2953	2957	2907			
1605-	CSHEAR	102907	1167	2907	2957	2964	2914			
1606-	CSHEAR	102914	1165	2914	2964	2969	2919			
1607-	CSHEAR	102919	1160	2919	2969	2973	2923			
1608-	CSHEAR	102923	1060	2923	2973	2974	2924			
1609-	CSHEAR	301101	1052	1101	1601	1651	1151			
1610-	CSHEAR	301103	1170	1103	1203	1253	1153			
1611-	CSHEAR	301105	2060	1105	1205	1255	1155			
1612-	CSHEAR	301107	2085	1107	1207	1257	1157			
1613-	CSHEAR	301115	2067	1116	1216	1266	1166			
1614-	CSHEAR	301118	2060	1118	1218	1268	1168			
1615-	CSHEAR	301123	1195	1120	1321	1371	1170			
1616-	CSHEAR	301124	1060	1124	2224	2274	1174			
1617-	CSHEAR	301203	1170	1203	1603	1653	1253			
1618-	CSHEAR	301204	2013	1204	1604	1654	1254			
1619-	CSHEAR	301205	2017	1205	1605	1655	1255			
1620-	CSHEAR	301205	2017	1206	1406	1456	1256			
1621-	CSHEAR	301207	2017	1207	1307	1357	1257			
1622-	CSHEAR	301209	2020	1208	1308	1358	1258			
1623-	CSHEAR	301214	2013	1214	1314	1364	1264			
1624-	CSHEAR	301216	2013	1216	1316	1366	1266			
1625-	CSHEAR	301217	2013	1217	1417	1467	1267			
1626-	CSHEAR	301218	2013	1218	1618	1668	1268			
1627-	CSHEAR	301219	2013	1219	1619	1669	1269			
1628-	CSHEAR	301220	2013	1220	1620	1670	1270			
1629-	CSHEAR	301307	2017	1307	1407	1457	1357			
1630-	CSHEAR	301308	2020	1308	1408	1458	1358			
1631-	CSHEAR	301314	2013	1314	1414	1464	1364			
1632-	CSHEAR	301316	2013	1316	1416	1466	1366			
1633-	CSHEAR	301321	2010	1321	1621	1671	1371			
1634-	CSHEAR	301323	1195	1321	1422	1472	1371			
1635-	CSHEAR	301406	2017	1406	1606	1656	1456			
1636-	CSHEAR	301407	2017	1407	1507	1557	1457			
1637-	CSHEAR	301408	2020	1408	1508	1558	1458			
1638-	CSHEAR	301414	2013	1414	1514	1564	1464			
1639-	CSHEAR	301415	2013	1416	1516	1566	1466			
1640-	CSHEAR	301417	2013	1417	1617	1667	1467			
1641-	CSHEAR	301422	2010	1422	1622	1672	1472			
1642-	CSHEAR	301423	1195	1422	1623	1673	1472			
1643-	CSHEAR	301507	2017	1507	1607	1657	1557			
1644-	CSHEAR	301508	2020	1508	1608	1658	1558			
1645-	CSHEAR	301514	2013	1514	1614	1664	1564			
1646-	CSHEAR	301516	2013	1516	1616	1666	1566			
1647-	CSHEAR	301501	1052	1601	1701	1751	1651			
1648-	CSHEAR	301503	1170	1603	1703	1753	1653			
1649-	CSHEAR	301604	2010	1604	1704	1754	1654			
1650-	CSHEAR	301605	2010	1605	1705	1755	1655			

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SORTED BULK DATA ECHO

CARD COUNT	1	2	3	4	5	6	7	8	9	10
1651-	CSHEAR	301605	2010	1606	1706	1755	1656			
1652-	CSHEAR	301507	2013	1607	1707	1757	1657			
1653-	CSHEAR	301508	2013	1608	1708	1758	1658			
1654-	CSHEAR	301514	2020	1614	1814	1864	1664			
1655-	CSHEAR	301615	2017	1616	2016	2066	1666			
1656-	CSHEAR	301517	2013	1617	2017	2067	1667			
1657-	CSHEAR	301518	2013	1618	2118	2168	1668			
1658-	CSHEAR	301519	2013	1619	2119	2169	1669			
1659-	CSHEAR	301520	2010	1620	2120	2170	1670			
1660-	CSHEAR	301521	2010	1621	2121	2171	1671			
1661-	CSHEAR	301522	2010	1622	2122	2172	1672			
1662-	CSHEAR	301623	1156	1623	2223	2273	1673			
1663-	CSHEAR	301701	1103	1701	1901	1951	1751			
1664-	CSHEAR	301703	1170	1703	1903	1953	1753			
1665-	CSHEAR	301704	2010	1704	1904	1954	1754			
1666-	CSHEAR	301705	2010	1705	1905	1955	1755			
1667-	CSHEAR	301705	2010	1706	1806	1856	1756			
1668-	CSHEAR	301707	2013	1707	1807	1857	1757			
1669-	CSHEAR	301708	2013	1708	1808	1858	1758			
1670-	CSHEAR	301805	2010	1806	1906	1956	1856			
1671-	CSHEAR	301807	2013	1807	1907	1957	1857			
1672-	CSHEAR	301808	2013	1808	1908	1958	1858			
1673-	CSHEAR	301814	2020	1814	1914	1964	1864			
1674-	CSHEAR	301901	1103	1901	2001	2051	1951			
1675-	CSHEAR	301903	1170	1903	2003	2053	1953			
1676-	CSHEAR	301904	2010	1904	2004	2054	1954			
1677-	CSHEAR	301905	2010	1905	2005	2055	1955			
1678-	CSHEAR	301905	2010	1906	2006	2056	1956			
1679-	CSHEAR	301907	2013	1907	2007	2057	1957			
1680-	CSHEAR	301908	2013	1908	2008	2058	1958			
1681-	CSHEAR	301914	2020	1914	2014	2064	1964			
1682-	CSHEAR	302001	1103	2001	2101	2151	2051			
1683-	CSHEAR	302003	1165	2003	2103	2153	2053			
1684-	CSHEAR	302004	2010	2004	2104	2154	2054			
1685-	CSHEAR	302005	2010	2005	2105	2155	2055			
1686-	CSHEAR	302006	2010	2006	2106	2156	2056			
1687-	CSHEAR	302007	2013	2007	2107	2157	2057			
1688-	CSHEAR	302008	2013	2008	2108	2158	2058			
1689-	CSHEAR	302010	2017	2010	2110	2160	2060			
1690-	CSHEAR	302012	2017	2012	2112	2162	2062			
1691-	CSHEAR	302014	2017	2014	2114	2164	2064			
1692-	CSHEAR	302015	2017	2016	2116	2166	2066			
1693-	CSHEAR	302017	2013	2017	2117	2167	2067			
1694-	CSHEAR	302101	1103	2101	2201	2251	2151			
1695-	CSHEAR	302103	1156	2103	2203	2253	2153			
1696-	CSHEAR	302104	2010	2104	2204	2254	2154			
1697-	CSHEAR	302105	2010	2105	2205	2255	2155			
1698-	CSHEAR	302105	2010	2106	2206	2256	2156			
1699-	CSHEAR	302107	2013	2107	2207	2257	2157			
1700-	CSHEAR	302108	2013	2108	2208	2258	2158			

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CARD COUNT	. 1	.. 2	.. 3	.. 4	.. 5	.. 6	.. 7	.. 8	.. 9	.. 10	.
1701-	CSHEAR	302110	2017	2110	2210	2260	2160				
1702-	CSHEAR	302112	2017	2112	2212	2262	2162				
1703-	CSHEAR	302114	2017	2114	2214	2264	2164				
1704-	CSHEAR	302116	2017	2116	2216	2266	2166				
1705-	CSHEAR	302117	2013	2117	2217	2267	2167				
1706-	CSHEAR	302118	2013	2118	2218	2268	2168				
1707-	CSHEAR	302119	2013	2119	2219	2269	2169				
1708-	CSHEAR	302120	2010	2120	2220	2270	2170				
1709-	CSHEAR	302121	2010	2121	2221	2271	2171				
1710-	CSHEAR	302122	2010	2122	2222	2272	2172				
1711-	CSHEAR	302201	1103	2201	2301	2351	2251				
1712-	CSHEAR	302203	1165	2203	2303	2353	2253				
1713-	CSHEAR	302205	2020	2205	2305	2355	2255				
1714-	CSHEAR	302207	2015	2207	2307	2357	2257				
1715-	CSHEAR	302208	2010	2208	2308	2358	2258				
1716-	CSHEAR	302210	2010	2210	2310	2360	2260				
1717-	CSHEAR	302212	2010	2212	2312	2362	2262				
1718-	CSHEAR	302214	2013	2214	2314	2364	2264				
1719-	CSHEAR	302215	2013	2215	2315	2365	2265				
1720-	CSHEAR	302217	2020	2217	2317	2367	2267				
1721-	CSHEAR	302219	2025	2219	2319	2369	2269				
1722-	CSHEAR	302221	2020	2221	2321	2371	2271				
1723-	CSHEAR	302223	1167	2223	2323	2373	2273				
1724-	CSHEAR	302224	1073	2224	2324	2374	2274				
1725-	CSHEAR	302301	1103	2301	2401	2451	2351				
1726-	CSHEAR	302303	1190	2303	2403	2453	2353				
1727-	CSHEAR	302305	2020	2305	2405	2455	2355				
1728-	CSHEAR	302307	2020	2307	2407	2457	2357				
1729-	CSHEAR	302310	2015	2310	2410	2460	2360				
1730-	CSHEAR	302312	2010	2312	2412	2462	2362				
1731-	CSHEAR	302314	2015	2314	2414	2464	2364				
1732-	CSHEAR	302317	2020	2317	2417	2467	2367				
1733-	CSHEAR	302319	2020	2319	2419	2469	2369				
1734-	CSHEAR	302321	2020	2321	2421	2471	2371				
1735-	CSHEAR	302323	1190	2323	2423	2473	2373				
1736-	CSHEAR	302324	1067	2324	2424	2474	2374				
1737-	CSHEAR	302401	1103	2401	2501	2551	2451				
1738-	CSHEAR	302403	1230	2403	2503	2553	2453				
1739-	CSHEAR	302405	2020	2405	2505	2555	2455				
1740-	CSHEAR	302407	2020	2407	2507	2557	2457				
1741-	CSHEAR	302410	2020	2410	2510	2560	2460				
1742-	CSHEAR	302414	2020	2414	2514	2564	2464				
1743-	CSHEAR	302417	2020	2417	2517	2567	2467				
1744-	CSHEAR	302419	2020	2419	2519	2569	2469				
1745-	CSHEAR	302421	2020	2421	2521	2571	2471				
1746-	CSHEAR	302423	1227	2423	2523	2573	2473				
1747-	CSHEAR	302424	1058	2424	2524	2574	2474				
1748-	CSHEAR	302501	1103	2501	2601	2651	2551				
1749-	CSHEAR	302503	1248	2503	2603	2653	2553				
1750-	CSHEAR	302507	2025	2507	2607	2657	2557				

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S O R T E D B U L K D A T A E C H O

CARD COUNT	1	2	3	4	5	6	7	8	9	10
1751-	CSHEAR	302514	2025	2514	2614	2664	2564			
1752-	CSHEAR	302519	2025	2519	2619	2669	2569			
1753-	CSHEAR	302523	1248	2523	2623	2673	2573			
1754-	CSHEAR	302524	1050	2524	2624	2674	2574			
1755-	CSHEAR	302501	1103	2601	2701	2751	2651			
1756-	CSHEAR	302503	1200	2603	2703	2753	2653			
1757-	CSHEAR	302507	2020	2607	2707	2757	2657			
1758-	CSHEAR	302514	2025	2614	2714	2764	2664			
1759-	CSHEAR	302519	2023	2619	2719	2769	2669			
1760-	CSHEAR	302623	1215	2623	2723	2773	2673			
1761-	CSHEAR	302524	1043	2624	2724	2774	2674			
1762-	CSHEAR	302701	1103	2701	2801	2851	2751			
1763-	CSHEAR	302703	1150	2703	2803	2853	2753			
1764-	CSHEAR	302707	2015	2707	2807	2857	2757			
1765-	CSHEAR	302714	2015	2714	2814	2864	2764			
1766-	CSHEAR	302719	2015	2719	2819	2869	2769			
1767-	CSHEAR	302723	1160	2723	2823	2873	2773			
1768-	CSHEAR	302724	1034	2724	2824	2874	2774			
1769-	CSHEAR	302801	1170	2801	2901	2951	2851			
1770-	CSHEAR	302803	1058	2803	2903	2953	2853			
1771-	CSHEAR	302807	1032	2807	2907	2957	2857			
1772-	CSHEAR	302814	1036	2814	2914	2964	2864			
1773-	CSHEAR	302819	1030	2819	2919	2969	2869			
1774-	CSHEAR	302823	1135	2823	2923	2973	2873			
1775-	CSHEAR	302824	1032	2824	2924	2974	2874			
1776-	CTRMEM	111124	4107	1124	1174	1125				
1777-	CTRMEM	112224	1156	2224	2274	2225				
1778-	CTRMEM	112324	1135	2324	2374	2325				
1779-	CTRMEM	112424	1135	2424	2474	2425				
1780-	CTRMEM	112524	1135	2524	2574	2525				
1781-	CTRMEM	112624	1135	2624	2674	2625				
1782-	CTRMEM	112724	1100	2724	2774	2725				
1783-	CTRMEM	112824	1112	2824	2874	2825				
1784-	CTRMEM	112924	1060	2924	2974	2925				
1785-	CTRMEM	211101	4027	1101	1601	1102				
1786-	CTRMEM	211120	1229	1120	1220	1321				
1787-	CTRMEM	211124	4027	1120	1422	1124				
1788-	CTRMEM	211151	4027	1151	1651	1152				
1789-	CTRMEM	211170	1229	1170	1270	1371				
1790-	CTRMEM	211174	4027	1170	1472	1174				
1791-	CTRMEM	211205	1235	1205	1406	1206				
1792-	CTRMEM	211206	1260	1206	1406	1307				
1793-	CTRMEM	211207	1260	1206	1307	1207				
1794-	CTRMEM	211216	1315	1216	1316	1217				
1795-	CTRMEM	211217	1315	1217	1316	1417				
1796-	CTRMEM	211218	1280	1217	1417	1218				
1797-	CTRMEM	211255	1235	1255	1456	1256				
1798-	CTRMEM	211256	1260	1256	1456	1357				
1799-	CTRMEM	211257	1260	1256	1357	1257				
1800-	CTRMEM	211266	1315	1266	1366	1267				

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

CARD COUNT	1	2	3	4	5	6	7	8	9	10
1801-	CTRMEM	211267	1315	1267	1366	1467				
1802-	CTRMEM	211268	1280	1267	1467	1268				
1803-	CTRMEM	211307	1260	1307	1406	1407				
1804-	CTRMEM	211316	1315	1316	1416	1417				
1805-	CTRMEM	211357	1260	1357	1456	1457				
1806-	CTRMEM	211366	1315	1366	1466	1467				
1807-	CTRMEM	211406	1235	1406	1605	1606				
1808-	CTRMEM	211407	1260	1406	1507	1407				
1809-	CTRMEM	211416	1315	1416	1516	1417				
1810-	CTRMEM	211417	1315	1417	1516	1617				
1811-	CTRMEM	211422	1198	1422	1622	1623				
1812-	CTRMEM	211455	1235	1456	1655	1656				
1813-	CTRMEM	211457	1260	1456	1557	1457				
1814-	CTRMEM	211466	1315	1466	1566	1467				
1815-	CTRMEM	211467	1315	1467	1566	1667				
1816-	CTRMEM	211472	1198	1472	1672	1673				
1817-	CTRMEM	211507	1260	1507	1606	1607				
1818-	CTRMEM	211515	1315	1516	1616	1617				
1819-	CTRMEM	211557	1260	1557	1656	1657				
1820-	CTRMEM	211566	1315	1566	1666	1667				
1821-	CTRMEM	211505	1235	1205	1605	1406				
1822-	CTRMEM	211606	1260	1406	1606	1507				
1823-	CTRMEM	211511	1455	1611	1711	1612				
1824-	CTRMEM	211614	1327	1614	1814	1615				
1825-	CTRMEM	211615	1327	1615	1915	1616				
1826-	CTRMEM	211615	1297	1616	1915	2016				
1827-	CTRMEM	211517	1280	1417	1617	1618				
1828-	CTRMEM	211518	1280	1218	1417	1618				
1829-	CTRMEM	211522	1175	1622	2122	1623				
1830-	CTRMEM	211623	4027	1623	2223	2224				
1831-	CTRMEM	211655	1235	1255	1655	1456				
1832-	CTRMEM	211656	1260	1456	1656	1557				
1833-	CTRMEM	211561	1455	1661	1761	1662				
1834-	CTRMEM	211664	1327	1664	1864	1665				
1835-	CTRMEM	211565	1327	1665	1965	1666				
1836-	CTRMEM	211666	1297	1666	1965	2066				
1837-	CTRMEM	211567	1280	1467	1667	1668				
1838-	CTRMEM	211668	1280	1268	1467	1668				
1839-	CTRMEM	211572	1175	1672	2172	1673				
1840-	CTRMEM	211573	4027	1673	2273	2274				
1841-	CTRMEM	211705	1222	1705	1905	1806				
1842-	CTRMEM	211706	1227	1705	1806	1706				
1843-	CTRMEM	211755	1222	1755	1955	1856				
1844-	CTRMEM	211755	1227	1755	1856	1756				
1845-	CTRMEM	211806	1218	1806	1905	1906				
1846-	CTRMEM	211855	1218	1856	1955	1956				
1847-	CTRMEM	211908	1262	1908	2008	1909				
1848-	CTRMEM	211909	1262	1909	2008	2010				
1849-	CTRMEM	211910	1317	1910	2010	1911				
1850-	CTRMEM	211911	1283	1911	2010	2012				

SORTED BULK DATA ECHO

CARD COUNT	1	2	3	4	5	6	7	8	9	10
1851-	CTRMEM	211912	1325	1912	2012	1913				
1852-	CTRMEM	211913	1325	1913	2012	2014				
1853-	CTRMEM	211914	1297	1914	2014	1915				
1854-	CTRMEM	211915	1297	1915	2014	2016				
1855-	CTRMEM	211958	1262	1958	2058	1959				
1856-	CTRMEM	211959	1262	1959	2058	2060				
1857-	CTRMEM	211960	1317	1960	2060	1961				
1858-	CTRMEM	211961	1283	1961	2060	2062				
1859-	CTRMEM	211962	1325	1962	2062	1963				
1860-	CTRMEM	211963	1325	1963	2062	2064				
1861-	CTRMEM	211964	1297	1964	2064	1965				
1862-	CTRMEM	211965	1297	1965	2064	2066				
1863-	CTRMEM	212010	1262	1909	2010	1910				
1864-	CTRMEM	212012	1325	1911	2012	1912				
1865-	CTRMEM	212014	1325	1913	2014	1914				
1866-	CTRMEM	212017	1283	1617	2017	1618				
1867-	CTRMEM	212060	1262	1959	2060	1960				
1868-	CTRMEM	212062	1325	1961	2062	1962				
1869-	CTRMEM	212064	1325	1963	2064	1964				
1870-	CTRMEM	212067	1283	1667	2067	1668				
1871-	CTRMEM	212801	1125	2801	2903	2803				
1872-	CTRMEM	212851	1125	2851	2953	2853				
1873-	FORCE	1	1102		0.001	0.0	0.0	619.399		
1874-	FORCE	1	1203		0.001	0.0	0.0	56.018		
1875-	FORCE	1	1603		0.001	0.0	0.0	324.582		
1876-	FORCE	2	1206		0.001	0.0	0.0	245.342		
1877-	FORCE	2	1307		0.001	0.0	0.0	603.498		
1878-	FORCE	2	1406		0.001	0.0	0.0	151.160		
1879-	FORCE	3	1314		0.001	0.0	0.0	600.420		
1880-	FORCE	3	1316		0.001	0.0	0.0	337.157		
1881-	FORCE	3	1416		0.001	0.0	0.0	62.423		
1882-	FORCE	4	1124		0.001	0.0	0.0	53.968		
1883-	FORCE	4	1321		0.001	0.0	0.0	920.237		
1884-	FORCE	4	1422		0.001	0.0	0.0	25.795		
1885-	FORCE	5	1124		0.001	0.0	0.0	458.252		
1886-	FORCE	5	1125		0.001	0.0	0.0	265.611		
1887-	FORCE	5	2224		0.001	0.0	0.0	276.136		
1888-	FORCE	6	1703		0.001	0.0	0.0	280.560		
1889-	FORCE	6	1901		0.001	0.0	0.0	2.535		
1890-	FORCE	6	1903		0.001	0.0	0.0	716.905		
1891-	FORCE	7	2008		0.001	0.0	0.0	783.740		
1892-	FORCE	7	2010		0.001	0.0	0.0	197.056		
1893-	FORCE	7	2108		0.001	0.0	0.0	19.204		
1894-	FORCE	8	2116		0.001	0.0	0.0	227.850		
1895-	FORCE	8	2117		0.001	0.0	0.0	705.399		
1896-	FORCE	8	2217		0.001	0.0	0.0	66.750		
1897-	FORCE	9	2223		0.001	0.0	0.0	954.660		
1898-	FORCE	9	2224		0.001	0.0	0.0	0.244		
1899-	FORCE	9	2323		0.001	0.0	0.0	45.096		
1900-	FORCE	10	2224		0.001	0.0	0.0	333.061		

Airloads Research Study - Horizontal Stabilizer

S O R T E D B U L K D A T A E C H O

CARD COUNT	1	2	3	4	5	6	7	8	9	10
1901-	FORCE	10	2324		0.001	0.0	0.0	418.961		
1902-	FORCE	10	2325		0.001	0.0	0.0	247.978		
1903-	FORCE	11	2103		0.001	0.0	0.0	262.512		
1904-	FORCE	11	2201		0.001	0.0	0.0	0.084		
1905-	FORCE	11	2203		0.001	0.0	0.0	737.403		
1906-	FORCE	12	2208		0.001	0.0	0.0	524.135		
1907-	FORCE	12	2210		0.001	0.0	0.0	190.405		
1908-	FORCE	12	2308		0.001	0.0	0.0	285.460		
1909-	FORCE	13	2217		0.001	0.0	0.0	286.450		
1910-	FORCE	13	2316		0.001	0.0	0.0	238.065		
1911-	FORCE	13	2317		0.001	0.0	0.0	475.485		
1912-	FORCE	14	2323		0.001	0.0	0.0	796.603		
1913-	FORCE	14	2324		0.001	0.0	0.0	0.218		
1914-	FORCE	14	2423		0.001	0.0	0.0	203.179		
1915-	FORCE	15	2324		0.001	0.0	0.0	246.391		
1916-	FORCE	15	2424		0.001	0.0	0.0	587.476		
1917-	FORCE	15	2425		0.001	0.0	0.0	246.133		
1918-	FORCE	16	2301		0.001	0.0	0.0	0.111		
1919-	FORCE	16	2303		0.001	0.0	0.0	954.898		
1920-	FORCE	16	2403		0.001	0.0	0.0	44.990		
1921-	FORCE	17	2307		0.001	0.0	0.0	393.251		
1922-	FORCE	17	2310		0.001	0.0	0.0	182.958		
1923-	FORCE	17	2410		0.001	0.0	0.0	423.790		
1924-	FORCE	18	2317		0.001	0.0	0.0	197.270		
1925-	FORCE	18	2414		0.001	0.0	0.0	116.348		
1926-	FORCE	18	2417		0.001	0.0	0.0	686.382		
1927-	FORCE	19	2423		0.001	0.0	0.0	763.815		
1928-	FORCE	19	2424		0.001	0.0	0.0	0.425		
1929-	FORCE	19	2523		0.001	0.0	0.0	235.761		
1930-	FORCE	20	2424		0.001	0.0	0.0	277.253		
1931-	FORCE	20	2524		0.001	0.0	0.0	474.192		
1932-	FORCE	20	2525		0.001	0.0	0.0	248.555		
1933-	FORCE	21	2403		0.001	0.0	0.0	879.210		
1934-	FORCE	21	2405		0.001	0.0	0.0	0.297		
1935-	FORCE	21	2503		0.001	0.0	0.0	120.492		
1936-	FORCE	22	2407		0.001	0.0	0.0	388.580		
1937-	FORCE	22	2410		0.001	0.0	0.0	156.819		
1938-	FORCE	22	2510		0.001	0.0	0.0	454.601		
1939-	FORCE	23	2417		0.001	0.0	0.0	211.291		
1940-	FORCE	23	2514		0.001	0.0	0.0	116.807		
1941-	FORCE	23	2517		0.001	0.0	0.0	671.902		
1942-	FORCE	24	2523		0.001	0.0	0.0	829.216		
1943-	FORCE	24	2524		0.001	0.0	0.0	0.270		
1944-	FORCE	24	2623		0.001	0.0	0.0	170.514		
1945-	FORCE	25	2524		0.001	0.0	0.0	399.922		
1946-	FORCE	25	2524		0.001	0.0	0.0	345.096		
1947-	FORCE	25	2625		0.001	0.0	0.0	254.981		
1948-	FORCE	26	2503		0.001	0.0	0.0	892.711		
1949-	FORCE	26	2505		0.001	0.0	0.0	0.034		
1950-	FORCE	26	2603		0.001	0.0	0.0	107.255		

Airloads Research Study - Horizontal Stabilizer

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SORTED BULK DATA ECHO										
CARD COUNT	1	2	3	4	5	6	7	8	9	10
1951-	FORCE	27	2507		0.001	0.0	0.0	45.509		
1952-	FORCE	27	2510		0.001	0.0	0.0	554.317		
1953-	FORCE	27	2607		0.001	0.0	0.0	400.175		
1954-	FORCE	28	2514		0.001	0.0	0.0	306.588		
1955-	FORCE	28	2614		0.001	0.0	0.0	217.581		
1956-	FORCE	28	2619		0.001	0.0	0.0	475.831		
1957-	FORCE	29	2619		0.001	0.0	0.0	0.206		
1958-	FORCE	29	2623		0.001	0.0	0.0	971.644		
1959-	FORCE	29	2723		0.001	0.0	0.0	28.149		
1960-	FORCE	30	2624		0.001	0.0	0.0	371.924		
1961-	FORCE	30	2625		0.001	0.0	0.0	223.194		
1962-	FORCE	30	2724		0.001	0.0	0.0	404.883		
1963-	FORCE	31	2601		0.001	0.0	0.0	0.062		
1964-	FORCE	31	2503		0.001	0.0	0.0	982.147		
1965-	FORCE	31	2703		0.001	0.0	0.0	17.792		
1966-	FORCE	32	2507		0.001	0.0	0.0	458.223		
1967-	FORCE	32	2514		0.001	0.0	0.0	268.758		
1968-	FORCE	32	2707		0.001	0.0	0.0	273.018		
1969-	FORCE	33	2514		0.001	0.0	0.0	57.981		
1970-	FORCE	33	2519		0.001	0.0	0.0	413.917		
1971-	FORCE	33	2714		0.001	0.0	0.0	528.102		
1972-	FORCE	34	2523		0.001	0.0	0.0	180.264		
1973-	FORCE	34	2723		0.001	0.0	0.0	819.573		
1974-	FORCE	34	2724		0.001	0.0	0.0	0.163		
1975-	FORCE	35	2724		0.001	0.0	0.0	644.771		
1976-	FORCE	35	2725		0.001	0.0	0.0	231.871		
1977-	FORCE	35	2824		0.001	0.0	0.0	123.358		
1978-	FORCE	36	2603		0.001	0.0	0.0	158.496		
1979-	FORCE	36	2703		0.001	0.0	0.0	841.472		
1980-	FORCE	36	2707		0.001	0.0	0.0	0.032		
1981-	FORCE	37	2707		0.001	0.0	0.0	600.591		
1982-	FORCE	37	2714		0.001	0.0	0.0	277.461		
1983-	FORCE	37	2807		0.001	0.0	0.0	121.948		
1984-	FORCE	38	2714		0.001	0.0	0.0	157.337		
1985-	FORCE	38	2719		0.001	0.0	0.0	427.878		
1986-	FORCE	38	2814		0.001	0.0	0.0	414.785		
1987-	FORCE	39	2723		0.001	0.0	0.0	457.418		
1988-	FORCE	39	2724		0.001	0.0	0.0	0.311		
1989-	FORCE	39	2823		0.001	0.0	0.0	542.271		
1990-	FORCE	40	2724		0.001	0.0	0.0	358.823		
1991-	FORCE	40	2824		0.001	0.0	0.0	367.870		
1992-	FORCE	40	2825		0.001	0.0	0.0	273.307		
1993-	FORCE	41	2803		0.001	0.0	0.0	478.464		
1994-	FORCE	41	2807		0.001	0.0	0.0	0.333		
1995-	FORCE	41	2903		0.001	0.0	0.0	521.203		
1996-	FORCE	42	2807		0.001	0.0	0.0	328.097		
1997-	FORCE	42	2814		0.001	0.0	0.0	276.811		
1998-	FORCE	42	2907		0.001	0.0	0.0	395.092		
1999-	FORCE	43	2814		0.001	0.0	0.0	200.206		
2000-	FORCE	43	2819		0.001	0.0	0.0	442.604		

S O R T E D B U L K D A T A E C H O

CARD COUNT	. 1	.. 2	.. 3	.. 4	.. 5	.. 6	.. 7	.. 8	.. 9	.. 10
2001-	FORCE	43	2914		0.001	0.0	0.0	357.190		
2002-	FORCE	44	2823		0.001	0.0	0.0	642.127		
2003-	FORCE	44	2824		0.001	0.0	0.0	0.642		
2004-	FORCE	44	2923		0.001	0.0	0.0	357.190		
2005-	FORCE	45	2824		0.001	0.0	0.0	409.469		
2006-	FORCE	45	2825		0.001	0.0	0.0	233.340		
2007-	FORCE	45	2924		0.001	0.0	0.0	357.190		
2008-	GRAV	101		10.	1.0	.0	.0			
2009-	GRAV	102		10.	.0	1.0	.0			
2010-	GRAV	103		10.	.0	.0	1.0			
2011-	GRID	1001	59.787	-10.75	2.63			123456		
2012-	GRID	1002	102.215	-10.75	10.915			2456		
2013-	GRID	1010	96.537	-10.75	6.75			456		
2014-	GRID	1011	102.787	-10.75	6.75			456		
2015-	GRID	1012	109.037	-10.75	6.75			456		
2016-	GRID	1040	96.537	-10.75	.0			45		
2017-	GRID	1041	102.787	-10.75	.0			12345		
2018-	GRID	1042	109.037	-10.75	.0			45		
2019-	GRID	1051	59.787	-10.75	-2.63			123456		
2020-	GRID	1052	99.409	-10.75	-10.395			2456		
2021-	GRID	1060	96.537	-10.75	-6.75			456		
2022-	GRID	1061	102.787	-10.75	-6.75			456		
2023-	GRID	1062	109.037	-10.75	-6.75			456		
2024-	GRID	1101	25.80	-18.875	.5			456		
2025-	GRID	1102	43.07	-18.875	3.55			456		
2026-	GRID	1103	61.462	-18.875	5.429			456		
2027-	GRID	1104	67.180	-18.875	5.771			456		
2028-	GRID	1105	73.096	-18.875	6.073			456		
2029-	GRID	1105	79.264	-18.875	6.333			456		
2030-	GRID	1107	85.670	-18.875	6.554			456		
2031-	GRID	1108	88.92	-18.875	6.62			456		
2032-	GRID	1109	93.33	-18.875	6.68			456		
2033-	GRID	1110	96.537	-18.875	6.642			456		
2034-	GRID	1111	102.787	-18.875	6.541			456		
2035-	GRID	1112	109.037	-18.875	6.450			456		
2036-	GRID	1113	111.73	-18.875	6.46			456		
2037-	GRID	1114	113.333	-18.875	6.469			456		
2038-	GRID	1115	116.58	-18.875	6.51			456		
2039-	GRID	1116	120.483	-18.875	6.553			456		
2040-	GRID	1117	127.421	-18.875	6.459			456		
2041-	GRID	1118	134.047	-18.875	6.179			456		
2042-	GRID	1119	140.389	-18.875	5.843			456		
2043-	GRID	1120	146.826	-18.875	5.438			456		
2044-	GRID	1124	183.45	-18.875	2.57			456		
2045-	GRID	1125	218.85	-25.00	.0			456		
2046-	GRID	1137	85.670	-18.875	.0			2456		
2047-	GRID	1138	88.92	-18.875	.0			2456		
2048-	GRID	1139	93.33	-18.875	.0			2456		
2049-	GRID	1140	96.537	-18.875	.0			456		
2050-	GRID	1141	102.787	-18.875	.0			2456		

Airloads Research Study - Horizontal Stabilizer

SORTED BULK DATA ECHO

CARD	1	2	3	4	5	6	7	8	9	10
2051-	GRID	1142		109.037	-18.875	.0		456		
2052-	GRID	1143		111.73	-18.875	.0		2456		
2053-	GRID	1144		113.333	-18.875	.0		2456		
2054-	GRID	1145		116.58	-18.875	.0		2456		
2055-	GRID	1145		120.483	-18.875	.0		2456		
2056-	GRID	1151		25.80	-18.875	-0.5		456		
2057-	GRID	1152		43.07	-18.875	-3.55		456		
2058-	GRID	1153		61.462	-18.875	-5.429		456		
2059-	GRID	1154		67.180	-18.875	-5.771		456		
2060-	GRID	1155		73.096	-18.875	-6.073		456		
2061-	GRID	1156		79.264	-18.875	-6.333		456		
2062-	GRID	1157		85.670	-18.875	-6.554		456		
2063-	GRID	1158		88.92	-18.875	-6.62		456		
2064-	GRID	1159		93.33	-18.875	-6.68		456		
2065-	GRID	1160		96.537	-18.875	-6.642		456		
2066-	GRID	1161		102.787	-18.875	-6.541		456		
2067-	GRID	1162		109.037	-18.875	-6.450		456		
2068-	GRID	1163		111.73	-18.875	-6.46		456		
2069-	GRID	1164		113.333	-18.875	-6.469		456		
2070-	GRID	1165		116.58	-18.875	-6.51		456		
2071-	GRID	1165		120.483	-18.875	-6.553		456		
2072-	GRID	1167		127.421	-18.875	-6.459		456		
2073-	GRID	1168		134.047	-18.875	-6.179		456		
2074-	GRID	1169		140.389	-18.875	-5.843		456		
2075-	GRID	1170		146.826	-18.875	-5.438		456		
2076-	GRID	1174		183.45	-18.875	-2.57		456		
2077-	GRID	1203		61.462	-24.875	5.105		456		
2078-	GRID	1204		67.180	-24.875	5.480		456		
2079-	GRID	1205		73.096	-24.875	5.813		456		
2080-	GRID	1206		79.264	-24.875	5.105		456		
2081-	GRID	1207		85.670	-24.875	6.348		456		
2082-	GRID	1208		92.301	-24.875	6.512		456		
2083-	GRID	1209		93.33	-24.875	6.50		456		
2084-	GRID	1210		96.708	-24.875	6.464		456		
2085-	GRID	1211		102.787	-24.875	6.309		456		
2086-	GRID	1212		108.867	-24.875	6.276		456		
2087-	GRID	1213		111.734	-24.875	6.33		456		
2088-	GRID	1214		113.333	-24.875	6.364		456		
2089-	GRID	1215		116.584	-24.875	6.42		456		
2090-	GRID	1216		120.483	-24.875	6.490		456		
2091-	GRID	1217		127.421	-24.875	6.456		456		
2092-	GRID	1218		134.047	-24.875	6.223		456		
2093-	GRID	1219		140.389	-24.875	5.923		456		
2094-	GRID	1220		146.424	-24.875	5.58		456		
2095-	GRID	1240		96.708	-24.875	.0		1456		
2096-	GRID	1242		108.867	-24.875	.0		1456		
2097-	GRID	1253		61.462	-24.875	-5.105		456		
2098-	GRID	1254		67.180	-24.875	-5.480		456		
2099-	GRID	1255		73.096	-24.875	-5.813		456		
2100-	GRID	1256		79.264	-24.875	-6.105		456		

Airloads Research Study - Horizontal Stabilizer

SORTED BULK DATA ECHO

CARD	1	2	3	4	5	6	7	8	9	10
COUNT	.	..	..	..	..	..	..	..	..	..
2101-	GRID	1257		85.670	-24.875	-6.348		456		
2102-	GRID	1258		92.311	-24.875	-6.512		456		
2103-	GRID	1259		93.33	-24.875	-6.50		456		
2104-	GRID	1260		96.708	-24.875	-6.464		456		
2105-	GRID	1261		102.787	-24.875	-6.309		456		
2106-	GRID	1262		108.867	-24.875	-6.276		456		
2107-	GRID	1263		111.734	-24.875	-6.33		456		
2108-	GRID	1264		113.333	-24.875	-6.364		456		
2109-	GRID	1265		116.584	-24.875	-6.42		456		
2110-	GRID	1265		120.483	-24.875	-6.490		456		
2111-	GRID	1267		127.421	-24.875	-6.456		456		
2112-	GRID	1268		134.047	-24.875	-6.223		456		
2113-	GRID	1269		140.389	-24.875	-5.923		456		
2114-	GRID	1270		146.424	-24.875	-5.58		456		
2115-	GRID	1307		85.670	-27.83	6.21		456		
2116-	GRID	1308		92.301	-27.83	6.39		46		
2117-	GRID	1309		93.33	-27.83	6.38		46		
2118-	GRID	1310		96.79	-27.83	6.36		46		
2119-	GRID	1311		102.787	-27.83	6.24		46		
2120-	GRID	1312		108.79	-27.83	6.23		46		
2121-	GRID	1313		111.73	-27.83	6.29		46		
2122-	GRID	1314		113.333	-27.83	6.32		46		
2123-	GRID	1315		116.58	-27.83	6.37		46		
2124-	GRID	1315		120.483	-27.83	6.44		46		
2125-	GRID	1321		152.141	-28.61	5.27		456		
2126-	GRID	1340		96.79	-27.83	.0		1456		
2127-	GRID	1342		108.79	-27.83	.0		1456		
2128-	GRID	1357		85.670	-27.83	-6.21		456		
2129-	GRID	1358		92.301	-27.83	-6.39		46		
2130-	GRID	1359		93.33	-27.83	-6.38		46		
2131-	GRID	1360		96.79	-27.83	-6.36		46		
2132-	GRID	1361		102.787	-27.83	-6.24		46		
2133-	GRID	1362		108.79	-27.83	-6.23		46		
2134-	GRID	1363		111.73	-27.83	-6.29		46		
2135-	GRID	1364		113.333	-27.83	-6.32		46		
2136-	GRID	1365		116.58	-27.83	-6.37		46		
2137-	GRID	1365		120.483	-27.83	-6.44		46		
2138-	GRID	1371		152.141	-28.61	-5.27		456		
2139-	GRID	1405		79.264	-36.00	5.96		456		
2140-	GRID	1407		85.670	-36.00	6.21		456		
2141-	GRID	1408		92.301	-36.00	6.39		46		
2142-	GRID	1409		93.33	-36.00	6.06		46		
2143-	GRID	1410		97.02	-36.00	5.10		46		
2144-	GRID	1411		102.787	-36.00	5.07		46		
2145-	GRID	1412		108.55	-36.00	6.11		46		
2146-	GRID	1413		111.737	-36.00	5.17		46		
2147-	GRID	1414		113.333	-36.00	6.20		46		
2148-	GRID	1415		116.58	-36.00	6.24		46		
2149-	GRID	1415		120.483	-36.00	5.29		46		
2150-	GRID	1417		127.421	-36.00	6.29		456		

Airloads Research Study - Horizontal Stabilizer

Airloads Research Study - Horizontal Stabilizer

SORTED BULK DATA ECHO										
CARD	1	2	3	4	5	6	7	8	9	10
COUNT	.	..	..	..	..	..	..	..	..	..
2151-	GRID	1422		157.542	-38.51	5.10		456		
2152-	GRID	1440		97.02	-36.00	.0		1456		
2153-	GRID	1442		108.55	-36.00	.0		1456		
2154-	GRID	1456		79.264	-36.00	-5.96		456		
2155-	GRID	1457		85.670	-36.00	-6.21		456		
2156-	GRID	1458		92.301	-36.00	-6.39		46		
2157-	GRID	1459		93.33	-36.00	-6.06		46		
2158-	GRID	1460		97.02	-36.00	-6.10		46		
2159-	GRID	1461		102.787	-36.00	-6.02		46		
2160-	GRID	1462		108.55	-36.00	-6.11		46		
2161-	GRID	1463		111.73	-36.00	-6.17		46		
2162-	GRID	1464		113.333	-36.00	-6.20		46		
2163-	GRID	1465		116.58	-36.00	-6.24		46		
2164-	GRID	1466		120.483	-36.00	-6.29		46		
2165-	GRID	1467		127.421	-36.00	-6.29		456		
2166-	GRID	1472		157.542	-38.51	-5.10		456		
2167-	GRID	1507		85.670	-43.52	5.49		456		
2168-	GRID	1508		92.301	-43.52	5.75		46		
2169-	GRID	1509		93.33	-43.52	5.77		46		
2170-	GRID	1510		97.24	-43.52	5.85		46		
2171-	GRID	1511		102.787	-43.52	5.90		46		
2172-	GRID	1512		108.34	-43.52	6.00		46		
2173-	GRID	1513		111.73	-43.52	6.06		46		
2174-	GRID	1514		113.333	-43.52	6.09		46		
2175-	GRID	1515		116.58	-43.52	6.12		46		
2176-	GRID	1516		120.483	-43.52	6.16		46		
2177-	GRID	1540		97.24	-43.52	.0		1456		
2178-	GRID	1542		108.34	-43.52	.0		1456		
2179-	GRID	1557		85.670	-43.52	-5.49		456		
2180-	GRID	1558		92.301	-43.52	-5.75		46		
2181-	GRID	1559		93.33	-43.52	-5.77		46		
2182-	GRID	1560		97.24	-43.52	-5.85		46		
2183-	GRID	1561		102.787	-43.52	-5.90		46		
2184-	GRID	1562		108.34	-43.52	-6.00		46		
2185-	GRID	1563		111.73	-43.52	-6.06		46		
2186-	GRID	1564		113.333	-43.52	-6.09		46		
2187-	GRID	1565		116.58	-43.52	-6.12		46		
2188-	GRID	1565		120.483	-43.52	-6.16		46		
2189-	GRID	1601		45.70	-47.000	.5		456		
2190-	GRID	1603		61.462	-47.000	3.487		456		
2191-	GRID	1604		67.180	-47.000	4.091		456		
2192-	GRID	1605		73.096	-47.000	4.579		456		
2193-	GRID	1605		79.264	-47.000	4.995		456		
2194-	GRID	1607		85.670	-47.000	5.333		456		
2195-	GRID	1608		92.301	-47.000	5.604		456		
2196-	GRID	1609		93.33	-47.000	5.63		456		
2197-	GRID	1610		97.337	-47.000	5.735		456		
2198-	GRID	1611		102.787	-47.000	5.826		456		
2199-	GRID	1612		108.237	-47.000	5.945		46		
2200-	GRID	1613		111.73	-47.000	6.01		456		

S O R T E D B U L K D A T A E C H O

CARD COUNT	1	2	3	4	5	6	7	8	9	10
2201-	GRID	1614		113.333	-47.000	6.036		456		
2202-	GRID	1615		116.58	-47.000	6.06		456		
2203-	GRID	1615		120.483	-47.000	6.099		46		
2204-	GRID	1617		127.421	-47.000	6.122		456		
2205-	GRID	1618		134.047	-47.000	6.129		456		
2206-	GRID	1619		140.389	-47.000	6.021		456		
2207-	GRID	1620		146.424	-47.000	5.819		456		
2208-	GRID	1621		152.141	-47.000	5.561		456		
2209-	GRID	1622		157.542	-47.000	5.267		456		
2210-	GRID	1623		162.630	-47.000	4.951		456		
2211-	GRID	1638		92.301	-47.000	.0		2456		
2212-	GRID	1639		93.33	-47.000	.0		2456		
2213-	GRID	1640		97.337	-47.000	.0		456		
2214-	GRID	1641		102.787	-47.000	.0		123456		
2215-	GRID	1642		108.237	-47.000	.0		456		
2216-	GRID	1643		111.73	-47.000	.0		2456		
2217-	GRID	1644		113.333	-47.000	.0		2456		
2218-	GRID	1645		116.58	-47.000	.0		2456		
2219-	GRID	1651		45.70	-47.000	-0.5		456		
2220-	GRID	1653		61.462	-47.000	-3.487		456		
2221-	GRID	1654		67.180	-47.000	-4.091		456		
2222-	GRID	1655		73.096	-47.000	-4.579		456		
2223-	GRID	1656		79.264	-47.000	-4.995		456		
2224-	GRID	1657		85.670	-47.000	-5.333		456		
2225-	GRID	1658		92.301	-47.000	-5.604		456		
2226-	GRID	1659		93.33	-47.000	-5.63		456		
2227-	GRID	1660		97.337	-47.000	-5.735		456		
2228-	GRID	1661		102.787	-47.000	-5.826		456		
2229-	GRID	1662		108.237	-47.000	-5.945		46		
2230-	GRID	1663		111.73	-47.000	-6.01		456		
2231-	GRID	1664		113.333	-47.000	-6.036		456		
2232-	GRID	1665		116.58	-47.000	-6.06		456		
2233-	GRID	1665		120.483	-47.000	-6.099		46		
2234-	GRID	1667		127.421	-47.000	-6.122		456		
2235-	GRID	1668		134.047	-47.000	-6.129		456		
2236-	GRID	1669		140.389	-47.000	-6.021		456		
2237-	GRID	1670		146.424	-47.000	-5.819		456		
2238-	GRID	1671		152.141	-47.000	-5.561		456		
2239-	GRID	1672		157.542	-47.000	-5.267		456		
2240-	GRID	1673		162.630	-47.000	-4.951		456		
2241-	GRID	1701		56.12	-61.25	.5		456		
2242-	GRID	1703		70.62	-57.57	3.42		456		
2243-	GRID	1704		75.16	-56.43	3.99		456		
2244-	GRID	1705		79.89	-55.23	4.46		456		
2245-	GRID	1705		84.89	-53.94	4.88		456		
2246-	GRID	1707		90.11	-52.62	5.23		456		
2247-	GRID	1708		95.58	-51.23	5.52		46		
2248-	GRID	1709		96.48	-50.94	5.56		46		
2249-	GRID	1710		99.82	-49.87	5.69		46		
2250-	GRID	1711		103.87	-48.48	5.80		46		

AirRaods Research Study - Horizontal Stabilizer

SORTED BULK DATA ECHO

CARD COUNT	1	2	3	4	5	6	7	8	9	10
2251-	GRID	1740		99.82	-49.87	.0		1456		
2252-	GRID	1751		56.12	-61.25	-0.5		456		
2253-	GRID	1753		70.62	-57.57	-3.42		456		
2254-	GRID	1754		75.16	-56.43	-3.99		456		
2255-	GRID	1755		79.89	-55.23	-4.46		456		
2256-	GRID	1755		84.89	-53.94	-4.88		456		
2257-	GRID	1757		90.11	-52.62	-5.23		456		
2258-	GRID	1758		95.58	-51.23	-5.52		46		
2259-	GRID	1759		96.48	-50.94	-5.56		46		
2260-	GRID	1760		99.82	-49.87	-5.69		46		
2261-	GRID	1761		103.87	-48.48	-5.80		46		
2262-	GRID	1805		88.69	-58.63	4.80		456		
2263-	GRID	1807		93.48	-56.89	5.15		456		
2264-	GRID	1808		98.52	-55.04	5.45		46		
2265-	GRID	1809		99.40	-54.73	5.49		46		
2266-	GRID	1810		102.90	-53.44	5.64		46		
2267-	GRID	1811		106.54	-52.11	5.75		46		
2268-	GRID	1812		110.37	-50.72	5.88		46		
2269-	GRID	1813		112.29	-49.68	5.95		46		
2270-	GRID	1814		114.42	-48.52	6.01		46		
2271-	GRID	1840		102.90	-53.44	.0		1456		
2272-	GRID	1842		110.37	-50.72	.0		1456		
2273-	GRID	1856		88.69	-58.63	-4.80		456		
2274-	GRID	1857		93.48	-56.89	-5.15		456		
2275-	GRID	1858		98.52	-55.04	-5.45		46		
2276-	GRID	1859		99.40	-54.73	-5.49		46		
2277-	GRID	1860		102.90	-53.44	-5.64		46		
2278-	GRID	1861		106.54	-52.11	-5.75		46		
2279-	GRID	1862		110.37	-50.72	-5.88		46		
2280-	GRID	1863		112.29	-49.68	-5.95		46		
2281-	GRID	1864		114.42	-48.52	-6.01		46		
2282-	GRID	1901		67.98	-74.18	.5		456		
2283-	GRID	1903		80.24	-68.74	3.34		456		
2284-	GRID	1904		84.12	-67.02	3.87		456		
2285-	GRID	1905		88.17	-65.22	4.32		456		
2286-	GRID	1905		92.47	-63.32	4.72		456		
2287-	GRID	1907		96.99	-61.32	5.07		456		
2288-	GRID	1908		101.74	-59.23	5.37		46		
2289-	GRID	1909		102.62	-58.84	5.41		46		
2290-	GRID	1910		106.20	-57.26	5.58		46		
2291-	GRID	1911		109.42	-56.00	5.69		46		
2292-	GRID	1912		112.65	-54.74	5.80		46		
2293-	GRID	1913		114.34	-52.77	5.88		46		
2294-	GRID	1914		116.028	-50.805	5.958		46		
2295-	GRID	1915		118.26	-48.90	6.03		46		
2296-	GRID	1940		106.20	-57.26	.0		1456		
2297-	GRID	1942		112.65	-54.74	.0		1456		
2298-	GRID	1951		67.98	-74.18	-0.5		456		
2299-	GRID	1953		80.24	-68.74	-3.34		456		
2300-	GRID	1954		84.12	-67.02	-3.87		456		

Airloads Research Study - Horizontal Stabilizer

S O R T E D B U L K D A T A E C H O

CARD COUNT	1	2	3	4	5	6	7	8	9	10
2301-	GRID	1955		86.17	-65.22	-4.32		456		
2302-	GRID	1955		92.47	-63.32	-4.72		456		
2303-	GRID	1957		96.99	-61.32	-5.07		456		
2304-	GRID	1958		101.74	-59.23	-5.37		46		
2305-	GRID	1959		102.62	-58.84	-5.41		46		
2306-	GRID	1960		106.20	-57.26	-5.58		46		
2307-	GRID	1961		109.42	-56.00	-5.69		46		
2308-	GRID	1962		112.65	-54.74	-5.80		46		
2309-	GRID	1963		114.34	-52.77	-5.88		46		
2310-	GRID	1964		116.028	-50.806	-5.958		46		
2311-	GRID	1965		118.26	-48.90	-6.03		46		
2312-	GRID	2001		78.57	-85.74	.5		456		
2313-	GRID	2003		88.730	-78.641	3.278		456		
2314-	GRID	2004		91.990	-76.365	3.774		456		
2315-	GRID	2005		95.413	-73.975	4.199		456		
2316-	GRID	2005		99.039	-71.443	4.581		456		
2317-	GRID	2007		102.869	-68.770	4.927		456		
2318-	GRID	2008		106.902	-65.953	5.235		456		
2319-	GRID	2010		111.141	-62.994	5.497		456		
2320-	GRID	2012		115.582	-59.893	5.705		456		
2321-	GRID	2014		120.186	-56.678	5.854		456		
2322-	GRID	2016		124.880	-53.401	5.972		456		
2323-	GRID	2017		129.525	-50.158	6.060		456		
2324-	GRID	2049		111.141	-62.994	.0		1456		
2325-	GRID	2042		115.582	-59.893	.0		1456		
2326-	GRID	2051		78.57	-85.74	-0.5		456		
2327-	GRID	2053		88.730	-78.641	-3.278		456		
2328-	GRID	2054		91.990	-76.365	-3.774		456		
2329-	GRID	2055		95.413	-73.975	-4.199		456		
2330-	GRID	2056		99.039	-71.443	-4.581		456		
2331-	GRID	2057		102.869	-68.770	-4.927		456		
2332-	GRID	2058		106.902	-65.953	-5.235		456		
2333-	GRID	2060		111.141	-62.994	-5.497		456		
2334-	GRID	2062		115.582	-59.893	-5.705		456		
2335-	GRID	2064		120.186	-56.678	-5.854		456		
2336-	GRID	2065		124.880	-53.401	-5.972		456		
2337-	GRID	2067		129.525	-50.158	-6.060		456		
2338-	GRID	2101		89.75	-97.95	.5		456		
2339-	GRID	2103		99.504	-91.142	3.111		456		
2340-	GRID	2104		102.630	-88.960	3.582		456		
2341-	GRID	2105		105.413	-86.667	3.988		456		
2342-	GRID	2106		109.391	-84.239	4.352		456		
2343-	GRID	2107		113.064	-81.674	4.682		456		
2344-	GRID	2108		116.933	-78.973	4.977		456		
2345-	GRID	2110		120.998	-76.135	5.227		456		
2346-	GRID	2112		125.257	-73.161	5.431		456		
2347-	GRID	2114		129.673	-70.077	5.574		456		
2348-	GRID	2116		134.175	-66.934	5.684		456		
2349-	GRID	2117		138.630	-63.823	5.766		456		
2350-	GRID	2118		142.967	-60.795	5.825		456		

Airloads Research Study - Horizontal Stabilizer

Airloads Research Study - Horizontal Stabilizer

S O R T E D B U L K D A T A E C H O

CARD COUNT	1	2	3	4	5	6	7	8	9	10
2351-	GRID	2119		147.196	-57.842	5.785		456		
2352-	GRID	2120		151.293	-54.982	5.652		456		
2353-	GRID	2121		155.240	-52.226	5.459		456		
2354-	GRID	2122		159.030	-49.580	5.222		456		
2355-	GRID	2151		89.75	-97.95	-0.5		456		
2356-	GRID	2153		99.504	-91.142	-3.111		456		
2357-	GRID	2154		102.630	-88.960	-3.582		456		
2358-	GRID	2155		105.913	-86.667	-3.988		456		
2359-	GRID	2155		109.391	-84.239	-4.352		456		
2360-	GRID	2157		113.064	-81.674	-4.682		456		
2361-	GRID	2158		116.933	-78.973	-4.977		456		
2362-	GRID	2160		120.998	-76.135	-5.227		456		
2363-	GRID	2162		125.257	-73.161	-5.431		456		
2364-	GRID	2164		129.673	-70.077	-5.574		456		
2365-	GRID	2165		134.175	-66.934	-5.684		456		
2366-	GRID	2167		138.630	-63.823	-5.766		456		
2367-	GRID	2168		142.967	-60.795	-5.825		456		
2368-	GRID	2163		147.196	-57.842	-5.785		456		
2369-	GRID	2170		151.293	-54.982	-5.652		456		
2370-	GRID	2171		155.240	-52.226	-5.459		456		
2371-	GRID	2172		159.030	-49.580	-5.222		456		
2372-	GRID	2201		103.10	-112.51	.5		456		
2373-	GRID	2203		112.354	-106.054	2.913		456		
2374-	GRID	2204		115.322	-103.982	3.354		456		
2375-	GRID	2205		118.438	-101.806	3.736		456		
2376-	GRID	2206		121.739	-99.501	4.080		456		
2377-	GRID	2207		125.225	-97.067	4.393		456		
2378-	GRID	2208		128.297	-94.503	4.672		456		
2379-	GRID	2210		132.755	-91.809	4.910		456		
2380-	GRID	2212		136.798	-88.985	5.102		456		
2381-	GRID	2214		140.989	-86.060	5.235		456		
2382-	GRID	2215		145.262	-83.077	5.337		456		
2383-	GRID	2217		149.491	-80.124	5.415		456		
2384-	GRID	2218		153.607	-77.250	5.469		456		
2385-	GRID	2219		157.621	-74.447	5.427		456		
2386-	GRID	2220		161.510	-71.732	5.302		456		
2387-	GRID	2221		165.256	-69.116	5.120		456		
2388-	GRID	2222		168.853	-66.605	4.897		456		
2389-	GRID	2223		172.295	-64.202	4.646		456		
2390-	GRID	2224		196.55	-47.26	2.32		456		
2391-	GRID	2225		220.82	-30.32	.0		456		
2392-	GRID	2251		103.10	-112.51	-0.5		456		
2393-	GRID	2253		112.354	-106.054	-2.913		456		
2394-	GRID	2254		115.322	-103.982	-3.354		456		
2395-	GRID	2255		118.438	-101.806	-3.736		456		
2396-	GRID	2255		121.739	-99.501	-4.080		456		
2397-	GRID	2257		125.225	-97.067	-4.393		456		
2398-	GRID	2258		128.297	-94.503	-4.672		456		
2399-	GRID	2260		132.755	-91.809	-4.910		456		
2400-	GRID	2262		136.798	-88.985	-5.102		456		

SORTED BULK DATA ECHO

CARD COUNT	1	2	3	4	5	6	7	8	9	10
2401-	GRID	2264		140.989	-86.060	-5.235		456		
2402-	GRID	2266		145.262	-83.077	-5.337		456		
2403-	GRID	2267		149.491	-80.124	-5.415		456		
2404-	GRID	2268		153.607	-77.250	-5.469		456		
2405-	GRID	2269		157.621	-74.447	-5.427		456		
2406-	GRID	2270		161.510	-71.732	-5.302		456		
2407-	GRID	2271		165.256	-69.116	-5.120		456		
2408-	GRID	2272		168.853	-66.605	-4.897		456		
2409-	GRID	2273		172.295	-64.202	-4.646		456		
2410-	GRID	2274		196.55	-47.26	-2.32		456		
2411-	GRID	2301		127.64	-139.29	.5		456		
2412-	GRID	2303		135.978	-133.466	2.531		456		
2413-	GRID	2305		141.462	-129.637	3.252		456		
2414-	GRID	2307		147.581	-125.354	3.836		456		
2415-	GRID	2308		150.891	-123.053	4.081		456		
2416-	GRID	2310		154.370	-120.624	4.288		456		
2417-	GRID	2312		158.014	-118.080	4.459		456		
2418-	GRID	2314		161.792	-115.442	4.580		456		
2419-	GRID	2316		165.644	-112.752	4.670		456		
2420-	GRID	2317		169.457	-110.090	4.738		456		
2421-	GRID	2319		176.786	-104.973	4.749		456		
2422-	GRID	2321		183.669	-100.167	4.478		456		
2423-	GRID	2323		190.015	-95.736	4.067		456		
2424-	GRID	2324		211.88	-80.47	-2.03		456		
2425-	GRID	2325		233.76	-65.19	.0		456		
2426-	GRID	2351		127.64	-139.29	-0.5		456		
2427-	GRID	2353		135.978	-133.466	-2.531		456		
2428-	GRID	2355		141.462	-129.637	-3.252		456		
2429-	GRID	2357		147.581	-125.364	-3.836		456		
2430-	GRID	2358		150.891	-123.053	-4.081		456		
2431-	GRID	2360		154.370	-120.624	-4.288		456		
2432-	GRID	2362		158.014	-118.080	-4.459		456		
2433-	GRID	2364		161.792	-115.442	-4.580		456		
2434-	GRID	2366		165.644	-112.752	-4.670		456		
2435-	GRID	2367		169.457	-110.090	-4.738		456		
2436-	GRID	2369		176.786	-104.973	-4.749		456		
2437-	GRID	2371		183.669	-100.167	-4.478		456		
2438-	GRID	2373		190.015	-95.736	-4.067		456		
2439-	GRID	2374		211.88	-80.47	-2.03		456		
2440-	GRID	2401		152.17	-166.07	.5		456		
2441-	GRID	2403		159.602	-160.878	2.144		456		
2442-	GRID	2405		164.487	-157.467	2.765		456		
2443-	GRID	2407		169.937	-153.662	3.268		456		
2444-	GRID	2410		175.584	-149.440	3.661		456		
2445-	GRID	2412		179.230	-147.173	3.810		456		
2446-	GRID	2414		182.596	-144.823	3.918		456		
2447-	GRID	2417		189.423	-140.057	4.059		456		
2448-	GRID	2419		195.951	-135.498	4.064		456		
2449-	GRID	2421		202.082	-131.218	3.832		456		
2450-	GRID	2423		207.734	-127.271	3.481		456		

Airloads Research Study - Horizontal Stabilizer

SORTED BULK DATA ECHO

CARD	1	2	3	4	5	6	7	8	9	10
COUNT										
2451-	GRID	2424		227.21	-113.67	1.74		456		
2452-	GRID	2425		246.70	-100.06	.0		456		
2453-	GRID	2451		152.17	-166.07	-0.5		456		
2454-	GRID	2453		159.602	-160.878	-2.144		456		
2455-	GRID	2453		164.487	-157.457	-2.765		456		
2456-	GRID	2457		169.937	-153.662	-3.268		456		
2457-	GRID	2460		175.984	-149.440	-3.661		456		
2458-	GRID	2462		179.230	-147.173	-3.810		456		
2459-	GRID	2464		182.596	-144.823	-3.918		456		
2460-	GRID	2467		189.423	-140.057	-4.059		456		
2461-	GRID	2469		195.951	-135.498	-4.064		456		
2462-	GRID	2471		202.082	-131.218	-3.832		456		
2463-	GRID	2473		207.734	-127.271	-3.481		456		
2464-	GRID	2474		227.21	-113.67	-1.74		456		
2465-	GRID	2501		176.71	-192.84	.5		456		
2466-	GRID	2503		183.226	-188.290	1.747		456		
2467-	GRID	2505		187.512	-185.298	2.268		456		
2468-	GRID	2507		192.293	-181.959	2.693		456		
2469-	GRID	2510		197.598	-178.255	3.026		456		
2470-	GRID	2514		203.399	-174.205	3.248		456		
2471-	GRID	2517		209.388	-170.023	3.367		456		
2472-	GRID	2519		215.116	-166.024	3.370		456		
2473-	GRID	2521		220.495	-162.268	3.177		456		
2474-	GRID	2523		225.454	-158.806	2.888		456		
2475-	GRID	2524		242.54	-146.87	1.44		456		
2476-	GRID	2525		259.64	-134.94	.0		456		
2477-	GRID	2551		176.71	-192.84	-0.5		456		
2478-	GRID	2553		183.226	-188.290	-1.747		456		
2479-	GRID	2555		187.512	-185.298	-2.268		456		
2480-	GRID	2557		192.293	-181.959	-2.693		456		
2481-	GRID	2560		197.598	-178.255	-3.026		456		
2482-	GRID	2564		203.399	-174.205	-3.248		456		
2483-	GRID	2567		209.388	-170.023	-3.367		456		
2484-	GRID	2569		215.116	-166.024	-3.370		456		
2485-	GRID	2571		220.495	-162.268	-3.177		456		
2486-	GRID	2573		225.454	-158.806	-2.888		456		
2487-	GRID	2574		242.54	-146.87	-1.44		456		
2488-	GRID	2601		201.24	-219.62	.5		456		
2489-	GRID	2603		206.850	-215.702	1.377		456		
2490-	GRID	2607		214.649	-210.257	2.138		456		
2491-	GRID	2614		224.202	-203.587	2.598		456		
2492-	GRID	2619		234.281	-196.549	2.696		456		
2493-	GRID	2623		243.173	-190.341	2.310		456		
2494-	GRID	2624		257.87	-180.08	1.15		456		
2495-	GRID	2625		272.58	-169.81	.8		456		
2496-	GRID	2651		201.24	-219.62	-0.5		456		
2497-	GRID	2653		206.850	-215.702	-1.377		456		
2498-	GRID	2657		214.649	-210.257	-2.138		456		
2499-	GRID	2664		224.202	-203.587	-2.598		456		
2500-	GRID	2669		234.281	-196.549	-2.696		456		

SORTED BULK DATA ECHO

CARD		1	2	3	4	5	6	7	8	9	10
2501-	GRID	2673			243.173	-190.341	-2.310		456		
2502-	GRID	2674			257.87	-180.08	-1.15		456		
2503-	GRID	2701			225.78	-246.39	.5		456		
2504-	GRID	2703			230.474	-243.115	1.038		456		
2505-	GRID	2707			237.005	-238.554	1.615		456		
2506-	GRID	2714			245.005	-232.968	1.971		456		
2507-	GRID	2719			253.446	-227.075	2.046		456		
2508-	GRID	2723			260.892	-221.876	1.763		456		
2509-	GRID	2724			273.20	-213.28	.88		456		
2510-	GRID	2725			285.52	-204.68	.0		456		
2511-	GRID	2751			225.78	-246.39	-0.5		456		
2512-	GRID	2753			230.474	-243.115	-1.038		456		
2513-	GRID	2757			237.005	-238.554	-1.615		456		
2514-	GRID	2764			245.005	-232.968	-1.971		456		
2515-	GRID	2769			253.446	-227.075	-2.046		456		
2516-	GRID	2773			260.892	-221.876	-1.763		456		
2517-	GRID	2774			273.20	-213.28	-0.88		456		
2518-	GRID	2801			231.86	-253.035	.5		456		
2519-	GRID	2803			239.023	-253.035	.918		456		
2520-	GRID	2807			248.446	-253.035	1.347		456		
2521-	GRID	2814			259.213	-253.035	1.541		456		
2522-	GRID	2819			269.744	-253.035	1.489		456		
2523-	GRID	2823			278.400	-253.035	1.216		456		
2524-	GRID	2824			291.63	-253.035	.61		456		
2525-	GRID	2825			303.46	-253.035	.0		456		
2526-	GRID	2851			231.86	-253.035	-0.5		456		
2527-	GRID	2853			239.023	-253.035	-0.918		456		
2528-	GRID	2857			248.446	-253.035	-1.347		456		
2529-	GRID	2864			259.213	-253.035	-1.541		456		
2530-	GRID	2869			269.744	-253.035	-1.489		456		
2531-	GRID	2873			278.400	-253.035	-1.216		456		
2532-	GRID	2874			291.63	-253.035	-0.61		456		
2533-	GRID	2903			248.47	-264.00	.5		456		
2534-	GRID	2907			259.87	-267.50	.5		456		
2535-	GRID	2914			270.54	-269.035	.5		456		
2536-	GRID	2919			279.79	-269.035	.5		456		
2537-	GRID	2923			287.39	-269.035	.5		456		
2538-	GRID	2924			299.02	-269.035	.5		456		
2539-	GRID	2925			309.396	-269.035	.0		456		
2540-	GRID	2953			248.47	-264.00	-0.5		456		
2541-	GRID	2957			259.87	-267.50	-0.5		456		
2542-	GRID	2964			270.54	-269.035	-0.5		456		
2543-	GRID	2969			279.79	-269.035	-0.5		456		
2544-	GRID	2973			287.39	-269.035	-0.5		456		
2545-	GRID	2974			299.02	-269.035	-0.5		456		
2546-	MAT1	1		10.5+6	4.0+6	.33	.190				
2547-	MAT1	2		15.2+6	6.4+6	.33	.160				
2548-	MAT1	3		30.+6	12.+6	.33	.300				
2549-	MAT1	4		3.6+6	1.4+6	.14	.075				
2550-	PRAP	1010		1	.01	.10					

Airloads Research Study - Horizontal Stabilizer

Airloads Research Study - Horizontal Stabilizer

CARD	1	2	3	4	5	6	7	8	9	10
CARD	..	..	..	..	..	..	..	..	..	..
COUNT										
2551-	PBAR	21000	2	1.00	.10					
2552-	PQDMEM2	1027	1	.027						
2553-	PQDMEM2	1125	1	.125						
2554-	PQDMEM2	1125	1	.126						
2555-	PQDMEM2	1135	1	.135						
2556-	PQDMEM2	1140	1	.140						
2557-	PQDMEM2	1145	1	.145						
2558-	PQDMEM2	1156	1	.156						
2559-	PQDMEM2	1162	1	.162						
2560-	PQDMEM2	1168	1	.168						
2561-	PQDMEM2	1170	1	.170						
2562-	PQDMEM2	1173	1	.173						
2563-	PQDMEM2	1180	1	.180						
2564-	PQDMEM2	1182	1	.182						
2565-	PQDMEM2	1184	1	.184						
2566-	PQDMEM2	1188	1	.188						
2567-	PQDMEM2	1190	1	.190						
2568-	PQDMEM2	1193	1	.193						
2569-	PQDMEM2	1195	1	.195						
2570-	PQDMEM2	1198	1	.198						
2571-	PQDMEM2	1200	1	.200						
2572-	PQDMEM2	1203	1	.203						
2573-	PQDMEM2	1205	1	.205						
2574-	PQDMEM2	1208	1	.208						
2575-	PQDMEM2	1213	1	.213						
2576-	PQDMEM2	1215	1	.215						
2577-	PQDMEM2	1218	1	.218						
2578-	PQDMEM2	1220	1	.220						
2579-	PQDMEM2	1222	1	.222						
2580-	PQDMEM2	1224	1	.224						
2581-	PQDMEM2	1227	1	.227						
2582-	PQDMEM2	1229	1	.229						
2583-	PQDMEM2	1233	1	.233						
2584-	PQDMEM2	1235	1	.235						
2585-	PQDMEM2	1238	1	.238						
2586-	PQDMEM2	1243	1	.240						
2587-	PQDMEM2	1242	1	.242						
2588-	PQDMEM2	1246	1	.246						
2589-	PQDMEM2	1250	1	.250						
2590-	PQDMEM2	1256	1	.256						
2591-	PQDMEM2	1260	1	.260						
2592-	PQDMEM2	1263	1	.268						
2593-	PQDMEM2	1278	1	.278						
2594-	PQDMEM2	1280	1	.280						
2595-	PQDMEM2	1290	1	.290						
2596-	PQDMEM2	1300	1	.300						
2597-	PQDMEM2	1315	1	.315						
2598-	PQDMEM2	1327	1	.327						
2599-	PQDMEM2	1332	1	.332						
2600-	PQDMEM2	1350	1	.350						

Airloads Research Study - Horizontal Stabilizer

CARD	SORTED BULK DATA ECHO									
COUNT	1	2	3	4	5	6	7	8	9	10
2601-	PQCMEM2 1405	1		.465						
2602-	PQCMEM2 1417	1		.417						
2603-	PQDMEM2 1430	1		.430						
2604-	PQDMEM2 1455	1		.455						
2605-	PQCMEM2 1473	1		.473						
2606-	PQDMEM2 1477	1		.477						
2607-	PQDMEM2 1480	1		.480						
2608-	PQDMEM2 1512	1		.512						
2609-	PQDMEM2 1568	1		.568						
2610-	PQDMEM2 1574	1		.574						
2611-	PQDMEM2 1592	1		.592						
2612-	PQCMEM2 1665	1		.666						
2613-	PQDMEM2 1687	1		.687						
2614-	PQCMEM2 1695	1		.695						
2615-	PQCMEM2 1781	1		.781						
2616-	PQCMEM2 1833	1		.833						
2617-	PQCMEM2 1855	1		.856						
2618-	PQCMEM2 1997	1		.997						
2619-	PQDMEM2 2013	2		.013						
2620-	PQDMEM2 2017	2		.017						
2621-	PQDMEM2 2020	2		.020						
2622-	PQCMEM2 2023	2		.023						
2623-	PQDMEM2 2030	2		.030						
2624-	PQDMEM2 2106	2		.106						
2625-	PQDMEM2 2140	2		.140						
2626-	PQCMEM2 2145	2		.146						
2627-	PQCMEM2 2152	2		.152						
2628-	PQDMEM2 2155	2		.156						
2629-	PQDMEM2 2190	2		.190						
2630-	PQDMEM2 2232	2		.232						
2631-	PQDMEM2 2237	2		.237						
2632-	PQCMEM2 2241	2		.241						
2633-	PQDMEM2 2250	2		.250						
2634-	PQCMEM2 2500	2		.500						
2635-	PQCMEM2 2590	2		.590						
2636-	PQCMEM2 4027	4		.027						
2637-	PQDMEM2 11154	1		1.168						
2638-	PQDMEM2 11262	1		1.262						
2639-	PQDMEM2 11294	1		1.294						
2640-	PQCMEM2 21000	2		1.00						
2641-	PSHEAR 1013	1		.013						
2642-	PSHEAR 1028	1		.028						
2643-	PSHEAR 1030	1		.030						
2644-	PSHEAR 1032	1		.032						
2645-	PSHEAR 1034	1		.034						
2646-	PSHEAR 1036	1		.036						
2647-	PSHEAR 1038	1		.038						
2648-	PSHEAR 1041	1		.041						
2649-	PSHEAR 1043	1		.043						
2650-	PSHEAR 1045	1		.045						

Airloads Research Study - Horizontal Stabilizer

CARD	SORTED BULK DATA ECHO									
COUNT	1	2	3	4	5	6	7	8	9	10
2651-	PSHEAR	1048	1	.048						
2652-	PSHEAR	1050	1	.050						
2653-	PSHEAR	1052	1	.052						
2654-	PSHEAR	1056	1	.056						
2655-	PSHEAR	1058	1	.058						
2656-	PSHEAR	1060	1	.060						
2657-	PSHEAR	1063	1	.063						
2658-	PSHEAR	1067	1	.067						
2659-	PSHEAR	1070	1	.070						
2660-	PSHEAR	1073	1	.073						
2661-	PSHEAR	1075	1	.075						
2662-	PSHEAR	1077	1	.077						
2663-	PSHEAR	1080	1	.080						
2664-	PSHEAR	1085	1	.085						
2665-	PSHEAR	1090	1	.090						
2666-	PSHEAR	1095	1	.095						
2667-	PSHEAR	1095	1	.096						
2668-	PSHEAR	1100	1	.100						
2669-	PSHEAR	1103	1	.103						
2670-	PSHEAR	1112	1	.112						
2671-	PSHEAR	1113	1	.113						
2672-	PSHEAR	1115	1	.115						
2673-	PSHEAR	1125	1	.126						
2674-	PSHEAR	1135	1	.135						
2675-	PSHEAR	1150	1	.150						
2676-	PSHEAR	1155	1	.156						
2677-	PSHEAR	1160	1	.160						
2678-	PSHEAR	1165	1	.165						
2679-	PSHEAR	1167	1	.167						
2680-	PSHEAR	1170	1	.170						
2681-	PSHEAR	1175	1	.175						
2682-	PSHEAR	1190	1	.190						
2683-	PSHEAR	1195	1	.195						
2684-	PSHEAR	1200	1	.200						
2685-	PSHEAR	1215	1	.215						
2686-	PSHEAR	1227	1	.227						
2687-	PSHEAR	1230	1	.230						
2688-	PSHEAR	1248	1	.248						
2689-	PSHEAR	2010	2	.010						
2690-	PSHEAR	2013	2	.013						
2691-	PSHEAR	2015	2	.015						
2692-	PSHEAR	2017	2	.017						
2693-	PSHEAR	2020	2	.020						
2694-	PSHEAR	2023	2	.023						
2695-	PSHEAR	2025	2	.025						
2696-	PSHEAR	2060	2	.060						
2697-	PSHEAR	2067	2	.067						
2698-	PSHEAR	2085	2	.085						
2699-	PSHEAR	4107	4	.107						
2700-	PTMEM	1063	1	.060						

CARD COUNT	S O R T E D B U L K D A T A E C H O									
	1	2	3	4	5	6	7	8	9	10
2701-	PTRHEM	1100	1	.100						
2702-	PTRHEM	1112	1	.112						
2703-	PTRHEM	1125	1	.125						
2704-	PTRHEM	1135	1	.135						
2705-	PTRHEM	1156	1	.156						
2706-	PTRHEM	1160	1	.160						
2707-	PTRHEM	1175	1	.175						
2708-	PTRHEM	1198	1	.198						
2709-	PTRHEM	1218	1	.218						
2710-	PTRHEM	1222	1	.222						
2711-	PTRHEM	1227	1	.227						
2712-	PTRHEM	1229	1	.229						
2713-	PTRHEM	1235	1	.235						
2714-	PTRHEM	1260	1	.260						
2715-	PTRHEM	1262	1	.262						
2716-	PTRHEM	1280	1	.280						
2717-	PTRHEM	1283	1	.283						
2718-	PTRHEM	1297	1	.297						
2719-	PTRHEM	1315	1	.315						
2720-	PTRHEM	1317	1	.317						
2721-	PTRHEM	1325	1	.325						
2722-	PTRHEM	1327	1	.327						
2723-	PTRHEM	1455	1	.455						
2724-	PTRHEM	4027	4	.027						
2725-	PTRHEM	4107	4	.167						
	ENDDATA									

Appendix D

NASTRAN MODEL VERTICAL STABILIZER



VERTICAL STABILIZER MODEL

Four-digit grid numbering scheme

<u>Item</u>	<u>Rib No.</u>	<u>Spar No.</u>
Grid numbers =	XX	YY

Five-digit CONROD and bar element numbering scheme

<u>Item</u>	<u>Orientations</u>	<u>Rib No.</u>	<u>Spar No.</u>
Spars	Blank	XX	YY
Ribs	1	XX	YY
Rods normal to surface	3	XX	YY
Diagonal rods	5	XX	YY

Six-digit shear panel and membrane element numbering scheme

<u>Item</u>	<u>Orientations</u>	<u>Shape*</u>	<u>Rib No.</u>	<u>Spar No.</u>
Rib webs	1	W	XX	YY
Cover skins	2	W	XX	YY
Spar webs	3	W	XX	YY

*W=0 - quadrilateral
 W=1 - triangular

└─ Lowest grid no.
 of panel when
 possible

NOTE: Δ = STRAIN GAGE LOCATION

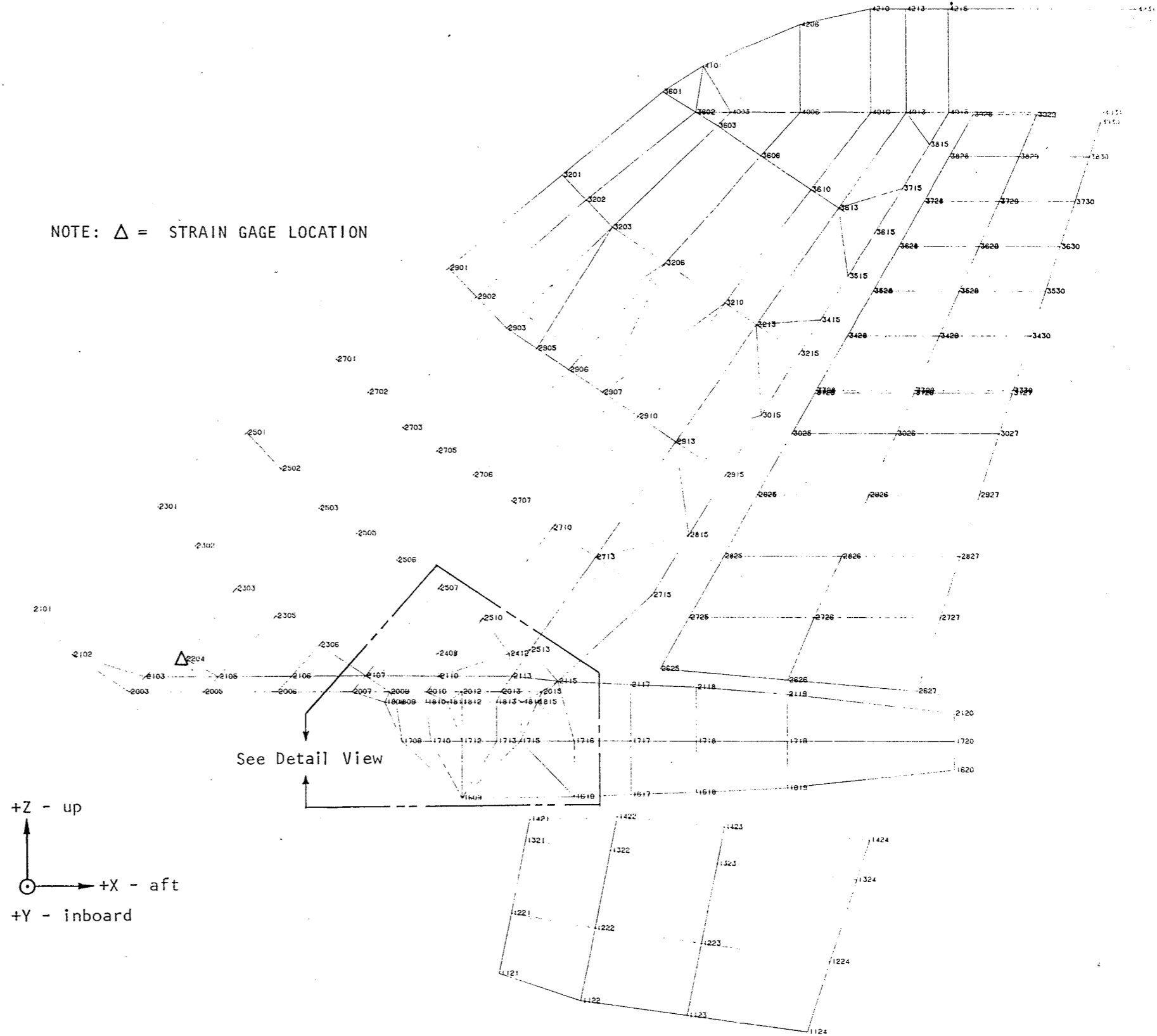


Figure D-1. - ARS vertical stabilizer NASTRAN model - grid point identification numbers.

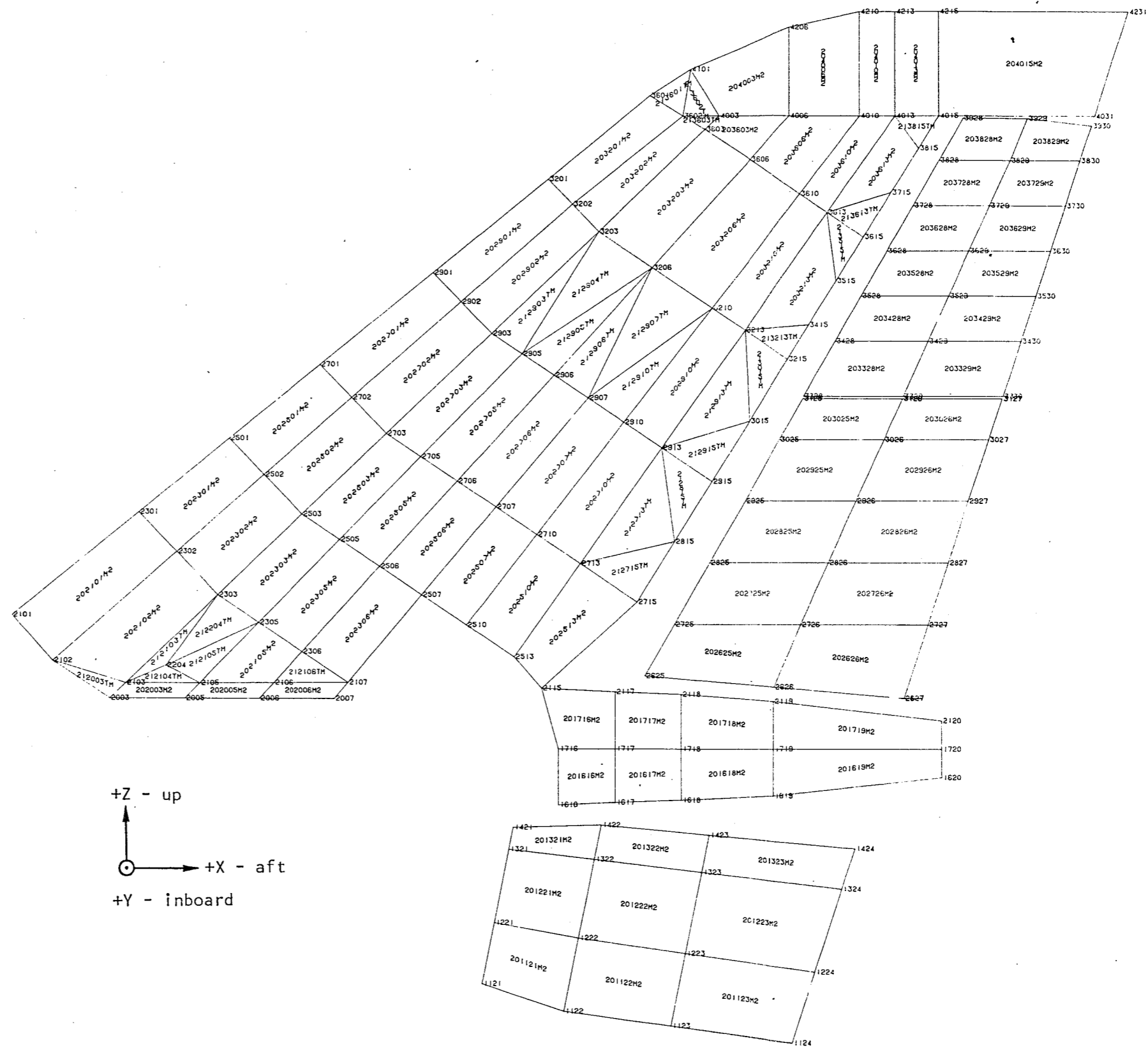


Figure D-2. - ARS vertical stabilizer NASTRAN model - membrane identification numbers.

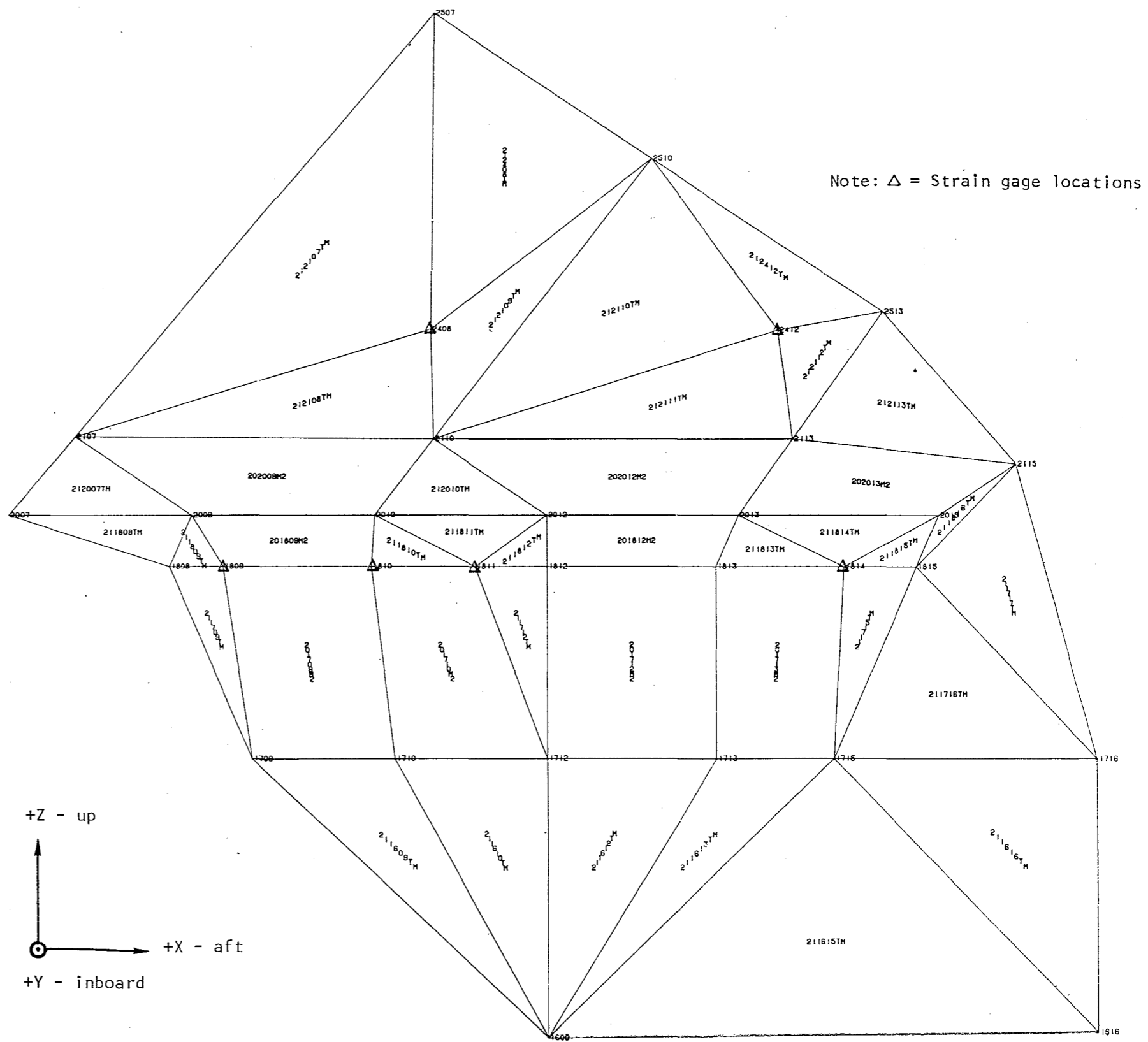
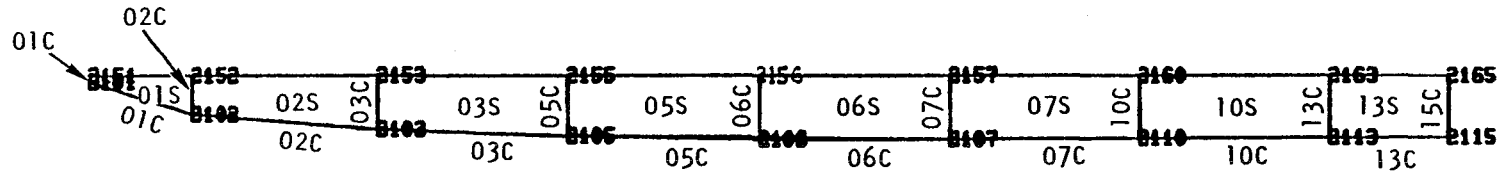
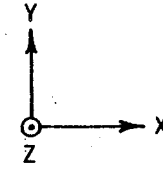
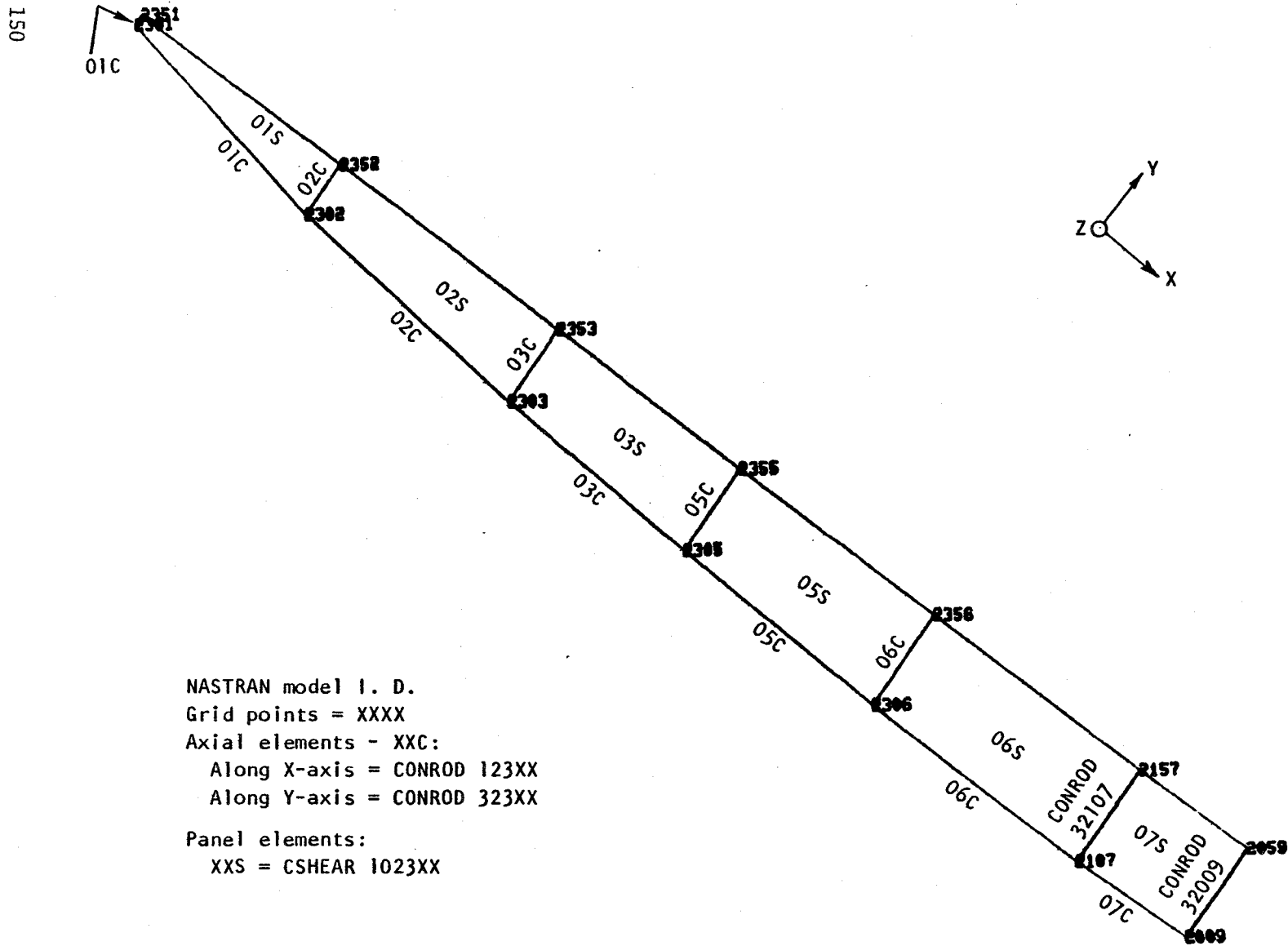


Figure D-3. - ARS vertical stabilizer NASTRAN model - rear spar attach region.



NASTRAN model I. D.
 Grid points = XXXX
 Axial elements - XXC:
 Along X-axis = CONROD 121XX
 Along Y-axis = CONROD 321XX
 Panel elements:
 XXS = CSHEAR 1021XX

Figure D-4. - Vertical stabilizer - rib No. 21.



NASTRAN model I. D.
 Grid points = XXXX
 Axial elements - XXC:
 Along X-axis = CONROD 123XX
 Along Y-axis = CONROD 323XX
 Panel elements:
 XXS = CSHEAR 1023XX

Figure D-5. - Vertical stabilizer - rib No. 23.

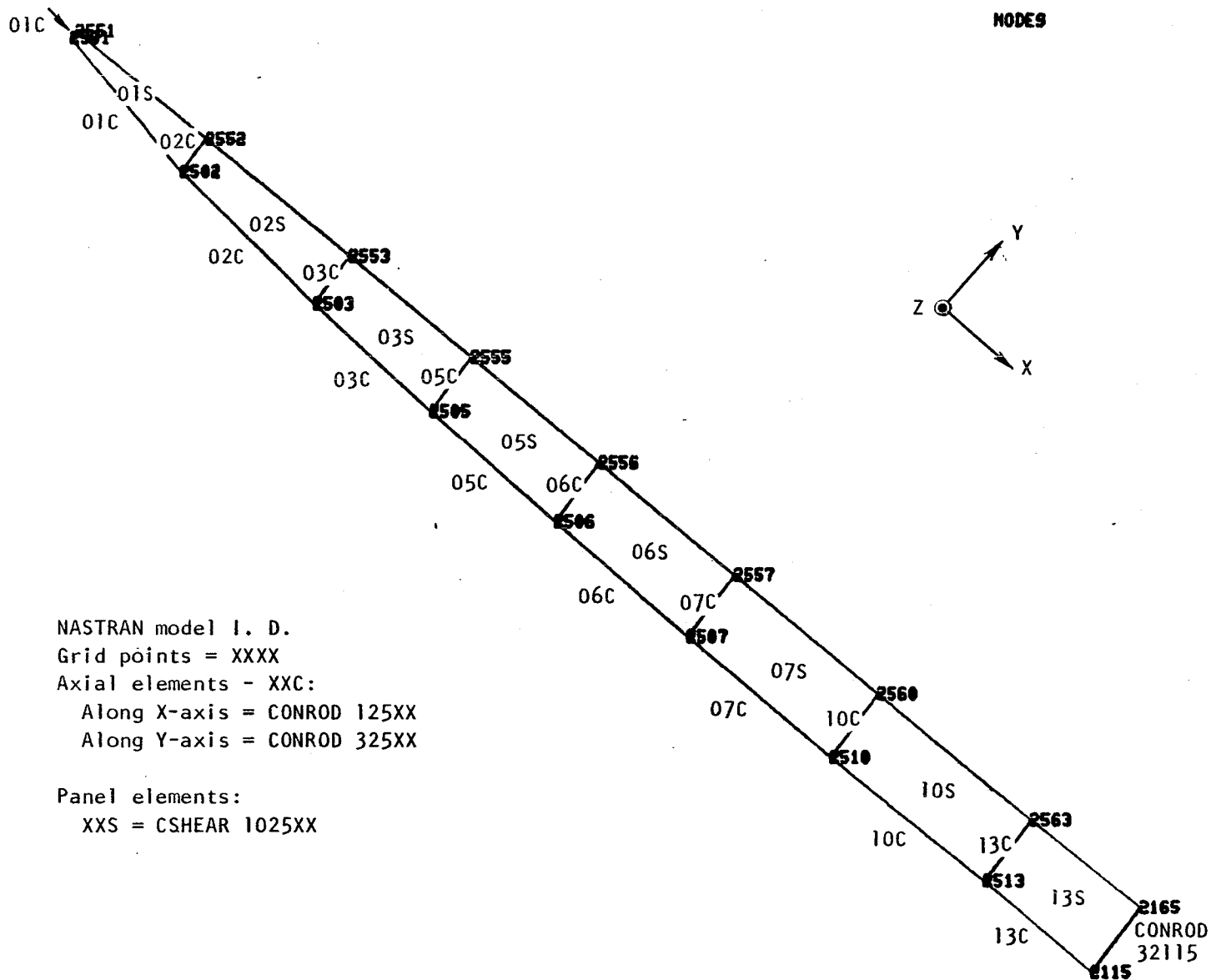


Figure D-6. - Vertical stabilizer - rib No. 25.

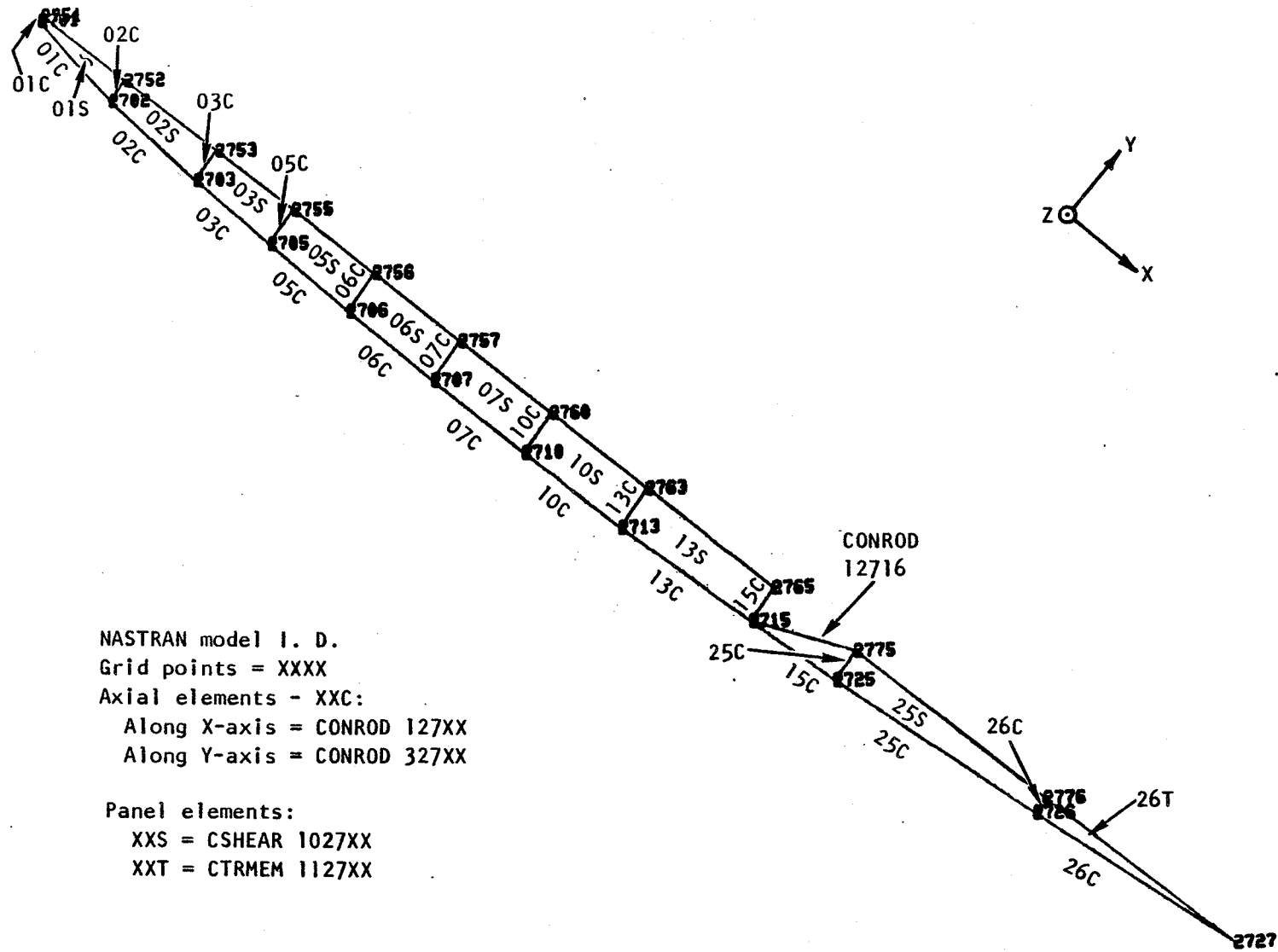


Figure D-7. Vertical stabilizer - rib No. 27.

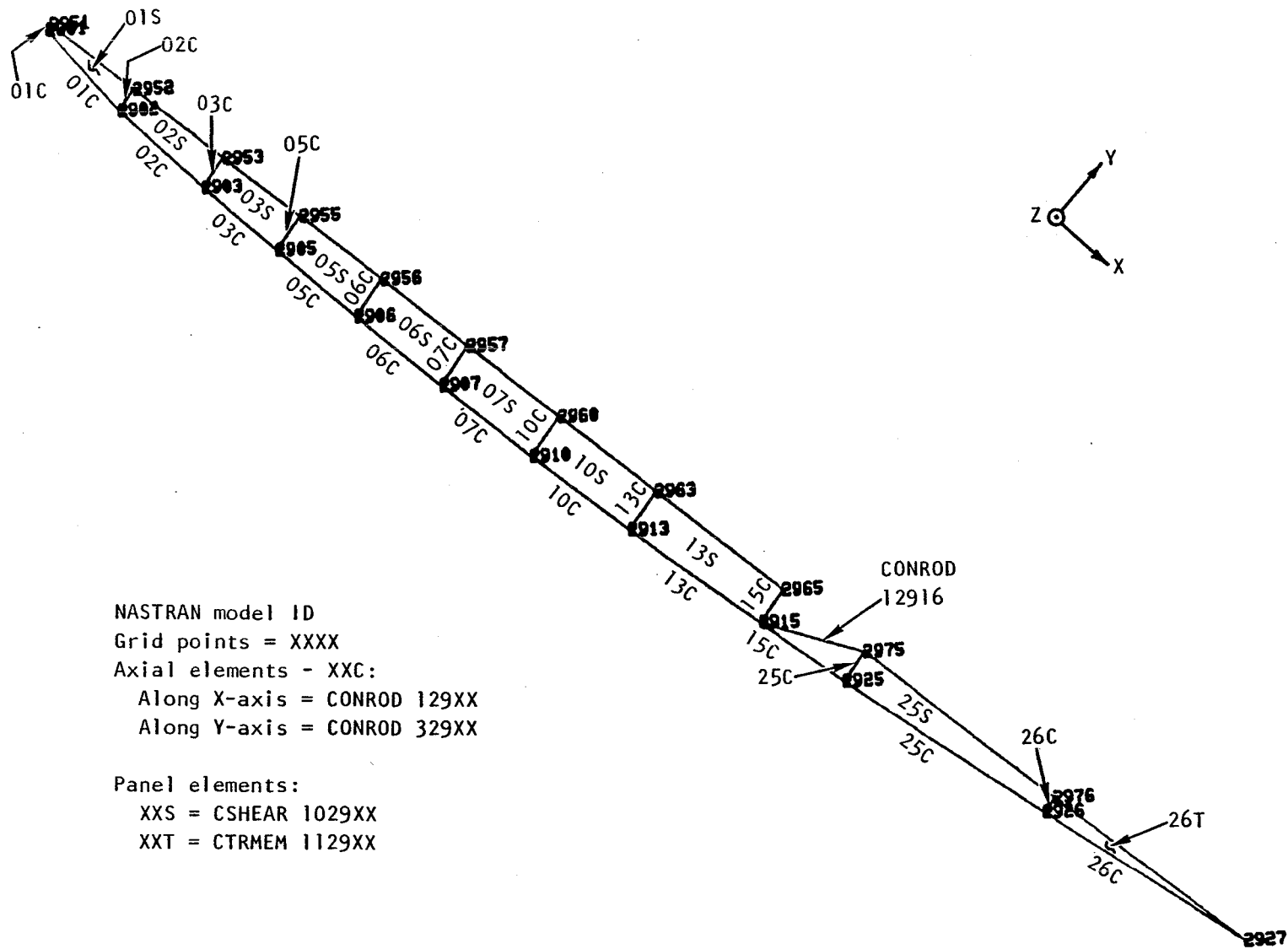


Figure D-8. - Vertical stabilizer - rib No. 29.

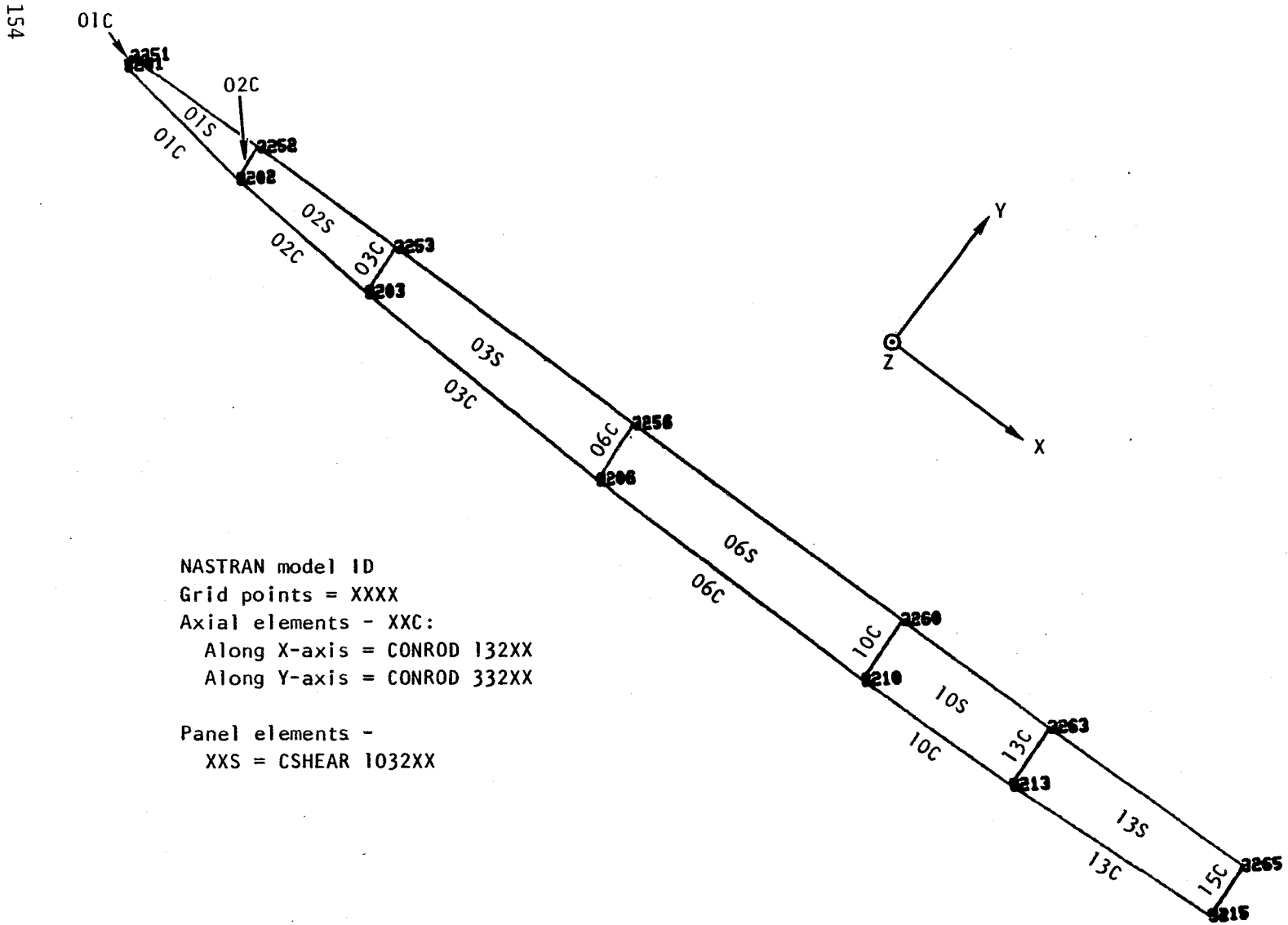


Figure D-9. - Vertical stabilizer - rib No. 32.

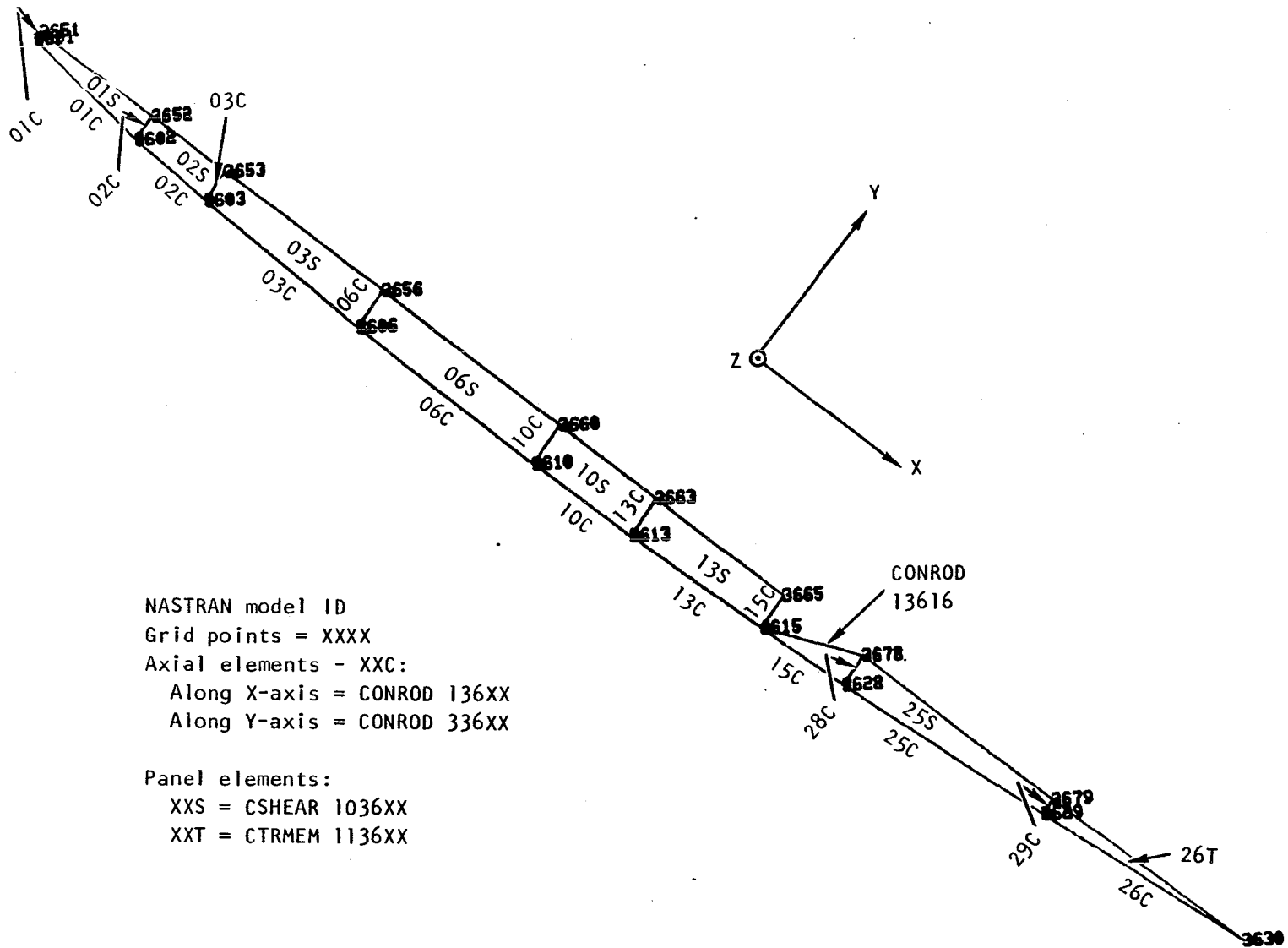
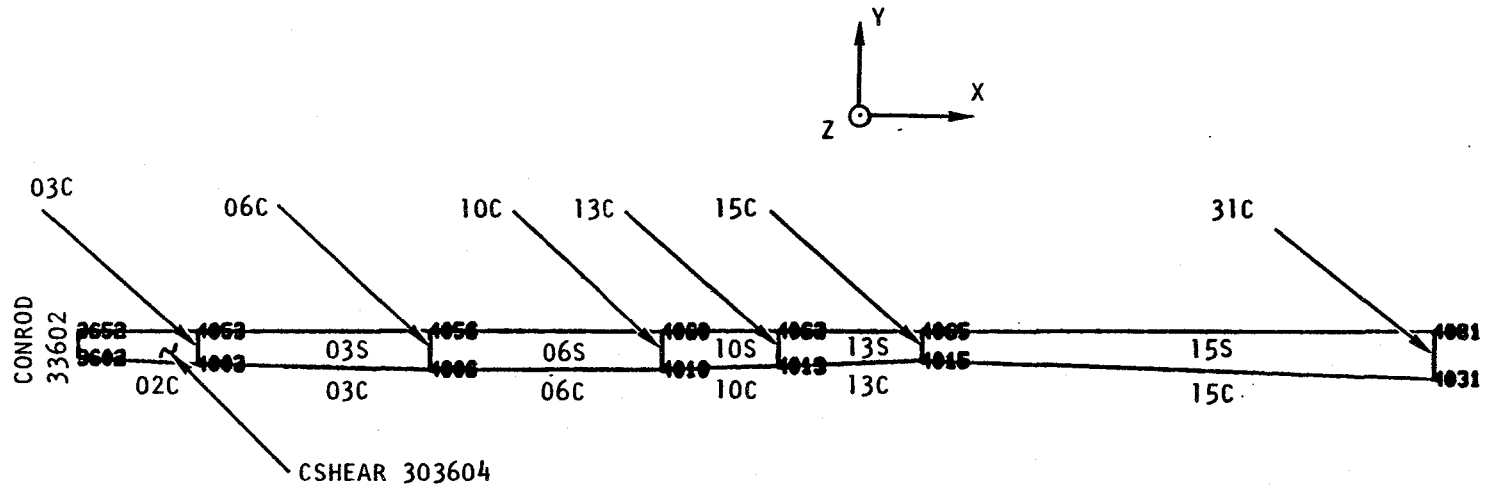


Figure D-10. - Vertical stabilizer - rib No. 36.



NASTRAN model ID

Grid points = XXXX

Axial elements - XXC:

Along X-axis = CONROD 140XX

Along Y-axis = CONROD 340XX

Panel elements:

XXS = CSHEAR 1040XX

Figure D-11. - Vertical stabilizer - rib No. 40.

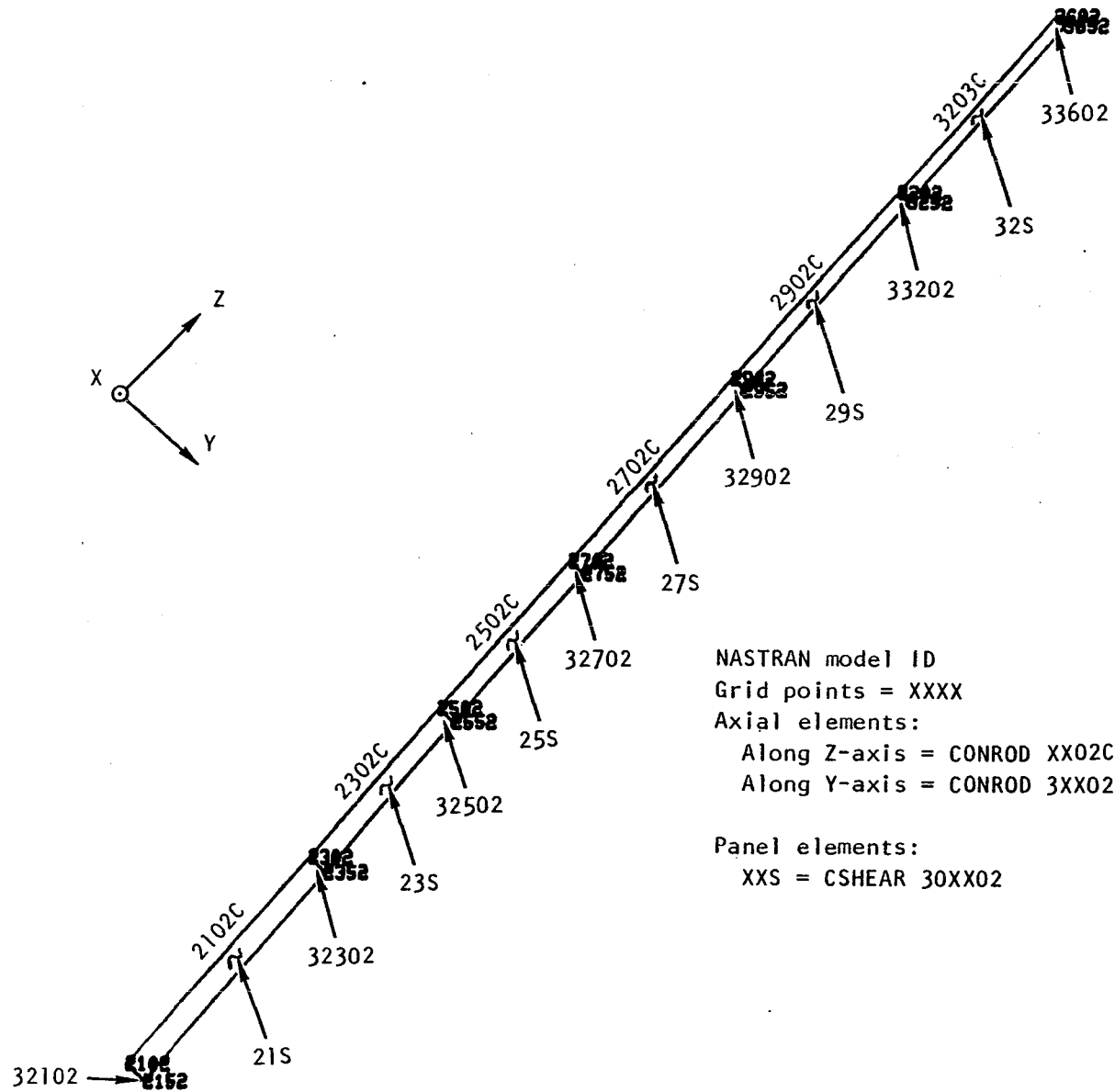


Figure D-12. - Vertical stabilizer - spar No. 02.

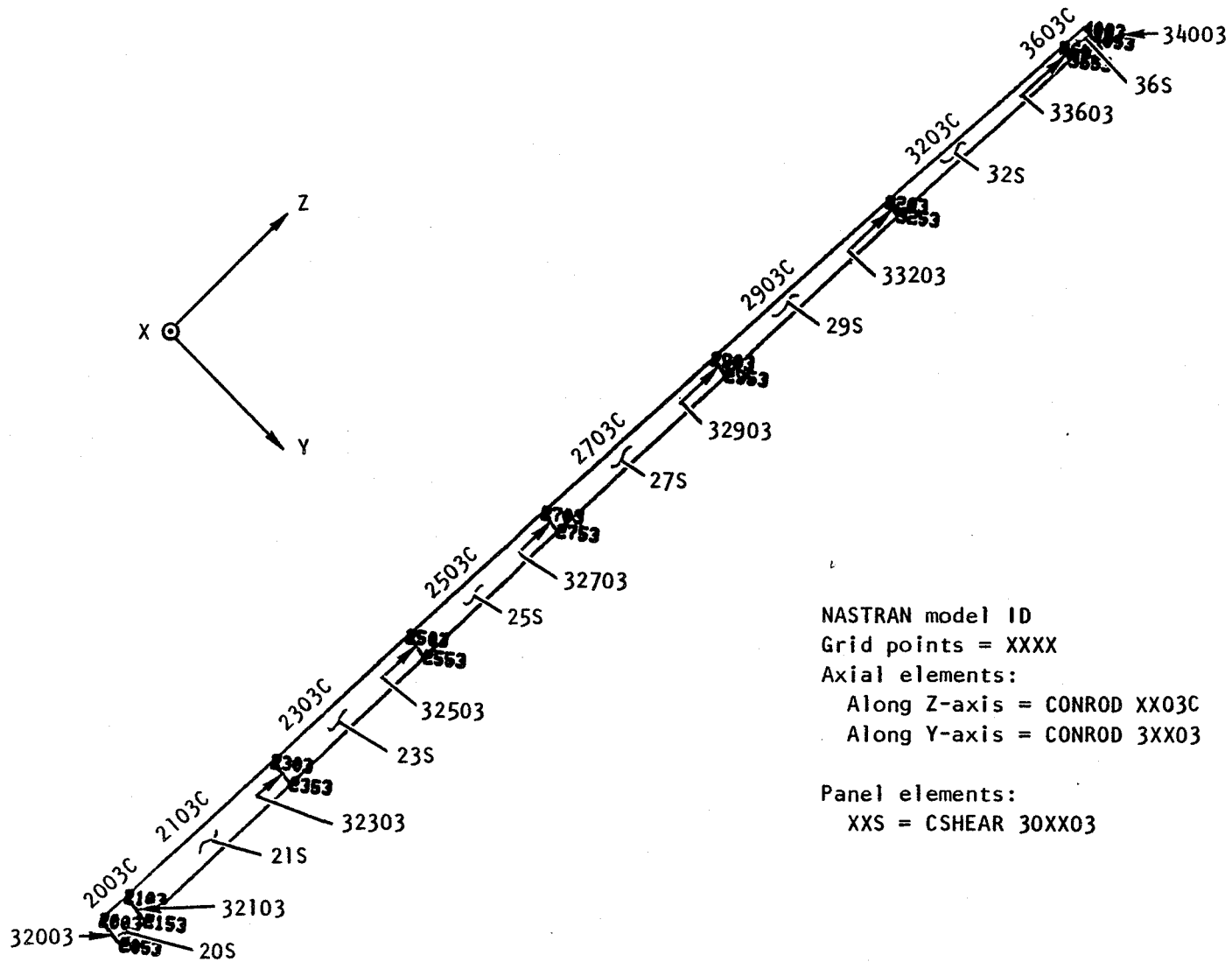
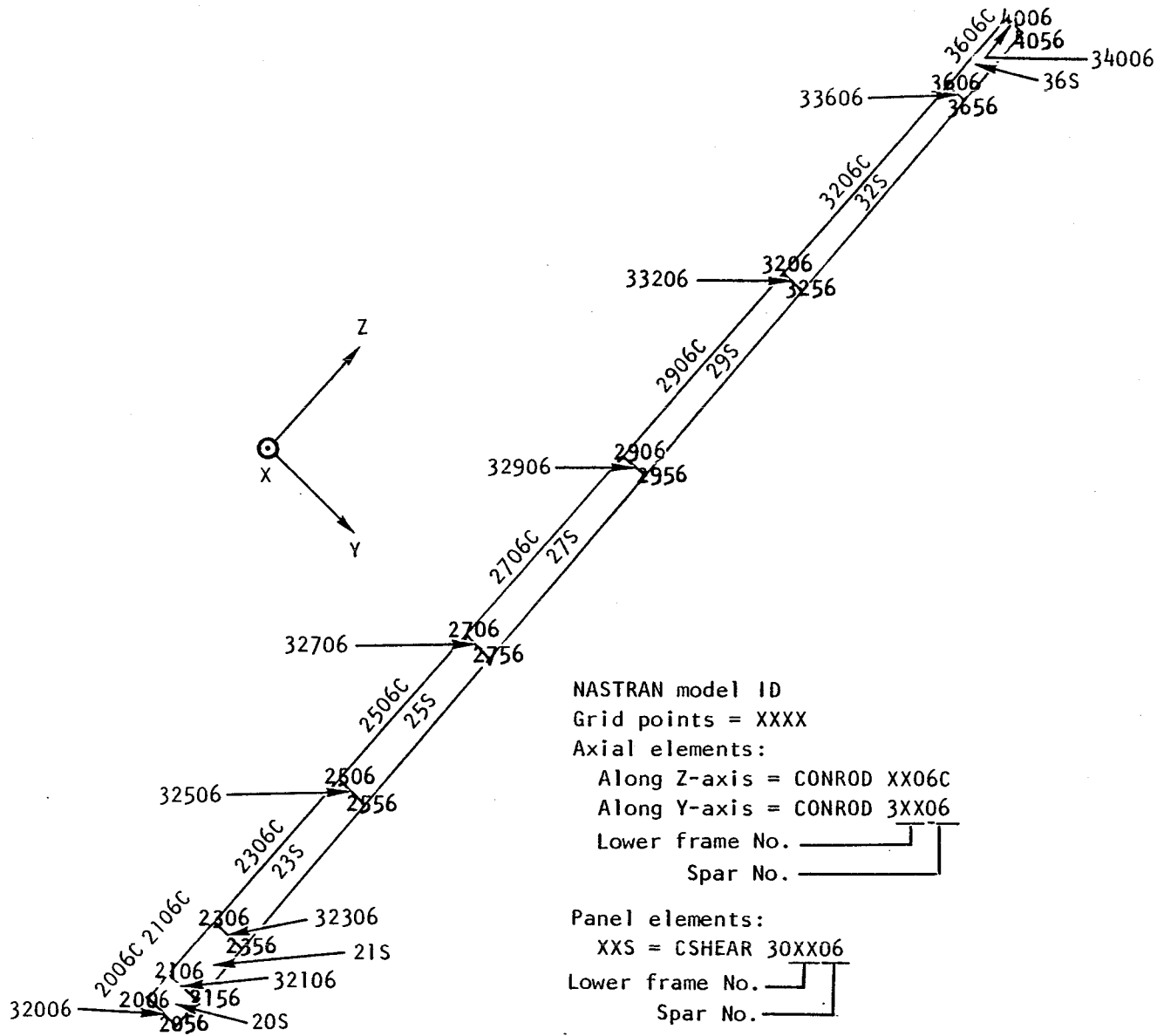


Figure D-13. - Vertical stabilizer - spar No. 03.



NASTRAN model ID
 Grid points = XXXX
 Axial elements:
 Along Z-axis = CONROD XX06C
 Along Y-axis = CONROD 3XX06
 Lower frame No. _____
 Spar No. _____

Panel elements:
 XXS = CSHEAR 30XX06
 Lower frame No. _____
 Spar No. _____

Figure D-14. - Vertical stabilizer - spar No. 06.

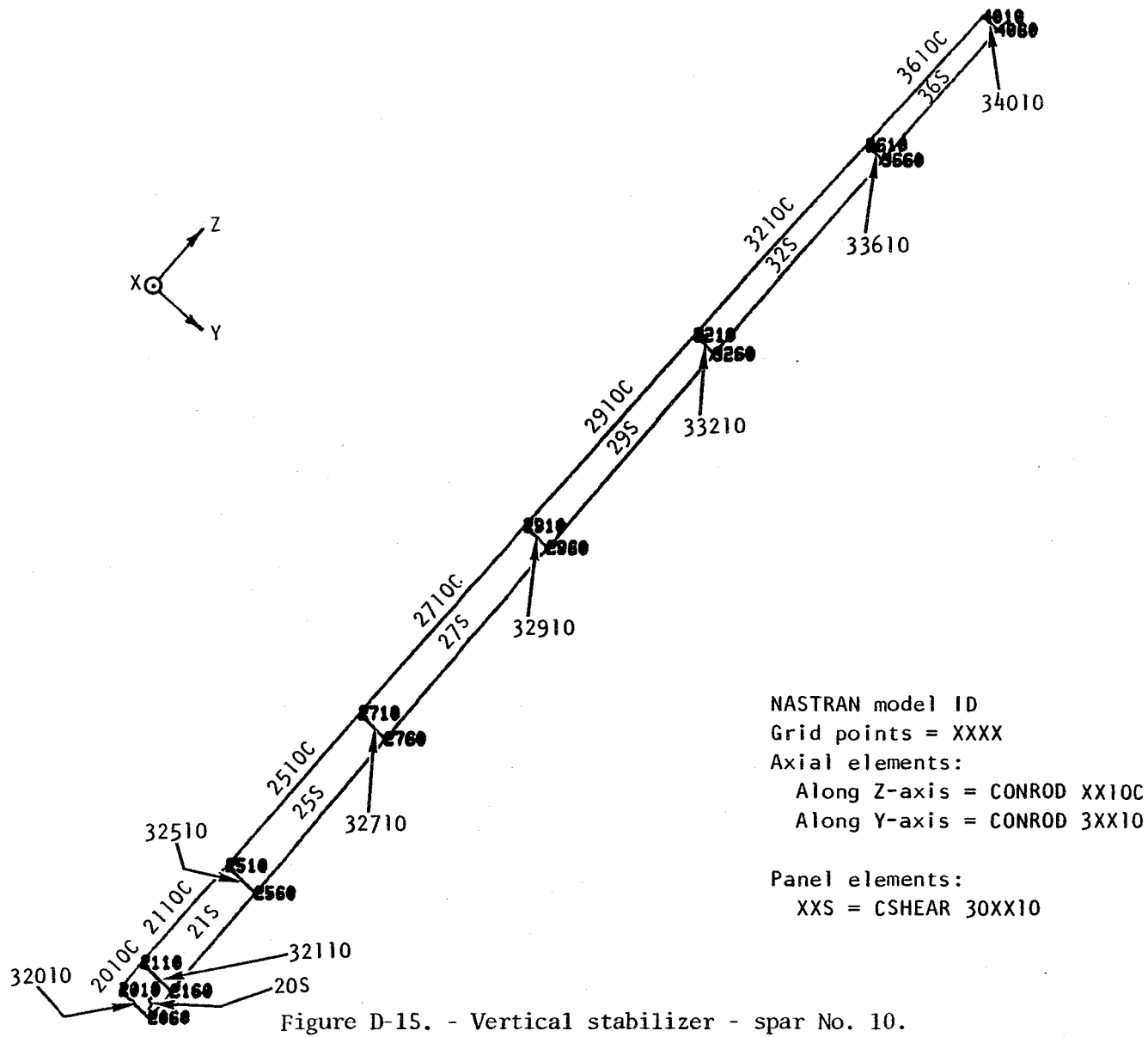
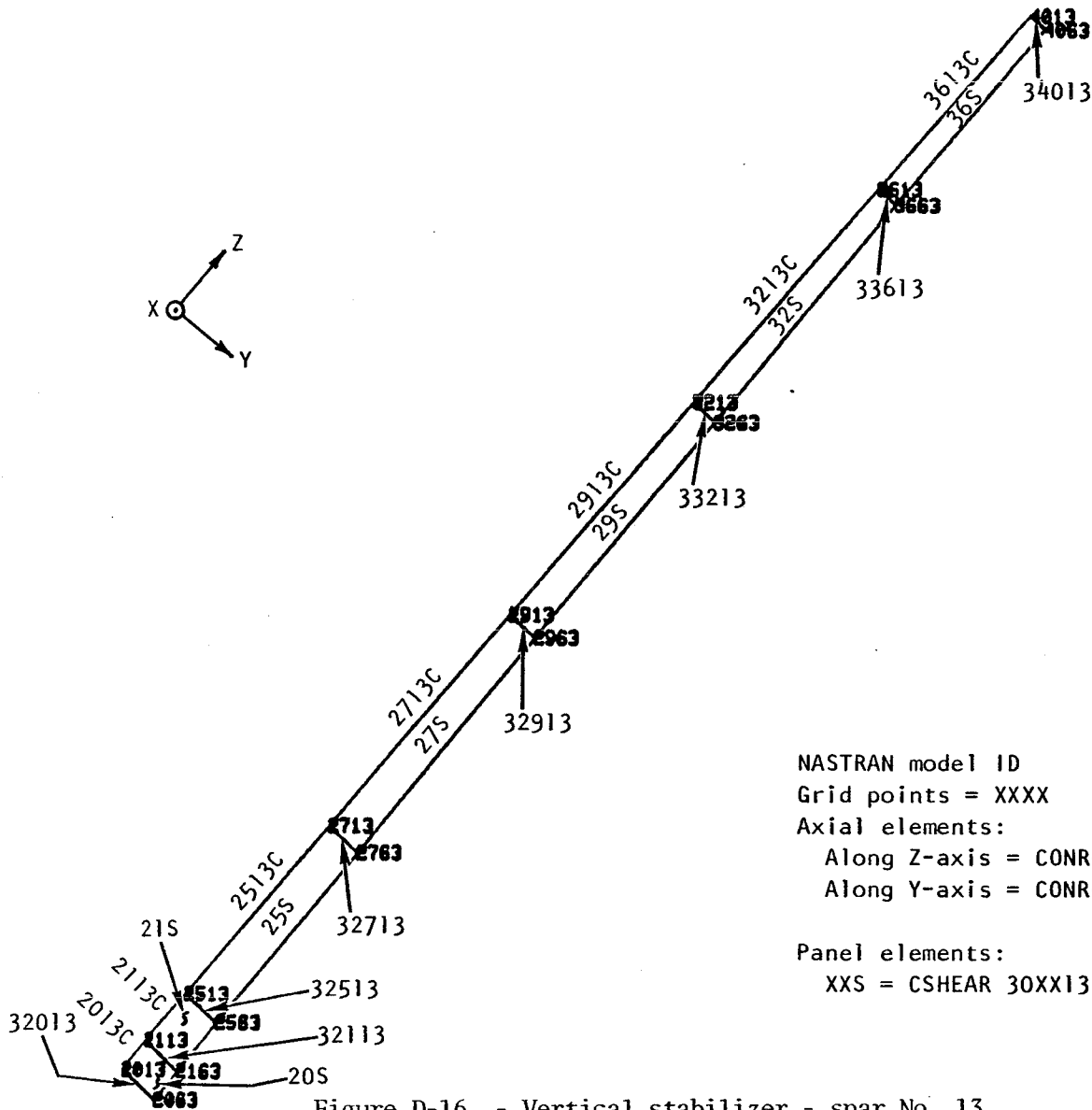


Figure D-15. - Vertical stabilizer - spar No. 10.



NASTRAN model ID
 Grid points = XXXX
 Axial elements:
 Along Z-axis = CONROD XX13C
 Along Y-axis = CONROD 3XX13

 Panel elements:
 XXS = CSHEAR 30XX13

Figure D-16. - Vertical stabilizer - spar No. 13.

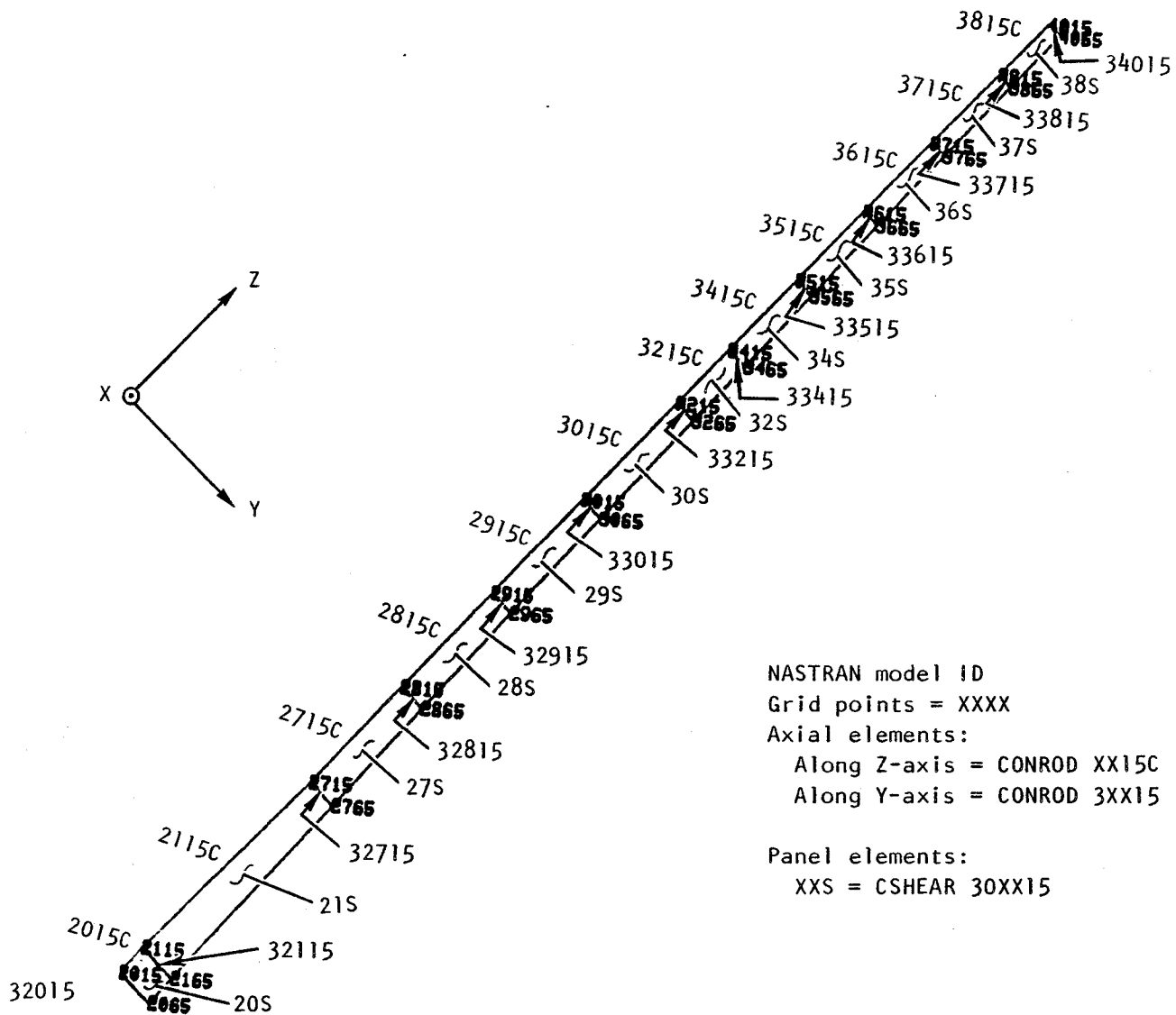


Figure D-17. - Vertical stabilizer - spar No. 15.

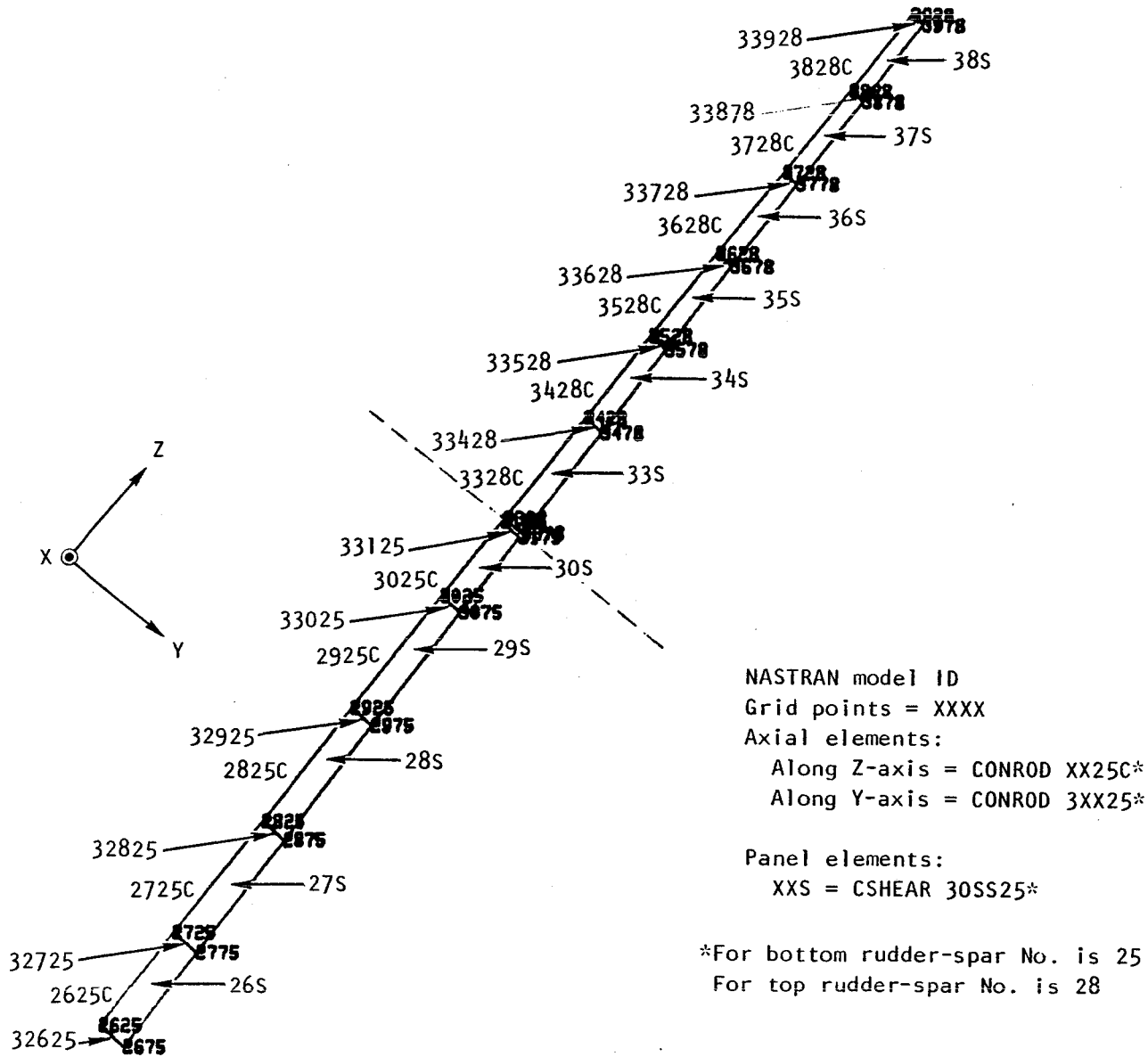


Figure D-18. - Vertical stabilizer - spar No. 25-28.*

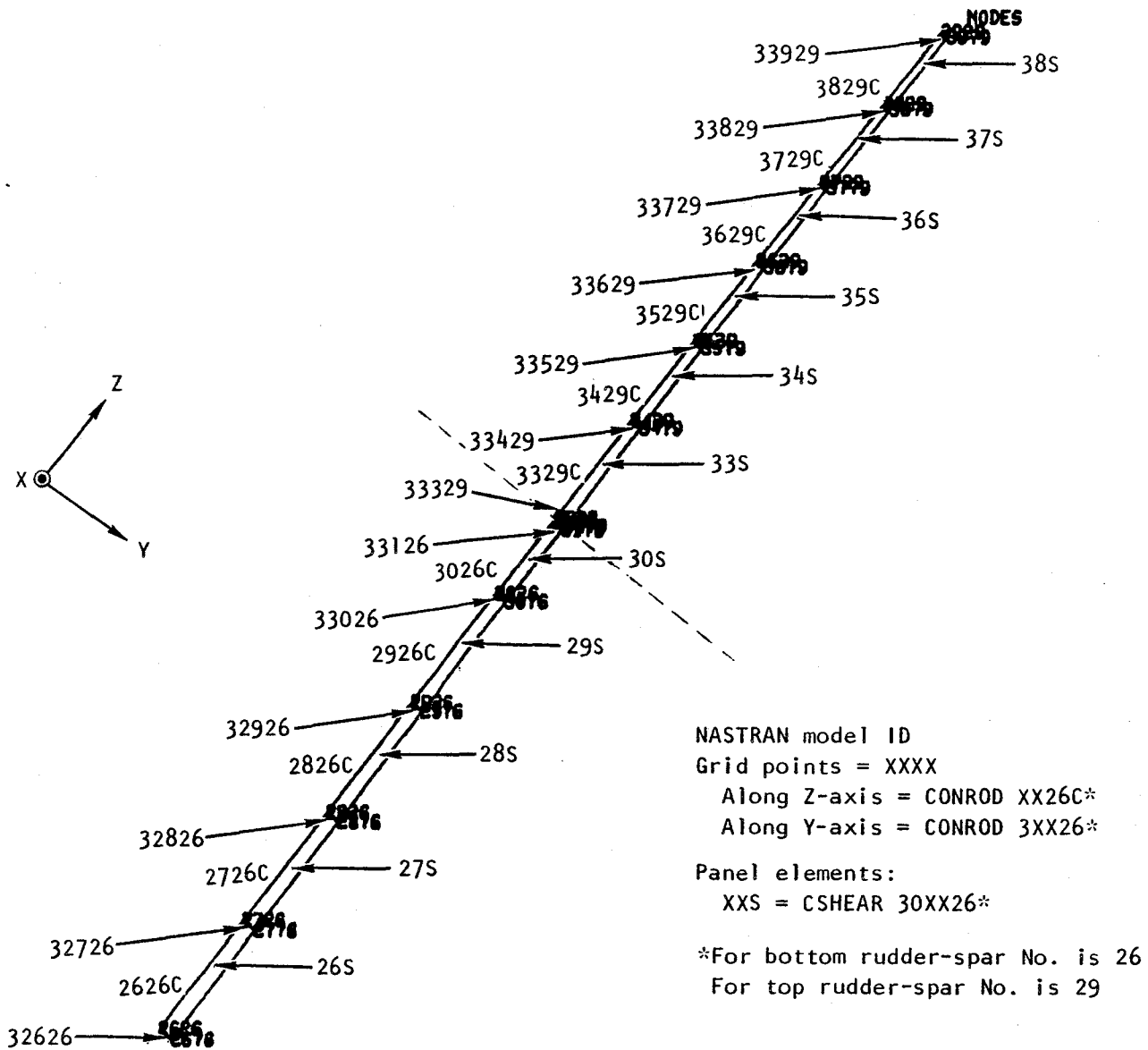


Figure D-19. - Vertical stabilizer - spar No. 26-29.*

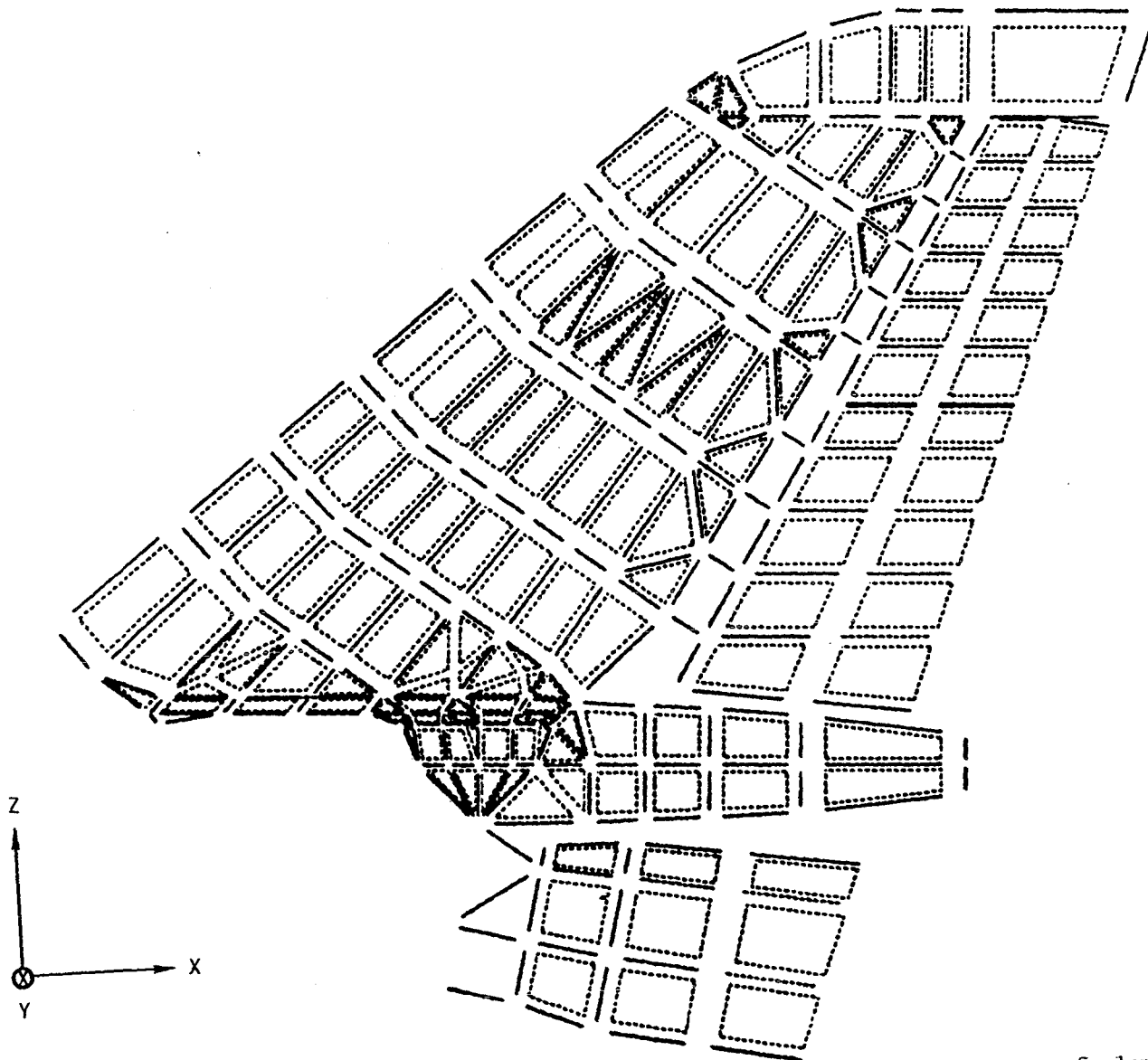


Figure D-20. - Vertical stabilizer NASTRAN model, computer graphics display of elements.

SIC			SIC		
PT	X	Z	PT	X	Z
5	200.91	9.54	41	284.48	138.31
6	220.15	9.54	42	300.33	138.31
7	249.00	9.54	43	211.19	167.18
12	211.81	28.78	44	228.44	167.18
13	229.76	28.78	45	253.18	167.18
14	256.67	28.78	46	276.18	167.18
18	198.38	52.23	47	290.27	167.18
19	225.11	52.23	48	298.90	167.1
20	241.48	52.23	49	311.84	167.1
21	266.02	52.23	50	243.11	194.15
22	108.77	80.67	51	256.73	194.15
23	137.67	80.67	52	276.26	194.15
24	179.09	80.67	53	294.43	194.15
25	217.63	80.67	54	305.56	194.15
26	241.23	80.67	55	312.37	194.15
27	255.68	80.67	56	322.59	194.15
28	277.36	80.67			
29	143.04	109.62			
30	168.04	109.62			
31	203.88	109.62			
32	237.22	109.62			
33	257.64	109.62			
34	270.14	109.62			
35	288.90	109.62			
36	177.00	138.31			
37	198.15	138.31			
38	228.46	138.31			
39	256.64	138.31			
40	273.91	138.31			

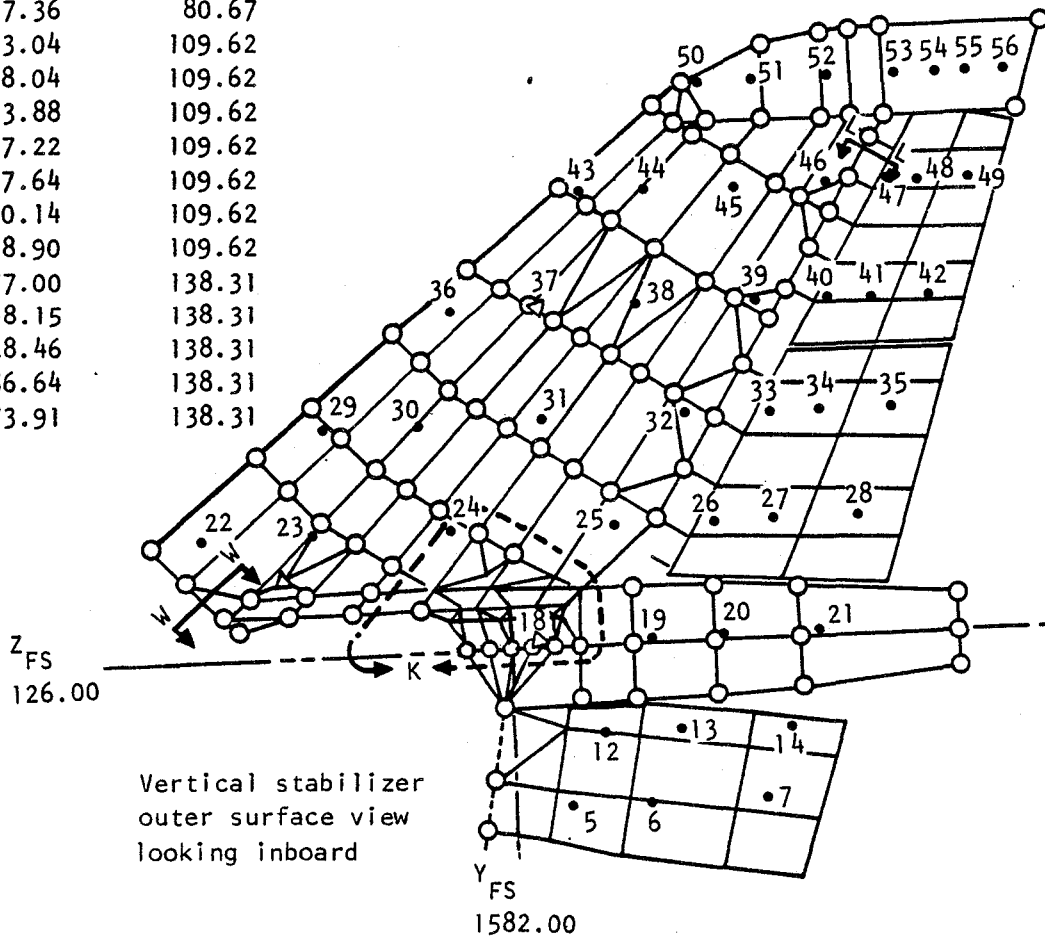


Figure D-21. - ARS vertical stabilizer (LHS) SIC points.

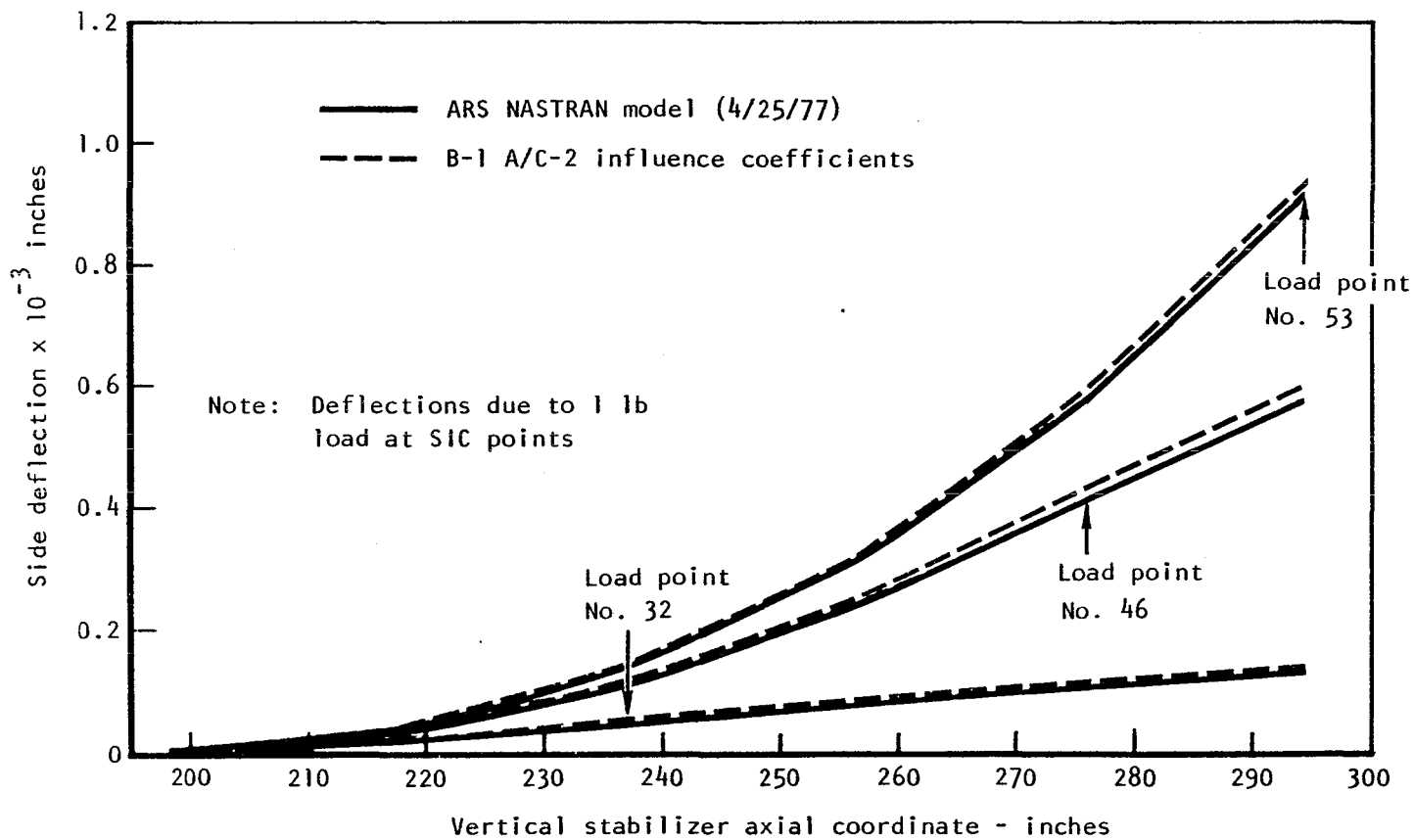


Figure D-22. - Airloads research study - vertical stabilizer deflections along rear spar.

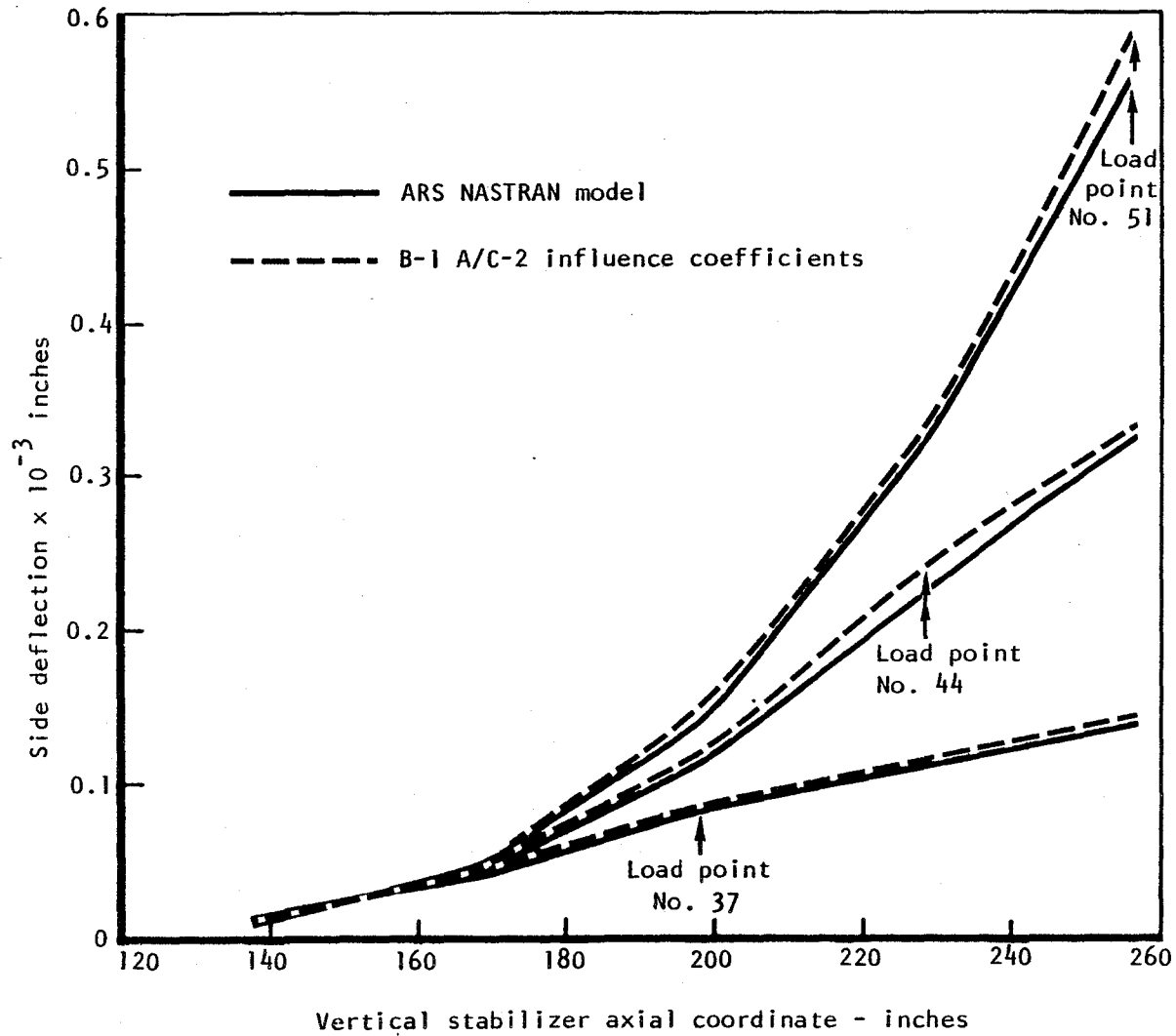


Figure D-23. - Airloads research study - vertical stabilizer deflection along front spar.

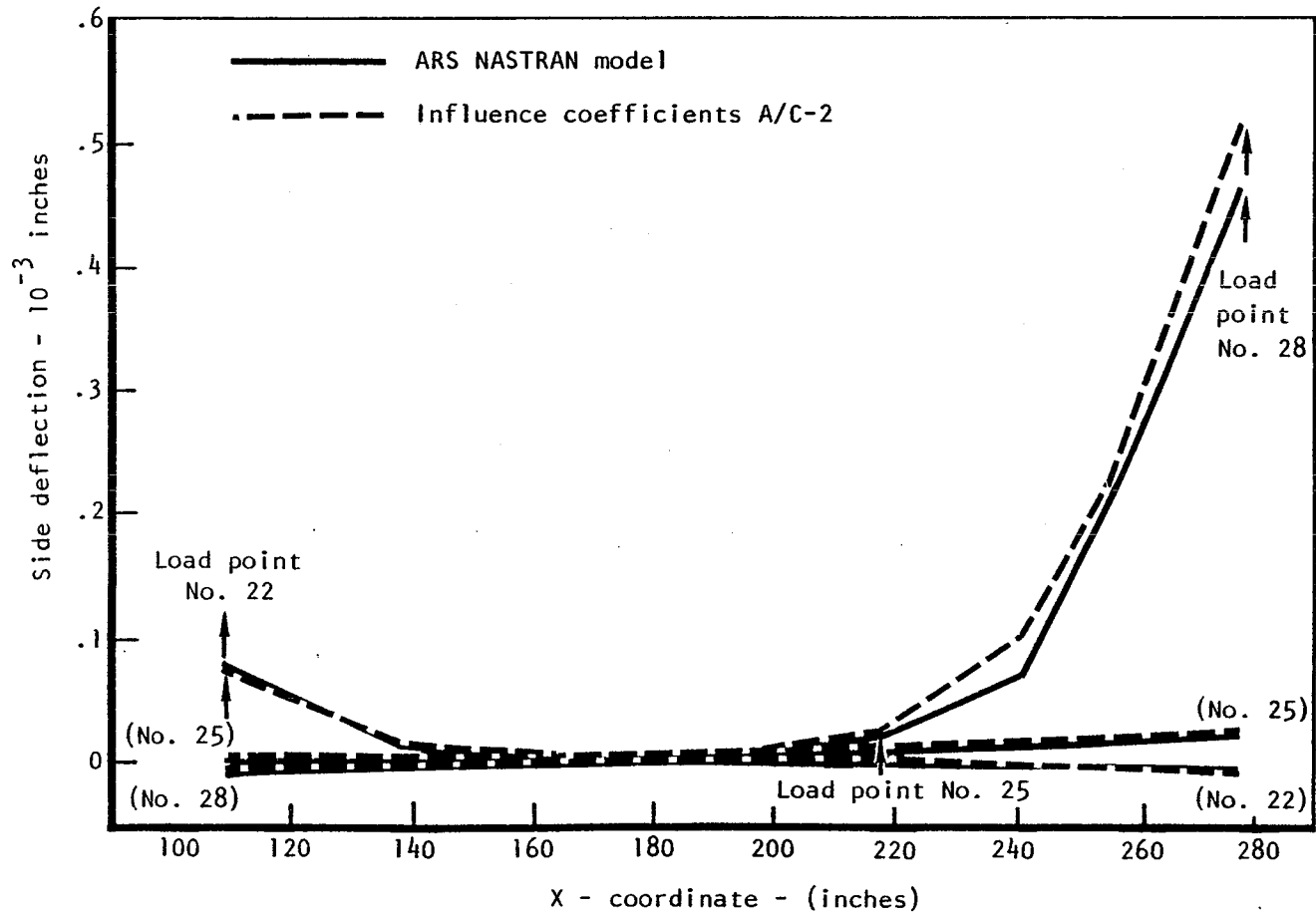


Figure D-24. - Airloads research study - vertical stabilizer deflection along Z = 80.67 axis.

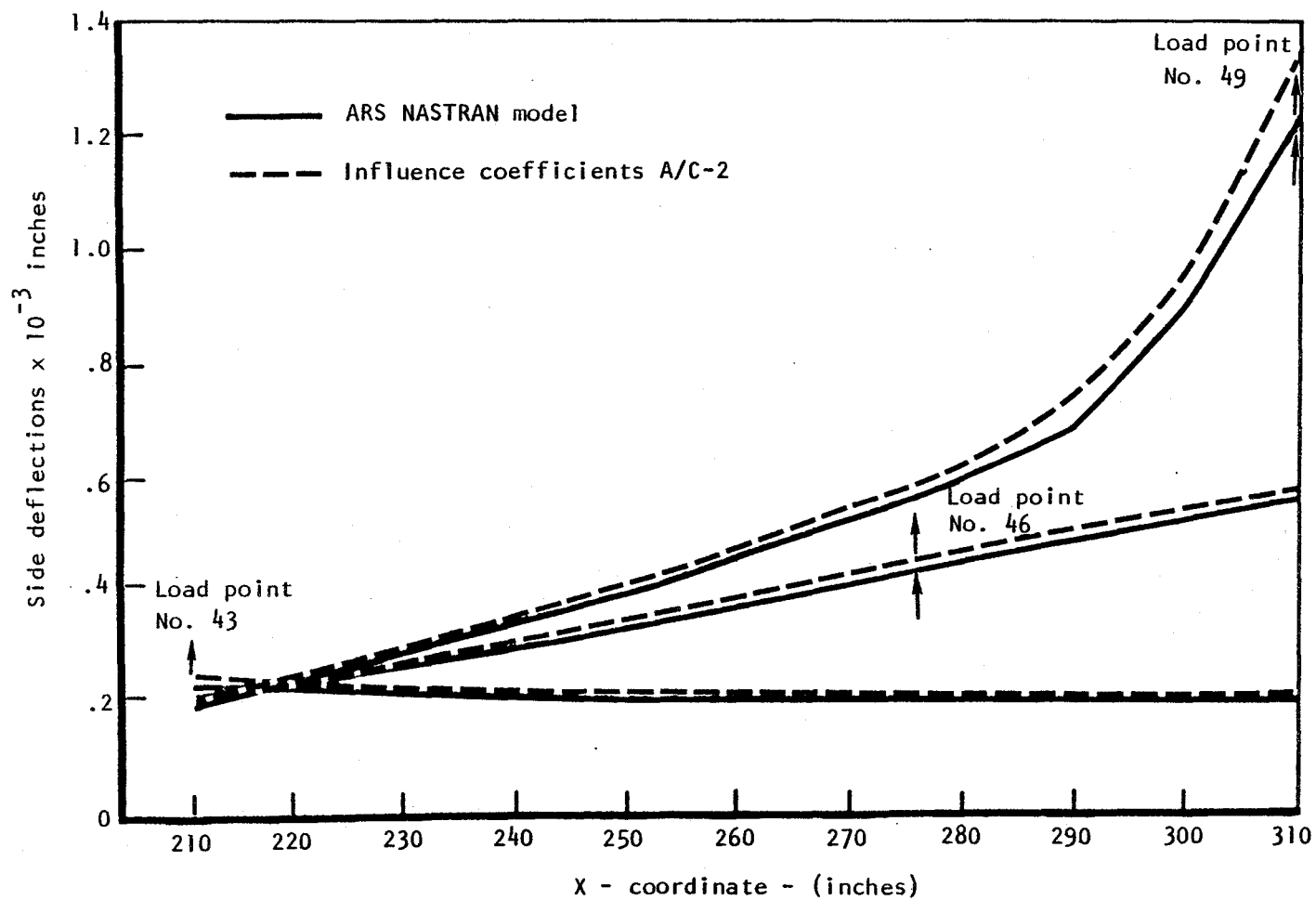


Figure D-25. - Airloads research study - vertical stabilizer deflection along Z = 167.18 axis.

SORTED BULK DATA ECHO

CARD COUNT	1	2	3	4	5	6	7	8	9	10
1-	CBAR	31616	1400	1616	1666	0.0	0.0	10.0	1	
2-	CBAR	31617	1600	1617	1667	0.0	0.0	10.0	1	
3-	CBAR	31618	1800	1618	1668	0.0	0.0	10.0	1	
4-	CBAR	31619	11200	1619	1669	0.0	0.0	10.0	1	
5-	CBAR	31620	1800	1620	1670	0.0	0.0	10.0	1	
6-	CBAR	32115	1400	2115	2165	0.0	0.0	10.0	1	
7-	CBAR	32117	1600	2117	2167	0.0	0.0	10.0	1	
8-	CBAR	32118	1800	2118	2168	0.0	0.0	10.0	1	
9-	CBAR	32119	11200	2119	2169	0.0	0.0	10.0	1	
10-	CBAR	32120	1800	2120	2170	0.0	0.0	10.0	1	
11-	CBAR	301616	1400	1616	1716	0.0	10.0	0.0	1	
12-	CBAR	301617	1600	1617	1717	0.0	10.0	0.0	1	
13-	CBAR	301618	1800	1618	1718	0.0	10.0	0.0	1	
14-	CBAR	301619	11200	1619	1719	0.0	10.0	0.0	1	
15-	CBAR	301620	1800	1620	1720	0.0	10.0	0.0	1	
16-	CBAR	301716	1400	1716	2115	0.0	10.0	0.0	1	
17-	CBAR	301717	1600	1717	2117	0.0	10.0	0.0	1	
18-	CBAR	301718	1800	1718	2118	0.0	10.0	0.0	1	
19-	CBAR	301719	11200	1719	2119	0.0	10.0	0.0	1	
20-	CBAR	301720	1800	1720	2120	0.0	10.0	0.0	1	
21-	CONROD	1121	1121	1221	1	0.295				
22-	CONROD	1122	1122	1222	1	0.228				
23-	CONROD	1221	1221	1321	1	0.295				
24-	CONROD	1222	1222	1322	1	0.228				
25-	CONROD	1321	1321	1421	1	0.295				
26-	CONROD	1322	1322	1422	1	.228				
27-	CONROD	1609	1609	1709	3	0.100				
28-	CONROD	1610	1609	1710	3	0.100				
29-	CONROD	1612	1609	1712	3	0.100				
30-	CONROD	1613	1609	1713	3	0.100				
31-	CONROD	1615	1609	1715	3	0.100				
32-	CONROD	1616	1616	1716	1	0.231				
33-	CONROD	1617	1617	1717	1	0.231				
34-	CONROD	1618	1618	1718	1	0.231				
35-	CONROD	1619	1619	1719	1	0.598				
36-	CONROD	1620	1620	1720	1	0.971				
37-	CONROD	1708	1709	1808	3	0.500				
38-	CONROD	1709	1709	1809	3	0.200				
39-	CONROD	1710	1710	1810	3	0.200				
40-	CONROD	1712	1712	1812	3	0.500				
41-	CONROD	1713	1713	1813	3	0.200				
42-	CONROD	1715	1715	1815	3	0.500				
43-	CONROD	1716	1716	2115	1	0.231				
44-	CONROD	1717	1717	2117	1	0.231				
45-	CONROD	1718	1718	2118	1	0.231				
46-	CONROD	1719	1719	2119	1	0.598				
47-	CONROD	1720	1720	2120	1	0.971				
48-	CONROD	1807	1808	2007	3	0.500				
49-	CONROD	1808	1808	2009	3	0.100				
50-	CONROD	1809	1809	2009	3	0.200				

Airloads Research Study - Vertical Stabilizer

SORTED BULK DATA ECHO

CARD COUNT	1	2	3	4	5	6	7	8	9	10
51-	CONROD	1810	1810	2010	3	0.200				
52-	CONROD	1812	1812	2012	3	0.887				
53-	CONROD	1813	1813	2013	3	0.200				
54-	CONROD	1815	1815	2015	3	1.000				
55-	CONROD	1816	1716	1815	1	0.100				
56-	CONROD	1904	1904	2003	1	0.500				
57-	CONROD	1905	1904	2005	1	0.500				
58-	CONROD	2003	2003	2102	1	0.100				
59-	CONROD	2004	2003	2103	1	0.231				
60-	CONROD	2005	2005	2105	2	0.034				
61-	CONROD	2006	2006	2106	2	0.059				
62-	CONROD	2007	2007	2107	2	0.111				
63-	CONROD	2009	2009	2107	1	0.334				
64-	CONROD	2010	2010	2110	2	0.152				
65-	CONROD	2012	2012	2110	1	0.500				
66-	CONROD	2013	2013	2113	2	0.172				
67-	CONROD	2015	2015	2115	1	1.249				
68-	CONROD	2101	2101	2301	1	0.155				
69-	CONROD	2102	2102	2302	1	0.142				
70-	CONROD	2103	2103	2303	1	0.390				
71-	CONROD	2105	2105	2305	2	0.046				
72-	CONROD	2106	2106	2306	2	0.063				
73-	CONROD	2107	2107	2507	2	0.196				
74-	CONROD	2110	2110	2510	2	0.258				
75-	CONROD	2113	2113	2513	2	0.172				
76-	CONROD	2115	2115	2715	1	0.540				
77-	CONROD	2301	2301	2501	1	0.150				
78-	CONROD	2302	2302	2502	1	0.140				
79-	CONROD	2303	2303	2503	1	0.460				
80-	CONROD	2305	2305	2505	2	0.058				
81-	CONROD	2306	2306	2506	2	0.098				
82-	CONROD	2501	2501	2701	1	0.140				
83-	CONROD	2502	2502	2702	1	0.136				
84-	CONROD	2503	2503	2703	1	0.495				
85-	CONROD	2505	2505	2705	2	0.046				
86-	CONROD	2506	2506	2706	2	0.060				
87-	CONROD	2507	2507	2707	2	0.087				
88-	CONROD	2510	2510	2710	2	0.104				
89-	CONROD	2513	2513	2713	2	0.109				
90-	CONROD	2625	2625	2725	1	0.212				
91-	CONROD	2701	2701	2901	1	.092				
92-	CONROD	2703	2703	2903	1	0.495				
93-	CONROD	2705	2705	2905	2	0.036				
94-	CONROD	2706	2706	2906	2	0.042				
95-	CONROD	2707	2707	2907	2	0.052				
96-	CONROD	2710	2710	2910	2	0.051				
97-	CONROD	2713	2713	2913	2	0.047				
98-	CONROD	2714	2713	2815	1	0.100				
99-	CONROD	2715	2715	2815	1	0.532				
100-	CONROD	2725	2725	2825	1	0.212				

Airloads Research Study - Vertical Stabilizer

SORTED BULK DATA ECHO

CARD COUNT	1	2	3	4	5	6	7	8	9	10
101-	CONROD	2813	2815	2913	1	0.100				
102-	CONROD	2815	2815	2915	1	0.485				
103-	CONROD	2825	2825	2925	1	0.212				
104-	CONROD	2901	2901	3201	1	0.080				
105-	CONROD	2903	2903	3203	1	0.460				
106-	CONROD	2904	2905	3203	2	0.100				
107-	CONROD	2905	2905	3206	2	0.100				
108-	CONROD	2906	2906	3206	2	0.029				
109-	CONROD	2907	2907	3206	2	0.100				
110-	CONROD	2908	2907	3210	2	0.100				
111-	CONROD	2910	2910	3210	2	0.023				
112-	CONROD	2913	2913	3213	2	0.079				
113-	CONROD	2914	2913	3015	1	0.180				
114-	CONROD	2915	2915	3015	1	0.455				
115-	CONROD	2925	2925	3025	1	0.212				
116-	CONROD	3013	3015	3213	1	0.180				
117-	CONROD	3015	3015	3215	1	0.505				
118-	CONROD	3025	3025	3125	1	0.212				
119-	CONROD	3201	3201	3601	1	0.060				
120-	CONROD	3203	3203	3603	1	0.420				
121-	CONROD	3206	3206	3606	2	0.024				
122-	CONROD	3210	3210	3610	2	0.018				
123-	CONROD	3213	3213	3613	2	0.059				
124-	CONROD	3214	3213	3415	1	0.350				
125-	CONROD	3215	3215	3415	1	0.490				
126-	CONROD	3328	3328	3428	1	0.120				
127-	CONROD	3415	3415	3515	1	0.405				
128-	CONROD	3428	3428	3528	1	0.120				
129-	CONROD	3513	3515	3613	1	0.190				
130-	CONROD	3515	3515	3615	1	0.390				
131-	CONROD	3528	3528	3628	1	0.120				
132-	CONROD	3601	3601	4101	1	0.200				
133-	CONROD	3602	3602	4101	1	0.080				
134-	CONROD	3603	3603	4003	1	0.397				
135-	CONROD	3606	3606	4006	2	0.012				
136-	CONROD	3610	3610	4010	2	0.015				
137-	CONROD	3613	3613	4013	2	0.028				
138-	CONROD	3614	3613	3715	1	0.250				
139-	CONROD	3615	3615	3715	1	0.375				
140-	CONROD	3628	3628	3728	1	0.120				
141-	CONROD	3715	3715	3815	1	0.410				
142-	CONROD	3728	3728	3828	1	0.120				
143-	CONROD	3813	3815	4013	1	0.290				
144-	CONROD	3815	3815	4015	1	0.385				
145-	CONROD	3828	3828	3928	1	0.120				
146-	CONROD	4003	4003	4101	1	0.074				
147-	CONROD	4006	4006	4206	1	0.074				
148-	CONROD	4010	4010	4210	1	0.074				
149-	CONROD	4013	4013	4213	1	0.074				
150-	CONROD	4015	4015	4215	1	0.263				

Airloads Research Study - Vertical Stabilizer

Airloads Research Study - Vertical Stabilizer

CARD COUNT	SORTED BULK DATA ECHO									
	1	2	3	4	5	6	7	8	9	10
151-	CONROD	4031	4031	4231	1	0.135				
152-	CONROD	4101	4101	4206	1	0.147				
153-	CONROD	11109	1109	1121	1	0.271				
154-	CONROD	11110	1109	1171	1	0.325				
155-	CONROD	11121	1121	1122	1	0.500				
156-	CONROD	11122	1122	1123	1	0.051				
157-	CONROD	11123	1123	1124	1	0.051				
158-	CONROD	11209	1209	1221	1	0.271				
159-	CONROD	11210	1209	1271	1	0.325				
160-	CONROD	11211	1209	1321	1	0.200				
161-	CONROD	11221	1221	1222	1	0.600				
162-	CONROD	11310	1371	1609	1	0.254				
163-	CONROD	11321	1321	1322	1	0.400				
164-	CONROD	11421	1421	1422	1	0.094				
165-	CONROD	11422	1422	1423	1	0.051				
166-	CONROD	11423	1423	1424	1	0.051				
167-	CONROD	11609	1609	1616	1	1.768				
168-	CONROD	11616	1616	1617	1	1.047				
169-	CONROD	11617	1617	1618	1	1.065				
170-	CONROD	11618	1618	1619	1	0.850				
171-	CONROD	11619	1619	1620	1	0.529				
172-	CONROD	11709	1709	1710	3	0.200				
173-	CONROD	11710	1710	1712	3	0.200				
174-	CONROD	11712	1712	1713	3	0.200				
175-	CONROD	11713	1713	1715	3	0.200				
176-	CONROD	11715	1715	1716	1	0.200				
177-	CONROD	11716	1716	1717	1	0.375				
178-	CONROD	11717	1717	1718	1	0.915				
179-	CONROD	11718	1718	1719	1	0.760				
180-	CONROD	11719	1719	1720	1	0.174				
181-	CONROD	11808	1808	1809	3	0.100				
182-	CONROD	11809	1809	1810	3	0.100				
183-	CONROD	11810	1810	1811	3	0.100				
184-	CONROD	11811	1811	1812	3	0.100				
185-	CONROD	11812	1812	1813	3	0.100				
186-	CONROD	11813	1813	1814	3	0.100				
187-	CONROD	11814	1814	1815	3	0.100				
188-	CONROD	12003	2003	2005	1	0.465				
189-	CONROD	12005	2005	2006	1	0.569				
190-	CONROD	12006	2006	2007	1	0.580				
191-	CONROD	12007	2007	2009	1	0.483				
192-	CONROD	12009	2009	2010	1	0.773				
193-	CONROD	12010	2010	2012	1	0.787				
194-	CONROD	12012	2012	2013	1	0.787				
195-	CONROD	12013	2013	2015	1	0.789				
196-	CONROD	12101	2101	2102	1	0.261				
197-	CONROD	12102	2102	2103	4	0.076				
198-	CONROD	12103	2103	2105	1	0.100				
199-	CONROD	12105	2105	2106	1	0.100				
200-	CONROD	12106	2106	2107	1	0.100				

S O R T E D B U L K D A T A E C H O

CARD COUNT	1	2	3	4	5	6	7	8	9	10
201-	CONROD	12107	2107	2110	1	0.100				
202-	CONROD	12110	2110	2113	1	0.100				
203-	CONROD	12113	2113	2115	1	0.100				
204-	CONROD	12115	2115	2117	1	1.047				
205-	CONROD	12117	2117	2118	1	1.065				
206-	CONROD	12118	2118	2119	1	0.850				
207-	CONROD	12119	2119	2120	1	0.529				
208-	CONROD	12301	2301	2302	1	0.335				
209-	CONROD	12303	2303	2305	1	0.238				
210-	CONROD	12305	2305	2306	1	0.315				
211-	CONROD	12306	2306	2107	1	0.375				
212-	CONROD	12501	2501	2502	1	0.202				
213-	CONROD	12502	2502	2503	4	0.282				
214-	CONROD	12503	2503	2505	1	0.356				
215-	CONROD	12505	2505	2506	1	0.331				
216-	CONROD	12506	2506	2507	1	0.394				
217-	CONROD	12507	2507	2510	1	0.540				
218-	CONROD	12510	2510	2513	1	0.583				
219-	CONROD	12513	2513	2115	1	0.580				
220-	CONROD	12625	2625	2626	1	0.032				
221-	CONROD	12626	2626	2627	1	0.032				
222-	CONROD	12701	2701	2702	1	0.277				
223-	CONROD	12702	2702	2703	4	0.282				
224-	CONROD	12703	2703	2705	1	0.133				
225-	CONROD	12705	2705	2706	1	0.142				
226-	CONROD	12706	2706	2707	1	0.158				
227-	CONROD	12707	2707	2710	1	0.156				
228-	CONROD	12710	2710	2713	1	0.133				
229-	CONROD	12713	2713	2715	1	0.210				
230-	CONROD	12715	2715	2725	1	0.138				
231-	CONROD	12716	2715	2775	1	2.680				
232-	CONROD	12725	2725	2726	1	0.100				
233-	CONROD	12815	2815	2825	1	0.147				
234-	CONROD	12816	2815	2875	1	2.590				
235-	CONROD	12825	2825	2826	1	0.100				
236-	CONROD	12903	2903	2905	1	0.096				
237-	CONROD	12905	2905	2906	1	0.104				
238-	CONROD	12906	2906	2907	1	0.097				
239-	CONROD	12907	2907	2910	1	0.099				
240-	CONROD	12910	2910	2913	1	0.088				
241-	CONROD	12913	2913	2915	1	0.141				
242-	CONROD	12915	2915	2925	1	0.158				
243-	CONROD	12916	2915	2975	1	2.490				
244-	CONROD	12925	2925	2926	1	0.100				
245-	CONROD	13015	3015	3025	1	0.169				
246-	CONROD	13016	3015	3075	1	2.370				
247-	CONROD	13025	3025	3026	1	0.100				
248-	CONROD	13125	3125	3126	1	0.032				
249-	CONROD	13126	3126	3127	1	0.032				
250-	CONROD	13203	3203	3206	1	0.072				

Airloads Research Study - Vertical Stabilizer

Airloads Research Study - Vertical Stabilizer

SORTED BULK DATA ECHO																					
CARD	..	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	..
COLUNT																					
251-	CONROD	13206	3206	3210	1	0.077															
252-	CONROD	13210	3210	3213	1	0.068															
253-	CONROD	13213	3213	3215	1	0.074															
254-	CONROD	13328	3328	3329	1	0.032															
255-	CONROD	13329	3329	3330	1	0.032															
256-	CONROD	13415	3415	3428	1	0.068															
257-	CONROD	13416	3415	3478	1	2.160															
258-	CONROD	13428	3428	3429	1	0.100															
259-	CONROD	13515	3515	3528	1	0.070															
260-	CONROD	13516	3515	3578	1	2.370															
261-	CONROD	13528	3528	3529	1	0.100															
262-	CONROD	13601	3601	3602	1	0.080															
263-	CONROD	13602	3602	3603	1	0.080															
264-	CONROD	13603	3603	3606	1	0.050															
265-	CONROD	13606	3606	3610	1	0.059															
266-	CONROD	13610	3610	3613	1	0.054															
267-	CONROD	13613	3613	3615	1	0.115															
268-	CONROD	13615	3615	3628	1	0.073															
269-	CONROD	13616	3615	3678	1	2.490															
270-	CONROD	13628	3628	3629	1	0.100															
271-	CONROD	13715	3715	3728	1	0.076															
272-	CONROD	13716	3715	3778	1	2.530															
273-	CONROD	13728	3728	3729	1	0.100															
274-	CONROD	13815	3815	3828	1	0.080															
275-	CONROD	13816	3815	3878	1	2.530															
276-	CONROD	13828	3828	3829	1	0.100															
277-	CONROD	13928	3928	3929	1	0.032															
278-	CONROD	13929	3929	3930	1	0.032															
279-	CONROD	14002	3602	4003	1	0.080															
280-	CONROD	14003	4003	4006	1	0.216															
281-	CONROD	14006	4006	4010	1	0.216															
282-	CONROD	14010	4010	4013	1	0.216															
283-	CONROD	14013	4013	4015	1	0.216															
284-	CONROD	14015	4015	4031	1	0.115															
285-	CONROD	14206	4206	4210	1	0.157															
286-	CONROD	14210	4210	4213	1	0.157															
287-	CONROD	14213	4213	4215	1	0.157															
288-	CONROD	14215	4215	4231	1	0.157															
289-	CONROD	31121	1121	1171	1	1.5															
290-	CONROD	31122	1122	1172	1	1.0															
291-	CONROD	31123	1123	1173	1	1.0															
292-	CONROD	31221	1221	1271	1	1.5															
293-	CONROD	31222	1222	1272	1	0.8															
294-	CONROD	31223	1223	1273	1	0.6															
295-	CONROD	31321	1321	1371	1	0.8															
296-	CONROD	31322	1322	1372	1	0.8															
297-	CONROD	31323	1323	1373	1	0.6															
298-	CONROD	31421	1421	1471	1	0.5															
299-	CONROD	31422	1422	1472	1	1.0															
300-	CONROD	31423	1423	1473	1	0.8															

S O R T E D B U L K D A T A E C H O

CARD COUNT	. 1	.. 2	.. 3	.. 4	.. 5	.. 6	.. 7	.. 8	.. 9	.. 10
301-	CONROD	31709	1709	1759	3	1.0				
302-	CONROD	31712	1712	1762	3	1.0				
303-	CONROD	31715	1715	1765	3	1.0				
304-	CONROD	31808	1808	1858	3	2.0				
305-	CONROD	31809	1809	1859	3	.1				
306-	CONROD	31810	1810	1860	3	.1				
307-	CONROD	31811	1811	1861	3	.1				
308-	CONROD	31812	1812	1862	3	10.0				
309-	CONROD	31813	1813	1863	3	2.0				
310-	CONROD	31814	1814	1864	3	.1				
311-	CONROD	31815	1815	1865	3	1.0				
312-	CONROD	32003	2003	2053	1	1.1				
313-	CONROD	32005	2005	2055	1	2.5				
314-	CONROD	32006	2006	2056	1	2.3				
315-	CONROD	32007	2007	2057	1	1.7				
316-	CONROD	32009	2009	2059	1	1.7				
317-	CONROD	32010	2010	2060	1	1.3				
318-	CONROD	32012	2012	2062	1	2.5				
319-	CONROD	32013	2013	2063	1	1.4				
320-	CONROD	32015	2015	2065	1	1.5				
321-	CONROD	32101	2101	2151	1	1.0				
322-	CONROD	32102	2102	2152	1	2.8				
323-	CONROD	32103	2103	2153	1	1.6				
324-	CONROD	32105	2105	2155	2	0.2				
325-	CONROD	32106	2106	2156	2	0.2				
326-	CONROD	32107	2107	2157	2	1.2				
327-	CONROD	32110	2110	2160	1	0.5				
328-	CONROD	32113	2113	2163	1	0.5				
329-	CONROD	32115	2115	2165	1	4.4				
330-	CONROD	32301	2301	2351	1	1.5				
331-	CONROD	32302	2302	2352	1	2.7				
332-	CONROD	32303	2303	2353	1	2.8				
333-	CONROD	32305	2305	2355	2	0.9				
334-	CONROD	32306	2306	2356	2	1.1				
335-	CONROD	32501	2501	2551	1	1.5				
336-	CONROD	32502	2502	2552	1	2.5				
337-	CONROD	32503	2503	2553	1	4.3				
338-	CONROD	32505	2505	2555	2	1.5				
339-	CONROD	32506	2506	2556	2	1.8				
340-	CONROD	32507	2507	2557	2	2.4				
341-	CONROD	32510	2510	2560	2	2.6				
342-	CONROD	32513	2513	2563	2	2.2				
343-	CONROD	32625	2625	2675	1	2.7				
344-	CONROD	32626	2626	2676	1	4.1				
345-	CONROD	32701	2701	2751	1	1.6				
346-	CONROD	32702	2702	2752	1	2.7				
347-	CONROD	32703	2703	2753	1	5.4				
348-	CONROD	32705	2705	2755	2	1.7				
349-	CONROD	32706	2706	2756	2	1.9				
350-	CONROD	32707	2707	2757	2	1.9				

Airloads Research Study - Vertical Stabilizer

Airloads Research Study - Vertical Stabilizer

SORTED BULK DATA ECHO										
CARD	1	2	3	4	5	6	7	8	9	10
COUNT										
351-	CONROD	32710	2710	2760	2	2.1				
352-	CONROD	32713	2713	2763	2	2.4				
353-	CONROD	32715	2715	2765	1	3.7				
354-	CONROD	32725	2725	2775	1	3.5				
355-	CONROD	32726	2726	2776	1	2.5				
356-	CONROD	32815	2815	2865	1	2.7				
357-	CONROD	32825	2825	2875	1	3.8				
358-	CONROD	32826	2826	2876	1	2.5				
359-	CONROD	32901	2901	2951	1	1.6				
360-	CONROD	32902	2902	2952	1	2.3				
361-	CONROD	32903	2903	2953	1	5.2				
362-	CONROD	32905	2905	2955	2	1.4				
363-	CONROD	32906	2906	2956	2	1.5				
364-	CONROD	32907	2907	2957	2	1.6				
365-	CONROD	32910	2910	2960	2	1.7				
366-	CONROD	32913	2913	2963	2	1.8				
367-	CONROD	32915	2915	2965	1	2.2				
368-	CONROD	32925	2925	2975	1	3.6				
369-	CONROD	32926	2926	2976	1	2.4				
370-	CONROD	33015	3015	3065	1	2.1				
371-	CONROD	33025	3025	3075	1	3.0				
372-	CONROD	33026	3026	3076	1	1.9				
373-	CONROD	33125	3125	3175	1	2.2				
374-	CONROD	33126	3126	3176	1	2.3				
375-	CONROD	33201	3201	3251	1	1.6				
376-	CONROD	33202	3202	3252	1	2.5				
377-	CONROD	33203	3203	3253	1	5.3				
378-	CONROD	33206	3206	3256	2	2.2				
379-	CONROD	33210	3210	3260	2	1.5				
380-	CONROD	33213	3213	3263	2	1.6				
381-	CONROD	33215	3215	3265	1	1.6				
382-	CONROD	33328	3328	3378	1	2.9				
383-	CONROD	33329	3329	3379	1	2.9				
384-	CONROD	33415	3415	3465	1	1.3				
385-	CONROD	33428	3428	3478	1	2.6				
386-	CONROD	33429	3429	3479	1	1.5				
387-	CONROD	33515	3515	3565	1	1.2				
388-	CONROD	33528	3528	3578	1	2.4				
389-	CONROD	33529	3529	3579	1	1.4				
390-	CONROD	33601	3601	3651	1	0.8				
391-	CONROD	33602	3602	3652	1	1.5				
392-	CONROD	33603	3603	3653	1	2.3				
393-	CONROD	33606	3606	3656	2	1.3				
394-	CONROD	33610	3610	3660	2	1.1				
395-	CONROD	33613	3613	3663	2	1.1				
396-	CONROD	33615	3615	3665	1	1.2				
397-	CONROD	33628	3628	3678	1	2.2				
398-	CONROD	33629	3629	3679	1	1.2				
399-	CONROD	33715	3715	3765	1	1.1				
400-	CONROD	33728	3728	3778	1	1.7				

S O R T E D B U L K D A T A E C H O

CARD COUNT	1	2	3	4	5	6	7	8	9	10
401-	CONROD	33729	3729	3779	1	0.1				
402-	CONROD	33815	3815	3865	1	0.9				
403-	CONROD	33828	3828	3878	1	0.9				
404-	CONROD	33829	3829	3879	1	1.1				
405-	CONROD	33928	3928	3978	1	1.7				
406-	CONROD	33929	3929	3979	1	1.6				
407-	CONROD	34003	4003	4053	1	1.0				
408-	CONROD	34006	4006	4056	1	1.0				
409-	CONROD	34010	4010	4060	1	1.0				
410-	CONROD	34013	4013	4063	1	1.0				
411-	CONROD	34015	4015	4065	1	3.5				
412-	CONROD	34031	4031	4081	1	1.3				
413-	CONROD	34101	4101	4151	1	0.7				
414-	CONROD	34206	4206	4256	1	0.5				
415-	CONROD	34210	4210	4260	1	0.5				
416-	CONROD	34213	4213	4263	1	0.3				
417-	CONROD	34215	4215	4265	1	3.0				
418-	CONROD	34231	4231	4281	1	1.4				
419-	CQDMEM2	201121	1050	1121	1122	1222	1221			
420-	CQDMEM2	201122	1025	1122	1123	1223	1222			
421-	CQDMEM2	201123	1025	1123	1124	1224	1223			
422-	CQDMEM2	201221	1045	1221	1222	1322	1321			
423-	CQDMEM2	201222	1025	1222	1223	1323	1322			
424-	CQDMEM2	201223	1025	1223	1224	1324	1323			
425-	CQDMEM2	201321	1060	1321	1322	1422	1421			
426-	CQDMEM2	201322	1025	1322	1323	1423	1422			
427-	CQDMEM2	201323	1025	1323	1324	1424	1423			
428-	CQDMEM2	201616	1060	1616	1617	1717	1716			
429-	CQDMEM2	201617	1032	1617	1618	1718	1717			
430-	CQDMEM2	201618	1060	1618	1619	1719	1718			
431-	CQDMEM2	201619	1060	1619	1620	1720	1719			
432-	CQDMEM2	201709	31000	1709	1710	1810	1809			
433-	CQDMEM2	201710	31000	1710	1712	1811	1810			
434-	CQDMEM2	201712	31000	1712	1713	1813	1812			
435-	CQDMEM2	201713	31000	1713	1715	1814	1813			
436-	CQDMEM2	201716	1032	1716	1717	2117	2115			
437-	CQDMEM2	201717	1032	1717	1718	2118	2117			
438-	CQDMEM2	201718	1060	1718	1719	2119	2118			
439-	CQDMEM2	201719	1060	1719	1720	2120	2119			
440-	CQDMEM2	201809	11734	1809	1810	2010	2009			
441-	CQDMEM2	201812	11734	1812	1813	2013	2012			
442-	CQDMEM2	202003	1127	2003	2105	2105	2103			
443-	CQDMEM2	202005	1130	2005	2106	2106	2105			
444-	CQDMEM2	202006	1225	2006	2007	2107	2106			
445-	CQDMEM2	202009	1545	2009	2010	2110	2107			
446-	CQDMEM2	202012	1420	2012	2013	2113	2110			
447-	CQDMEM2	202013	1420	2013	2015	2115	2113			
448-	CQDMEM2	202101	1063	2101	2102	2302	2301			
449-	CQDMEM2	202102	4027	2102	2103	2303	2302			
450-	CQDMEM2	202105	1145	2105	2106	2306	2305			

Airloads Research Study - Vertical Stabilizer

Airloads Research Study - Vertical Stabilizer

CARD COUNT	1	2	3	4	5	6	7	8	9	10
451-	CQDNEM2	202301	1063	2301	2302	2502	2501			
452-	CQDNEM2	202302	4027	2302	2303	2503	2502			
453-	CQDNEM2	202303	1142	2303	2305	2505	2503			
454-	CQDNEM2	202305	1185	2305	2306	2506	2505			
455-	CQDNEM2	202306	1240	2306	2107	2507	2506			
456-	CQDNEM2	202501	1063	2501	2502	2702	2701			
457-	CQDNEM2	202502	4027	2502	2503	2703	2702			
458-	CQDNEM2	202503	1185	2503	2505	2705	2703			
459-	CQDNEM2	202505	1200	2505	2506	2706	2705			
460-	CQDNEM2	202506	1208	2506	2507	2707	2706			
461-	CQDNEM2	202507	1220	2507	2510	2710	2707			
462-	CQDNEM2	202510	1238	2510	2513	2713	2710			
463-	CQDNEM2	202513	1254	2513	2115	2715	2713			
464-	CQDNEM2	202625	1045	2625	2626	2726	2725			
465-	CQDNEM2	202626	1025	2626	2627	2727	2726			
466-	CQDNEM2	202701	1020	2701	2702	2902	2901			
467-	CQDNEM2	202702	1020	2702	2703	2903	2902			
468-	CQDNEM2	202703	1200	2703	2705	2905	2903			
469-	CQDNEM2	202705	1200	2705	2706	2906	2905			
470-	CQDNEM2	202706	1200	2706	2707	2907	2906			
471-	CQDNEM2	202707	1200	2707	2710	2910	2907			
472-	CQDNEM2	202710	1200	2710	2713	2913	2910			
473-	CQDNEM2	202725	1045	2725	2726	2826	2825			
474-	CQDNEM2	202726	1025	2726	2727	2827	2826			
475-	CQDNEM2	202825	1045	2825	2826	2926	2925			
476-	CQDNEM2	202826	1025	2826	2827	2927	2926			
477-	CQDNEM2	202901	1020	2901	2902	3202	3201			
478-	CQDNEM2	202902	1020	2902	2903	3203	3202			
479-	CQDNEM2	202910	1200	2910	2913	3213	3210			
480-	CQDNEM2	202925	1045	2925	2926	3026	3025			
481-	CQDNEM2	202926	1025	2926	2927	3027	3026			
482-	CQDNEM2	203025	1033	3025	3026	3126	3125			
483-	CQDNEM2	203026	1025	3026	3027	3127	3126			
484-	CQDNEM2	203201	1020	3201	3202	3602	3601			
485-	CQDNEM2	203202	1020	3202	3203	3603	3602			
486-	CQDNEM2	203203	1200	3203	3206	3606	3603			
487-	CQDNEM2	203206	1200	3206	3210	3610	3606			
488-	CQDNEM2	203210	1200	3210	3213	3613	3610			
489-	CQDNEM2	203213	1205	3213	3415	3515	3613			
490-	CQDNEM2	203328	1038	3328	3329	3429	3428			
491-	CQDNEM2	203329	1025	3329	3330	3430	3429			
492-	CQDNEM2	203428	1038	3428	3429	3529	3528			
493-	CQDNEM2	203429	1025	3429	3430	3530	3529			
494-	CQDNEM2	203528	1038	3528	3529	3629	3628			
495-	CQDNEM2	203529	1025	3529	3530	3630	3629			
496-	CQDNEM2	203603	1200	3603	3606	4006	4003			
497-	CQDNEM2	203606	1200	3606	3610	4010	4006			
498-	CQDNEM2	203610	1200	3610	3613	4013	4010			
499-	CQDNEM2	203613	1202	3613	3715	3815	4013			
500-	CQDNEM2	203628	1038	3628	3629	3729	3728			

Airloads Research Study - Vertical Stabilizer

SORTED BULK DATA ECHO										
CARD	1	2	3	4	5	6	7	8	9	10
COUNT										
501-	CQDMEM2	203629	1025	3629	3630	3730	3729			
502-	CQDMEM2	203728	1038	3728	3729	3829	3828			
503-	CQDMEM2	203729	1025	3729	3730	3830	3829			
504-	CQDMEM2	203828	1032	3828	3829	3929	3928			
505-	CQDMEM2	203829	1025	3829	3830	3930	3929			
506-	CQDMEM2	204003	1115	4003	4006	4206	4101			
507-	CQDMEM2	204006	1145	4006	4010	4210	4206			
508-	CQDMEM2	204010	1143	4010	4013	4213	4210			
509-	CQDMEM2	204013	1149	4013	4015	4215	4213			
510-	CQDMEM2	204015	4058	4015	4031	4231	4215			
511-	CSHEAR	101121	1281	1121	1122	1172	1171			
512-	CSHEAR	101122	1078	1122	1123	1173	1172			
513-	CSHEAR	101221	1248	1221	1222	1272	1271			
514-	CSHEAR	101222	1057	1222	1223	1273	1272			
515-	CSHEAR	101321	1107	1321	1322	1372	1371			
516-	CSHEAR	101322	1053	1322	1323	1373	1372			
517-	CSHEAR	101421	1063	1421	1422	1472	1471			
518-	CSHEAR	101422	1041	1422	1423	1473	1472			
519-	CSHEAR	101616	1032	1616	1617	1667	1666			
520-	CSHEAR	101617	1032	1617	1618	1668	1667			
521-	CSHEAR	101618	1060	1618	1619	1669	1668			
522-	CSHEAR	101619	1060	1619	1620	1670	1669			
523-	CSHEAR	101808	3010	1808	1809	1859	1858			
524-	CSHEAR	101809	3010	1809	1810	1860	1859			
525-	CSHEAR	101810	3010	1810	1811	1861	1860			
526-	CSHEAR	101811	3010	1811	1812	1862	1861			
527-	CSHEAR	101812	3010	1812	1813	1863	1862			
528-	CSHEAR	101813	3010	1813	1814	1864	1863			
529-	CSHEAR	101814	3010	1814	1815	1865	1864			
530-	CSHEAR	102003	1103	2003	2005	2055	2053			
531-	CSHEAR	102005	1110	2005	2006	2056	2055			
532-	CSHEAR	102006	1138	2006	2007	2057	2056			
533-	CSHEAR	102007	1170	2007	2009	2059	2057			
534-	CSHEAR	102009	1146	2009	2010	2060	2059			
535-	CSHEAR	102010	1158	2010	2012	2062	2060			
536-	CSHEAR	102012	1155	2012	2013	2063	2062			
537-	CSHEAR	102013	1120	2013	2015	2065	2063			
538-	CSHEAR	102101	1241	2101	2102	2152	2151			
539-	CSHEAR	102102	1010	2102	2103	2153	2152			
540-	CSHEAR	102103	1050	2103	2105	2155	2153			
541-	CSHEAR	102105	1055	2105	2106	2156	2155			
542-	CSHEAR	102106	1055	2106	2107	2157	2156			
543-	CSHEAR	102107	1055	2107	2110	2160	2157			
544-	CSHEAR	102110	1060	2110	2113	2163	2160			
545-	CSHEAR	102113	1060	2113	2115	2165	2163			
546-	CSHEAR	102115	1060	2115	2117	2167	2165			
547-	CSHEAR	102117	1060	2117	2118	2168	2167			
548-	CSHEAR	102118	1060	2118	2119	2169	2168			
549-	CSHEAR	102119	1060	2119	2120	2170	2169			
550-	CSHEAR	102301	1251	2301	2302	2352	2351			

Airloads Research Study - Vertical Stabilizer

CARD COUNT	1	2	3	4	5	6	7	8	9	10
551-	CSHEAR	102302	1063	2302	2303	2353	2352			
552-	CSHEAR	102303	1065	2303	2305	2355	2353			
553-	CSHEAR	102305	1093	2305	2306	2356	2355			
554-	CSHEAR	102306	1113	2306	2107	2157	2356			
555-	CSHEAR	102307	1135	2107	2009	2059	2157			
556-	CSHEAR	102501	1193	2501	2502	2552	2551			
557-	CSHEAR	102502	1060	2502	2503	2553	2552			
558-	CSHEAR	102503	1095	2503	2505	2555	2553			
559-	CSHEAR	102505	1105	2505	2506	2556	2555			
560-	CSHEAR	102506	1125	2506	2507	2557	2556			
561-	CSHEAR	102507	1140	2507	2510	2560	2557			
562-	CSHEAR	102510	1130	2510	2513	2563	2560			
563-	CSHEAR	102513	1090	2513	2115	2165	2563			
564-	CSHEAR	102625	1072	2625	2626	2676	2675			
565-	CSHEAR	102701	1231	2701	2702	2752	2751			
566-	CSHEAR	102702	1271	2702	2703	2753	2752			
567-	CSHEAR	102703	1070	2703	2705	2755	2753			
568-	CSHEAR	102705	1070	2705	2706	2756	2755			
569-	CSHEAR	102706	1075	2706	2707	2757	2756			
570-	CSHEAR	102707	1073	2707	2710	2760	2757			
571-	CSHEAR	102710	1063	2710	2713	2763	2760			
572-	CSHEAR	102713	1072	2713	2715	2765	2763			
573-	CSHEAR	102725	1130	2725	2726	2776	2775			
574-	CSHEAR	102825	1137	2825	2826	2876	2875			
575-	CSHEAR	102901	1245	2901	2902	2952	2951			
576-	CSHEAR	102902	1245	2902	2903	2953	2952			
577-	CSHEAR	102903	1056	2903	2905	2955	2953			
578-	CSHEAR	102905	1056	2905	2906	2956	2955			
579-	CSHEAR	102906	1053	2906	2907	2957	2956			
580-	CSHEAR	102907	1048	2907	2910	2960	2957			
581-	CSHEAR	102910	1046	2910	2913	2963	2960			
582-	CSHEAR	102913	1054	2913	2915	2965	2963			
583-	CSHEAR	102925	1137	2925	2926	2976	2975			
584-	CSHEAR	103025	1114	3025	3026	3076	3075			
585-	CSHEAR	103125	1056	3125	3126	3176	3175			
586-	CSHEAR	103201	1241	3201	3202	3252	3251			
587-	CSHEAR	103202	1241	3202	3203	3253	3252			
588-	CSHEAR	103203	1050	3203	3206	3256	3253			
589-	CSHEAR	103206	1049	3206	3210	3260	3256			
590-	CSHEAR	103210	1043	3210	3213	3263	3260			
591-	CSHEAR	103213	1040	3213	3215	3265	3263			
592-	CSHEAR	103328	1072	3328	3329	3379	3378			
593-	CSHEAR	103428	1112	3428	3429	3479	3478			
594-	CSHEAR	103528	1100	3528	3529	3579	3578			
595-	CSHEAR	103601	1135	3601	3602	3652	3651			
596-	CSHEAR	103602	1100	3602	3603	3653	3652			
597-	CSHEAR	103603	1040	3603	3606	3656	3653			
598-	CSHEAR	103606	1040	3606	3610	3660	3656			
599-	CSHEAR	103610	1040	3610	3613	3663	3660			
600-	CSHEAR	103613	1045	3613	3615	3665	3663			

S O R T E D B U L K D A T A E C H O

CARD COUNT	1	2	3	4	5	6	7	8	9	10
601-	CSHEAR	103628	1100	3628	3629	3679	3678			
602-	CSHEAR	103728	1100	3728	3729	3779	3778			
603-	CSHEAR	103828	1097	3828	3829	3879	3878			
604-	CSHEAR	103928	1057	3928	3929	3979	3978			
605-	CSHEAR	104003	1101	4003	4006	4056	4053			
606-	CSHEAR	104006	1100	4006	4010	4060	4056			
607-	CSHEAR	104010	1100	4010	4013	4063	4060			
608-	CSHEAR	104013	1140	4013	4015	4065	4063			
609-	CSHEAR	104015	1100	4015	4031	4081	4065			
610-	CSHEAR	104206	1100	4206	4210	4260	4256			
611-	CSHEAR	104210	1130	4210	4213	4263	4260			
612-	CSHEAR	104213	1160	4213	4215	4265	4263			
613-	CSHEAR	104215	1080	4215	4231	4281	4265			
614-	CSHEAR	301121	1080	1121	1171	1271	1221			
615-	CSHEAR	301122	1060	1122	1172	1272	1222			
616-	CSHEAR	301123	1054	1123	1173	1273	1223			
617-	CSHEAR	301221	1080	1221	1271	1371	1321			
618-	CSHEAR	301222	1060	1222	1272	1372	1322			
619-	CSHEAR	301223	1055	1223	1273	1373	1323			
620-	CSHEAR	301321	1080	1321	1371	1471	1421			
621-	CSHEAR	301322	1060	1322	1372	1472	1422			
622-	CSHEAR	301323	1057	1323	1373	1473	1423			
623-	CSHEAR	301709	3150	1709	1759	1858	1808			
624-	CSHEAR	301712	3180	1712	1762	1862	1812			
625-	CSHEAR	301715	3150	1715	1765	1865	1815			
626-	CSHEAR	301808	3100	1808	1858	2057	2007			
627-	CSHEAR	301809	3100	1808	1858	2059	2009			
628-	CSHEAR	301812	3180	1812	1862	2062	2012			
629-	CSHEAR	301815	3190	1815	1865	2065	2015			
630-	CSHEAR	302002	1058	2003	2053	2152	2102			
631-	CSHEAR	302003	1090	2003	2053	2153	2103			
632-	CSHEAR	302005	2020	2005	2055	2155	2105			
633-	CSHEAR	302006	2031	2006	2056	2156	2106			
634-	CSHEAR	302007	2042	2007	2057	2157	2107			
635-	CSHEAR	302010	2035	2010	2060	2160	2110			
636-	CSHEAR	302013	2023	2013	2063	2163	2113			
637-	CSHEAR	302015	1200	2015	2065	2165	2115			
638-	CSHEAR	302101	1027	2101	2151	2351	2301			
639-	CSHEAR	302102	1057	2102	2152	2352	2302			
640-	CSHEAR	302103	1114	2103	2153	2353	2303			
641-	CSHEAR	302105	2020	2105	2155	2355	2305			
642-	CSHEAR	302106	2029	2106	2156	2356	2306			
643-	CSHEAR	302107	2042	2107	2157	2557	2507			
644-	CSHEAR	302110	2046	2110	2160	2560	2510			
645-	CSHEAR	302113	2023	2113	2163	2563	2513			
646-	CSHEAR	302115	1139	2115	2165	2765	2715			
647-	CSHEAR	302301	1027	2301	2351	2551	2501			
648-	CSHEAR	302302	1057	2302	2352	2552	2502			
649-	CSHEAR	302303	1162	2303	2353	2553	2503			
650-	CSHEAR	302305	2020	2305	2355	2555	2505			

Airloads Research Study - Vertical Stabilizer

SORTED BULK DATA ECHO

CARD COUNT	1	2	3	4	5	6	7	8	9	10
651-	CSHEAR	302306	2022	2306	2356	2556	2506			
652-	CSHEAR	302501	1027	2501	2551	2751	2701			
653-	CSHEAR	302502	1056	2502	2552	2752	2702			
654-	CSHEAR	302503	1190	2503	2553	2753	2703			
655-	CSHEAR	302505	2022	2505	2555	2755	2705			
656-	CSHEAR	302506	2026	2506	2556	2756	2706			
657-	CSHEAR	302507	2033	2507	2557	2757	2707			
658-	CSHEAR	302510	2034	2510	2560	2760	2710			
659-	CSHEAR	302513	2034	2513	2563	2763	2713			
660-	CSHEAR	302625	1182	2625	2675	2775	2725			
661-	CSHEAR	302626	1092	2626	2676	2776	2726			
662-	CSHEAR	302701	1055	2701	2751	2951	2901			
663-	CSHEAR	302702	1010	2702	2752	2952	2902			
664-	CSHEAR	302703	1205	2703	2753	2953	2903			
665-	CSHEAR	302705	2020	2705	2755	2955	2905			
666-	CSHEAR	302706	2025	2706	2756	2956	2906			
667-	CSHEAR	302707	2026	2707	2757	2957	2907			
668-	CSHEAR	302710	2026	2710	2760	2960	2910			
669-	CSHEAR	302713	2026	2713	2763	2963	2913			
670-	CSHEAR	302714	1020	2713	2763	2865	2815			
671-	CSHEAR	302715	1207	2715	2765	2865	2815			
672-	CSHEAR	302725	1180	2725	2775	2875	2825			
673-	CSHEAR	302726	1089	2726	2776	2876	2826			
674-	CSHEAR	302814	1020	2815	2865	2963	2913			
675-	CSHEAR	302815	1207	2815	2865	2965	2915			
676-	CSHEAR	302825	1169	2825	2875	2975	2925			
677-	CSHEAR	302826	1083	2826	2876	2976	2926			
678-	CSHEAR	302901	1052	2901	2951	3251	3201			
679-	CSHEAR	302902	1010	2902	2952	3252	3202			
680-	CSHEAR	302903	1200	2903	2953	3253	3203			
681-	CSHEAR	302904	1010	2905	2955	3253	3203			
682-	CSHEAR	302905	1010	2905	2955	3256	3206			
683-	CSHEAR	302906	2010	2906	2956	3256	3206			
684-	CSHEAR	302907	1010	2907	2957	3256	3206			
685-	CSHEAR	302908	1010	2907	2957	3260	3210			
686-	CSHEAR	302910	2010	2910	2960	3260	3210			
687-	CSHEAR	302913	2010	2913	2963	3263	3213			
688-	CSHEAR	302914	1020	2913	2963	3065	3015			
689-	CSHEAR	302915	1200	2915	2965	3065	3015			
690-	CSHEAR	302925	1165	2925	2975	3075	3025			
691-	CSHEAR	302926	1078	2926	2976	3076	3026			
692-	CSHEAR	303014	1020	3015	3065	3263	3213			
693-	CSHEAR	303015	1200	3015	3065	3265	3215			
694-	CSHEAR	303025	1161	3025	3075	3175	3125			
695-	CSHEAR	303026	1073	3026	3076	3176	3126			
696-	CSHEAR	303201	1042	3201	3251	3651	3601			
697-	CSHEAR	303202	1010	3202	3252	3652	3602			
698-	CSHEAR	303203	1205	3203	3253	3653	3603			
699-	CSHEAR	303206	2020	3206	3256	3656	3606			
700-	CSHEAR	303210	2015	3210	3260	3660	3610			

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SORTED BULK DATA ECHO

CARD COUNT	1	2	3	4	5	6	7	8	9	10
701-	CSHEAR	303213	2015	3213	3263	3663	3613			
702-	CSHEAR	303214	1020	3213	3263	3465	3415			
703-	CSHEAR	303215	1200	3215	3265	3465	3415			
704-	CSHEAR	303328	1128	3328	3378	3478	3428			
705-	CSHEAR	303329	1069	3329	3379	3479	3429			
706-	CSHEAR	303415	1200	3415	3465	3565	3515			
707-	CSHEAR	303428	1124	3428	3478	3578	3528			
708-	CSHEAR	303429	1064	3429	3479	3579	3529			
709-	CSHEAR	303514	1020	3515	3565	3663	3613			
710-	CSHEAR	303515	1200	3515	3565	3665	3615			
711-	CSHEAR	303528	1120	3528	3578	3678	3628			
712-	CSHEAR	303529	1060	3529	3579	3679	3629			
713-	CSHEAR	303601	1060	3601	3651	4151	4101			
714-	CSHEAR	303602	1040	3602	3652	4151	4101			
715-	CSHEAR	303603	1205	3603	3653	4053	4003			
716-	CSHEAR	303604	1082	3602	3652	4053	4003			
717-	CSHEAR	303606	2020	3606	3656	4056	4006			
718-	CSHEAR	303610	2015	3610	3660	4060	4010			
719-	CSHEAR	303613	2015	3613	3663	4063	4013			
720-	CSHEAR	303614	1020	3613	3663	3765	3715			
721-	CSHEAR	303615	1200	3615	3665	3765	3715			
722-	CSHEAR	303628	1118	3628	3678	3778	3728			
723-	CSHEAR	303629	1056	3629	3679	3779	3729			
724-	CSHEAR	303715	1200	3715	3765	3865	3815			
725-	CSHEAR	303728	1114	3728	3778	3878	3828			
726-	CSHEAR	303729	1052	3729	3779	3879	3829			
727-	CSHEAR	303814	1040	3815	3865	4063	4013			
728-	CSHEAR	303815	1010	3815	3865	4065	4015			
729-	CSHEAR	303828	1111	3828	3878	3978	3928			
730-	CSHEAR	303829	1048	3829	3879	3979	3929			
731-	CSHEAR	304003	1020	4003	4053	4151	4101			
732-	CSHEAR	304006	1020	4006	4056	4256	4206			
733-	CSHEAR	304010	1020	4010	4060	4260	4210			
734-	CSHEAR	304013	1040	4013	4063	4263	4213			
735-	CSHEAR	304015	1080	4015	4065	4265	4215			
736-	CSHEAR	304031	1050	4031	4081	4281	4231			
737-	CSHEAR	304101	1100	4101	4151	4256	4206			
738-	CTRMEM	111123	1089	1123	1124	1173	1173			
739-	CTRMEM	111223	1057	1223	1224	1273	1273			
740-	CTRMEM	111323	1053	1323	1324	1373	1373			
741-	CTRMEM	111423	1036	1423	1424	1473	1473			
742-	CTRMEM	112626	1067	2626	2627	2676	2676			
743-	CTRMEM	112726	1108	2726	2727	2776	2776			
744-	CTRMEM	112826	1107	2826	2827	2876	2876			
745-	CTRMEM	112926	1107	2926	2927	2976	2976			
746-	CTRMEM	113026	1089	3026	3027	3076	3076			
747-	CTRMEM	113126	1046	3126	3127	3176	3176			
748-	CTRMEM	113329	1058	3329	3330	3379	3379			
749-	CTRMEM	113429	1087	3429	3430	3479	3479			
750-	CTRMEM	113529	1078	3529	3530	3579	3579			

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SORTED BULK DATA ECHO

CARD COUNT	.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
801-	CTRMEM	212913	1205	2913	3015	3213															
802-	CTRMEM	212915	1210	2913	2915	3015															
803-	CTRMEM	213015	1208	3015	3215	3213															
804-	CTRMEM	213213	1208	3213	3215	3415															
805-	CTRMEM	213515	1205	3515	3615	3613															
806-	CTRMEM	213601	1024	3601	3602	4101															
807-	CTRMEM	213602	1024	3602	4003	4101															
808-	CTRMEM	213603	1024	3602	3603	4003															
809-	CTRMEM	213613	1204	3613	3615	3715															
810-	CTRMEM	213615	1200	3815	4015	4013															
811-	FORCE	5	1121		0.001	0.0						341.810	0.0								
812-	FORCE	5	1221		0.001	0.0						471.572	0.0								
813-	FORCE	5	1222		0.001	0.0						186.618	0.0								
814-	FORCE	6	1122		0.001	0.0						77.256	0.0								
815-	FORCE	6	1222		0.001	0.0						739.673	0.0								
816-	FORCE	6	1223		0.001	0.0						183.071	0.0								
817-	FORCE	7	1223		0.001	0.0						490.032	0.0								
818-	FORCE	7	1224		0.001	0.0						346.368	0.0								
819-	FORCE	7	1323		0.001	0.0						163.601	0.0								
820-	FORCE	12	1321		0.001	0.0						431.368	0.0								
821-	FORCE	12	1322		0.001	0.0						563.879	0.0								
822-	FORCE	12	1422		0.001	0.0						4.753	0.0								
823-	FORCE	13	1322		0.001	0.0						280.750	0.0								
824-	FORCE	13	1323		0.001	0.0						429.291	0.0								
825-	FORCE	13	1422		0.001	0.0						289.960	0.0								
826-	FORCE	14	1323		0.001	0.0						382.838	0.0								
827-	FORCE	14	1423		0.001	0.0						186.509	0.0								
828-	FORCE	14	1424		0.001	0.0						430.653	0.0								
829-	FORCE	18	1713		0.001	0.0						283.312	0.0								
830-	FORCE	18	1715		0.001	0.0						568.496	0.0								
831-	FORCE	18	1813		0.001	0.0						148.192	0.0								
832-	FORCE	19	1717		0.001	0.0						818.211	0.0								
833-	FORCE	19	1718		0.001	0.0						79.289	0.0								
834-	FORCE	19	2117		0.001	0.0						102.499	0.0								
835-	FORCE	20	1718		0.001	0.0						716.035	0.0								
836-	FORCE	20	1719		0.001	0.0						177.009	0.0								
837-	FORCE	20	2118		0.001	0.0						106.956	0.0								
838-	FORCE	21	1719		0.001	0.0						641.598	0.0								
839-	FORCE	21	1720		0.001	0.0						235.402	0.0								
840-	FORCE	21	2119		0.001	0.0						122.999	0.0								
841-	FORCE	22	2101		0.001	0.0						477.668	0.0								
842-	FORCE	22	2102		0.001	0.0						234.329	0.0								
843-	FORCE	22	2302		0.001	0.0						288.003	0.0								
844-	FORCE	23	2103		0.001	0.0						139.239	0.0								
845-	FORCE	23	2303		0.001	0.0						836.624	0.0								
846-	FORCE	23	2305		0.001	0.0						24.137	0.0								
847-	FORCE	24	2107		0.001	0.0						192.688	0.0								
848-	FORCE	24	2506		0.001	0.0						131.641	0.0								
849-	FORCE	24	2507		0.001	0.0						675.671	0.0								
850-	FORCE	25	2513		0.001	0.0						300.741	0.0								

Airloads Research Study - Vertical Stabilizer

Airloads Research Study - Vertical Stabilizer

CARD		1	2	3	4	5	6	7	8	9	10
COUNT											
851-	FORCE	25	2713	0.001	0.0	269.658	0.0				
852-	FORCE	25	2715	0.001	0.0	429.601	0.0				
853-	FORCE	26	2725	0.001	0.0	638.128	0.0				
854-	FORCE	26	2726	0.001	0.0	99.203	0.0				
855-	FORCE	26	2825	0.001	0.0	262.668	0.0				
856-	FORCE	27	2725	0.001	0.0	347.370	0.0				
857-	FORCE	27	2726	0.001	0.0	389.962	0.0				
858-	FORCE	27	2826	0.001	0.0	262.668	0.0				
859-	FORCE	28	2726	0.001	0.0	277.727	0.0				
860-	FORCE	28	2727	0.001	0.0	459.604	0.0				
861-	FORCE	28	2826	0.001	0.0	262.668	0.0				
862-	FORCE	29	2302	0.001	0.0	180.877	0.0				
863-	FORCE	29	2501	0.001	0.0	488.922	0.0				
864-	FORCE	29	2502	0.001	0.0	330.201	0.0				
865-	FORCE	30	2503	0.001	0.0	451.789	0.0				
866-	FORCE	30	2703	0.001	0.0	509.676	0.0				
867-	FORCE	30	2705	0.001	0.0	38.535	0.0				
868-	FORCE	31	2706	0.001	0.0	111.054	0.0				
869-	FORCE	31	2707	0.001	0.0	585.498	0.0				
870-	FORCE	31	2907	0.001	0.0	303.448	0.0				
871-	FORCE	32	2815	0.001	0.0	152.217	0.0				
872-	FORCE	32	2913	0.001	0.0	577.511	0.0				
873-	FORCE	32	2915	0.001	0.0	270.272	0.0				
874-	FORCE	33	2925	0.001	0.0	408.294	0.0				
875-	FORCE	33	2926	0.001	0.0	104.768	0.0				
876-	FORCE	33	3025	0.001	0.0	486.938	0.0				
877-	FORCE	34	2926	0.001	0.0	513.062	0.0				
878-	FORCE	34	3025	0.001	0.0	358.438	0.0				
879-	FORCE	34	3026	0.001	0.0	128.500	0.0				
880-	FORCE	35	2926	0.001	0.0	54.271	0.0				
881-	FORCE	35	2927	0.001	0.0	458.791	0.0				
882-	FORCE	35	3026	0.001	0.0	486.938	0.0				
883-	FORCE	36	2701	0.001	0.0	439.615	0.0				
884-	FORCE	36	2702	0.001	0.0	64.409	0.0				
885-	FORCE	36	2902	0.001	0.0	495.976	0.0				
886-	FORCE	37	2703	0.001	0.0	9.283	0.0				
887-	FORCE	37	2903	0.001	0.0	934.340	0.0				
888-	FORCE	37	2905	0.001	0.0	56.377	0.0				
889-	FORCE	38	2907	0.001	0.0	454.329	0.0				
890-	FORCE	38	3206	0.001	0.0	330.147	0.0				
891-	FORCE	38	3210	0.001	0.0	215.524	0.0				
892-	FORCE	39	3213	0.001	0.0	550.755	0.0				
893-	FORCE	39	3215	0.001	0.0	228.638	0.0				
894-	FORCE	39	3415	0.001	0.0	220.608	0.0				
895-	FORCE	40	3428	0.001	0.0	757.514	0.0				
896-	FORCE	40	3429	0.001	0.0	125.089	0.0				
897-	FORCE	40	3528	0.001	0.0	117.397	0.0				
898-	FORCE	41	3428	0.001	0.0	327.440	0.0				
899-	FORCE	41	3429	0.001	0.0	555.163	0.0				
900-	FORCE	41	3529	0.001	0.0	117.397	0.0				

S O R T E D B U L K D A T A E C H O

CARD COUNT	1	2	3	4	5	6	7	8	9	10
901-	FORCE	42	3429		0.001	0.0	399.485	0.0		
902-	FORCE	42	3430		0.001	0.0	483.119	0.0		
903-	FORCE	42	3529		0.001	0.0	117.397	0.0		
904-	FORCE	43	2902		0.001	0.0	64.631	0.0		
905-	FORCE	43	3201		0.001	0.0	450.108	0.0		
906-	FORCE	43	3202		0.001	0.0	485.261	0.0		
907-	FORCE	44	3203		0.001	0.0	630.668	0.0		
908-	FORCE	44	3206		0.001	0.0	38.225	0.0		
909-	FORCE	44	3603		0.001	0.0	331.107	0.0		
910-	FORCE	45	3206		0.001	0.0	215.987	0.0		
911-	FORCE	45	3606		0.001	0.0	312.486	0.0		
912-	FORCE	45	3610		0.001	0.0	471.528	0.0		
913-	FORCE	46	3613		0.001	0.0	480.579	0.0		
914-	FORCE	46	3715		0.001	0.0	480.905	0.0		
915-	FORCE	46	4013		0.001	0.0	38.515	0.0		
916-	FORCE	47	3728		0.001	0.0	717.249	0.0		
917-	FORCE	47	3729		0.001	0.0	139.149	0.0		
918-	FORCE	47	3828		0.001	0.0	143.602	0.0		
919-	FORCE	48	3728		0.001	0.0	309.401	0.0		
920-	FORCE	48	3729		0.001	0.0	555.375	0.0		
921-	FORCE	48	3829		0.001	0.0	135.224	0.0		
922-	FORCE	49	3729		0.001	0.0	366.220	0.0		
923-	FORCE	49	3730		0.001	0.0	498.556	0.0		
924-	FORCE	49	3829		0.001	0.0	135.224	0.0		
925-	FORCE	50	4003		0.001	0.0	139.919	0.0		
926-	FORCE	50	4101		0.001	0.0	755.364	0.0		
927-	FORCE	50	4206		0.001	0.0	104.717	0.0		
928-	FORCE	51	4003		0.001	0.0	288.327	0.0		
929-	FORCE	51	4006		0.001	0.0	209.270	0.0		
930-	FORCE	51	4206		0.001	0.0	502.403	0.0		
931-	FORCE	52	4010		0.001	0.0	542.485	0.0		
932-	FORCE	52	4013		0.001	0.0	30.700	0.0		
933-	FORCE	52	4210		0.001	0.0	426.814	0.0		
934-	FORCE	53	4015		0.001	0.0	526.188	0.0		
935-	FORCE	53	4031		0.001	0.0	46.998	0.0		
936-	FORCE	53	4215		0.001	0.0	426.814	0.0		
937-	FORCE	54	4015		0.001	0.0	219.362	0.0		
938-	FORCE	54	4031		0.001	0.0	353.824	0.0		
939-	FORCE	54	4215		0.001	0.0	426.814	0.0		
940-	FORCE	55	4015		0.001	0.0	501.683	0.0		
941-	FORCE	55	4031		0.001	0.0	71.501	0.0		
942-	FORCE	55	4231		0.001	0.0	426.816	0.0		
943-	FORCE	56	4015		0.001	0.0	219.945	0.0		
944-	FORCE	56	4031		0.001	0.0	353.238	0.0		
945-	FORCE	56	4231		0.001	0.0	426.816	0.0		
946-	GRAV	1		1.0		1.0				
947-	GRID	1109		178.871	-5.75	5.096		123456		
948-	GRID	1121		195.892	-7.984	1.675		456		
949-	GRID	1122		213.144	-6.155	-4.090		456		
950-	GRID	1123		235.818	-3.380	-7.170		456		

Airloads Research Study - Vertical Stabilizer

CARD COUNT	1	2	3	4	5	6	7	8	9	10
951-	GRID	1124	261.591	0.000	-10.671	456				
952-	GRID	1171	195.892	0.000	1.675	456				
953-	GRID	1172	213.144	0.000	-4.090	456				
954-	GRID	1173	235.818	0.000	-7.170	456				
955-	GRID	1209	181.457	-5.75	17.964	123456				
956-	GRID	1221	198.479	-7.222	14.543	456				
957-	GRID	1222	216.244	-5.681	11.326	456				
958-	GRID	1223	238.888	-3.198	8.109	456				
959-	GRID	1224	266.451	0.000	4.193	456				
960-	GRID	1271	198.479	0.000	14.543	456				
961-	GRID	1272	216.244	0.000	11.326	456				
962-	GRID	1273	238.888	0.000	8.109	456				
963-	GRID	1321	201.574	-6.133	29.947	456				
964-	GRID	1322	219.563	-4.797	27.843	456				
965-	GRID	1323	242.342	-2.837	25.180	456				
966-	GRID	1324	272.172	0.000	21.693	456				
967-	GRID	1371	201.574	0.000	29.947	456				
968-	GRID	1372	219.56	0.000	27.843	456				
969-	GRID	1373	242.342	0.000	25.180	456				
970-	GRID	1421	202.491	5.771	34.510	456				
971-	GRID	1422	221.005	-4.447	35.020	456				
972-	GRID	1423	243.882	-2.673	32.965	456				
973-	GRID	1424	274.945	0.000	30.175	456				
974-	GRID	1471	202.491	0.000	34.510	456				
975-	GRID	1472	221.005	0.000	35.020	456				
976-	GRID	1473	243.882	0.000	32.965	456				
977-	GRID	1609	188.096	-4.720	39.000	123456				
978-	GRID	1616	212.000	-1.742	39.250	456				
979-	GRID	1617	224.000	-1.690	39.750	456				
980-	GRID	1618	238.000	-1.229	40.250	456				
981-	GRID	1619	257.66	-7.191	41.193	456				
982-	GRID	1620	293.174	-5.508	45.000	456				
983-	GRID	1666	212.000	0.000	39.250	456				
984-	GRID	1667	224.000	0.000	39.750	456				
985-	GRID	1668	238.000	0.000	40.250	456				
986-	GRID	1669	257.66	0.000	41.193	456				
987-	GRID	1670	293.174	0.000	45.000	456				
988-	GRID	1709	175.346	-4.720	51.000	2456				
989-	GRID	1710	181.500	-4.720	51.000	2456				
990-	GRID	1712	188.096	-4.720	51.000	123456				
991-	GRID	1713	195.510	-4.720	51.000	2456				
992-	GRID	1715	200.566	-4.720	51.000	2456				
993-	GRID	1716	212.000	-15.398	51.000	456				
994-	GRID	1717	224.000	-15.015	51.000	456				
995-	GRID	1718	238.010	-14.328	51.000	456				
996-	GRID	1719	257.66	-11.342	51.000	456				
997-	GRID	1720	293.174	-8.135	51.000	456				
998-	GRID	1759	175.346	0.000	51.000	456				
999-	GRID	1762	188.096	0.000	51.000	456				
1000-	GRID	1765	200.566	0.000	51.000	456				

Airloads Research Study - Vertical Stabilizer

SORTED BULK DATA ECHO

CARD COUNT	1	2	3	4	5	6	7	8	9	10
1001-	GRID	1808		171.746	-4.8	59.305		456		
1002-	GRID	1809		174.096	-4.8	59.305		456		
1003-	GRID	1810		180.5	-4.8	59.305		456		
1004-	GRID	1811		185.	-4.8	59.305		456		
1005-	GRID	1812		188.096	-4.800	59.305		456		
1006-	GRID	1813		195.500	-4.8	59.305		456		
1007-	GRID	1814		201.	-4.8	59.305		456		
1008-	GRID	1815		204.166	-4.8	59.305		456		
1009-	GRID	1858		171.746	0.0	59.305		456		
1010-	GRID	1859		174.096	0.0	59.305		456		
1011-	GRID	1860		180.5	0.0	59.305		456		
1012-	GRID	1861		183.429	0.0	59.305		456		
1013-	GRID	1862		188.096	0.0	59.305		456		
1014-	GRID	1863		195.500	0.0	59.305		456		
1015-	GRID	1864		201.000	0.0	59.305		456		
1016-	GRID	1865		204.166	0.000	59.305		456		
1017-	GRID	1904		119.096	0.0	59.500		2456		
1018-	GRID	2003		117.307	-4.258	61.530		456		
1019-	GRID	2005		133.141	-4.788	61.530		456		
1020-	GRID	2006		148.977	-5.071	61.530		456		
1021-	GRID	2007		164.811	-5.076	61.530		456		
1022-	GRID	2009		172.729	-4.800	61.530		456		
1023-	GRID	2010		180.647	-4.800	61.530		456		
1024-	GRID	2012		188.095	-4.800	61.530		456		
1025-	GRID	2013		196.481	-4.800	61.530		456		
1026-	GRID	2015		205.130	-4.8	61.53		456		
1027-	GRID	2053		117.307	0.0	61.530		456		
1028-	GRID	2055		133.141	0.0	61.530		456		
1029-	GRID	2056		148.977	0.0	61.530		456		
1030-	GRID	2057		164.811	0.0	61.530		456		
1031-	GRID	2059		172.729	0.0	61.530		456		
1032-	GRID	2060		180.647	0.0	61.530		456		
1033-	GRID	2062		188.095	0.0	61.530		456		
1034-	GRID	2063		196.481	0.0	61.530		456		
1035-	GRID	2065		205.130	0.000	61.530		456		
1036-	GRID	2101		96.793	-0.500	79.056		456		
1037-	GRID	2102		105.280	-3.042	69.426		456		
1038-	GRID	2103		120.664	-4.203	64.743		456		
1039-	GRID	2105		136.281	-4.721	64.743		456		
1040-	GRID	2106		151.982	-4.991	64.834		456		
1041-	GRID	2107		167.673	-4.993	64.930		456		
1042-	GRID	2110		183.197	-4.921	64.824		456		
1043-	GRID	2113		198.808	-4.884	64.824		456		
1044-	GRID	2115		208.500	-4.853	63.750		456		
1045-	GRID	2117		224.000	-7.068	63.000		456		
1046-	GRID	2118		238.000	-9.634	62.500		456		
1047-	GRID	2119		257.66	-6.979	61.000		456		
1048-	GRID	2120		293.174	-5.508	57.000		456		
1049-	GRID	2151		96.793	0.0	79.056		456		
1050-	GRID	2152		105.280	0.0	69.426		456		

Airloads Research Study - Vertical Stabilizer

Airloads Research Study - Vertical Stabilizer

SORTED BULK DATA ECHO											
CARD		1	2	3	4	5	6	7	8	9	10
COUNT											
1051-	GRID	2153			126.664	0.000	64.743		456		
1052-	GRID	2155			136.281	0.0	64.743		456		
1053-	GRID	2156			151.982	0.0	64.834		456		
1054-	GRID	2157			167.673	0.0	64.930		456		
1055-	GRID	2160			183.197	0.0	64.824		456		
1056-	GRID	2163			198.808	0.000	64.824		456		
1057-	GRID	2165			208.500	0.0	63.750		456		
1058-	GRID	2167			224.000	0.0	63.000		456		
1059-	GRID	2168			238.000	0.0	62.500		456		
1060-	GRID	2169			257.66	0.0	61.000		456		
1061-	GRID	2170			293.174	0.0	57.000		456		
1062-	GRID	2204			129.24	-4.2	68.47		456		
1063-	GRID	2301			123.487	-0.500	100.859		456		
1064-	GRID	2302			131.474	-2.745	92.513		456		
1065-	GRID	2303			140.178	-3.882	83.419		456		
1066-	GRID	2305			148.839	-4.445	77.595		456		
1067-	GRID	2306			157.990	-4.834	71.441		456		
1068-	GRID	2351			123.487	0.0	100.859		456		
1069-	GRID	2352			131.474	0.0	92.513		456		
1070-	GRID	2353			140.178	0.0	83.419		456		
1071-	GRID	2355			148.839	0.0	77.595		456		
1072-	GRID	2356			157.990	0.0	71.441		456		
1073-	GRID	2408			183.096	-4.8	69.59		456		
1074-	GRID	2412			198.226	-4.8	69.56		456		
1075-	GRID	2501			142.633	-0.500	116.496		456		
1076-	GRID	2502			149.978	-2.523	108.821		456		
1077-	GRID	2503			157.982	-3.559	100.458		456		
1078-	GRID	2505			165.947	-4.062	95.102		456		
1079-	GRID	2506			174.362	-4.430	89.443		456		
1080-	GRID	2507			183.267	-4.630	83.456		456		
1081-	GRID	2510			192.705	-4.718	77.109		456		
1082-	GRID	2513			202.726	-4.623	70.371		456		
1083-	GRID	2551			142.633	0.0	116.496		456		
1084-	GRID	2552			149.978	0.0	108.821		456		
1085-	GRID	2553			157.982	0.0	100.458		456		
1086-	GRID	2555			165.947	0.0	95.102		456		
1087-	GRID	2556			174.362	0.0	89.443		456		
1088-	GRID	2557			183.267	0.0	83.456		456		
1089-	GRID	2560			192.705	0.0	77.109		456		
1090-	GRID	2563			202.726	0.0	70.371		456		
1091-	GRID	2625			230.352	-3.355	66.350		456		
1092-	GRID	2626			257.801	-1.678	64.022		456		
1093-	GRID	2627			285.249	0.000	61.690		456		
1094-	GRID	2675			230.352	0.0	66.350		456		
1095-	GRID	2676			257.801	0.000	64.022		456		
1096-	GRID	2701			161.813	-0.500	132.161		456		
1097-	GRID	2702			168.515	-2.308	125.159		456		
1098-	GRID	2703			175.818	-3.236	117.528		456		
1099-	GRID	2705			183.085	-3.689	112.641		456		
1100-	GRID	2706			190.764	-4.038	107.478		456		

Airloads Research Study - Vertical Stabilizer

CARD COUNT	1	2	3	4	5	6	7	8	9	10
1101-	GRID	2707		198.888	-4.236	102.015		456		
1102-	GRID	2710		207.500	-4.323	96.224		456		
1103-	GRID	2713		216.643	-4.243	90.076		456		
1104-	GRID	2715		228.683	-3.622	81.980		456		
1105-	GRID	2725		236.605	-3.183	77.257		456		
1106-	GRID	2726		263.471	-1.592	77.257		456		
1107-	GRID	2727		290.337	0.000	77.257		456		
1108-	GRID	2751		161.813	0.0	132.161		456		
1109-	GRID	2752		168.515	0.0	125.159		456		
1110-	GRID	2753		175.818	0.0	117.528		456		
1111-	GRID	2755		183.085	0.0	112.641		456		
1112-	GRID	2756		190.764	0.0	107.478		456		
1113-	GRID	2757		198.888	0.0	102.015		456		
1114-	GRID	2760		207.500	0.0	96.224		456		
1115-	GRID	2763		216.643	0.0	90.076		456		
1116-	GRID	2765		228.683	0.0	81.980		456		
1117-	GRID	2775		236.605	0.0	77.257		456		
1118-	GRID	2776		263.471	0.000	77.257		456		
1119-	GRID	2815		236.617	-3.395	94.713		456		
1120-	GRID	2825		244.066	-2.988	90.272		456		
1121-	GRID	2826		269.339	-1.494	90.272		456		
1122-	GRID	2827		294.592	0.000	90.272		456		
1123-	GRID	2865		236.617	0.0	94.713		456		
1124-	GRID	2875		244.066	0.0	90.272		456		
1125-	GRID	2876		269.339	0.000	90.272		456		
1126-	GRID	2901		185.662	-0.500	151.640		456		
1127-	GRID	2902		191.563	-2.035	145.472		456		
1128-	GRID	2903		197.995	-2.842	138.753		456		
1129-	GRID	2905		204.395	-3.236	134.449		456		
1130-	GRID	2906		211.157	-3.545	129.902		456		
1131-	GRID	2907		218.312	-3.720	125.090		456		
1132-	GRID	2910		225.896	-3.786	119.991		456		
1133-	GRID	2913		233.948	-3.701	114.576		456		
1134-	GRID	2915		244.551	-3.165	107.446		456		
1135-	GRID	2925		251.527	-2.793	103.288		456		
1136-	GRID	2926		275.197	-1.397	103.288		456		
1137-	GRID	2927		298.847	0.000	103.288		456		
1138-	GRID	2951		185.662	0.0	151.640		456		
1139-	GRID	2952		191.563	0.0	145.472		456		
1140-	GRID	2953		197.995	0.0	138.753		456		
1141-	GRID	2955		204.395	0.0	134.449		456		
1142-	GRID	2956		211.157	0.0	129.902		456		
1143-	GRID	2957		218.312	0.0	125.090		456		
1144-	GRID	2960		225.896	0.0	119.991		456		
1145-	GRID	2963		233.948	0.0	114.576		456		
1146-	GRID	2965		244.551	0.0	107.446		456		
1147-	GRID	2975		251.527	0.0	103.288		456		
1148-	GRID	2976		275.197	0.000	103.288		456		
1149-	GRID	3015		252.485	-2.936	120.180		456		
1150-	GRID	3025		258.988	-2.599	116.303		456		

Airloads Research Study - Vertical Stabilizer

SORTED BULK DATA ECHO										
CARD	1	2	3	4	5	6	7	8	9	10
COUNT										
1151-	GRID	3026		281.055	-1.300	116.303		456		
1152-	GRID	3027		303.102	0.000	116.303		456		
1153-	GRID	3065		252.485	0.0	120.180		456		
1154-	GRID	3075		258.988	0.0	116.303		456		
1155-	GRID	3076		281.055	0.000	116.303		456		
1156-	GRID	3125		263.974	-2.477	125.030		456		
1157-	GRID	3126		284.965	-1.204	125.030		456		
1158-	GRID	3127		305.945	0.000	125.030		456		
1159-	GRID	3175		263.974	0.0	125.030		456		
1160-	GRID	3176		284.965	0.000	125.000		456		
1161-	GRID	3201		209.906	-0.500	171.442		456		
1162-	GRID	3202		214.995	-1.753	166.125		456		
1163-	GRID	3203		220.541	-2.443	160.331		456		
1164-	GRID	3206		231.890	-3.042	152.699		456		
1165-	GRID	3210		244.598	-3.237	144.153		456		
1166-	GRID	3213		251.541	-3.144	139.485		456		
1167-	GRID	3215		260.683	-2.698	133.337		456		
1168-	GRID	3251		209.906	0.0	171.442		456		
1169-	GRID	3252		214.995	0.0	166.125		456		
1170-	GRID	3253		220.541	0.0	160.331		456		
1171-	GRID	3256		231.890	0.0	152.699		456		
1172-	GRID	3260		244.598	0.0	144.153		456		
1173-	GRID	3263		251.541	0.0	139.485		456		
1174-	GRID	3265		260.683	0.0	133.337		456		
1175-	GRID	3328		264.108	-2.478	125.500		456		
1176-	GRID	3329		285.113	-1.239	125.500		456		
1177-	GRID	3330		306.109	0.000	125.500		456		
1178-	GRID	3378		264.108	0.0	125.500		456		
1179-	GRID	3379		285.113	0.000	125.500		456		
1180-	GRID	3415		265.179	-2.568	140.553		456		
1181-	GRID	3428		270.820	-2.299	137.190		456		
1182-	GRID	3429		290.380	-1.150	137.190		456		
1183-	GRID	3430		309.931	0.000	137.190		456		
1184-	GRID	3465		265.179	0.0	140.553		456		
1185-	GRID	3478		270.820	0.0	137.190		456		
1186-	GRID	3479		290.380	0.000	137.190		456		
1187-	GRID	3515		270.997	-2.400	149.891		456		
1188-	GRID	3528		276.298	-2.156	146.731		456		
1189-	GRID	3529		294.679	-1.078	146.731		456		
1190-	GRID	3530		313.050	0.000	146.731		456		
1191-	GRID	3565		270.997	0.0	149.891		456		
1192-	GRID	3578		276.298	0.0	146.731		456		
1193-	GRID	3579		294.679	0.000	146.731		456		
1194-	GRID	3601		231.432	-0.5	189.075		456		
1195-	GRID	3602		238.419	-1.633	184.762		456		
1196-	GRID	3603		243.087	-2.024	181.909		456		
1197-	GRID	3606		252.623	-2.540	175.497		456		
1198-	GRID	3610		263.301	-2.688	168.316		456		
1199-	GRID	3613		269.134	-2.586	164.394		456		
1200-	GRID	3615		276.815	-2.231	159.229		456		

S O R T E D B U L K D A T A E C H O

CAFD COUNT	1	2	3	4	5	6	7	8	9	10
1201-	GRID	3628		281.776	-2.012	156.271		456		
1202-	GRID	3629		298.977	-1.006	156.271		456		
1203-	GRID	3630		316.169	0.000	156.271		456		
1204-	GRID	3651		231.432	0.0	189.075		456		
1205-	GRID	3652		238.419	0.0	184.762		456		
1206-	GRID	3653		243.087	0.0	181.909		456		
1207-	GRID	3656		252.623	0.0	175.497		456		
1208-	GRID	3660		263.301	0.0	168.316		456		
1209-	GRID	3663		269.134	0.0	164.394		456		
1210-	GRID	3665		276.815	0.0	159.229		456		
1211-	GRID	3678		281.776	0.0	156.271		456		
1212-	GRID	3679		298.977	0.000	156.271		456		
1213-	GRID	3715		282.633	-2.063	168.566		456		
1214-	GRID	3728		287.254	-1.869	165.812		456		
1215-	GRID	3729		303.276	-0.936	165.812		456		
1216-	GRID	3730		319.288	0.000	165.812		456		
1217-	GRID	3765		282.633	0.0	168.566		456		
1218-	GRID	3778		287.254	0.0	165.812		456		
1219-	GRID	3779		303.276	0.000	165.812		456		
1220-	GRID	3815		288.452	-1.894	177.904		456		
1221-	GRID	3828		292.732	-1.726	175.353		456		
1222-	GRID	3829		307.574	-0.863	175.353		456		
1223-	GRID	3830		322.407	0.000	175.353		456		
1224-	GRID	3865		288.452	0.0	177.904		456		
1225-	GRID	3878		292.732	0.0	175.353		456		
1226-	GRID	3879		307.574	0.000	175.353		456		
1227-	GRID	3928		297.848	-1.595	184.262		456		
1228-	GRID	3929		311.338	-0.798	184.262		456		
1229-	GRID	3930		324.819	0.000	182.730		456		
1230-	GRID	3978		297.848	0.0	184.262		456		
1231-	GRID	3979		311.338	0.000	184.262		456		
1232-	GRID	4003		246.069	-1.988	184.762		456		
1233-	GRID	4006		261.049	-2.341	184.762		456		
1234-	GRID	4010		276.030	-2.320	184.762		456		
1235-	GRID	4013		283.520	-2.137	184.762		456		
1236-	GRID	4015		292.725	-1.794	184.762		456		
1237-	GRID	4031		325.482	-2.909	184.762		456		
1238-	GRID	4053		246.069	0.0	184.762		456		
1239-	GRID	4056		261.049	0.0	184.762		456		
1240-	GRID	4060		276.030	0.0	184.762		456		
1241-	GRID	4063		283.520	0.0	184.762		456		
1242-	GRID	4065		292.725	0.0	184.762		456		
1243-	GRID	4081		325.482	0.0	184.762		456		
1244-	GRID	4101		240.075	-0.5	194.6		456		
1245-	GRID	4151		240.075	0.0	194.630		456		
1246-	GRID	4206		261.049	-0.5	203.45		456		
1247-	GRID	4210		276.030	-0.5	206.762		456		
1248-	GRID	4213		283.520	-0.5	206.762		456		
1249-	GRID	4215		292.725	-0.500	206.762		456		
1250-	GRID	4231		332.675	-0.5	206.768		456		

Airloads Research Study - Vertical Stabilizer

SORTED BULK DATA ECHO

CARD COUNT	1	2	3	4	5	6	7	8	9	10
1251-	GRID	4256		261.049	0.0	203.45		456		
1252-	GRID	4260		276.030	0.0	206.762		456		
1253-	GRID	4263		283.520	0.0	206.762		456		
1254-	GRID	4265		292.725	0.0	206.762		456		
1255-	GRID	4281		332.675	0.0	206.762		456		
1256-	MAT1	1	9.9+6	4.0+6	.33	.100				
1257-	MAT1	2	15.5+6	6.4+6	.33	.160				
1258-	MAT1	3	28.+6	12.+6	.33	.300				
1259-	MAT1	4	3.6+6	1.4+6	.14	.075				
1260-	PBAR	1400	1	.400		.4				
1261-	PBAR	1600	1	.600		.60				
1262-	PBAR	1800	1	.800		.8				
1263-	PBAR	11200	1	1.200		1.2				
1264-	PQDMEM2	1020	1	.020						
1265-	PQDMEM2	1025	1	.025						
1266-	PQDMEM2	1032	1	.032						
1267-	PQDMEM2	1033	1	.033						
1268-	PQDMEM2	1038	1	.038						
1269-	PQDMEM2	1045	1	.045						
1270-	PQDMEM2	1050	1	.050						
1271-	PQDMEM2	1060	1	.060						
1272-	PQDMEM2	1063	1	.063						
1273-	PQDMEM2	1115	1	.115						
1274-	PQDMEM2	1127	1	.127						
1275-	PQDMEM2	1130	1	.130						
1276-	PQDMEM2	1142	1	.142						
1277-	PQDMEM2	1143	1	.143						
1278-	PQDMEM2	1145	1	.145						
1279-	PQDMEM2	1149	1	.149						
1280-	PQDMEM2	1185	1	.185						
1281-	PQDMEM2	1200	1	.200						
1282-	PQDMEM2	1202	1	.202						
1283-	PQDMEM2	1205	1	.205						
1284-	PQDMEM2	1208	1	.208						
1285-	PQDMEM2	1220	1	.220						
1286-	PQDMEM2	1225	1	.225						
1287-	PQDMEM2	1238	1	.238						
1288-	PQDMEM2	1240	1	.240						
1289-	PQDMEM2	1254	1	.254						
1290-	PQDMEM2	1420	1	.420						
1291-	PQDMEM2	1545	1	.545						
1292-	PQDMEM2	4027	4	.027						
1293-	PQDMEM2	4058	4	.058						
1294-	PQDMEM2	11734	1	1.734						
1295-	PQDMEM2	31000	3	1.000						
1296-	PSHEAR	1010	1	.010						
1297-	PSHEAR	1015	1	.015						
1298-	PSHEAR	1020	1	.020						
1299-	PSHEAR	1027	1	.027						
1300-	PSHEAR	1032	1	.032						

Airloads Research Study - Vertical Stabilizer

Airloads Research Study - Vertical Stabilizer

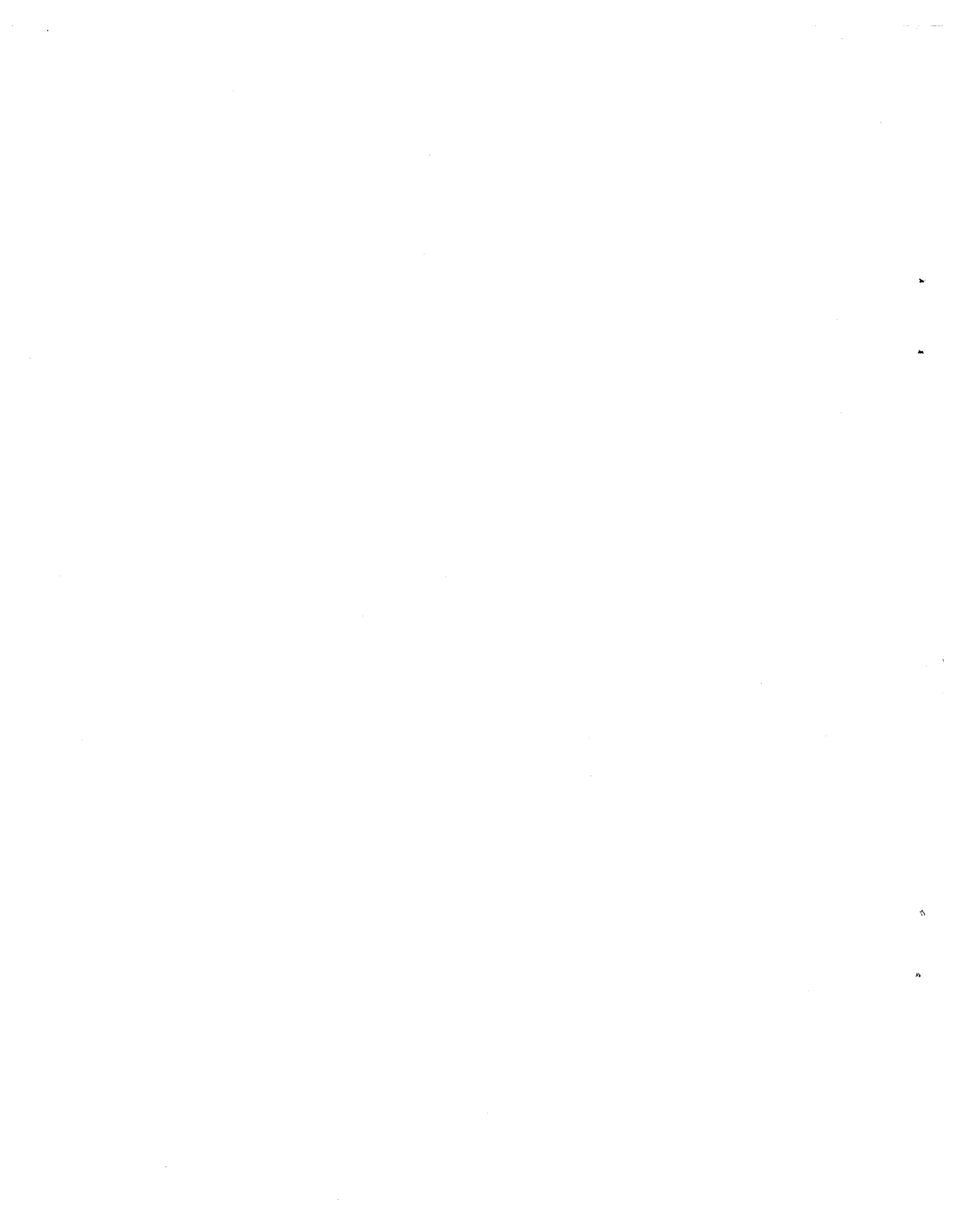
SORTED BULK DATA ECHO

CARD COUNT	1	2	3	4	5	6	7	8	9	10
1301-	PSHEAR	1036	1	.036						
1302-	PSHEAR	1040	1	.040						
1303-	PSHEAR	1041	1	.041						
1304-	PSHEAR	1042	1	.042						
1305-	PSHEAR	1043	1	.043						
1306-	PSHEAR	1045	1	.045						
1307-	PSHEAR	1046	1	.046						
1308-	PSHEAR	1040	1	.048						
1309-	PSHEAR	1049	1	.049						
1310-	PSHEAR	1050	1	.050						
1311-	PSHEAR	1052	1	.052						
1312-	PSHEAR	1053	1	.053						
1313-	PSHEAR	1054	1	.054						
1314-	PSHEAR	1055	1	.055						
1315-	PSHEAR	1056	1	.056						
1316-	PSHEAR	1057	1	.057						
1317-	PSHEAR	1058	1	.058						
1318-	PSHEAR	1060	1	.060						
1319-	PSHEAR	1063	1	.063						
1320-	PSHEAR	1064	1	.064						
1321-	PSHEAR	1069	1	.069						
1322-	PSHEAR	1070	1	.070						
1323-	PSHEAR	1072	1	.072						
1324-	PSHEAR	1073	1	.073						
1325-	PSHEAR	1075	1	.075						
1326-	PSHEAR	1078	1	.078						
1327-	PSHEAR	1080	1	.080						
1328-	PSHEAR	1082	1	.082						
1329-	PSHEAR	1083	1	.083						
1330-	PSHEAR	1085	1	.085						
1331-	PSHEAR	1089	1	.089						
1332-	PSHEAR	1090	1	.090						
1333-	PSHEAR	1092	1	.092						
1334-	PSHEAR	1093	1	.093						
1335-	PSHEAR	1095	1	.095						
1336-	PSHEAR	1097	1	.097						
1337-	PSHEAR	1100	1	.100						
1338-	PSHEAR	1101	1	.101						
1339-	PSHEAR	1103	1	.103						
1340-	PSHEAR	1105	1	.105						
1341-	PSHEAR	1107	1	.107						
1342-	PSHEAR	1110	1	.110						
1343-	PSHEAR	1111	1	.111						
1344-	PSHEAR	1112	1	.112						
1345-	PSHEAR	1113	1	.113						
1346-	PSHEAR	1114	1	.114						
1347-	PSHEAR	1118	1	.118						
1348-	PSHEAR	1120	1	.120						
1349-	PSHEAR	1124	1	.124						
1350-	PSHEAR	1125	1	.125						

SORTED BULK DATA ECHO

CARD COUNT	1	2	3	4	5	6	7	8	9	10
1401-	PTRMEM	1036	1	.036						
1402-	PTRMEM	1043	1	.043						
1403-	PTRMEM	1046	1	.046						
1404-	PTRMEM	1053	1	.053						
1405-	PTRMEM	1057	1	.057						
1406-	PTRMEM	1058	1	.058						
1407-	PTRMEM	1067	1	.067						
1408-	PTRMEM	1072	1	.072						
1409-	PTRMEM	1078	1	.078						
1410-	PTRMEM	1087	1	.087						
1411-	PTRMEM	1089	1	.089						
1412-	PTRMEM	1090	1	.090						
1413-	PTRMEM	1100	1	.100						
1414-	PTRMEM	1107	1	.107						
1415-	PTRMEM	1108	1	.108						
1416-	PTRMEM	1120	1	.120						
1417-	PTRMEM	1125	1	.125						
1418-	PTRMEM	1132	1	.132						
1419-	PTRMEM	1200	1	.200						
1420-	PTRMEM	1204	1	.204						
1421-	PTRMEM	1205	1	.205						
1422-	PTRMEM	1208	1	.208						
1423-	PTRMEM	1210	1	.210						
1424-	PTRMEM	1215	1	.215						
1425-	PTRMEM	1220	1	.220						
1426-	PTRMEM	1307	1	.307						
1427-	PTRMEM	1315	1	.315						
1428-	PTRMEM	1345	1	.345						
1429-	PTRMEM	1350	1	.350						
1430-	PTRMEM	1410	1	.410						
1431-	PTRMEM	1425	1	.425						
1432-	PTRMEM	1460	1	.460						
1433-	PTRMEM	1485	1	.485						
1434-	PTRMEM	1600	1	.600						
1435-	PTRMEM	3850	3	.850						
1436-	PTRMEM	11734	1	1.734						
1437-	PTRMEM	31000	3	1.000						
1438-	SPC1	2	13	1124	1171	1172	1173	1224	1271	
1439-	SPC1	2	13	1272	1273	1324	1371	1372	1373	
1440-	SPC1	2	13	1424	1471	1472	1473	1666	1667	
1441-	SPC1	2	13	1668	1669	1670	1759	1762	1765	
1442-	SPC1	2	13	1858	1859	1860	1861	1862	1863	
1443-	SPC1	2	13	1864	1865	1904	2053	2055	2056	
1444-	SPC1	2	13	2057	2059	2060	2062	2063	2065	
1445-	SPC1	2	13	2151	2152	2153	2155	2156	2157	
1446-	SPC1	2	13	2160	2163	2165	2167	2168	2169	
1447-	SPC1	2	13	2170	2351	2352	2353	2355	2356	
1448-	SPC1	2	13	2551	2552	2553	2555	2556	2557	
1449-	SPC1	2	13	2560	2563	2627	2675	2676	2727	
1450-	SPC1	2	13	2751	2752	2753	2755	2756	2757	

Appendix E
NASTRAN MODEL NACELLE



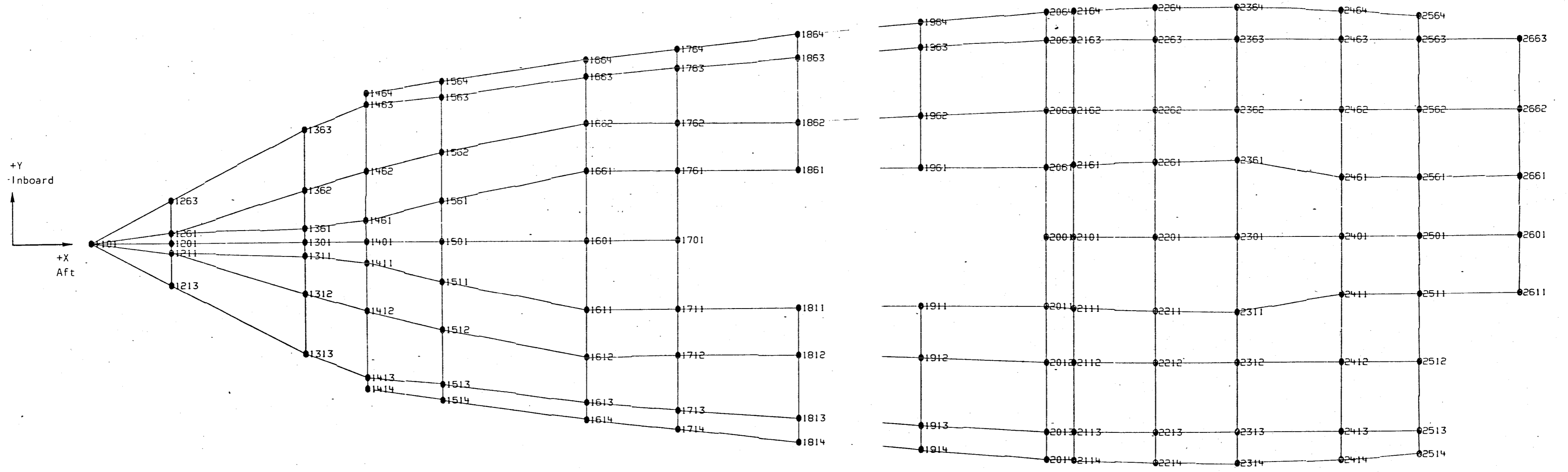
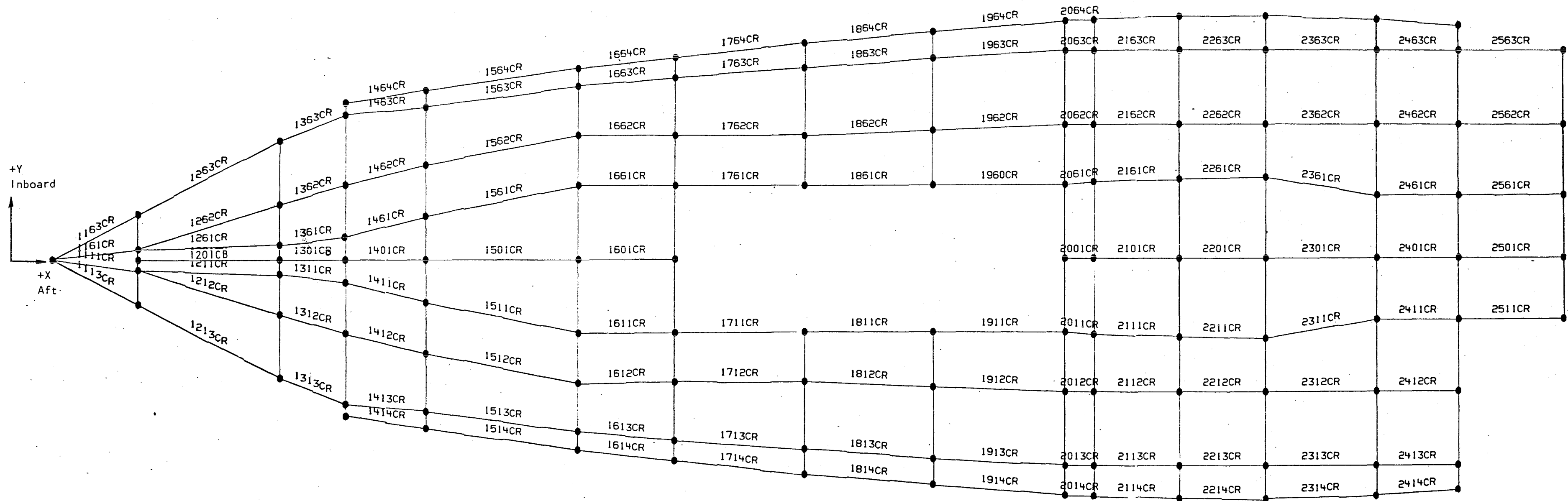


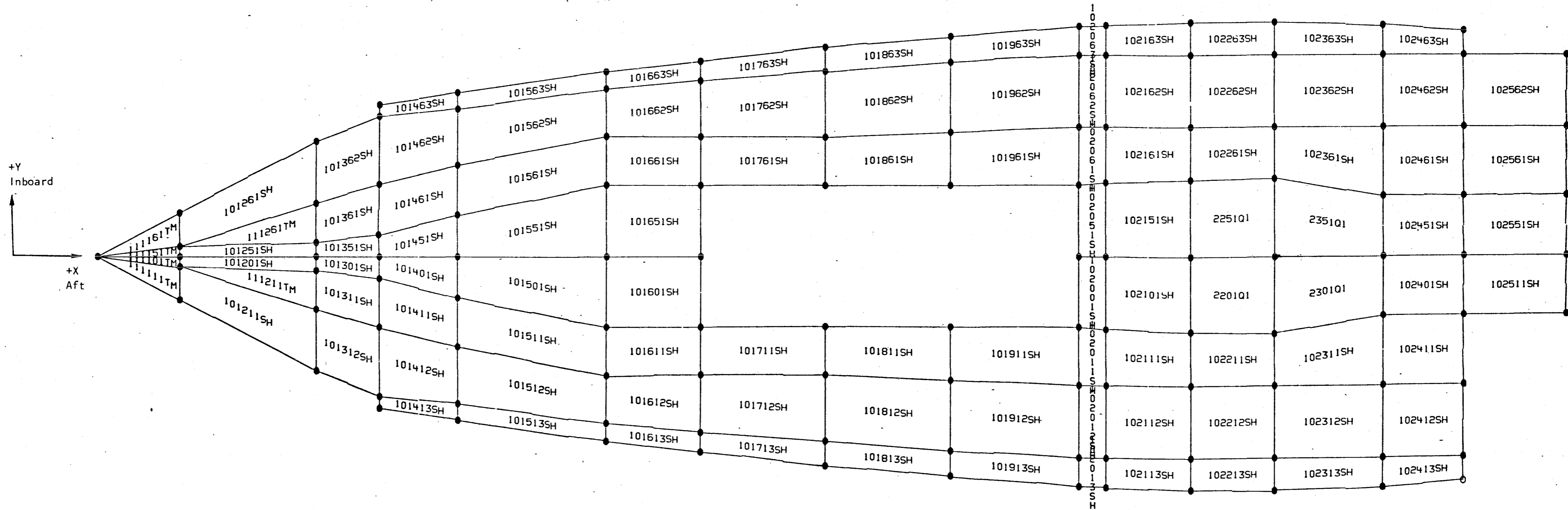
Figure E-1. - ARS B-1 nacelle top surface - node numbers.



Top surface - looking down

Note: CR = CONROD
CB = CBAR

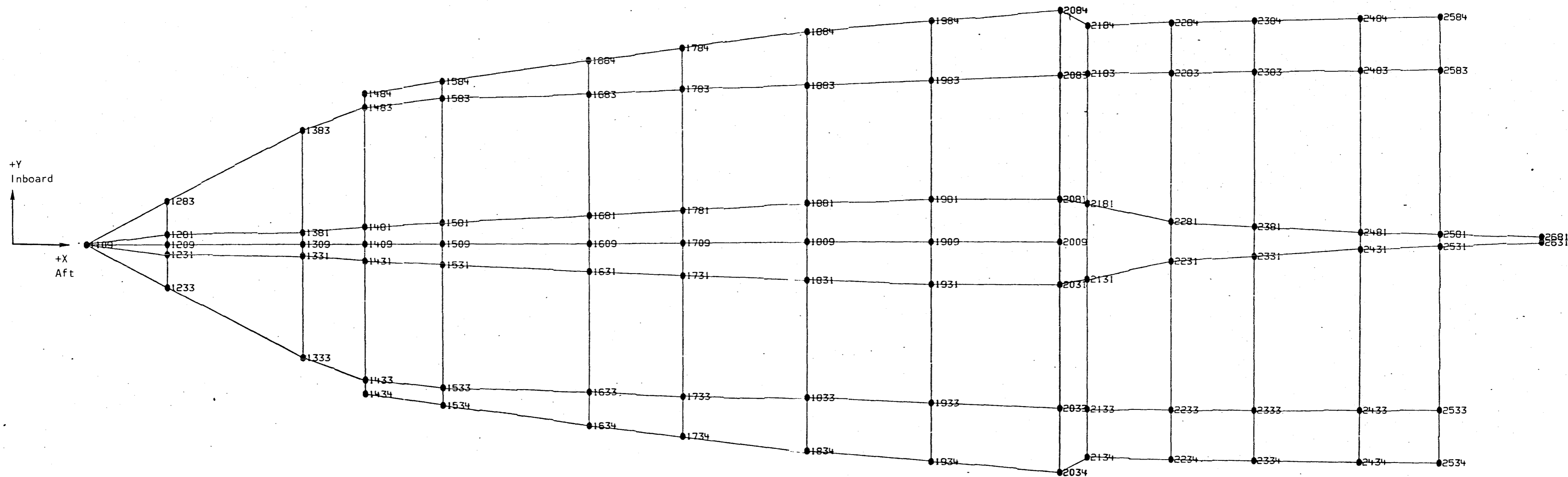
Figure E-2. - ARS B-1 nacelle top surface - axial members (CONRODS).



Top surface - looking down

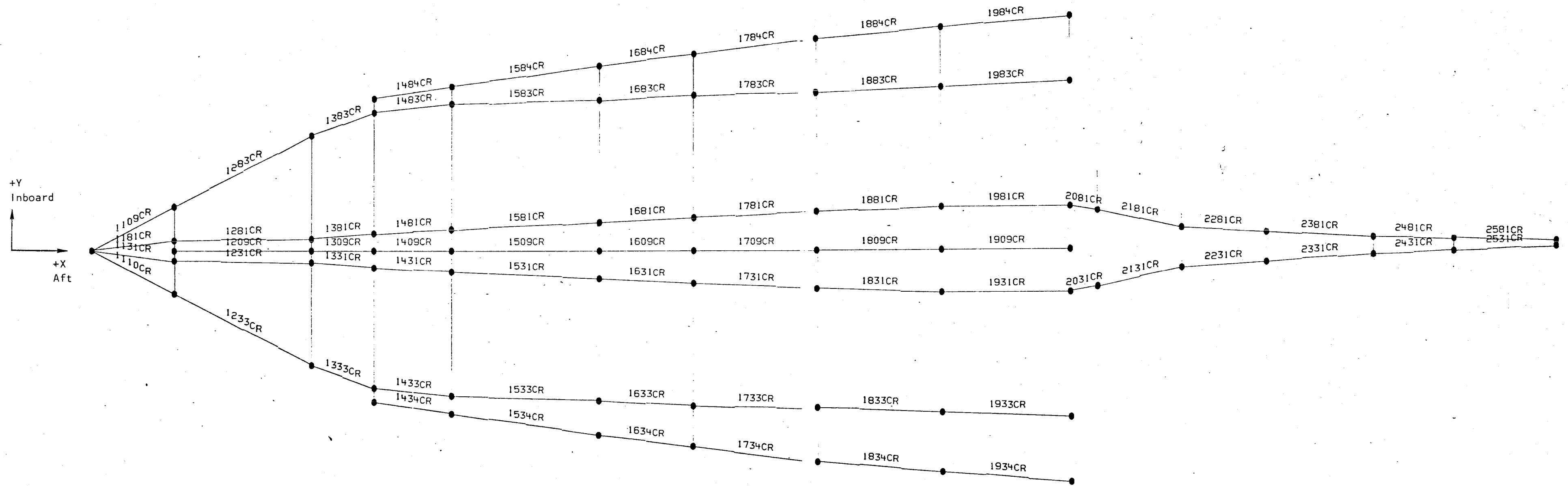
Note: SH = CSHEAR (Shear panel)
 TM = CTRMEM (Triangular membrane)
 QI = CQUADI (Quadrilateral plate)

Figure E-3. - ARS B-1 nacelle top surface - panels.



Bottom surface - looking down

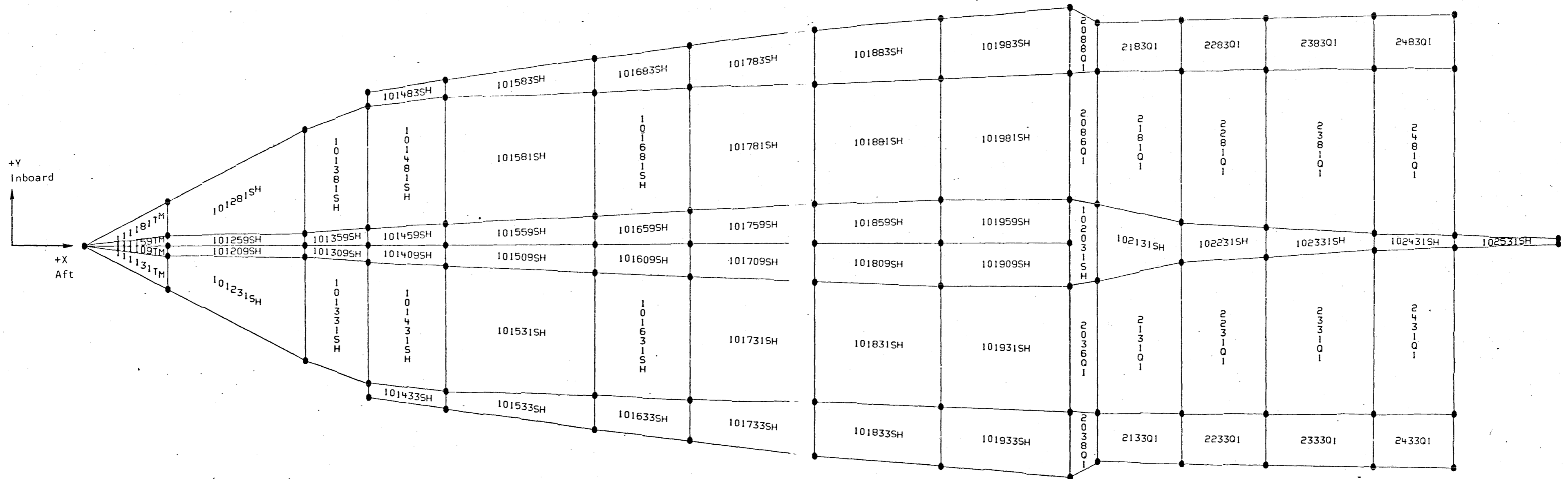
Figure E-4. - ARS B-1 nacelle bottom surface - node numbers.



Bottom surface - looking down

Note: CR = CONROD

Figure E-5. - ARS B-1 nacelle bottom surface - axial members (CONRODS).



Note: SH = CSHEAR (Shear panel)
 TM = CTRMEM (Triangular membrane)
 Q1 = CQUADI (Quadrilateral plate)

Bottom surface - looking down

Figure E-6. - ARS B-1 nacelle bottom surface - panels.

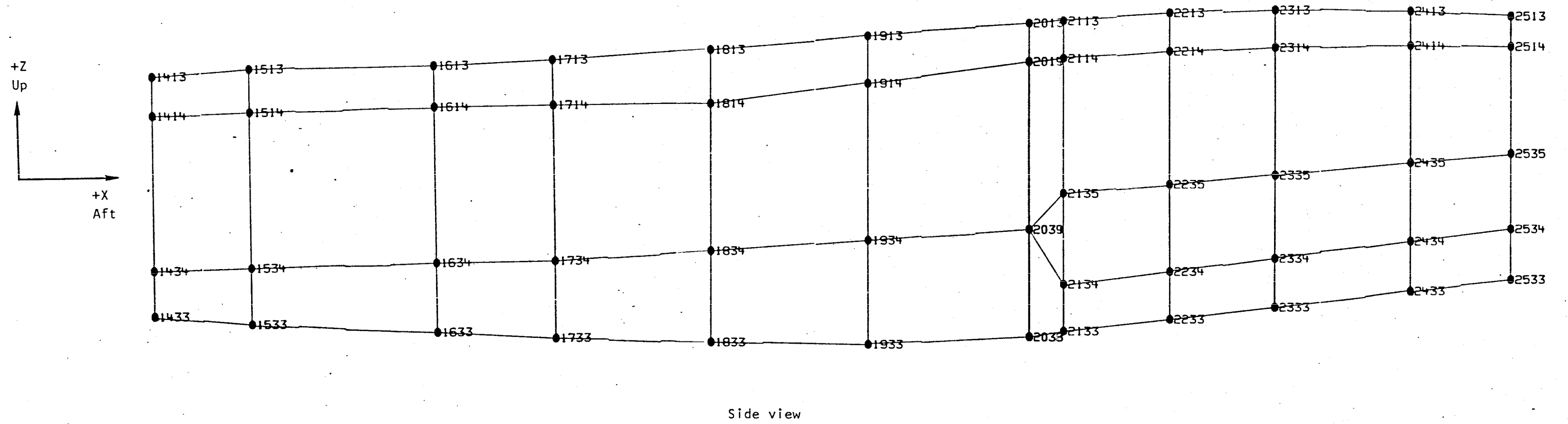
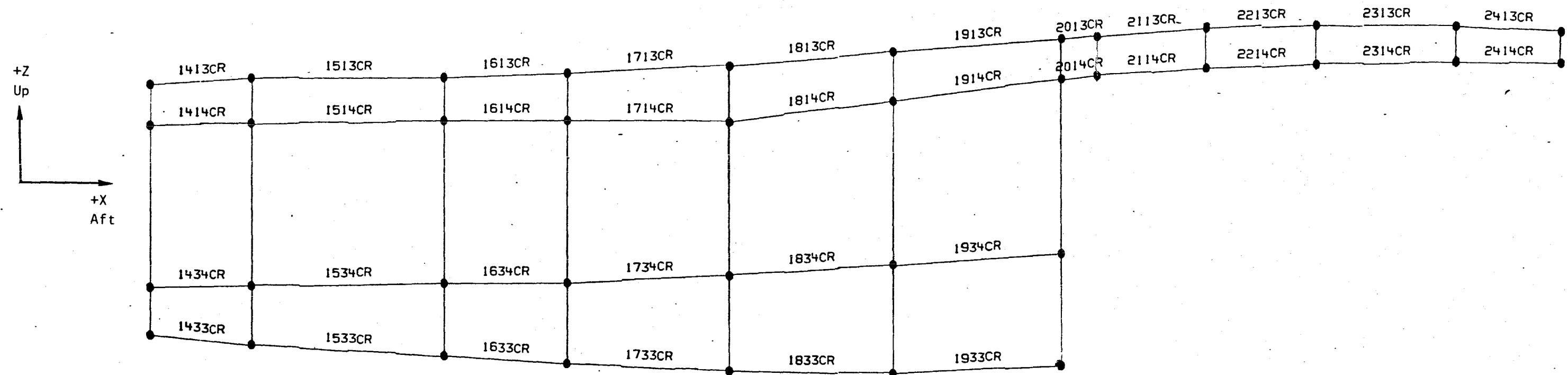


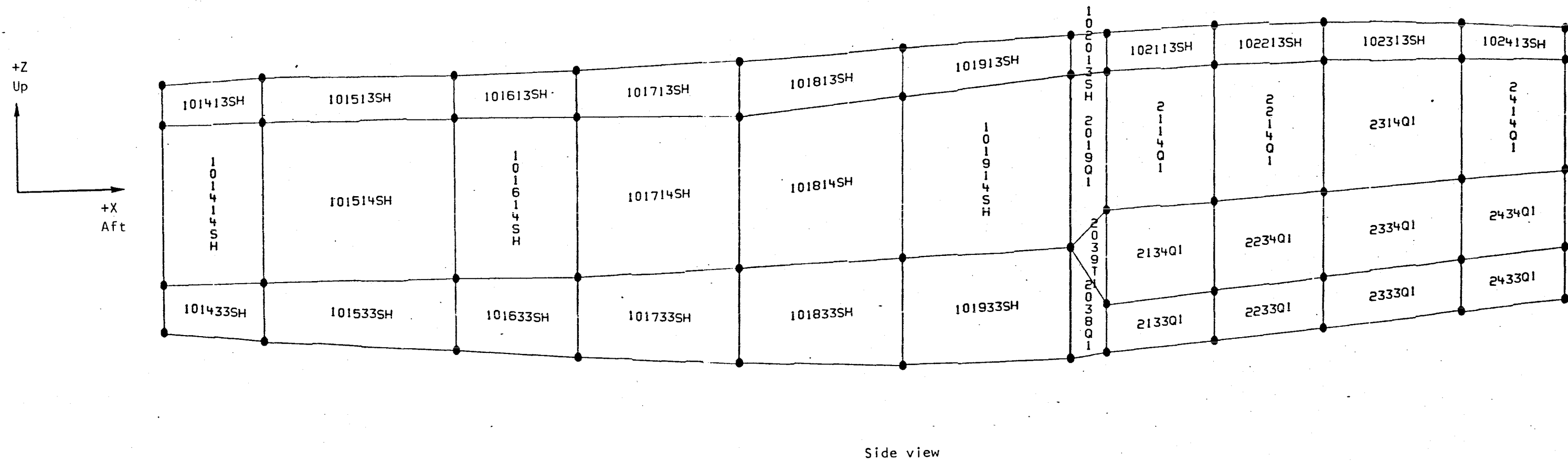
Figure E-7. - ARS B-1 nacelle outboard surface - node numbers.



Side view

Note: CR = CONROD

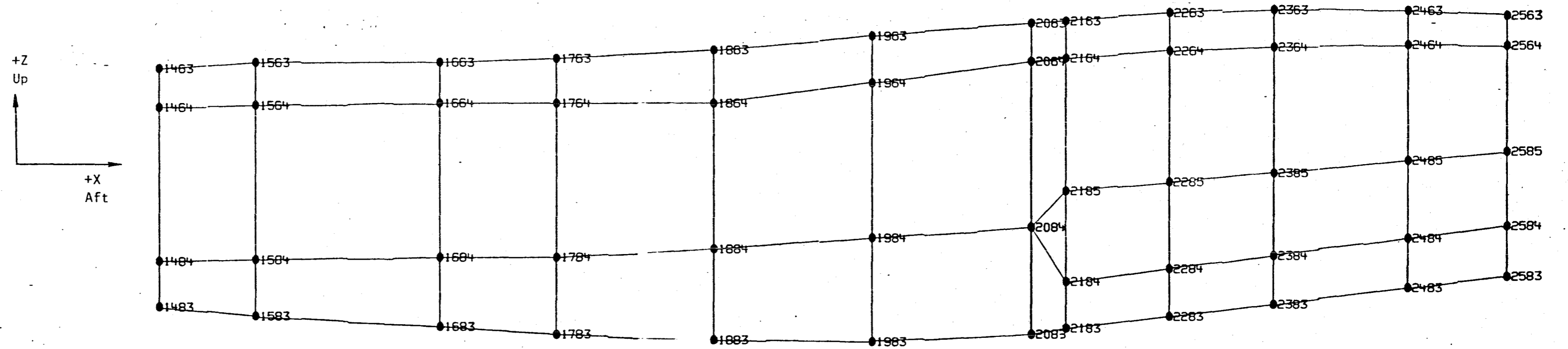
Figure E-8. - ARS B-1 nacelle outboard surface - axial members (CONRODS).



Note: SH = CSHEAR (Shear panel)
 T1 = CTRMEM (Triangular membrane)
 Q1 = CQUADI (Quadrilateral plate)

Figure E-9. - ARS B-1 nacelle outboard surface - panels.





Side view

Figure E-10. - ARS B-1 nacelle inboard surface - node numbers.

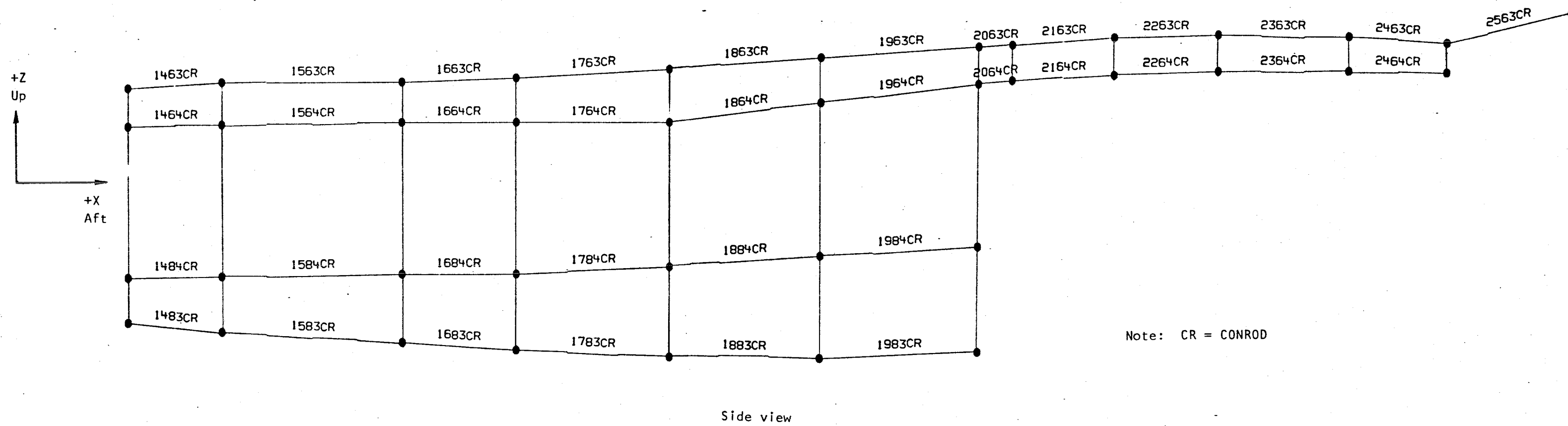
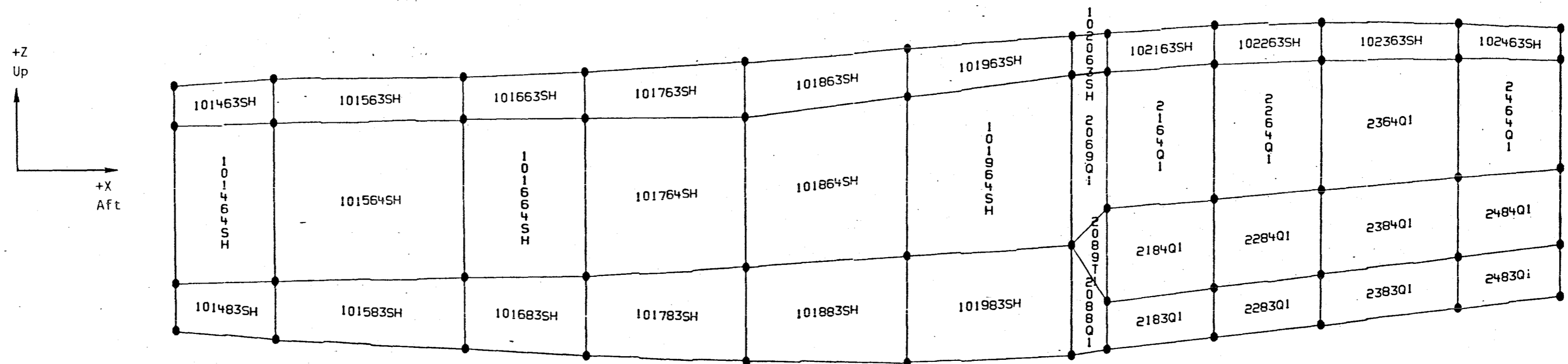


Figure E-11. - ARS B-1 nacelle inboard surface - axial members (CONRODS).



Side view

Note: SH = CSHEAR (Shear panel)
 T1 = CTRMEM (Triangular membrane)
 Q1 = CQUADI (Quadrilateral plate)

Figure E-12. - ARS B-1 nacelle inboard surface - panels.



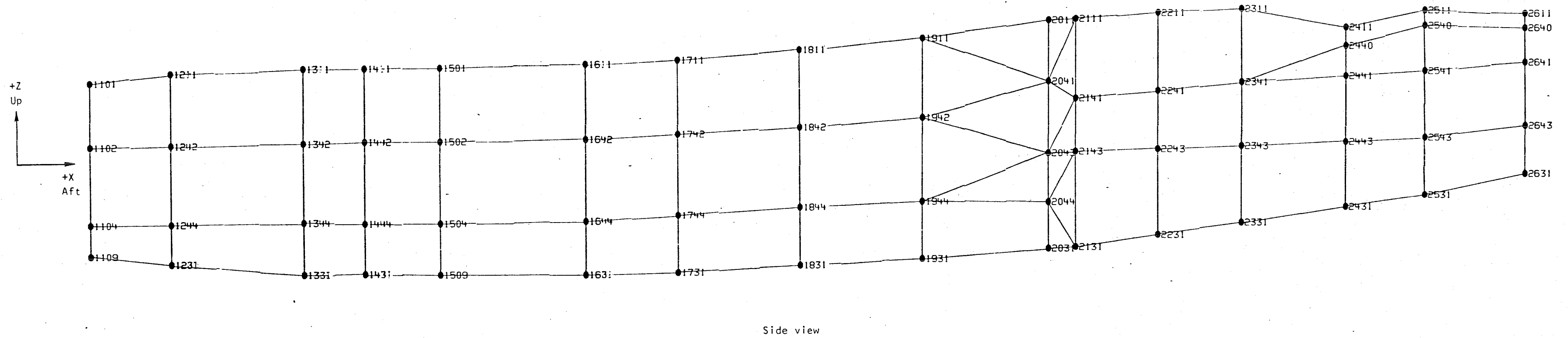
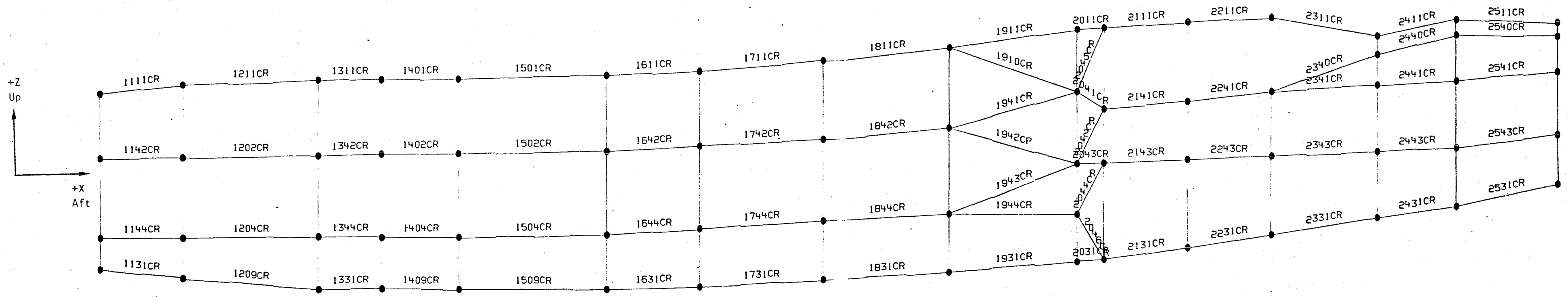


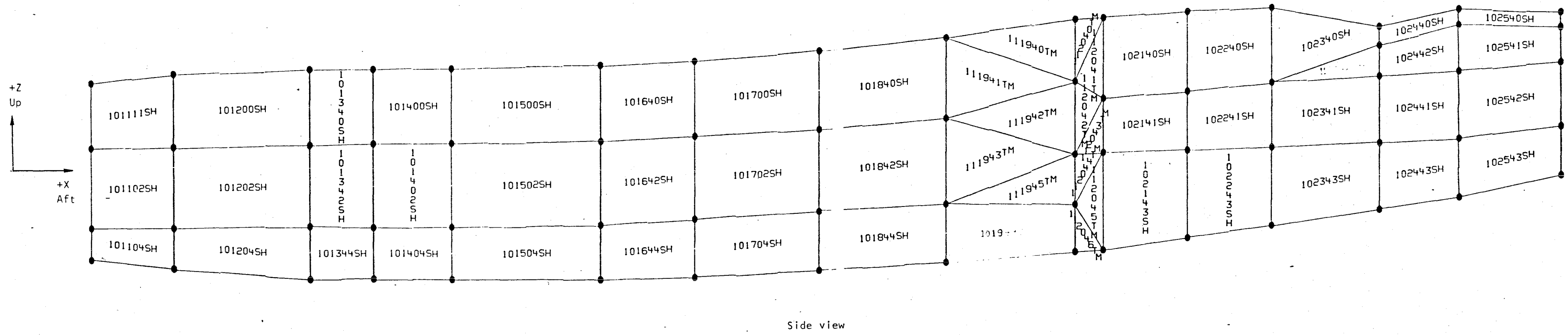
Figure E-13. - ARS B-1 nacelle outboard centerbody - node numbers.



Side view

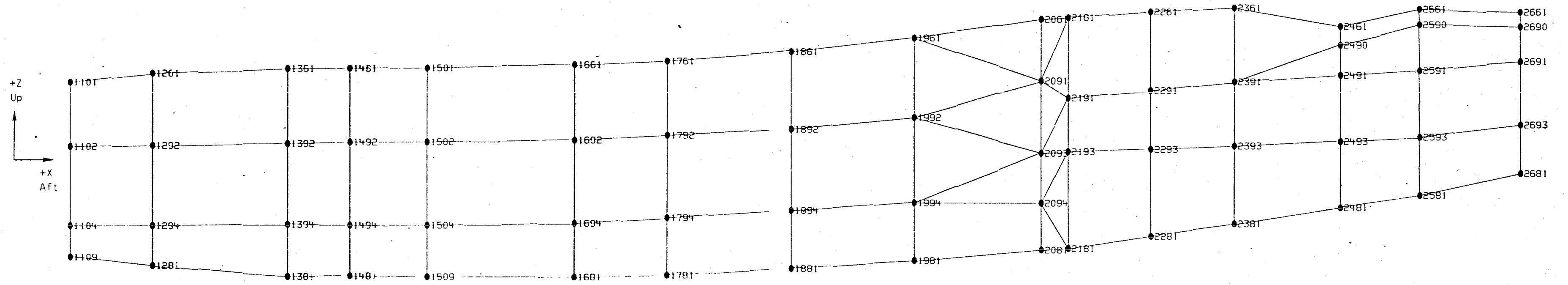
Note: CR = CONROD

Figure E-14. - ARS B-1 nacelle outboard centerbody - axial members (CONRODS).

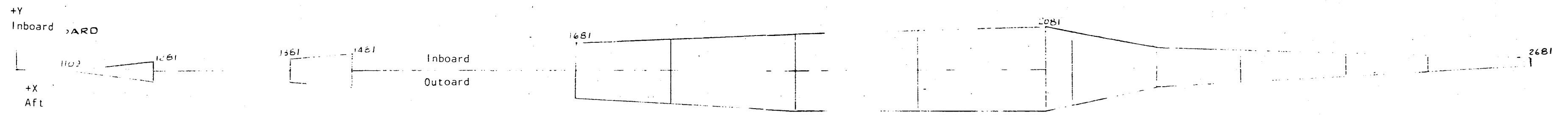


Note: SH = CSHEAR (Shear panel)
 TM = CTRMEM (Triangular membrane)

Figure E-15. - ARS B-1 nacelle outboard centerbody - panels.

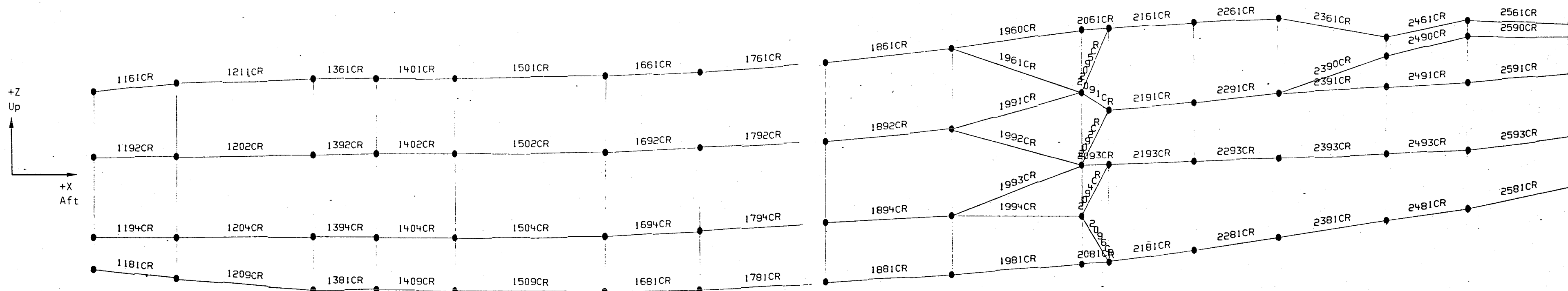


Side view



Centerbody bottom - looking down

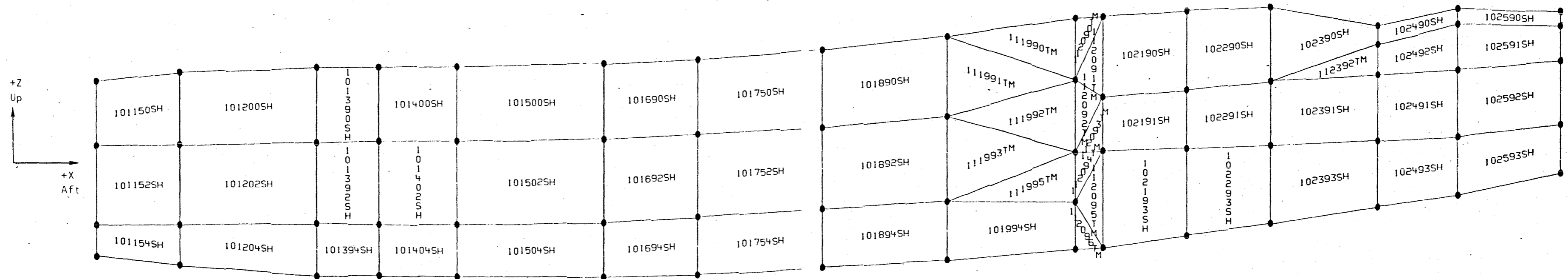
Figure E-16. - ARS B-1 nacelle inboard centerbody - node numbers.



Side view

Note: CR = CONROD

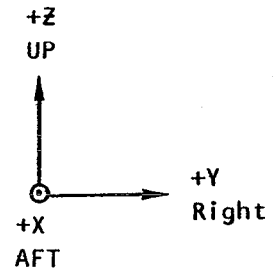
Figure E-17. - ARD B-1 nacelle inboard centerbody - axial members (CONRODS).



Side view

Note: SH = CSHEAR (Shear panel)
 TM = CTRMEM (Triangular membrane)

Figure E-18. - ARS B-1 nacelle inboard centerbody - panels.

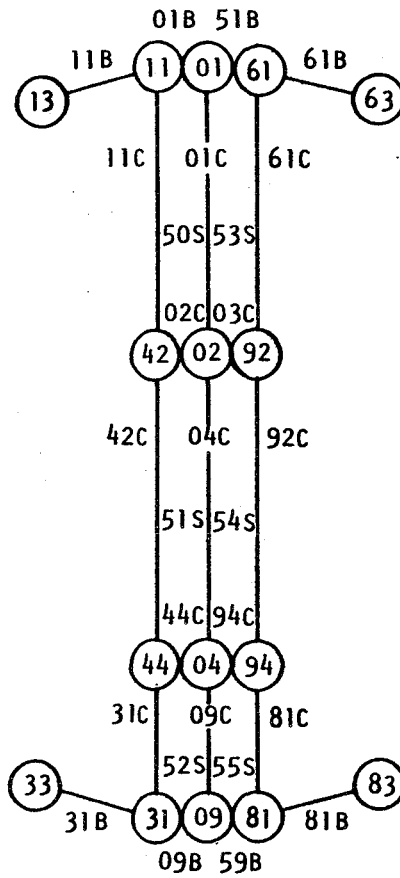


Station sign convention

Node: \textcircled{XX} = 11XX
 CONROD: XXC = 311XX

Views looking forward

Figure E-19. - 11 Nacelle station 15.0.



Node: (XX) = 12XX
 CBAR: XXB = 112XX
 CONROD: XXC = 312XX
 CSHEAR: XXS = 2012XX

Figure E-20. - 12 Nacelle station 36.23.

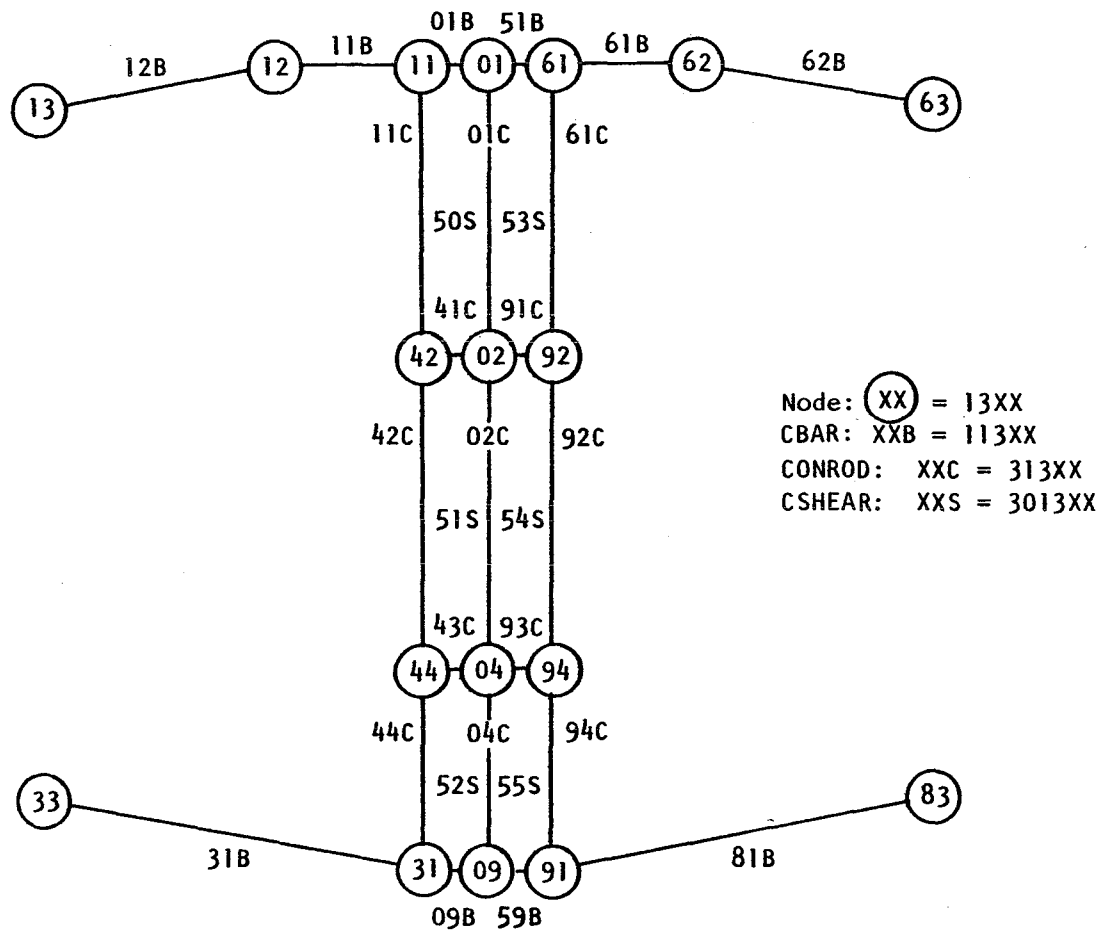


Figure E-21. - 13 Nacelle station 71.14.

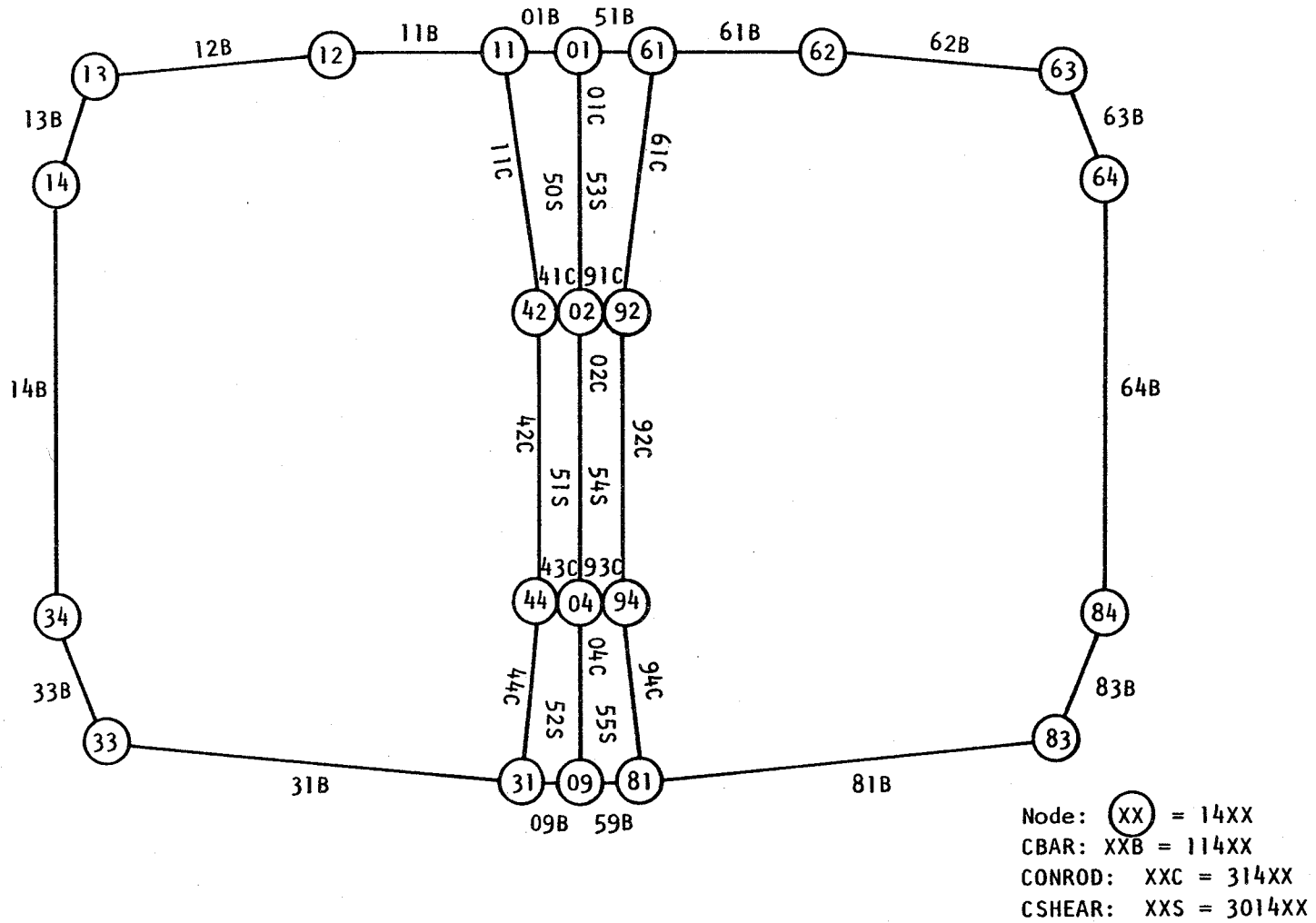


Figure E-22. - 14 Nacelle station 87.2.

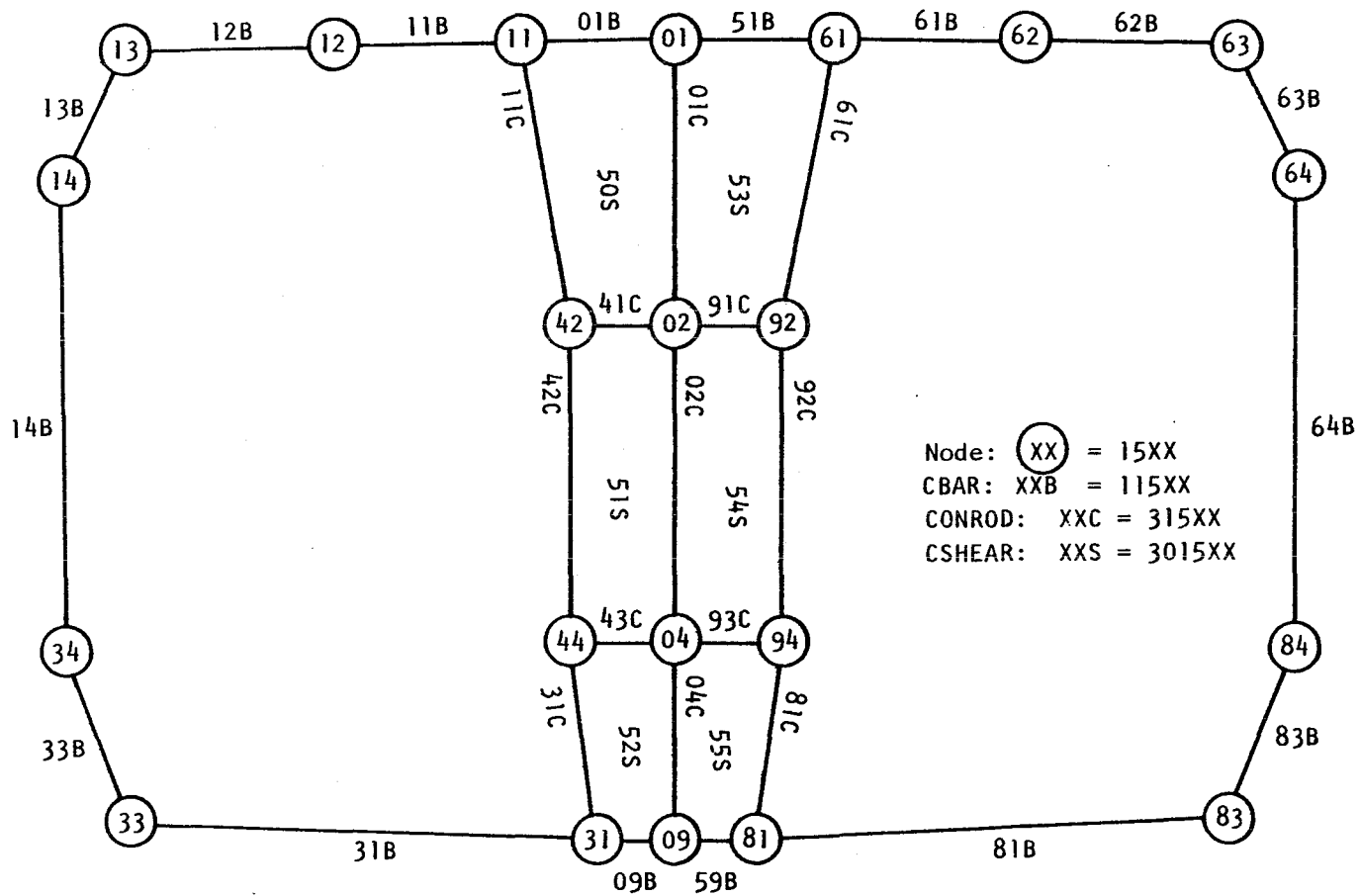


Figure E-23. - 15 Nacelle station 107.0.

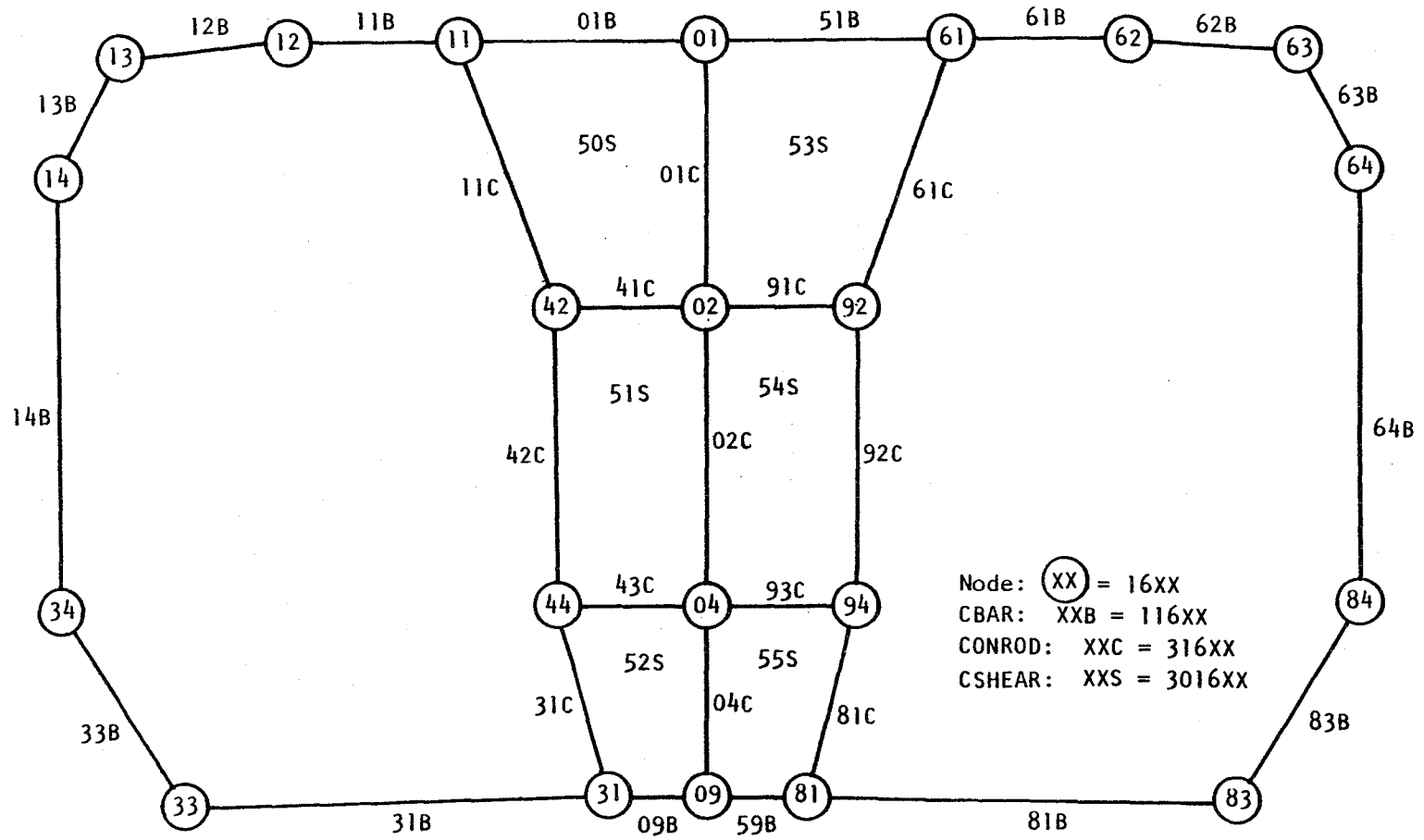


Figure E-24. - 16 Nacelle station 144.9.

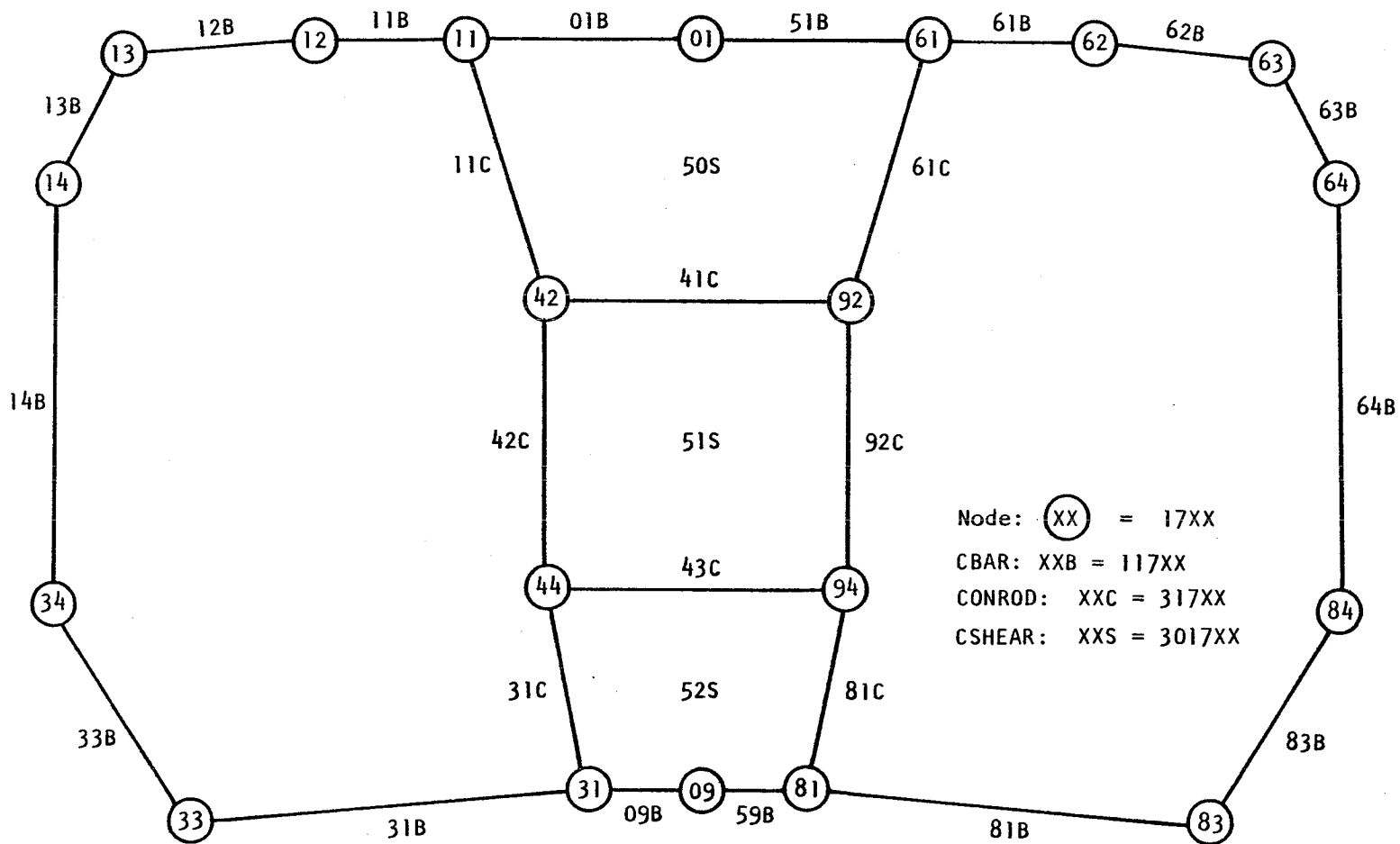


Figure E-25. - 17 Nacelle station 168.8.

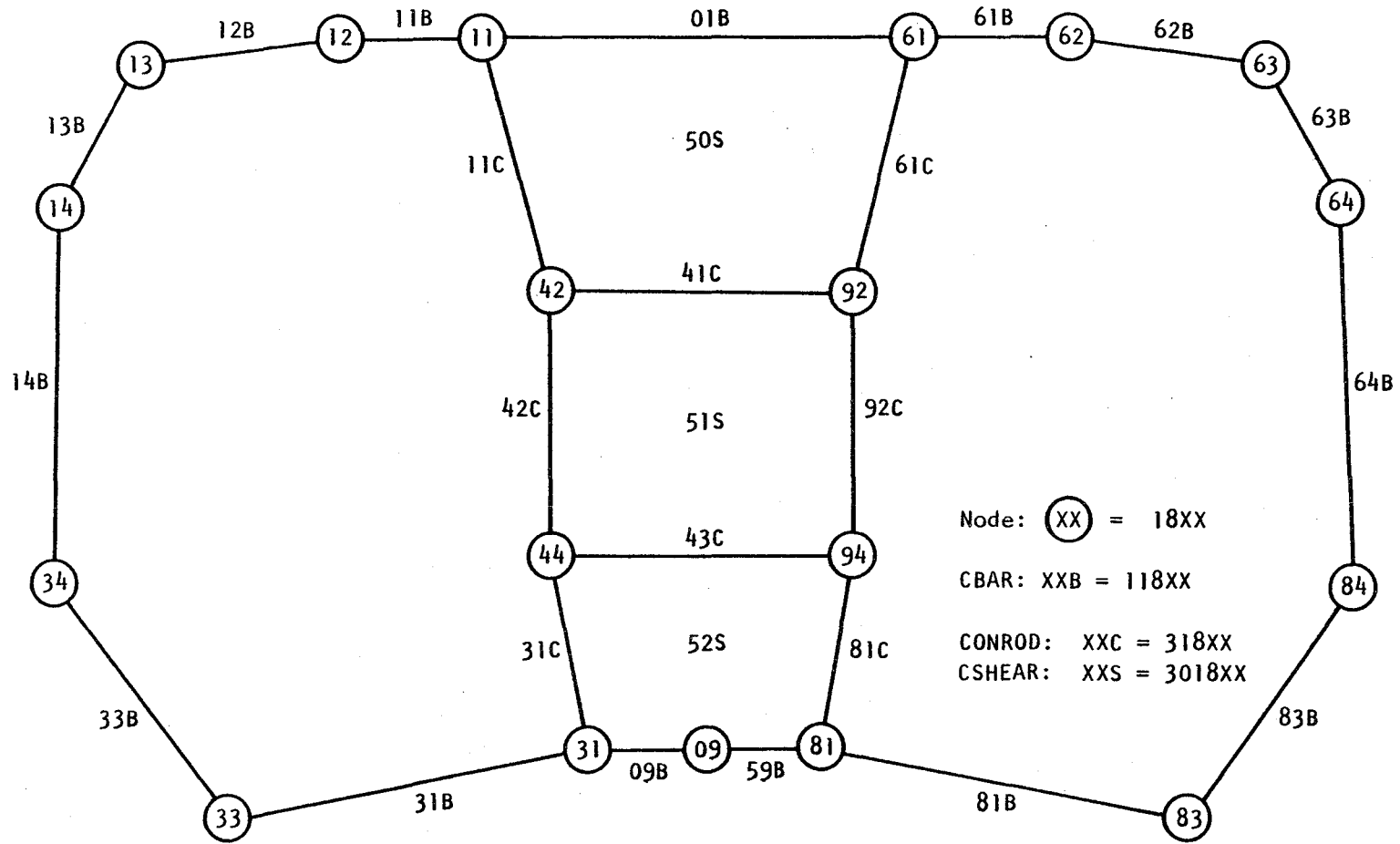


Figure E-26. - 18 Nacelle station 200.6.

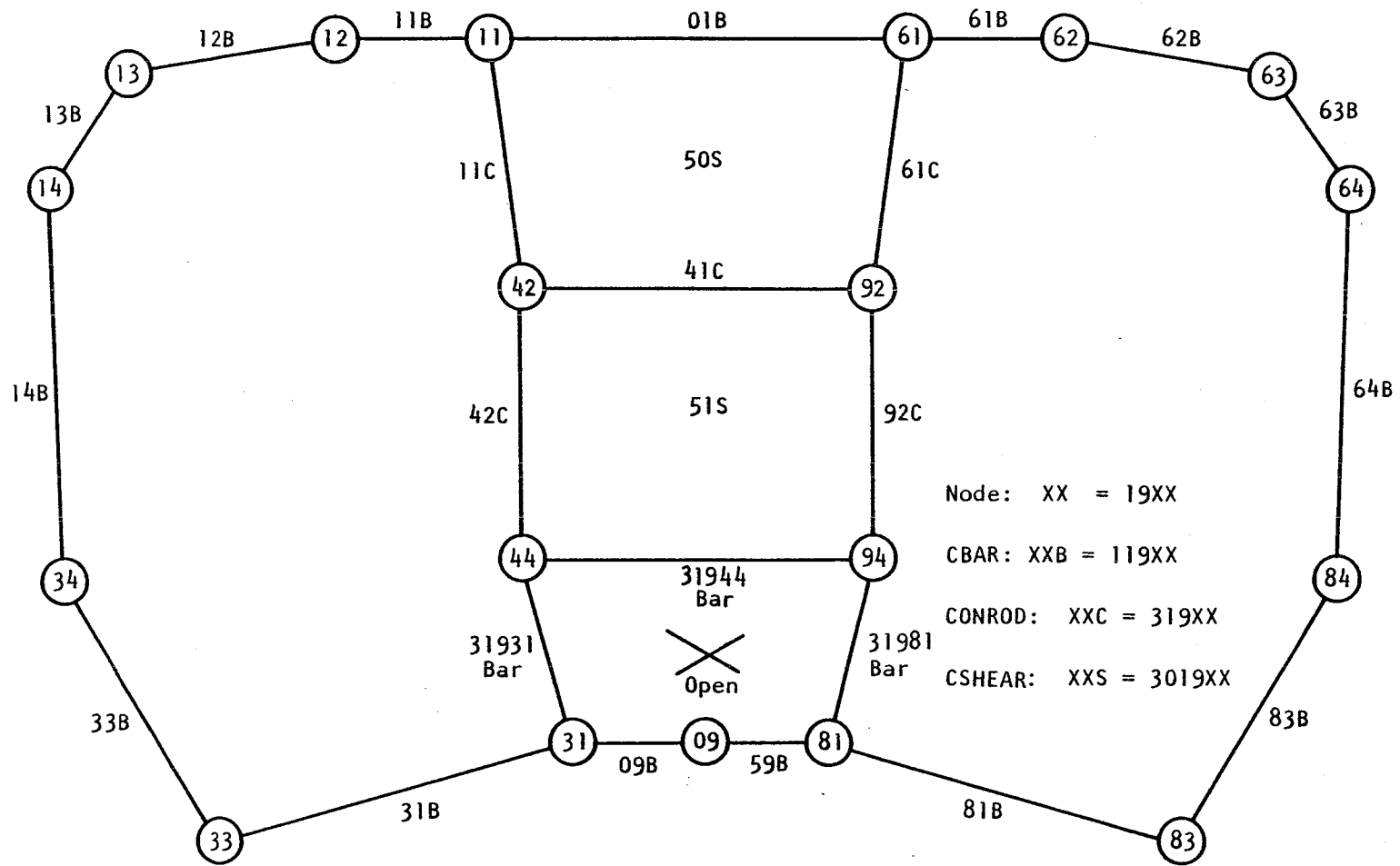


Figure E-27. - 19 Nacelle station 232.5.

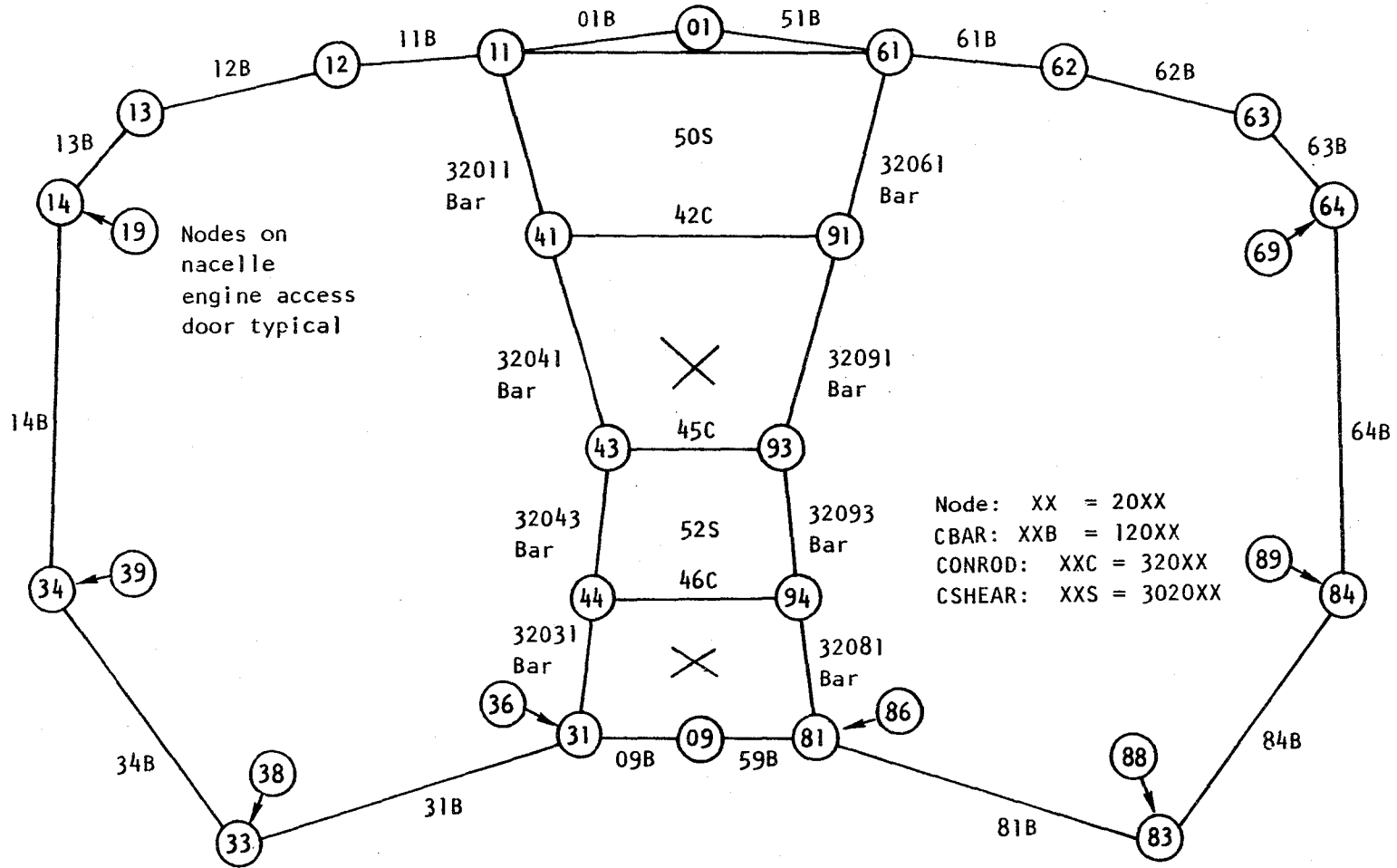


Figure E-28. - 20 Nacelle station 265.25.

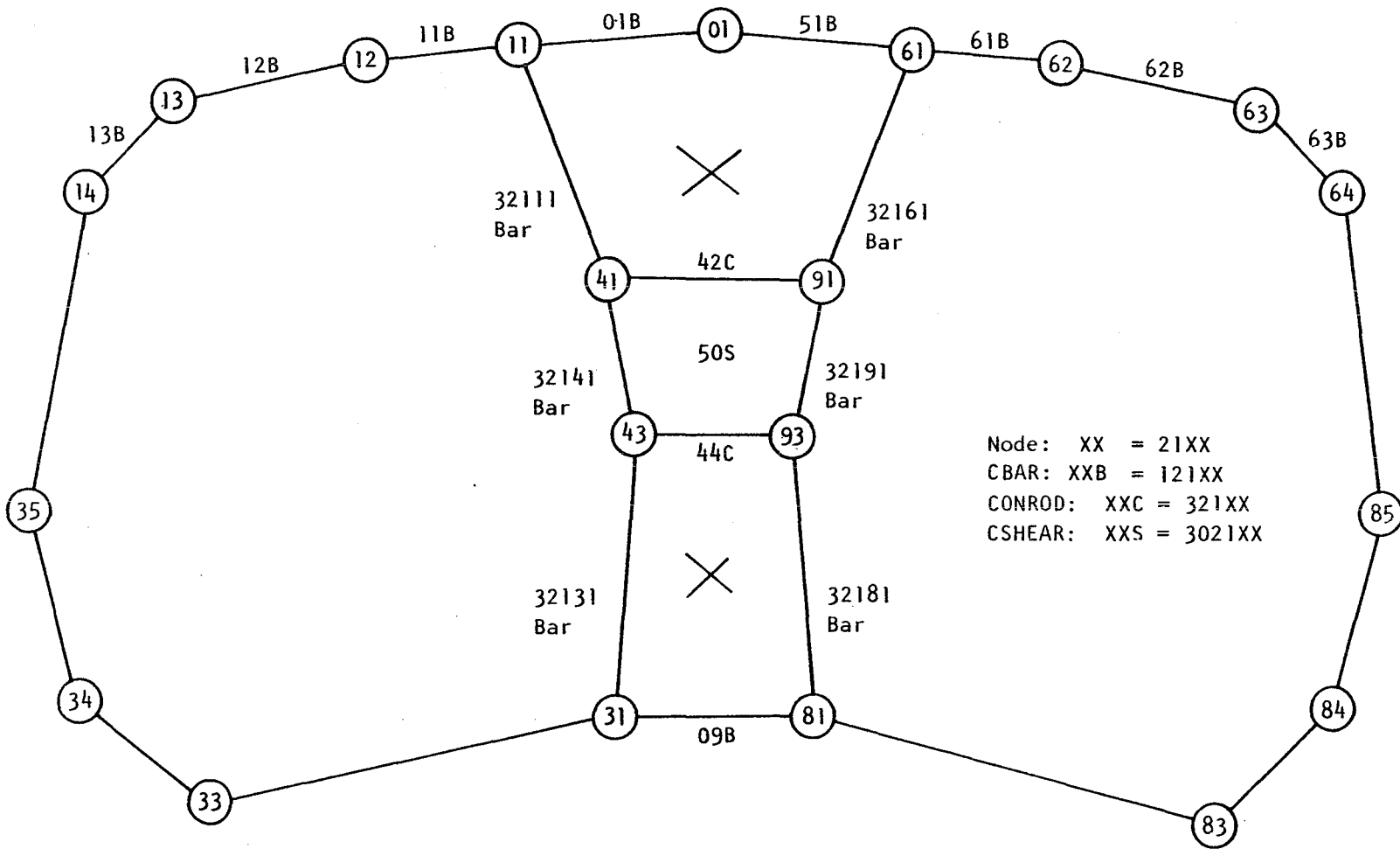


Figure E-29. - 21 Nacelle station 272.35.

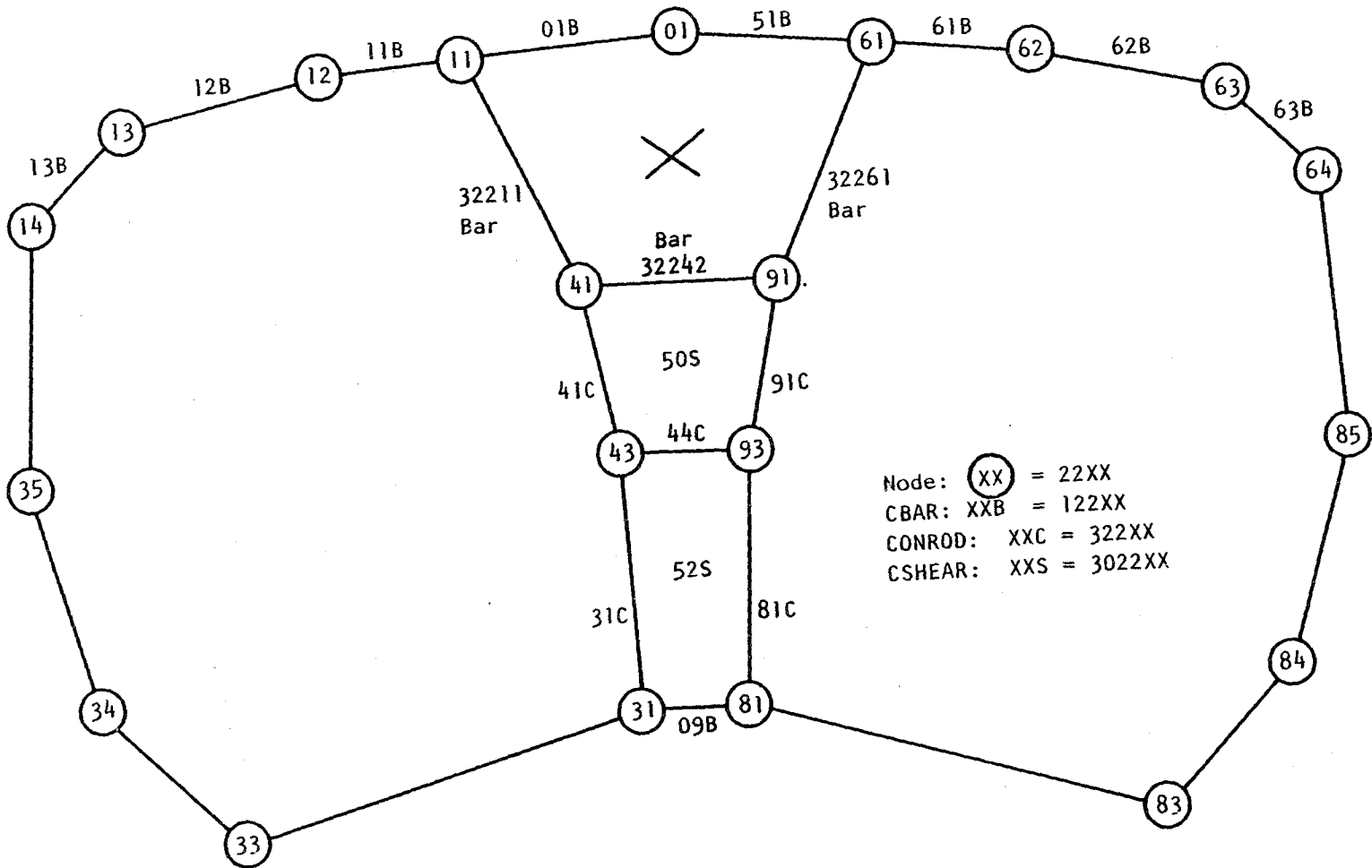


Figure E-30. - 22 Nacelle station 293.65.

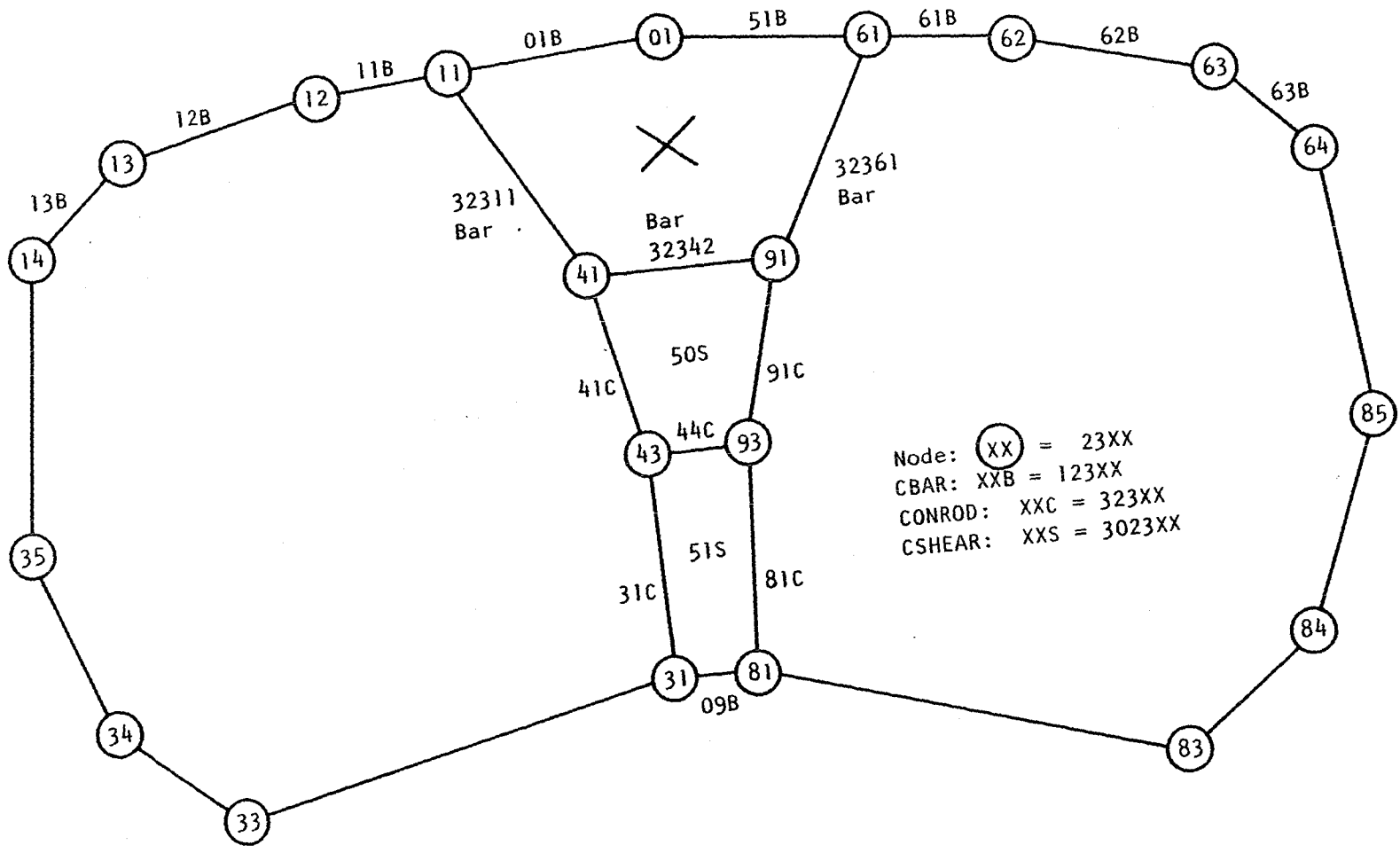


Figure E-31. 23 Nacelle Station 315.0.

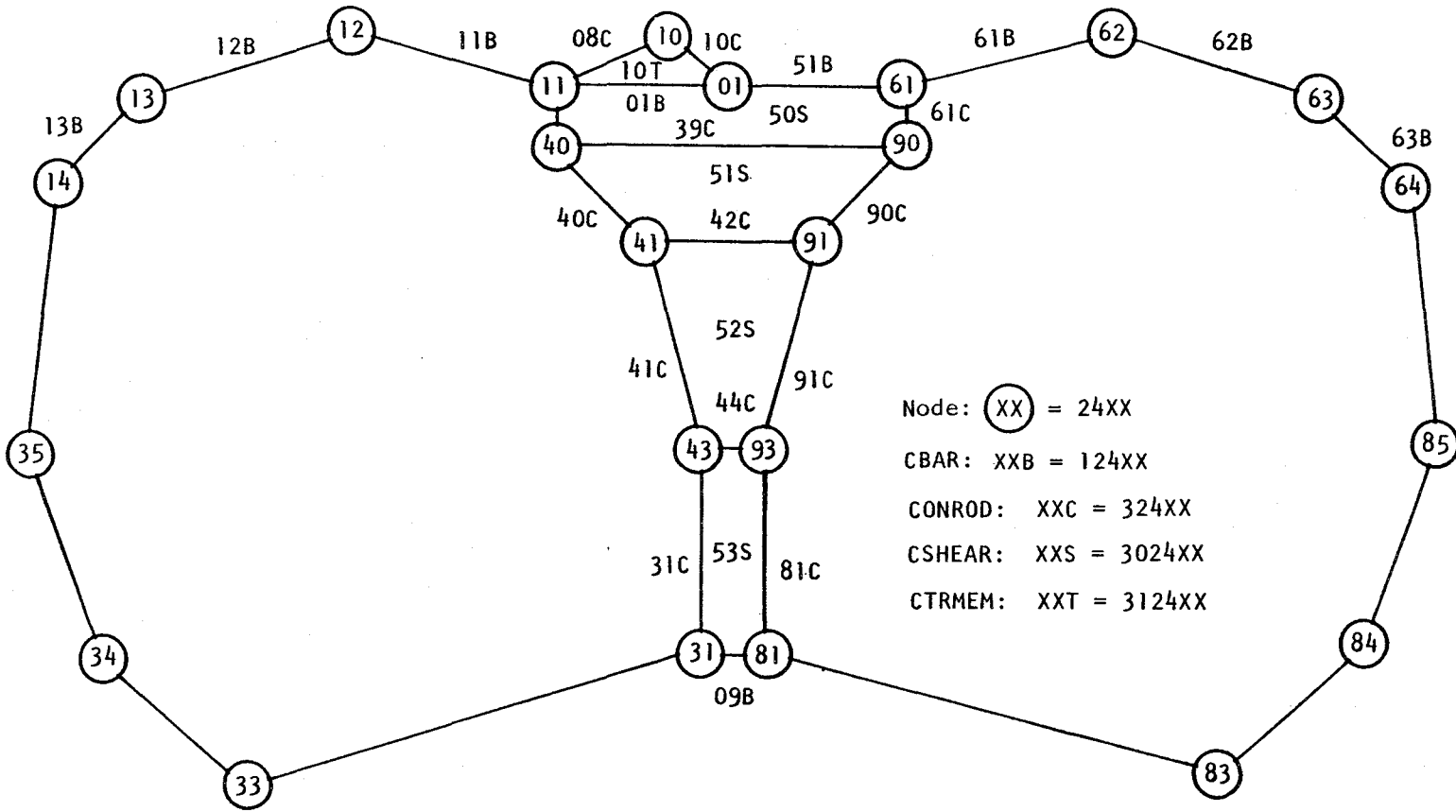


Figure E-32. 24 Nacelle Station 342.3.

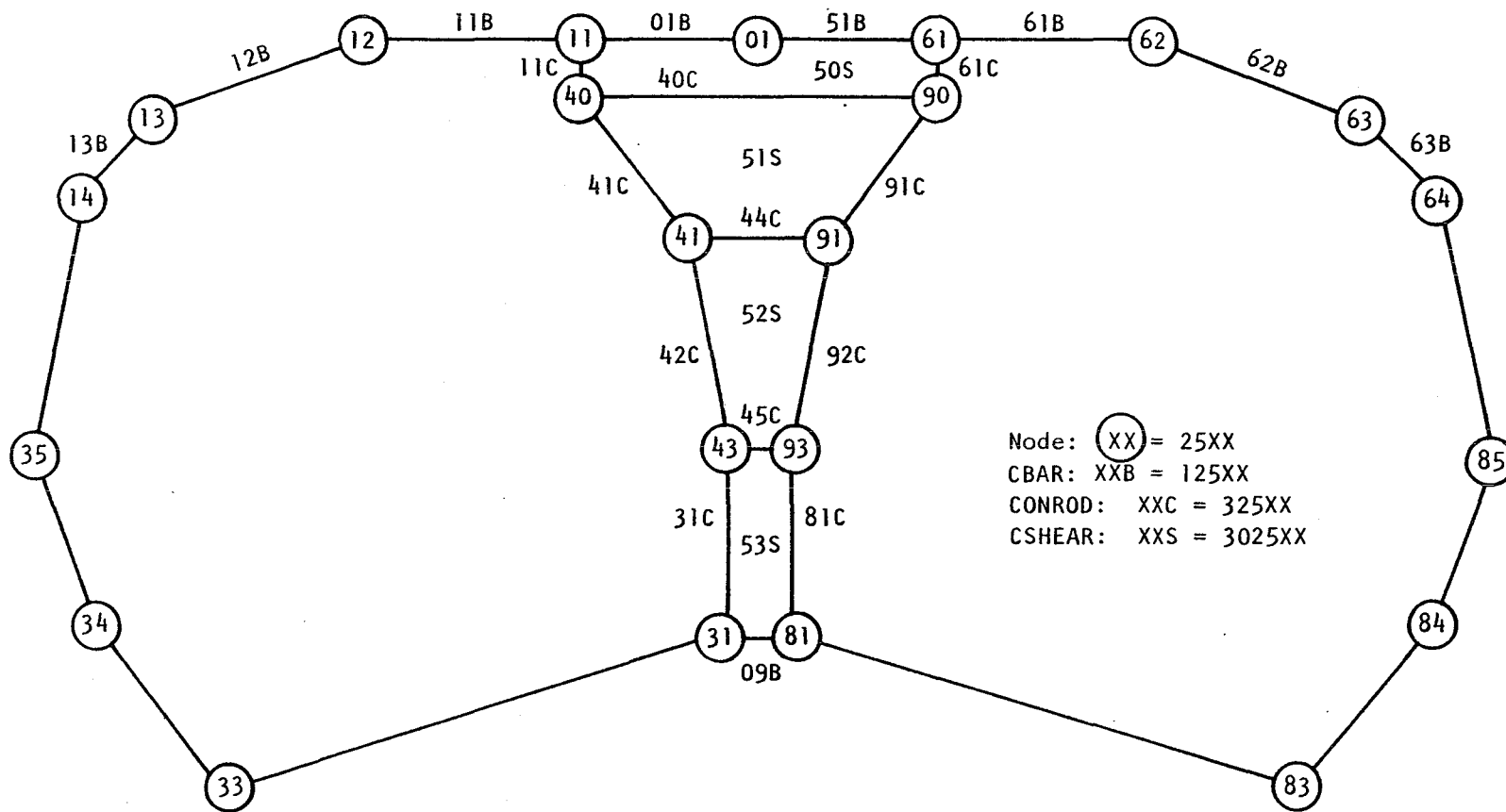


Figure E-33. 25 Nacelle Station 362.65.

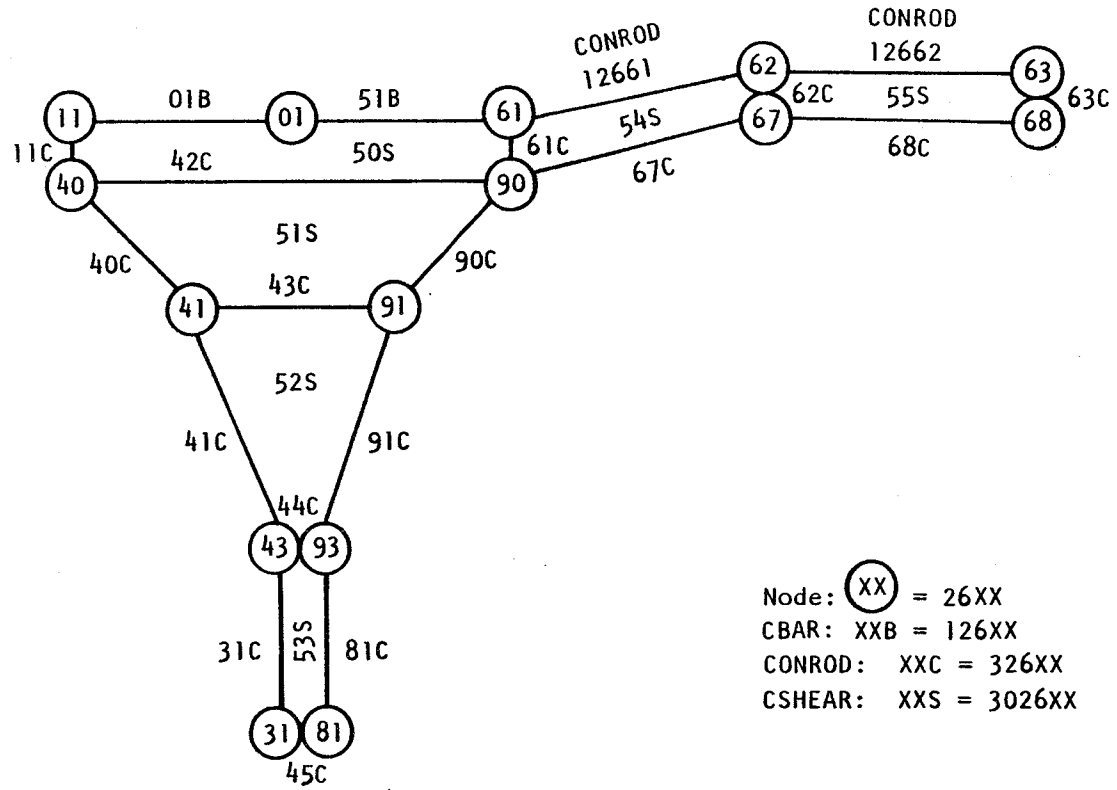


Figure E-34. 26 Nacelle Station 388.75.

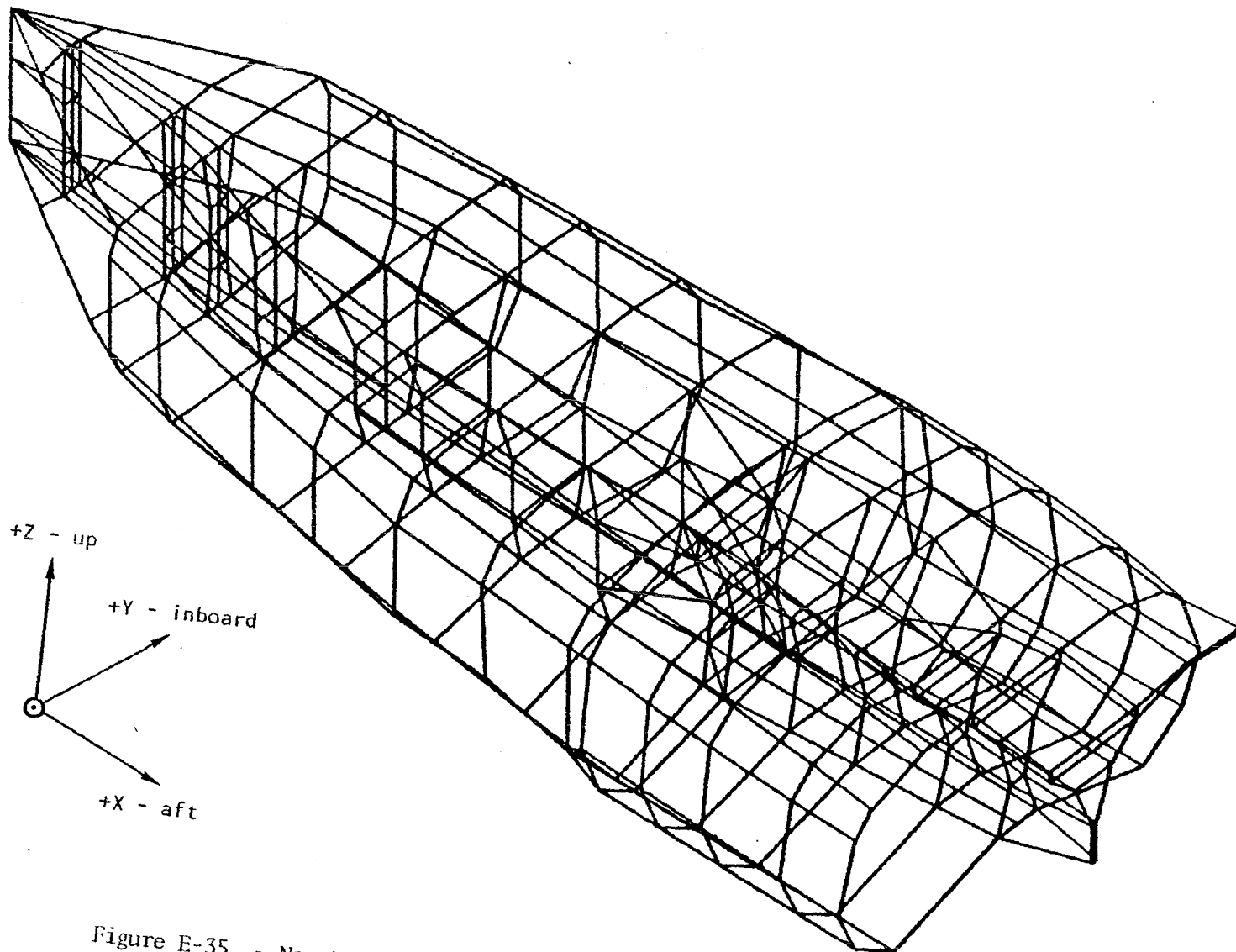


Figure E-35. - Nacelle NASTRAN model computer graphics display of elements.

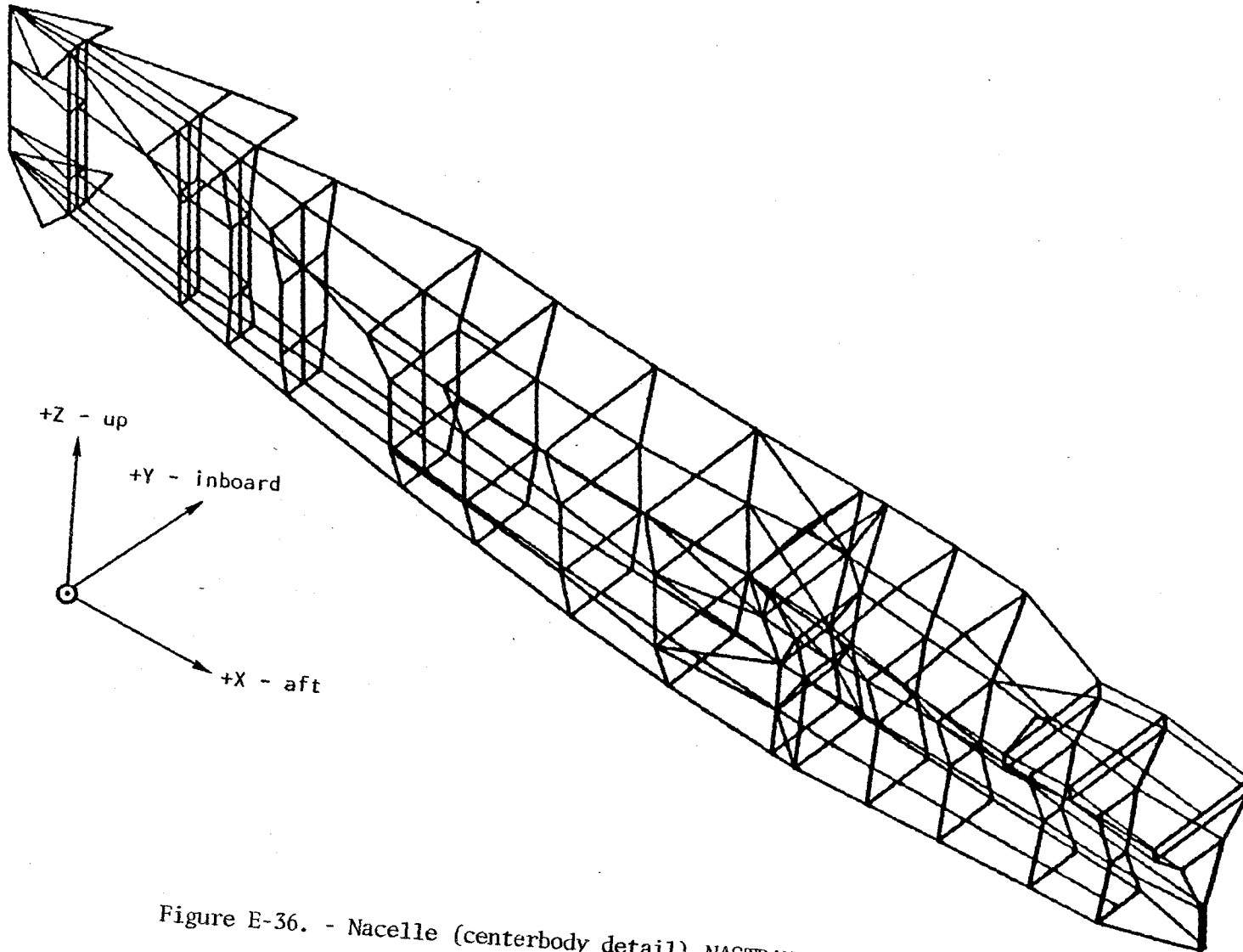


Figure E-36. - Nacelle (centerbody detail) NASTRAN model computer graphics display of elements.

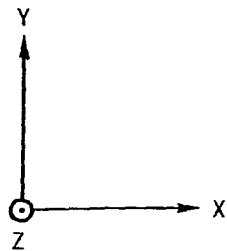
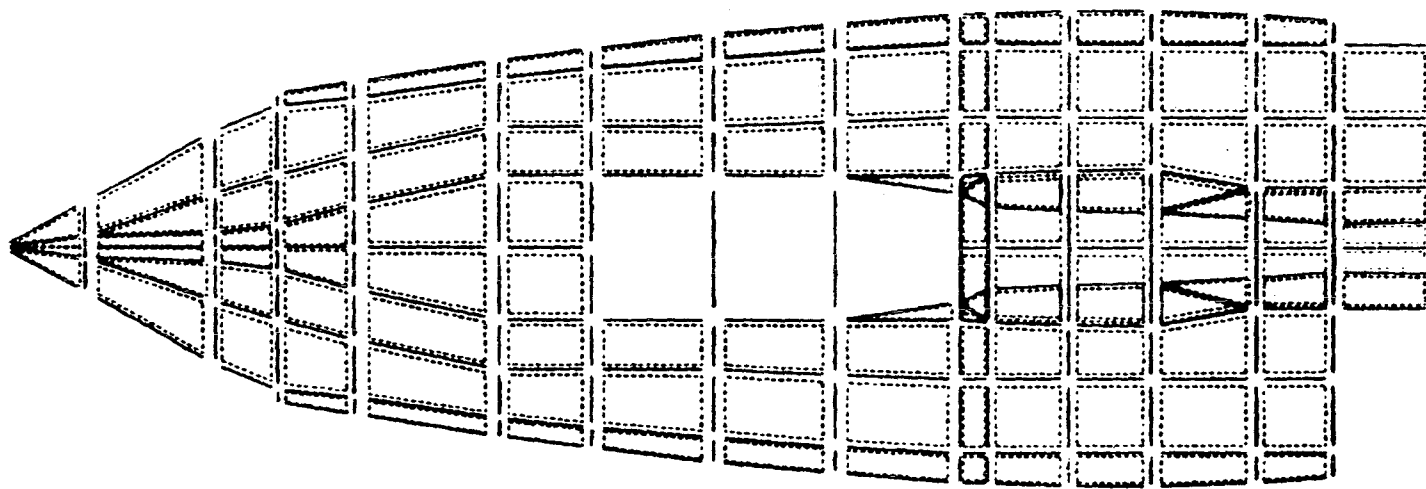


Figure E-37. - Nacelle NASTRAN model looking down.

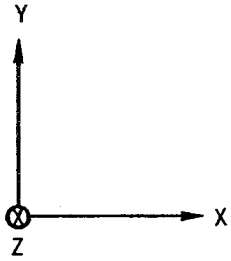
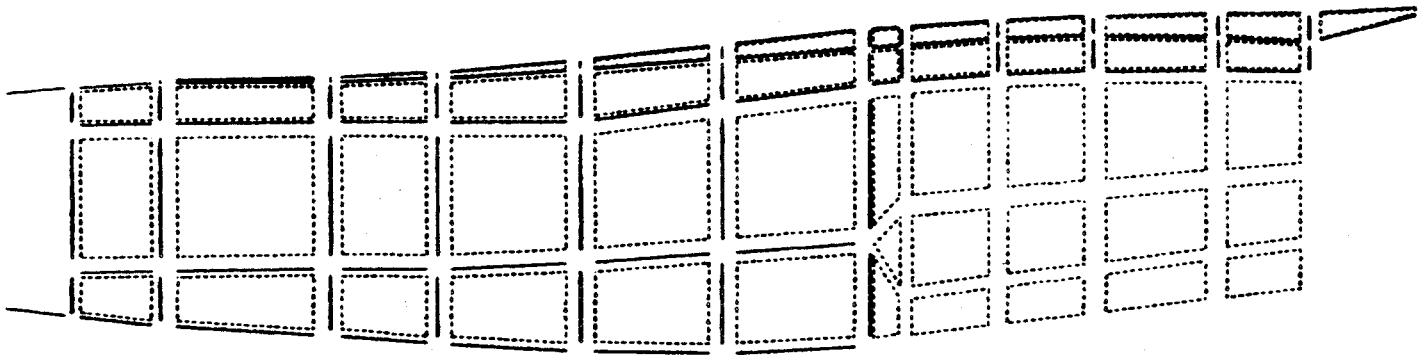


Figure E-38. - Nacelle NASTRAN model looking inboard.

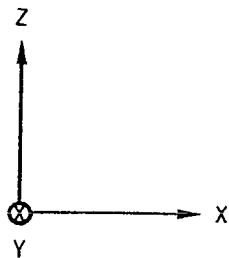
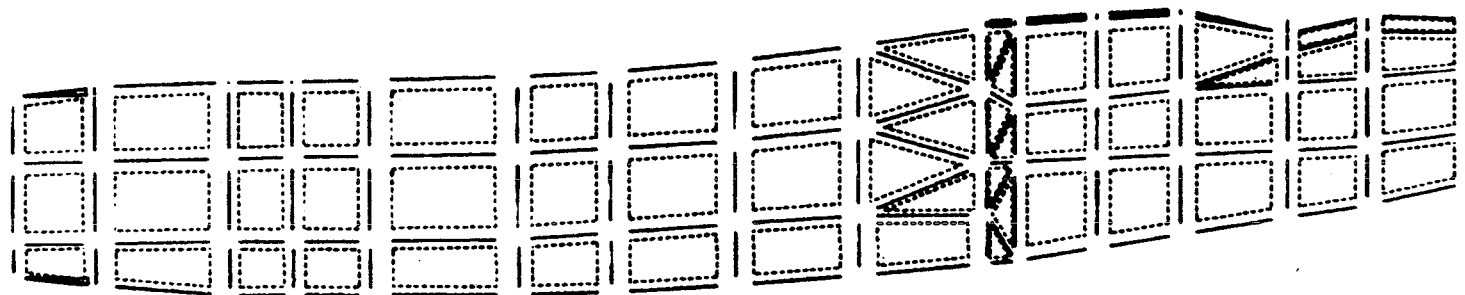


Figure E-39. - Nacelle NASTRAN model of centerbody.

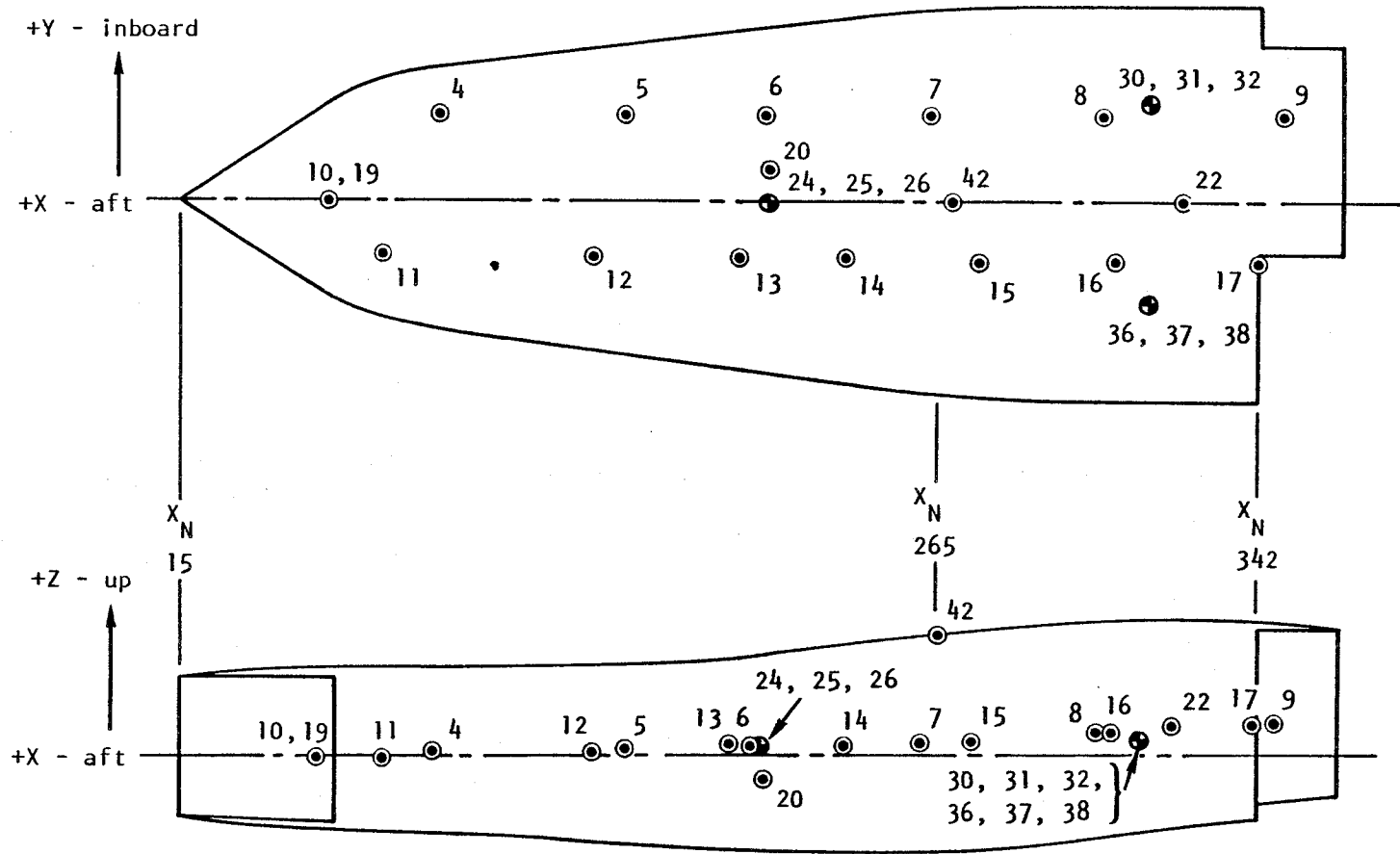


Figure E-40. - ARS nacelle SIC points.

TABLE E-I. - NACELLE STRUCTURAL INFLUENCE COEFFICIENT POINTS

SIC	LOAD SENSE	Description	X_N	Y_N	Z_N
4	Z	Nacelle grid force	98.8005	26.9617	1.0889
5	Z	Nacelle grid force	160.9946	27.5041	2.3792
6	Z	Nacelle grid force	206.6033	27.9018	3.3254
7	Z	Nacelle grid force	261.4292	28.3799	4.4628
8	Z	Nacelle grid force	318.4548	28.8772	5.6458
9	Z	Nacelle grid force	376.8188	29.2559	9.8544
10	Z	Nacelle fwd Z-load	69.5305	- 1.6178	- 0.7552
11	Z	Nacelle grid force	82.6743	-19.8965	- 1.2858
12	Z	Nacelle grid force	151.2271	-19.2987	0.1364
13	Z	Nacelle grid force	199.9946	-18.8735	1.1481
14	Z	Nacelle grid force	235.7656	-18.5615	1.8902
15	Z	Nacelle grid force	278.7244	-18.2303	3.7807
16	Z	Nacelle grid force	323.3923	-17.9277	6.7059
17	Z	Nacelle grid force	369.1604	-17.6155	9.6539
19	Y	Nacelle fwd Y-load	69.5305	- 1.6178	- .7552
20	Y	Nacelle accelerometer, A/C-2	209.9834	10.1627	-10.3955
22	Y	Nacelle aft Y-load	343.2000	0.5949	8.9193
24	Y	Nacelle CG w/o engines	208.3066	0.0	2.5357
25	Y	Nacelle CG w/o engines	208.3066	0.0	2.5357
26	Y	Nacelle CG w/o engines	208.3066	0.0	2.5357
30	X	Nacelle CG, inboard	334.1887	32.5556	5.5662
31	Y	Nacelle CG, inboard	334.1887	32.5556	5.5662
32	Z	Nacelle CG, inboard	334.1887	32.5556	5.5662
36	X	Nacelle CG, outboard	334.2561	-32.5583	5.5674
37	Y	Nacelle CG, outboard	334.2561	-32.5583	5.5674
38	Z	Nacelle CG, outboard	334.2561	-32.5583	5.5674
42	Z	Nacelle hard pt roller pad	265.2500	0.0	38.7400

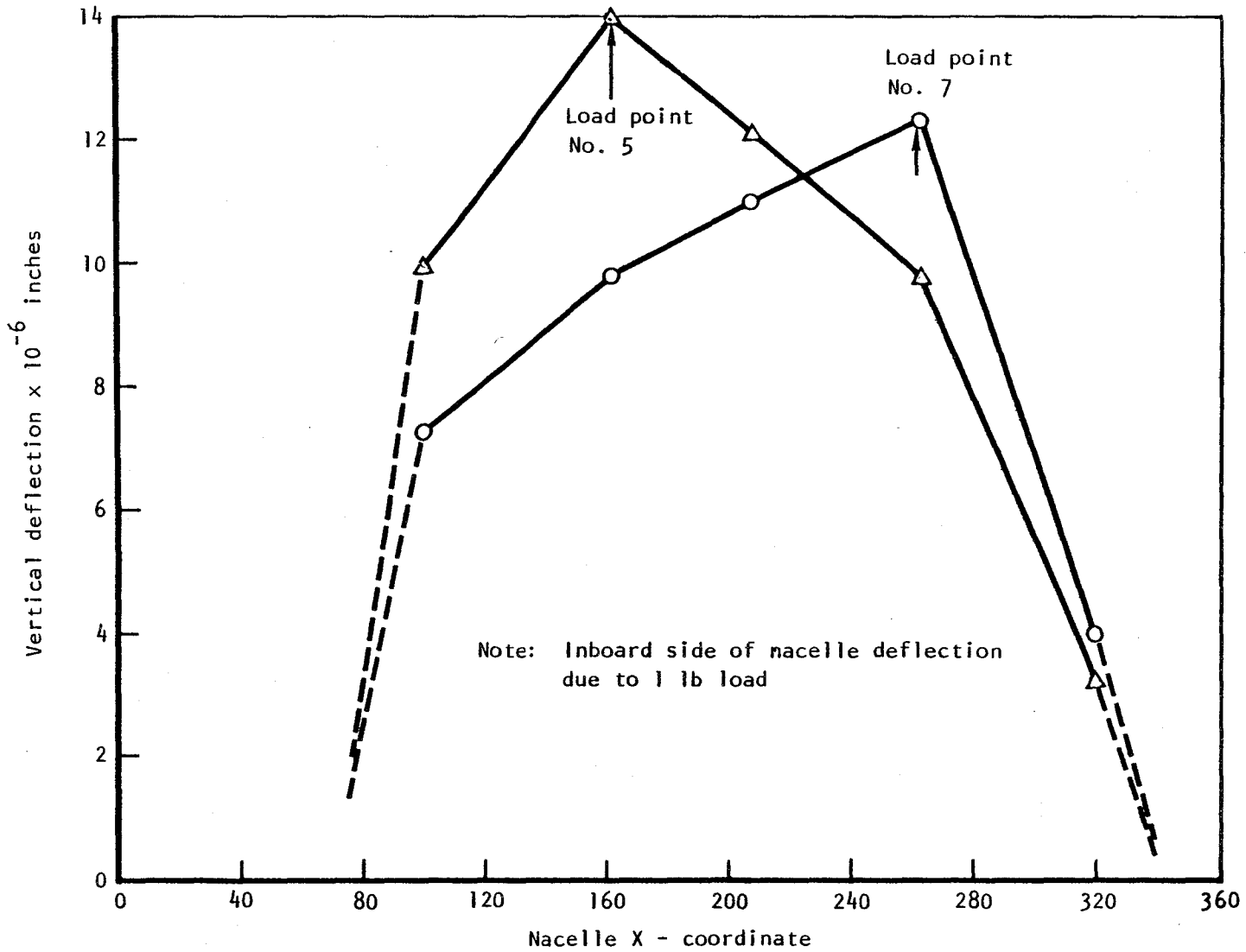


Figure E-41. - Airloads research study - NASTRAN nacelle model deflections - A/C-2

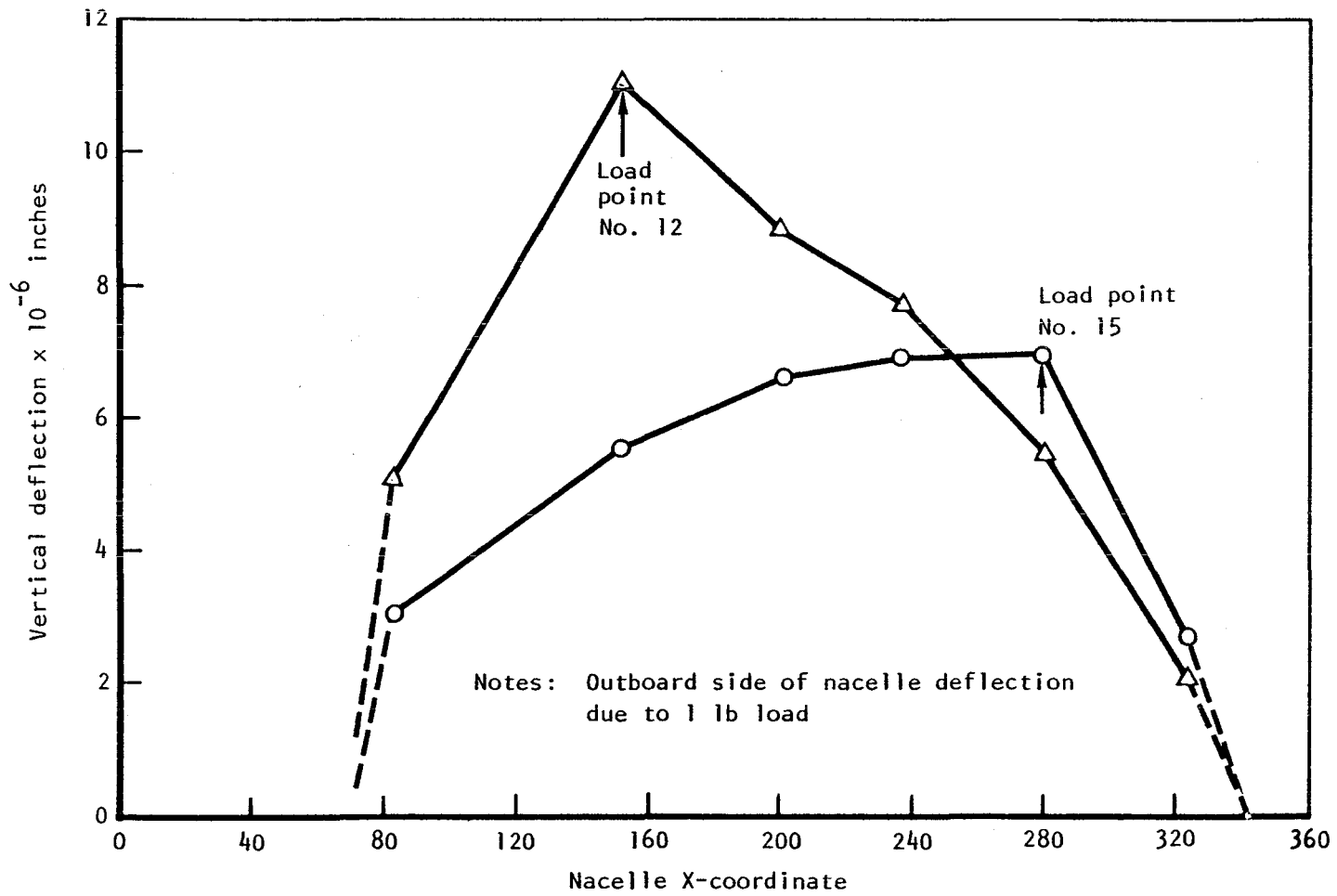


Figure E-42. - Airloads research study - NASTRAN nacelle model deflections - A/C-2

Airloads Research Study - Nacelle

SORTED BULK DATA ECHO										
CARD COUNT	1	2	3	4	5	6	7	8	9	10
1-	CBAR	1291	306	1201	1301	1202			2	
2-	CBAR	1301	307	1301	1401	1202			2	
3-	CBAR	11201	201	1201	1211	1202			2	
4-	CBAR	11209	203	1209	1231	1202			2	
5-	CBAR	11211	200	1211	1213	1202			2	
6-	CBAR	11231	202	1231	1233	1202			2	
7-	CBAR	11251	201	1261	1201	1202			2	
8-	CBAR	11259	203	1281	1209	1202			2	
9-	CBAR	11251	200	1263	1261	1202			2	
10-	CBAR	11281	202	1283	1281	1202			2	
11-	CBAR	11301	206	1301	1311	1302			2	
12-	CBAR	11309	212	1309	1331	1302			2	
13-	CBAR	11311	205	1311	1312	1302			2	
14-	CBAR	11312	204	1312	1313	1302			2	
15-	CBAR	11331	211	1331	1333	1302			2	
16-	CBAR	11351	206	1361	1381	1302			2	
17-	CBAR	11359	212	1309	1381	1302			2	
18-	CBAR	11361	205	1362	1361	1302			2	
19-	CBAR	11352	204	1363	1362	1302			2	
20-	CBAR	11381	211	1381	1383	1302			2	
21-	CBAR	11399	1399	1301	1399	1201			2	+11399
22-	+11399		456							
23-	CBAR	11401	210	1401	1411	1402			2	
24-	CBAR	11409	215	1409	1431	1402			2	
25-	CBAR	11411	209	1411	1412	1402			2	
26-	CBAR	11412	208	1412	1413	1402			2	
27-	CBAR	11413	207	1413	1414	1402			2	
28-	CBAR	11414	292	1414	1434	1402			2	
29-	CBAR	11431	214	1431	1433	1402			2	
30-	CBAR	11433	213	1433	1434	1402			2	
31-	CBAR	11451	210	1461	1401	1402			2	
32-	CBAR	11459	215	1461	1409	1402			2	
33-	CBAR	11451	209	1462	1461	1402			2	
34-	CBAR	11462	208	1462	1463	1402			2	
35-	CBAR	11463	207	1463	1464	1402			2	
36-	CBAR	11454	292	1464	1484	1402			2	
37-	CBAR	11481	214	1461	1483	1402			2	
38-	CBAR	11483	213	1464	1483	1402			2	
39-	CBAR	11501	219	1501	1511	1502			2	
40-	CBAR	11509	222	1509	1531	1502			2	
41-	CBAR	11511	218	1512	1511	1502			2	
42-	CBAR	11512	217	1512	1513	1502			2	
43-	CBAR	11513	216	1513	1514	1502			2	
44-	CBAR	11514	293	1514	1534	1502			2	
45-	CBAR	11531	221	1531	1533	1502			2	
46-	CBAR	11533	220	1534	1533	1502			2	
47-	CBAR	11551	219	1561	1501	1502			2	
48-	CBAR	11559	222	1509	1581	1502			2	
49-	CBAR	11561	218	1562	1561	1502			2	
50-	CBAR	11562	217	1563	1562	1502			2	

S O R T E D B U L K D A T A E C H O

CARD COUNT	1	2	3	4	5	6	7	8	9	10
51-	CBAR	11553	216	1564	1563	1502			2	
52-	CBAR	11564	293	1564	1584	1502			2	
53-	CBAR	11581	221	1581	1583	1502			2	
54-	CBAR	11583	220	1583	1584	1502			2	
55-	CBAR	11601	226	1601	1611	1602			2	
56-	CBAR	11609	229	1609	1631	1602			2	
57-	CBAR	11611	225	1611	1612	1602			2	
58-	CBAR	11612	224	1612	1613	1602			2	
59-	CBAR	11613	223	1613	1614	1602			2	
60-	CBAR	11614	294	1614	1634	1602			2	
61-	CBAR	11631	228	1631	1633	1602			2	
62-	CBAR	11633	227	1633	1634	1602			2	
63-	CBAR	11651	226	1651	1601	1602			2	
64-	CBAR	11659	229	1651	1609	1602			2	
65-	CBAR	11651	225	1652	1661	1602			2	
66-	CBAR	11652	224	1663	1662	1602			2	
67-	CBAR	11663	223	1664	1663	1602			2	
68-	CBAR	11654	294	1664	1684	1602			2	
69-	CBAR	11681	228	1683	1681	1602			2	
70-	CBAR	11683	227	1684	1683	1602			2	
71-	CBAR	11701	233	1701	1711	1742			2	
72-	CBAR	11709	236	1709	1731	1742			2	
73-	CBAR	11711	232	1711	1712	1742			2	
74-	CBAR	11712	231	1712	1713	1742			2	
75-	CBAR	11713	230	1713	1714	1742			2	
76-	CBAR	11714	296	1714	1734	1742			2	
77-	CBAR	11731	235	1731	1733	1742			2	
78-	CBAR	11733	234	1733	1734	1742			2	
79-	CBAR	11751	233	1701	1761	1742			2	
80-	CBAR	11759	236	1709	1781	1742			2	
81-	CBAR	11751	232	1761	1762	1742			2	
82-	CBAR	11752	231	1763	1762	1742			2	
83-	CBAR	11753	230	1764	1763	1742			2	
84-	CBAR	11754	296	1764	1784	1742			2	
85-	CBAR	11781	235	1781	1783	1742			2	
86-	CBAR	11783	234	1783	1784	1742			2	
87-	CBAR	11801	240	1861	1811	1842			2	
88-	CBAR	11809	243	1809	1831	1842			2	
89-	CBAR	11811	238	1811	1812	1842			2	
90-	CBAR	11812	238	1812	1813	1842			2	
91-	CBAR	11813	237	1813	1814	1842			2	
92-	CBAR	11814	297	1814	1834	1842			2	
93-	CBAR	11831	242	1831	1833	1842			2	
94-	CBAR	11833	241	1833	1834	1842			2	
95-	CBAR	11859	243	1809	1881	1842			2	
96-	CBAR	11851	238	1862	1861	1842			2	
97-	CBAR	11852	238	1863	1862	1842			2	
98-	CBAR	11863	237	1864	1863	1842			2	
99-	CBAR	11864	297	1864	1884	1842			2	
100-	CBAR	11881	242	1881	1883	1842			2	

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SORTED BULK DATA ECHO

CARD COUNT	.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.	
101-	CBAR	11883	241	1883	1884	1842																2
102-	CBAR	11901	247	1961	1911	1942																2
103-	CBAR	11909	250	1909	1931	1942																2
104-	CBAR	11911	246	1911	1912	1942																2
105-	CBAR	11912	245	1912	1913	1942																2
106-	CBAR	11913	244	1913	1914	1942																2
107-	CBAR	11914	298	1914	1934	1942																2
108-	CBAR	11931	249	1931	1933	1942																2
109-	CBAR	11933	248	1933	1934	1942																2
110-	CBAR	11959	250	1909	1981	1942																2
111-	CBAR	11961	246	1961	1962	1942																2
112-	CBAR	11962	245	1962	1963	1942																2
113-	CBAR	11963	244	1964	1963	1942																2
114-	CBAR	11954	298	1964	1984	1942																2
115-	CBAR	11981	249	1981	1983	1942																2
116-	CBAR	11983	248	1983	1984	1942																2
117-	CBAR	12001	254	2001	2011	2041																2
118-	CBAR	12009	257	2009	2031	2041																2
119-	+12009		456																			+12009
120-	CBAR	12011	253	2011	2012	2041																2
121-	CBAR	12012	252	2012	2013	2041																2
122-	CBAR	12013	251	2013	2014	2041																2
123-	+12013		456																			+12013
124-	CBAR	12014	264	2014	2034	2041																2
125-	CBAR	12031	264	2031	2033	2041																2
126-	CBAR	12034	264	2034	2033	2041																2
127-	CBAR	12051	254	2001	2061	2041																2
128-	CBAR	12059	257	2009	2081	2041																2
129-	+12059		456																			+12059
130-	CBAR	12061	253	2061	2062	2041																2
131-	CBAR	12062	252	2062	2063	2041																2
132-	CBAR	12063	251	2063	2064	2041																2
133-	+12063		456																			+12063
134-	CBAR	12054	264	2064	2084	2041																2
135-	CBAR	12081	264	2081	2083	2041																2
136-	CBAR	12084	264	2084	2083	2041																2
137-	CBAR	12101	261	2101	2111	2141																2
138-	CBAR	12109	264	2181	2131	2141																2
139-	+12109	456	456																			+12109
140-	CBAR	12111	260	2111	2112	2141																2
141-	CBAR	12112	259	2112	2113	2141																2
142-	CBAR	12113	258	2113	2114	2141																2
143-	+12113		456																			+12113
144-	CBAR	12151	261	2101	2161	2141																2
145-	CBAR	12151	260	2161	2162	2141																2
146-	CBAR	12162	259	2162	2163	2141																2
147-	CBAR	12153	258	2163	2164	2141																2
148-	+12163		456																			+12163
149-	CBAR	12201	268	2201	2211	2243																2
150-	CBAR	12209	271	2281	2231	2243																2

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CARD COUNT	1	2	3	4	5	6	7	8	9	10
151-	+12209	456	456							
152-	CBAR	12211	267	2211	2212	2243		2		
153-	CBAR	12212	266	2212	2213	2243		2		
154-	CBAR	12213	265	2213	2214	2243		2		+12213
155-	+12213		456							
156-	CBAR	12251	268	2201	2261	2243		2		
157-	CBAR	12251	267	2261	2262	2243		2		
158-	CBAR	12262	266	2262	2263	2243		2		
159-	CBAR	12263	265	2263	2264	2243		2		+12263
160-	+12263		456							
161-	CBAR	12301	274	2301	2311	2343		2		
162-	CBAR	12309	277	2381	2331	2343		2		+12309
163-	+12309	456	456							
164-	CBAR	12311	270	2311	2312	2343		2		
165-	CBAR	12312	270	2312	2313	2343		2		
166-	CBAR	12313	270	2313	2314	2343		2		+12313
167-	+12313		456							
168-	CBAR	12351	274	2301	2361	2343		2		
169-	CBAR	12361	270	2361	2362	2343		2		
170-	CBAR	12362	270	2362	2363	2343		2		
171-	CBAR	12363	270	2363	2364	2343		2		+12363
172-	+12363		456							
173-	CBAR	12401	281	2401	2411	2441		2		
174-	CBAR	12409	284	2411	2431	2441		2		+12409
175-	+12409	456	456							
176-	CBAR	12411	280	2411	2412	2441		2		
177-	CBAR	12412	279	2412	2413	2441		2		
178-	CBAR	12413	278	2413	2414	2441		2		+12413
179-	+12413		456							
180-	CBAR	12451	281	2401	2461	2441		2		
181-	CBAR	12461	280	2461	2462	2441		2		
182-	CBAR	12462	279	2462	2463	2441		2		
183-	CBAR	12463	278	2463	2464	2441		2		+12463
184-	+12463		456							
185-	CBAR	12501	288	2501	2511	2541		2		
186-	CBAR	12509	291	2501	2531	2541		2		+12509
187-	+12509	456	456							
188-	CBAR	12511	287	2511	2512	2541		2		
189-	CBAR	12512	286	2512	2513	2541		2		
190-	CBAR	12513	285	2513	2514	2541		2		+12513
191-	+12513		456							
192-	CBAR	12551	288	2501	2561	2541		2		
193-	CBAR	12561	287	2561	2562	2541		2		
194-	CBAR	12562	286	2562	2563	2541		2		
195-	CBAR	12563	285	2563	2564	2541		2		+12563
196-	+12563		456							
197-	CBAR	12601	305	2601	2611	2643		2		
198-	CBAR	12651	305	2601	2661	2643		2		
199-	CBAR	31931	300	1931	1944	1942		2		
200-	CBAR	31944	300	1944	1994	1942		2		

SORTED BULK DATA ECHO

CARD COUNT	1	2	3	4	5	6	7	8	9	10
201-	CBAR	31981	300	1981	1994	1942			2	
202-	CBAR	32011	301	2011	2041	2033			2	
203-	CBAR	32031	301	2031	2044	2041			2	
204-	CBAR	32041	301	2041	2043	2033			2	
205-	CBAR	32043	301	2043	2044	2041			2	
206-	CBAR	32051	301	2061	2091	2041			2	
207-	CBAR	32081	301	2081	2094	2041			2	
208-	CBAR	32091	301	2091	2093	2041			2	
209-	CBAR	32093	301	2093	2094	2041			2	
210-	CBAR	32111	302	2111	2141	2135			2	
211-	CBAR	32131	302	2131	2143	2141			2	
212-	CBAR	32141	302	2141	2143	2135			2	
213-	CBAR	32161	302	2161	2191	2141			2	
214-	CBAR	32181	302	2181	2193	2141			2	
215-	CBAR	32191	302	2191	2193	2141			2	
216-	CBAR	32211	303	2211	2241	2243			2	
217-	CBAR	32242	303	2241	2291	2243			2	
218-	CBAR	32261	303	2261	2291	2243			2	
219-	CBAR	32311	304	2311	2341	2343			2	
220-	CBAR	32342	304	2341	2391	2343			2	
221-	CBAR	32351	304	2361	2391	2343			2	
222-	CONROD	1109	1109	1283	1	.15				
223-	CONROD	1110	1109	1233	1	.15				
224-	CONROD	1111	1101	1211	1	.6				
225-	CONROD	1113	1101	1213	1	.150				
226-	CONROD	1131	1109	1231	1	.6				
227-	CONROD	1142	1102	1242	1	.150				
228-	CONROD	1144	1104	1244	1	.01				
229-	CONROD	1161	1101	1261	1	.6				
230-	CONROD	1163	1101	1263	1	.150				
231-	CONROD	1181	1109	1281	1	.6				
232-	CONROD	1192	1102	1292	1	.150				
233-	CONROD	1194	1104	1294	1	.8				
234-	CONROD	1202	1202	1302	1	.4				
235-	CONROD	1204	1204	1304	1	.4				
236-	CONROD	1209	1209	1309	1	1.0				
237-	CONROD	1211	1211	1311	1	.6				
238-	CONROD	1212	1211	1312	1	.15				
239-	CONROD	1213	1213	1313	1	.6				
240-	CONROD	1231	1231	1331	1	.6				
241-	CONROD	1233	1233	1333	1	.15				
242-	CONROD	1261	1261	1361	1	.6				
243-	CONROD	1262	1261	1362	1	.15				
244-	CONROD	1263	1263	1363	1	.6				
245-	CONROD	1281	1281	1381	1	.6				
246-	CONROD	1283	1283	1383	1	.15				
247-	CONROD	1309	1309	1409	1	.01				
248-	CONROD	1311	1311	1411	1	2.0				
249-	CONROD	1312	1312	1412	1	.15				
250-	CONROD	1313	1313	1413	1	.7				

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SORTED BULK DATA ECHO

CARD COUNT	1	2	3	4	5	6	7	8	9	10
251-	CONROD	1331	1331	1431	1	.75				
252-	CONROD	1333	1333	1433	1	.7				
253-	CONROD	1342	1342	1442	1	.41				
254-	CONROD	1344	1344	1444	1	.41				
255-	CONROD	1361	1361	1461	1	2.0				
256-	CONROD	1362	1362	1462	1	.15				
257-	CONROD	1363	1363	1463	1	.7				
258-	CONROD	1381	1381	1481	1	.75				
259-	CONROD	1383	1383	1483	1	.7				
260-	CONROD	1392	1392	1492	1	.41				
261-	CONROD	1394	1394	1494	1	.41				
262-	CONROD	1401	1401	1501	1	.2				
263-	CONROD	1402	1402	1502	1	.5				
264-	CONROD	1404	1404	1504	1	.5				
265-	CONROD	1409	1409	1509	1	.2				
266-	CONROD	1411	1411	1511	1	1.63				
267-	CONROD	1412	1412	1512	1	.15				
268-	CONROD	1413	1413	1513	1	.7				
269-	CONROD	1414	1414	1514	1	.3				
270-	CONROD	1431	1431	1531	1	1.00				
271-	CONROD	1433	1433	1533	1	.7				
272-	CONROD	1434	1434	1534	1	.3				
273-	CONROD	1461	1461	1561	1	1.63				
274-	CONROD	1462	1462	1562	1	.15				
275-	CONROD	1463	1463	1563	1	.7				
276-	CONROD	1464	1464	1564	1	.3				
277-	CONROD	1481	1481	1581	1	1.00				
278-	CONROD	1483	1483	1583	1	.7				
279-	CONROD	1484	1484	1584	1	.3				
280-	CONROD	1501	1501	1601	1	.2				
281-	CONROD	1502	1502	1602	1	.65				
282-	CONROD	1504	1504	1604	1	.65				
283-	CONROD	1509	1509	1609	1	.2				
284-	CONROD	1511	1511	1611	1	1.63				
285-	CONROD	1512	1512	1612	1	.15				
286-	CONROD	1513	1513	1613	1	.7				
287-	CONROD	1514	1514	1614	1	.3				
288-	CONROD	1531	1531	1631	1	1.21				
289-	CONROD	1533	1533	1633	1	.78				
290-	CONROD	1534	1534	1634	1	.3				
291-	CONROD	1561	1561	1661	1	1.63				
292-	CONROD	1562	1562	1662	1	.15				
293-	CONROD	1563	1563	1663	1	.7				
294-	CONROD	1564	1564	1664	1	.3				
295-	CONROD	1581	1581	1681	1	1.21				
296-	CONROD	1583	1583	1683	1	.78				
297-	CONROD	1584	1584	1684	1	.3				
298-	CONROD	1601	1601	1701	1	.2				
299-	CONROD	1609	1609	1709	1	.2				
300-	CONROD	1611	1611	1711	1	1.710				

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S O R T E D B U L K D A T A E C H O

CARD COUNT	1	2	3	4	5	6	7	8	9	10
301-	CONR CD	1612	1612	1712	1	.15				
302-	CONROD	1613	1613	1713	1	.7				
303-	CONROD	1614	1514	1714	1	.6				
304-	CONROD	1631	1631	1731	1	1.46				
305-	CONROD	1633	1633	1733	1	1.4				
306-	CONROD	1634	1634	1734	1	.6				
307-	CONROD	1642	1642	1742	1	.15				
308-	CONROD	1644	1644	1744	1	.15				
309-	CONROD	1661	1661	1761	1	1.710				
310-	CONROD	1662	1662	1762	1	.15				
311-	CONROD	1663	1663	1763	1	.7				
312-	CONROD	1664	1664	1764	1	.6				
313-	CONROD	1681	1681	1781	1	1.46				
314-	CONR CD	1683	1683	1783	1	1.4				
315-	CONR CD	1684	1684	1784	1	.6				
316-	CONROD	1692	1692	1792	1	.15				
317-	CONROD	1694	1694	1794	1	.15				
318-	CONROD	1709	1709	1809	1	.01				
319-	CONROD	1711	1711	1811	1	1.68				
320-	CONROD	1712	1712	1812	1	.15				
321-	CONROD	1713	1713	1813	1	.65				
322-	CONROD	1714	1714	1814	1	.6				
323-	CONROD	1731	1731	1831	1	1.8				
324-	CONROD	1733	1733	1833	1	1.82				
325-	CONR CD	1734	1734	1834	1	1.36				
326-	CONROD	1742	1742	1842	1	.15				
327-	CONR CD	1744	1744	1844	1	.15				
328-	CONROD	1761	1761	1861	1	1.6A				
329-	CONROD	1762	1762	1862	1	.15				
330-	CONR CD	1763	1763	1863	1	.65				
331-	CONROD	1764	1764	1864	1	.6				
332-	CONR CD	1781	1781	1881	1	1.8				
333-	CONROD	1783	1783	1883	1	1.82				
334-	CONR CD	1784	1784	1884	1	1.36				
335-	CONROD	1792	1792	1892	1	.15				
336-	CONROD	1794	1794	1894	1	.15				
337-	CONR CD	1809	1809	1909	1	.01				
338-	CONR CD	1811	1811	1911	1	.95				
339-	CONROD	1812	1812	1912	1	.15				
340-	CONROD	1813	1813	1913	1	.38				
341-	CONR CD	1814	1814	1914	1	.6				
342-	CONROD	1831	1831	1931	1	1.16				
343-	CONROD	1833	1833	1933	1	1.59				
344-	CONROD	1834	1834	1934	1	1.36				
345-	CONR CD	1842	1842	1942	1	.15				
346-	CONR CD	1844	1844	1944	1	.15				
347-	CONROD	1861	1861	1961	1	.95				
348-	CONROD	1862	1862	1962	1	.15				
349-	CONROD	1863	1863	1963	1	.38				
350-	CONROD	1864	1864	1964	1	.6				

S O R T E D B U L K D A T A E C H O

CARD COUNT	1	2	3	4	5	6	7	8	9	10
351-	CONROD	1881	1881	1981	1	1.16				
352-	CONROD	1883	1883	1983	1	1.59				
353-	CONROD	1884	1884	1984	1	1.36				
354-	CONROD	1892	1892	1992	1	.15				
355-	CONROD	1894	1894	1994	1	.15				
356-	CONROD	1909	1909	2009	1	.01				
357-	CONROD	1910	1911	2041	1	.15				
358-	CONROD	1911	1911	2011	1	1.16				
359-	CONROD	1912	1912	2012	1	.25				
360-	CONROD	1913	1913	2013	1	.15				
361-	CONROD	1914	1914	2014	1	.6				
362-	CONROD	1931	1931	2031	3	1.43				
363-	CONROD	1933	1933	2033	1	1.0				
364-	CONROD	1934	1934	2034	1	.63				
365-	CONROD	1941	1942	2041	1	.25				
366-	CONROD	1942	1942	2043	1	.15				
367-	CONROD	1943	1944	2043	3	.21				
368-	CONROD	1944	1944	2044	1	.15				
369-	CONROD	1960	1961	2061	1	1.16				
370-	CONROD	1961	1961	2091	1	.15				
371-	CONROD	1962	1962	2062	1	.25				
372-	CONROD	1963	1963	2063	1	.15				
373-	CONROD	1964	1964	2064	1	.6				
374-	CONROD	1981	1981	2081	3	1.43				
375-	CONROD	1983	1983	2083	1	1.0				
376-	CONROD	1984	1984	2084	1	.63				
377-	CONROD	1991	1992	2091	1	.25				
378-	CONROD	1992	1992	2093	1	.15				
379-	CONROD	1993	1994	2093	3	.21				
380-	CONROD	1994	1994	2094	1	.15				
381-	CONROD	2001	2001	2101	2	.01				
382-	CONROD	2011	2011	2111	2	.74				
383-	CONROD	2012	2012	2112	2	.15				
384-	CONROD	2013	2013	2113	2	.01				
385-	CONROD	2014	2014	2114	2	.48				
386-	CONROD	2031	2031	2131	3	.7				
387-	CONROD	2041	2041	2141	2	.25				
388-	CONROD	2042	2043	2141	2	.01				
389-	CONROD	2043	2043	2143	3	.3				
390-	CONROD	2044	2044	2143	2	.15				
391-	CONROD	2045	2041	2111	2	.15				
392-	CONROD	2045	2044	2131	2	.15				
393-	CONROD	2061	2061	2161	2	.74				
394-	CONROD	2062	2062	2162	2	.15				
395-	CONROD	2063	2063	2163	2	.01				
396-	CONROD	2064	2064	2164	2	.48				
397-	CONROD	2081	2081	2181	3	.7				
398-	CONROD	2091	2091	2191	2	.25				
399-	CONROD	2092	2093	2191	2	.01				
400-	CONROD	2093	2093	2193	3	.3				

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CARD COUNT	1	2	3	4	5	6	7	8	9	10
401-	CONR CD	2094	2094	2193	2	.15				
402-	CONR CD	2095	2091	2161	2	.15				
403-	CONROD	2096	2094	2121	2	.15				
404-	CONR CD	2101	2101	2201	2	.01				
405-	CONROD	2111	2111	2211	2	1.27				
406-	CONROD	2112	2112	2212	2	.15				
407-	CONR CD	2113	2113	2213	2	.01				
408-	CONROD	2114	2114	2214	2	.61				
409-	CONROD	2131	2131	2231	3	.48				
410-	CONROD	2141	2141	2241	2	.28				
411-	CONROD	2143	2143	2243	3	.3				
412-	CONROD	2161	2161	2261	2	1.27				
413-	CONROD	2162	2162	2262	2	.15				
414-	CONR CD	2163	2163	2263	2	.01				
415-	CONR CD	2164	2164	2264	2	.61				
416-	CONR CD	2181	2181	2281	3	.48				
417-	CONR CD	2191	2191	2291	2	.28				
418-	CONR CD	2193	2193	2293	3	.3				
419-	CONROD	2201	2201	2301	2	.01				
420-	CONROD	2211	2211	2311	2	1.65				
421-	CONROD	2212	2212	2312	2	.15				
422-	CONROD	2213	2213	2313	2	.01				
423-	CONROD	2214	2214	2314	2	.61				
424-	CONR CD	2231	2231	2331	3	.23				
425-	CONROD	2241	2241	2341	2	.28				
426-	CONROD	2243	2243	2343	3	.3				
427-	CONROD	2261	2261	2361	2	1.65				
428-	CONROD	2262	2262	2362	2	.15				
429-	CONR CD	2263	2263	2363	2	.01				
430-	CONROD	2264	2264	2364	2	.61				
431-	CONR CD	2281	2281	2381	3	.23				
432-	CONROD	2291	2291	2391	2	.28				
433-	CONR CD	2293	2293	2393	3	.3				
434-	CONR CD	2301	2301	2401	2	.01				
435-	CONROD	2311	2311	2411	2	1.58				
436-	CONROD	2312	2312	2412	2	.15				
437-	CONR CD	2313	2313	2413	2	.01				
438-	CONROD	2314	2314	2414	2	.61				
439-	CONROD	2331	2331	2431	2	.18				
440-	CONROD	2340	2341	2440	2	.15				
441-	CONR CD	2341	2341	2441	2	.28				
442-	CONR CD	2343	2343	2443	2	.15				
443-	CONROD	2361	2361	2461	2	1.58				
444-	CONROD	2362	2362	2462	2	.15				
445-	CONROD	2363	2363	2463	2	.01				
446-	CONR CD	2364	2364	2464	2	.61				
447-	CONROD	2381	2381	2481	2	.18				
448-	CONR CD	2390	2391	2490	2	.15				
449-	CONR CD	2391	2391	2491	2	.28				
450-	CONROD	2393	2393	2493	2	.15				

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S O R T E D B U L K D A T A E C H O

CARD COUNT	1	2	3	4	5	6	7	8	9	10
451-	CONR CD	2401	2401	2501	2	.01				
452-	CONROD	2411	2411	2511	2	.76				
453-	CONROD	2412	2412	2512	2	.15				
454-	CONROD	2413	2413	2513	2	.15				
455-	CONR CD	2414	2414	2514	2	.61				
456-	CONROD	2431	2431	2531	2	.18				
457-	CONROD	2440	2440	2540	2	.15				
458-	CONROD	2441	2441	2541	2	.28				
459-	CONR CD	2443	2443	2543	2	.01				
460-	CONROD	2461	2461	2561	2	.76				
461-	CONROD	2462	2462	2562	2	.15				
462-	CONROD	2463	2463	2563	2	.15				
463-	CONROD	2464	2464	2564	2	.61				
464-	CONROD	2481	2481	2581	2	.18				
465-	CONROD	2490	2490	2590	2	.15				
466-	CONROD	2491	2491	2591	2	.28				
467-	CONROD	2493	2493	2593	2	.01				
468-	CONROD	2501	2501	2601	2	.01				
469-	CONROD	2511	2511	2611	2	.29				
470-	CONR CD	2531	2531	2631	2	.17				
471-	CONR CD	2540	2540	2640	2	.17				
472-	CONROD	2541	2541	2641	2	.26				
473-	CONR CD	2543	2543	2643	2	.01				
474-	CONROD	2561	2561	2661	2	.29				
475-	CONROD	2562	2562	2662	2	.5				
476-	CONROD	2563	2563	2663	2	.5				
477-	CONROC	2581	2581	2681	2	.17				
478-	CONR CD	2590	2590	2690	2	.17				
479-	CONR CD	2591	2591	2691	2	.26				
480-	CONROD	2593	2593	2693	2	.01				
481-	CONR CD	12651	2661	2662	2	.3				
482-	CONROD	12652	2662	2663	2	.3				
483-	CONROD	31101	1101	1102	1	.45				
484-	CONR CD	31102	1102	1104	1	.45				
485-	CONR CD	31104	1104	1109	1	.45				
486-	CONROD	31201	1201	1202	1	.45				
487-	CONROD	31202	1242	1202	1	1.00				
488-	CONROD	31203	1202	1292	1	1.00				
489-	CONROD	31204	1204	1202	1	.45				
490-	CONR CD	31209	1209	1204	1	.45				
491-	CONROD	31211	1211	1242	1	1.40				
492-	CONROD	31231	1231	1244	1	1.40				
493-	CONROD	31242	1242	1244	1	1.40				
494-	CONROD	31244	1244	1204	1	1.00				
495-	CONROD	31251	1261	1292	1	1.40				
496-	CONR CD	31281	1281	1294	1	1.40				
497-	CONR CD	31292	1292	1294	1	1.40				
498-	CONR CD	31294	1204	1294	1	1.00				
499-	CONROD	31301	1301	1302	1	1.20				
500-	CONROD	31302	1302	1304	1	1.20				

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SORTED BULK DATA ECHO										
CARD COUNT	1	2	3	4	5	6	7	8	9	10
501-	CONROD	31304	1304	1309	1	1.20				
502-	CONROD	31311	1311	1342	1	2.50				
503-	CONROD	31341	1302	1342	1	1.00				
504-	CONROD	31342	1342	1344	1	2.50				
505-	CONROD	31343	1304	1344	1	1.00				
506-	CONROD	31344	1344	1331	1	2.50				
507-	CONROD	31351	1361	1392	1	2.50				
508-	CONROC	31391	1302	1392	1	1.00				
509-	CONROD	31392	1392	1394	1	2.50				
510-	CONROD	31393	1304	1394	1	1.00				
511-	CONROD	31394	1394	1381	1	2.50				
512-	CONROD	31401	1401	1402	2	1.10				
513-	CONROD	31402	1402	1404	2	1.10				
514-	CONROD	31404	1404	1409	2	1.10				
515-	CONROD	31411	1411	1442	2	1.00				
516-	CONROD	31441	1402	1442	2	1.00				
517-	CONROD	31442	1442	1444	2	1.00				
518-	CONROD	31443	1404	1444	2	1.00				
519-	CONROD	31444	1444	1431	2	1.00				
520-	CONROD	31451	1461	1492	2	1.00				
521-	CONROD	31491	1402	1492	2	1.00				
522-	CONROD	31492	1492	1494	2	1.00				
523-	CONROD	31493	1404	1494	2	1.00				
524-	CONROD	31494	1494	1481	2	1.00				
525-	CONROD	31501	1501	1502	1	2.00				
526-	CONROD	31502	1502	1504	1	2.00				
527-	CONROD	31504	1504	1509	1	2.00				
528-	CONROD	31511	1511	1542	1	1.20				
529-	CONROD	31531	1531	1544	1	1.20				
530-	CONROD	31541	1502	1542	1	1.00				
531-	CONROD	31542	1542	1544	1	1.20				
532-	CONROD	31543	1544	1504	1	1.00				
533-	CONROD	31551	1561	1592	1	1.20				
534-	CONROD	31581	1581	1594	1	1.20				
535-	CONROD	31591	1502	1592	1	1.00				
536-	CONROD	31592	1592	1594	1	1.20				
537-	CONROD	31593	1594	1504	1	1.00				
538-	CONROD	31601	1601	1602	1	1.40				
539-	CONROD	31602	1602	1604	1	1.40				
540-	CONROD	31604	1604	1609	1	1.40				
541-	CONROD	31611	1611	1642	1	.40				
542-	CONROD	31631	1631	1644	1	.40				
543-	CONROD	31641	1602	1642	1	1.00				
544-	CONROD	31642	1642	1644	1	.40				
545-	CONROD	31643	1644	1604	1	1.00				
546-	CONROD	31661	1661	1692	1	.40				
547-	CONROD	31681	1681	1694	1	.40				
548-	CONROD	31691	1602	1692	1	1.00				
549-	CONROD	31692	1692	1694	1	.40				
550-	CONROD	31693	1604	1694	1	1.00				

SORTED BULK DATA ECHO

CARD COUNT	1	2	3	4	5	6	7	8	9	10
551-	CONR CD	31711	1711	1742	1	1.90				
552-	CONR CD	31731	1731	1744	1	1.90				
553-	CONROD	31741	1792	1742	1	1.00				
554-	CONROD	31742	1742	1744	1	1.90				
555-	CONROD	31743	1744	1794	1	1.00				
556-	CONR CD	31751	1761	1792	1	1.90				
557-	CONROD	31781	1781	1794	1	1.90				
558-	CONROD	31792	1792	1794	1	1.90				
559-	CONROD	31811	1811	1842	1	3.70				
560-	CONROD	31831	1844	1831	1	3.70				
561-	CONROD	31841	1842	1892	1	1.00				
562-	CONR CD	31842	1844	1842	1	3.70				
563-	CONR CD	31843	1844	1894	1	1.00				
564-	CONROD	31861	1861	1892	1	3.70				
565-	CONROD	31881	1881	1894	1	3.70				
566-	CONR CD	31892	1892	1894	1	3.70				
567-	CONROD	31911	1911	1942	1	4.00				
568-	CONR CD	31941	1942	1992	1	1.00				
569-	CONROD	31942	1942	1944	1	4.00				
570-	CONROD	31961	1961	1992	1	4.00				
571-	CONROD	31992	1992	1994	1	4.00				
572-	CONROD	32042	2041	2091	2	1.00				
573-	CONROD	32045	2043	2093	2	1.00				
574-	CONROD	32046	2044	2094	2	1.00				
575-	CONROD	32142	2141	2191	2	1.00				
576-	CONROD	32144	2143	2193	2	1.00				
577-	CONROD	32231	2231	2243	2	1.70				
578-	CONR CD	32241	2241	2243	2	1.70				
579-	CONROD	32244	2243	2293	2	1.00				
580-	CONR CD	32281	2281	2293	2	1.70				
581-	CONROD	32291	2291	2293	2	1.70				
582-	CONROD	32331	2331	2343	2	1.60				
583-	CONROD	32341	2341	2343	2	1.60				
584-	CONROD	32344	2343	2393	2	1.00				
585-	CONROD	32381	2381	2393	2	1.60				
586-	CONROD	32391	2391	2393	2	1.60				
587-	CONR CD	32408	2410	2411	2	1.0				
588-	CONR CD	32410	2410	2401	2	1.0				
589-	CONROD	32411	2411	2440	2	3.00				
590-	CONROD	32431	2431	2443	2	1.70				
591-	CONROD	32439	2440	2490	2	1.00				
592-	CONROD	32440	2440	2441	2	3.00				
593-	CONROD	32441	2441	2443	2	1.70				
594-	CONROD	32442	2441	2491	2	1.00				
595-	CONROD	32444	2443	2493	2	1.00				
596-	CONROD	32451	2461	2490	2	3.00				
597-	CONROD	32481	2481	2493	2	1.70				
598-	CONROD	32490	2490	2491	2	3.00				
599-	CONROD	32491	2491	2493	2	1.70				
600-	CONROD	32511	2511	2540	2	1.10				

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CARD COUNT	S O R T E D B U L K D A T A E C H O									
	1	2	3	4	5	6	7	8	9	10
601-	CONROD	32531	2531	2543	2	.80				
602-	CONROD	32540	2540	2590	2	1.00				
603-	CONROD	32541	2540	2541	2	1.10				
604-	CONROD	32542	2541	2543	2	.80				
605-	CONROD	32544	2541	2591	2	1.00				
606-	CONROD	32545	2543	2593	2	1.00				
607-	CONR CD	32561	2561	2590	2	1.10				
608-	CONROD	32581	2581	2593	2	.80				
609-	CONROD	32591	2590	2591	2	1.10				
610-	CONROD	32592	2591	2593	2	.80				
611-	CONR OD	32611	2611	2640	2	1.10				
612-	CONROD	32631	2631	2643	2	.55				
613-	CONROD	32640	2640	2641	2	.55				
614-	CONR CD	32641	2641	2643	2	.55				
615-	CONROD	32642	2640	2690	2	.10				
616-	CONROD	32643	2641	2691	2	.84				
617-	CONR CD	32644	2643	2693	2	.84				
618-	CONROD	32645	2631	2681	2	.50				
619-	CONROD	32661	2661	2690	2	1.10				
620-	CONR CD	32662	2662	2667	2	.10				
621-	CONR CD	32663	2663	2668	2	.10				
622-	CONR CD	32667	2667	2690	2	.30				
623-	CONROD	32668	2668	2667	2	.30				
624-	CONR CD	32681	2681	2693	2	.55				
625-	CONR CD	32690	2690	2691	2	.55				
626-	CONROD	32691	2691	2693	2	.55				
627-	CQUAD1	2019	1028	2019	2039	2135	2114			
628-	CQUAD1	2035	1028	2036	2038	2133	2131			
629-	CQUAD1	2038	1028	2038	2039	2134	2133			
630-	CQUAD1	2069	1028	2069	2089	2185	2164			
631-	CQUAD1	2085	1028	2086	2181	2183	2088			
632-	CQUAD1	2088	1028	2088	2089	2184	2183			
633-	CQUAD1	2114	1028	2114	2135	2235	2214			
634-	CQUAD1	2131	1028	2131	2133	2233	2231			
635-	CQUAD1	2133	1028	2133	2134	2234	2233			
636-	CQUAD1	2134	1028	2134	2234	2235	2135			
637-	CQUAD1	2164	1028	2164	2185	2285	2264			
638-	CQUAD1	2181	1028	2181	2281	2283	2183			
639-	CQUAD1	2183	1028	2184	2183	2283	2284			
640-	CQUAD1	2184	1028	2184	2284	2285	2185			
641-	CQUAD1	2201	2030	2211	2311	2301	2201			
642-	CQUAD1	2214	1028	2214	2235	2335	2314			
643-	CQUAD1	2231	1028	2231	2233	2333	2331			
644-	CQUAD1	2233	1028	2233	2234	2334	2333			
645-	CQUAD1	2234	1028	2234	2334	2335	2235			
646-	CQUAD1	2251	2060	2281	2301	2361	2261			
647-	CQUAD1	2264	1028	2264	2285	2385	2364			
648-	CQUAD1	2281	1028	2281	2381	2383	2283			
649-	CQUAD1	2283	1028	2284	2283	2383	2384			
650-	CQUAD1	2284	1028	2284	2384	2385	2285			

S O R T E D B U L K D A T A E C H O

CARD COUNT	. 1	.. 2	.. 3	.. 4	.. 5	.. 6	.. 7	.. 8	.. 9	.. 10
651-	CQUAD1	2301	2040	2311	2411	2401	2301			
652-	CQUAD1	2314	1028	2314	2335	2435	2414			
653-	CQUAD1	2331	1028	2331	2333	2433	2431			
654-	CQUAD1	2333	1028	2333	2334	2434	2433			
655-	CQUAD1	2334	1028	2334	2434	2435	2335			
656-	CQUAD1	2351	2060	2301	2401	2461	2361			
657-	CQUAD1	2364	1028	2364	2385	2485	2464			
658-	CQUAD1	2381	1028	2381	2481	2483	2383			
659-	CQUAD1	2383	1028	2384	2383	2483	2484			
660-	CQUAD1	2384	1028	2384	2484	2485	2385			
661-	CQUAD1	2414	1028	2414	2435	2535	2514			
662-	CQUAD1	2431	1028	2431	2433	2533	2531			
663-	CQUAD1	2433	1028	2433	2434	2534	2533			
664-	CQUAD1	2434	1028	2434	2534	2535	2435			
665-	CQUAD1	2464	1028	2464	2485	2585	2564			
666-	CQUAD1	2481	1028	2481	2581	2583	2483			
667-	CQUAD1	2483	1028	2484	2483	2583	2584			
668-	CQUAD1	2484	1028	2484	2584	2585	2485			
669-	CSHEAR	101102	1080	1102	1104	1244	1242			
670-	CSHEAR	101104	1080	1104	1109	1231	1244			
671-	CSHEAR	101111	1080	1101	1102	1242	1211			
672-	CSHEAR	101150	1080	1101	1102	1292	1261			
673-	CSHEAR	101152	1080	1102	1104	1294	1292			
674-	CSHEAR	101154	1080	1104	1109	1281	1294			
675-	CSHEAR	101200	1040	1201	1202	1302	1301			
676-	CSHEAR	101201	1280	1211	1311	1301	1201			
677-	CSHEAR	101202	1040	1202	1204	1304	1302			
678-	CSHEAR	101204	1040	1204	1209	1309	1384			
679-	CSHEAR	101209	1250	1231	1331	1309	1209			
680-	CSHEAR	101211	1125	1213	1313	1312	1211			
681-	CSHEAR	101231	1100	1233	1333	1331	1231			
682-	CSHEAR	101251	1280	1201	1301	1361	1261			
683-	CSHEAR	101259	1250	1209	1309	1381	1281			
684-	CSHEAR	101261	1125	1261	1362	1363	1263			
685-	CSHEAR	101281	1100	1281	1381	1383	1283			
686-	CSHEAR	101301	1310	1311	1411	1401	1301			
687-	CSHEAR	101309	1250	1331	1431	1409	1309			
688-	CSHEAR	101311	1125	1312	1412	1411	1311			
689-	CSHEAR	101312	1125	1313	1413	1412	1312			
690-	CSHEAR	101331	1150	1333	1433	1431	1331			
691-	CSHEAR	101340	1140	1311	1342	1442	1411			
692-	CSHEAR	101342	1140	1342	1344	1444	1442			
693-	CSHEAR	101344	1140	1331	1431	1444	1344			
694-	CSHEAR	101351	1310	1301	1401	1461	1361			
695-	CSHEAR	101359	1250	1309	1409	1481	1381			
696-	CSHEAR	101361	1125	1361	1461	1462	1362			
697-	CSHEAR	101362	1125	1362	1462	1463	1363			
698-	CSHEAR	101381	1150	1381	1481	1483	1383			
699-	CSHEAR	101390	1140	1361	1392	1492	1461			
700-	CSHEAR	101392	1140	1392	1394	1494	1492			

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SORTED BULK DATA ECHO

CARD COUNT	1	2	3	4	5	6	7	8	9	10
701-	CSHEAR	101394	1140	1381	1481	1494	1394			
702-	CSHEAR	101400	1052	1401	1402	1502	1501			
703-	CSHEAR	101401	1250	1411	1511	1501	1401			
704-	CSHEAR	101402	1052	1402	1404	1504	1502			
705-	CSHEAR	101404	1052	1404	1409	1509	1504			
706-	CSHEAR	101409	1150	1431	1531	1509	1409			
707-	CSHEAR	101411	1150	1412	1512	1511	1411			
708-	CSHEAR	101412	1150	1413	1513	1512	1412			
709-	CSHEAR	101413	1150	1414	1514	1513	1413			
710-	CSHEAR	101414	1150	1414	1434	1534	1514			
711-	CSHEAR	101431	1150	1433	1533	1531	1431			
712-	CSHEAR	101433	1150	1434	1534	1533	1433			
713-	CSHEAR	101451	1250	1401	1501	1561	1461			
714-	CSHEAR	101459	1150	1409	1509	1581	1481			
715-	CSHEAR	101461	1150	1461	1561	1562	1462			
716-	CSHEAR	101462	1150	1462	1562	1563	1463			
717-	CSHEAR	101463	1150	1463	1563	1564	1464			
718-	CSHEAR	101464	1150	1464	1484	1584	1564			
719-	CSHEAR	101481	1150	1481	1581	1583	1483			
720-	CSHEAR	101483	1150	1483	1583	1584	1484			
721-	CSHEAR	101500	1065	1501	1502	1602	1601			
722-	CSHEAR	101501	1125	1511	1611	1601	1501			
723-	CSHEAR	101502	1065	1502	1504	1604	1602			
724-	CSHEAR	101504	1065	1504	1509	1609	1604			
725-	CSHEAR	101509	1125	1531	1631	1609	1509			
726-	CSHEAR	101511	1125	1512	1612	1611	1511			
727-	CSHEAR	101512	1125	1513	1613	1612	1512			
728-	CSHEAR	101513	1125	1514	1614	1613	1513			
729-	CSHEAR	101514	1125	1514	1534	1634	1614			
730-	CSHEAR	101531	1125	1533	1633	1631	1531			
731-	CSHEAR	101533	1125	1534	1634	1633	1533			
732-	CSHEAR	101551	1125	1501	1601	1661	1561			
733-	CSHEAR	101559	1125	1509	1609	1681	1581			
734-	CSHEAR	101561	1125	1561	1661	1662	1562			
735-	CSHEAR	101562	1125	1562	1662	1663	1563			
736-	CSHEAR	101563	1125	1563	1663	1664	1564			
737-	CSHEAR	101564	1125	1564	1584	1684	1664			
738-	CSHEAR	101581	1125	1581	1681	1683	1583			
739-	CSHEAR	101583	1125	1583	1683	1684	1584			
740-	CSHEAR	101501	1100	1611	1711	1701	1601			
741-	CSHEAR	101509	1125	1631	1731	1709	1609			
742-	CSHEAR	101611	1100	1612	1712	1711	1611			
743-	CSHEAR	101612	1100	1613	1713	1712	1612			
744-	CSHEAR	101613	1100	1614	1714	1713	1613			
745-	CSHEAR	101614	1100	1614	1634	1734	1714			
746-	CSHEAR	101631	1125	1633	1733	1731	1631			
747-	CSHEAR	101633	1100	1634	1734	1733	1633			
748-	CSHEAR	101640	1072	1611	1642	1742	1711			
749-	CSHEAR	101542	1072	1642	1644	1744	1742			
750-	CSHEAR	101544	1072	1631	1731	1744	1644			

SORTED BULK DATA ECHO

CARD COUNT	.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
751-	CSHEAR	101551	1100	1601	1701	1761	1661														
752-	CSHEAR	101659	1125	1609	1709	1781	1681														
753-	CSHEAR	101661	1100	1661	1761	1762	1662														
754-	CSHEAR	101662	1100	1662	1762	1763	1663														
755-	CSHEAR	101663	1100	1663	1763	1764	1664														
756-	CSHEAR	101664	1100	1664	1684	1784	1764														
757-	CSHEAR	101681	1125	1681	1781	1783	1683														
758-	CSHEAR	101683	1100	1683	1783	1784	1684														
759-	CSHEAR	101690	1072	1661	1692	1792	1761														
760-	CSHEAR	101692	1072	1692	1694	1794	1792														
761-	CSHEAR	101694	1072	1681	1781	1794	1694														
762-	CSHEAR	101700	1063	1711	1742	1842	1811														
763-	CSHEAR	101702	1063	1742	1744	1844	1842														
764-	CSHEAR	101704	1063	1731	1831	1844	1744														
765-	CSHEAR	101709	1140	1731	1831	1809	1709														
766-	CSHEAR	101711	1100	1712	1812	1811	1711														
767-	CSHEAR	101712	1100	1713	1813	1812	1712														
768-	CSHEAR	101713	1100	1714	1814	1813	1713														
769-	CSHEAR	101714	1010	1714	1734	1834	1814														
770-	CSHEAR	101731	1125	1733	1833	1831	1731														
771-	CSHEAR	101733	1010	1734	1834	1833	1733														
772-	CSHEAR	101750	1063	1761	1792	1892	1861														
773-	CSHEAR	101752	1063	1792	1794	1894	1892														
774-	CSHEAR	101754	1063	1781	1881	1894	1794														
775-	CSHEAR	101759	1140	1709	1809	1881	1781														
776-	CSHEAR	101761	1100	1761	1861	1862	1762														
777-	CSHEAR	101762	1100	1762	1862	1863	1763														
778-	CSHEAR	101763	1100	1763	1863	1864	1764														
779-	CSHEAR	101764	1010	1764	1784	1884	1864														
780-	CSHEAR	101781	1125	1781	1881	1883	1783														
781-	CSHEAR	101783	1010	1783	1883	1884	1784														
782-	CSHEAR	101809	1130	1831	1931	1909	1809														
783-	CSHEAR	101811	1100	1812	1912	1911	1811														
784-	CSHEAR	101812	1100	1813	1913	1912	1812														
785-	CSHEAR	101813	1100	1814	1914	1913	1813														
786-	CSHEAR	101814	1100	1814	1834	1934	1914														
787-	CSHEAR	101831	1110	1833	1933	1931	1831														
788-	CSHEAR	101833	1100	1834	1934	1933	1833														
789-	CSHEAR	101840	1063	1811	1842	1942	1911														
790-	CSHEAR	101842	1063	1842	1844	1944	1942														
791-	CSHEAR	101844	1063	1831	1931	1944	1844														
792-	CSHEAR	101859	1130	1809	1909	1981	1881														
793-	CSHEAR	101861	1100	1861	1961	1962	1862														
794-	CSHEAR	101862	1100	1862	1962	1963	1863														
795-	CSHEAR	101863	1100	1863	1963	1964	1864														
796-	CSHEAR	101864	1100	1864	1884	1984	1964														
797-	CSHEAR	101881	1110	1881	1981	1983	1883														
798-	CSHEAR	101883	1100	1883	1983	1984	1884														
799-	CSHEAR	101890	1063	1861	1892	1992	1961														
800-	CSHEAR	101892	1063	1892	1894	1994	1992														

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CARD COUNT	.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.	
801-	CSHEAR	101894		1063		1881		1981		1994		1894										
802-	CSHEAR	101909		2070		1931		2031		2009		1909										
803-	CSHEAR	101911		1100		1912		2012		2011		1911										
804-	CSHEAR	101912		1100		1913		2013		2012		1912										
805-	CSHEAR	101913		1100		1914		2014		2013		1913										
806-	CSHEAR	101914		1100		1914		1934		2034		2014										
807-	CSHEAR	101931		1075		1933		2033		2031		1931										
808-	CSHEAR	101933		1080		1934		2034		2033		1933										
809-	CSHEAR	101944		2035		1931		2031		2044		1944										
810-	CSHEAR	101959		2070		1909		2009		2081		1981										
811-	CSHEAR	101961		1100		1961		2061		2062		1962										
812-	CSHEAR	101962		1100		1962		2062		2063		1963										
813-	CSHEAR	101963		1100		1963		2063		2064		1964										
814-	CSHEAR	101964		1180		1964		1984		2084		2064										
815-	CSHEAR	101981		1075		1981		2081		2083		1983										
816-	CSHEAR	101983		1080		1983		2083		2084		1984										
817-	CSHEAR	101994		2035		1981		2081		2094		1994										
818-	CSHEAR	102001		2035		2011		2111		2101		2001										
819-	CSHEAR	102011		2074		2012		2112		2111		2011										
820-	CSHEAR	102012		2074		2013		2113		2112		2012										
821-	CSHEAR	102013		2074		2014		2114		2113		2013										
822-	CSHEAR	102031		3060		2031		2131		2181		2081										
823-	CSHEAR	102051		2035		2001		2101		2161		2061										
824-	CSHEAR	102061		2074		2061		2161		2162		2062										
825-	CSHEAR	102062		2074		2062		2162		2163		2063										
826-	CSHEAR	102063		2074		2063		2163		2164		2064										
827-	CSHEAR	102101		2026		2111		2211		2201		2101										
828-	CSHEAR	102111		2067		2112		2212		2211		2111										
829-	CSHEAR	102112		2067		2113		2213		2212		2112										
830-	CSHEAR	102113		2067		2114		2214		2213		2113										
831-	CSHEAR	102131		2010		2131		2231		2281		2181										
832-	CSHEAR	102140		2055		2111		2141		2241		2211										
833-	CSHEAR	102141		3045		2141		2143		2243		2241										
834-	CSHEAR	102143		3039		2143		2131		2231		2243										
835-	CSHEAR	102151		2026		2101		2201		2261		2161										
836-	CSHEAR	102161		2067		2161		2261		2262		2162										
837-	CSHEAR	102162		2067		2162		2262		2263		2163										
838-	CSHEAR	102163		2067		2163		2263		2264		2164										
839-	CSHEAR	102190		2055		2161		2191		2291		2261										
840-	CSHEAR	102191		3045		2191		2193		2293		2291										
841-	CSHEAR	102193		3039		2193		2181		2281		2293										
842-	CSHEAR	102211		2032		2212		2312		2311		2211										
843-	CSHEAR	102212		2030		2213		2313		2312		2212										
844-	CSHEAR	102213		2030		2214		2314		2313		2213										
845-	CSHEAR	102231		3060		2231		2331		2381		2281										
846-	CSHEAR	102240		2063		2211		2241		2341		2311										
847-	CSHEAR	102241		2032		2241		2243		2343		2341										
848-	CSHEAR	102243		2032		2243		2231		2331		2343										
849-	CSHEAR	102261		2032		2261		2361		2362		2262										
850-	CSHEAR	102262		2030		2262		2362		2363		2263										

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CARD COUNT	.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
851-	CSHEAR	102263	2030	2263	2363	2364	2264														
852-	CSHEAR	102290	2063	2261	2291	2391	2361														
853-	CSHEAR	102291	2032	2291	2293	2393	2391														
854-	CSHEAR	102293	2032	2293	2281	2381	2393														
855-	CSHEAR	102311	2030	2312	2412	2411	2311														
856-	CSHEAR	102312	2028	2313	2413	2412	2312														
857-	CSHEAR	102313	2028	2314	2414	2413	2313														
858-	CSHEAR	102331	2063	2331	2431	2481	2381														
859-	CSHEAR	102340	2060	2311	2341	2440	2411														
860-	CSHEAR	102341	2034	2341	2343	2443	2441														
861-	CSHEAR	102343	2034	2343	2331	2431	2443														
862-	CSHEAR	102361	2030	2361	2461	2462	2362														
863-	CSHEAR	102362	2028	2362	2462	2463	2363														
864-	CSHEAR	102363	2028	2363	2463	2464	2364														
865-	CSHEAR	102390	2060	2361	2391	2490	2461														
866-	CSHEAR	102391	2034	2391	2393	2493	2491														
867-	CSHEAR	102393	2034	2393	2381	2481	2493														
868-	CSHEAR	102401	2067	2411	2511	2501	2401														
869-	CSHEAR	102411	2040	2412	2512	2511	2411														
870-	CSHEAR	102412	2040	2413	2513	2512	2412														
871-	CSHEAR	102413	2040	2414	2514	2513	2413														
872-	CSHEAR	102431	2063	2431	2531	2581	2481														
873-	CSHEAR	102440	2065	2411	2440	2540	2511														
874-	CSHEAR	102441	2035	2441	2443	2543	2541														
875-	CSHEAR	102442	2030	2440	2441	2541	2540														
876-	CSHEAR	102443	2035	2443	2431	2531	2543														
877-	CSHEAR	102451	2067	2401	2501	2561	2461														
878-	CSHEAR	102461	2040	2461	2561	2562	2462														
879-	CSHEAR	102462	2040	2462	2562	2563	2463														
880-	CSHEAR	102463	2040	2463	2563	2564	2464														
881-	CSHEAR	102490	2065	2461	2490	2590	2561														
882-	CSHEAR	102491	2035	2491	2493	2593	2591														
883-	CSHEAR	102492	2030	2490	2491	2591	2590														
884-	CSHEAR	102493	2035	2493	2481	2581	2593														
885-	CSHEAR	102511	1080	2511	2611	2601	2501														
886-	CSHEAR	102531	2050	2531	2631	2681	2581														
887-	CSHEAR	102540	2032	2511	2540	2640	2611														
888-	CSHEAR	102541	2023	2540	2541	2641	2640														
889-	CSHEAR	102542	2023	2541	2543	2643	2641														
890-	CSHEAR	102543	2032	2543	2531	2631	2643														
891-	CSHEAR	102551	1080	2501	2601	2661	2561														
892-	CSHEAR	102551	1063	2561	2661	2662	2562														
893-	CSHEAR	102552	1063	2562	2662	2663	2563														
894-	CSHEAR	102590	2032	2561	2590	2690	2661														
895-	CSHEAR	102591	2023	2560	2591	2691	2690														
896-	CSHEAR	102592	2023	2591	2593	2693	2691														
897-	CSHEAR	102593	2032	2543	2581	2681	2693														
898-	CSHEAR	301250	1180	1211	1242	1202	1281														
899-	CSHEAR	301251	1180	1242	1244	1204	1202														
900-	CSHEAR	301252	1180	1244	1231	1209	1204														

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S O R T E D B U L K D A T A E C H O

CARD COUNT	1	2	3	4	5	6	7	8	9	10
901-	CSHEAR	301253	1180	1201	1202	1292	1261			
902-	CSHEAR	301254	1180	1202	1204	1294	1292			
903-	CSHEAR	301255	1180	1204	1209	1281	1294			
904-	CSHEAR	301350	1500	1311	1342	1302	1301			
905-	CSHEAR	301351	1500	1342	1344	1304	1302			
906-	CSHEAR	301352	1500	1344	1331	1309	1304			
907-	CSHEAR	301353	1500	1301	1302	1392	1361			
908-	CSHEAR	301354	1500	1302	1304	1394	1392			
909-	CSHEAR	301355	1500	1304	1349	1381	1394			
910-	CSHEAR	301450	2200	1411	1442	1402	1401			
911-	CSHEAR	301451	2200	1442	1444	1404	1402			
912-	CSHEAR	301452	2200	1444	1431	1409	1404			
913-	CSHEAR	301453	2200	1401	1402	1492	1461			
914-	CSHEAR	301454	2200	1402	1404	1494	1492			
915-	CSHEAR	301455	2200	1404	1409	1401	1494			
916-	CSHEAR	301550	1120	1511	1542	1502	1501			
917-	CSHEAR	301551	1120	1542	1544	1504	1502			
918-	CSHEAR	301552	1120	1544	1531	1509	1504			
919-	CSHEAR	301553	1120	1501	1502	1592	1561			
920-	CSHEAR	301554	1120	1502	1504	1594	1592			
921-	CSHEAR	301555	1120	1504	1509	1581	1594			
922-	CSHEAR	301550	1080	1611	1642	1602	1601			
923-	CSHEAR	301551	1080	1642	1644	1604	1602			
924-	CSHEAR	301552	1080	1644	1631	1609	1604			
925-	CSHEAR	301553	1080	1601	1602	1692	1661			
926-	CSHEAR	301554	1080	1602	1604	1694	1692			
927-	CSHEAR	301555	1080	1604	1609	1681	1694			
928-	CSHEAR	301750	1100	1711	1742	1792	1761			
929-	CSHEAR	301751	1100	1742	1744	1794	1792			
930-	CSHEAR	301752	1100	1744	1731	1781	1794			
931-	CSHEAR	301850	1100	1811	1842	1892	1861			
932-	CSHEAR	301851	1100	1842	1844	1894	1892			
933-	CSHEAR	301852	1100	1844	1831	1881	1894			
934-	CSHEAR	301950	1180	1911	1942	1992	1961			
935-	CSHEAR	301951	1180	1942	1944	1994	1992			
936-	CSHEAR	302050	2150	2011	2041	2091	2061			
937-	CSHEAR	302052	2150	2043	2044	2094	2093			
938-	CSHEAR	302150	2150	2141	2143	2193	2191			
939-	CSHEAR	302250	2150	2241	2243	2293	2291			
940-	CSHEAR	302252	2190	2243	2231	2281	2293			
941-	CSHEAR	302350	2170	2341	2343	2393	2391			
942-	CSHEAR	302351	2270	2343	2331	2381	2393			
943-	CSHEAR	302450	2200	2411	2440	2490	2461			
944-	CSHEAR	302451	2150	2440	2441	2491	2490			
945-	CSHEAR	302452	2200	2441	2443	2493	2491			
946-	CSHEAR	302453	2200	2443	2431	2481	2493			
947-	CSHEAR	302550	2170	2511	2540	2590	2561			
948-	CSHEAR	302551	2100	2540	2541	2591	2590			
949-	CSHEAR	302552	2170	2541	2543	2593	2591			
950-	CSHEAR	302553	2170	2543	2531	2581	2593			

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CARD COUNT	1	2	3	4	5	6	7	8	9	10
951-	CSHEAR	302550	2022	2611	2640	2690	2661			
952-	CSHEAR	302651	2015	2640	2641	2691	2690			
953-	CSHEAR	302552	2022	2641	2643	2693	2691			
954-	CSHEAR	302653	2022	2643	2631	2681	2693			
955-	CSHEAR	302654	2010	2661	2690	2667	2662			
956-	CSHEAR	302655	2010	2662	2667	2668	2663			
957-	CTRIA1	2039	1028	2039	2134	2135				
958-	CTRIA1	2089	1028	2089	2184	2185				
959-	CTRMEM	111101	10250	1101	1211	1201				
960-	CTRMEM	111109	10350	1109	1231	1209				
961-	CTRMEM	111111	10250	1101	1213	1211				
962-	CTRMEM	111131	10250	1109	1233	1231				
963-	CTRMEM	111151	10250	1101	1201	1261				
964-	CTRMEM	111159	10350	1109	1209	1281				
965-	CTRMEM	111161	10250	1101	1261	1263				
966-	CTRMEM	111181	10250	1109	1281	1283				
967-	CTRMEM	111211	10125	1211	1312	1311				
968-	CTRMEM	111261	10125	1261	1361	1362				
969-	CTRMEM	111940	10045	2011	1911	2041				
970-	CTRMEM	111941	10045	2041	1911	1942				
971-	CTRMEM	111942	10045	2041	1942	2043				
972-	CTRMEM	111943	20035	2043	1942	1944				
973-	CTRMEM	111945	20035	2043	1944	2044				
974-	CTRMEM	111990	10045	2061	1961	2091				
975-	CTRMEM	111991	10045	2091	1961	1992				
976-	CTRMEM	111992	10045	2091	1992	2093				
977-	CTRMEM	111993	20035	2093	1992	1994				
978-	CTRMEM	111995	20035	2093	1994	2094				
979-	CTRMEM	112040	20075	2111	2011	2041				
980-	CTRMEM	112041	20075	2111	2041	2141				
981-	CTRMEM	112042	20053	2141	2041	2043				
982-	CTRMEM	112043	20053	2141	2043	2143				
983-	CTRMEM	112044	30065	2143	2043	2044				
984-	CTRMEM	112045	30065	2143	2044	2131				
985-	CTRMEM	112046	30065	2131	2044	2031				
986-	CTRMEM	112090	20075	2161	2061	2091				
987-	CTRMEM	112091	20075	2161	2091	2191				
988-	CTRMEM	112092	20053	2191	2091	2093				
989-	CTRMEM	112093	20053	2191	2093	2193				
990-	CTRMEM	112094	30065	2193	2093	2094				
991-	CTRMEM	112095	30065	2193	2094	2181				
992-	CTRMEM	112095	30065	2181	2094	2081				
993-	CTRMEM	112342	20060	2440	2341	2441				
994-	CTRMEM	112392	20060	2490	2391	2491				
995-	CTRMEM	312410	20500	2410	2411	2401				
996-	FORCE	4	1462		0.001	0.0	0.0	414.116		
997-	FORCE	4	1562		0.001	0.0	0.0	148.745		
998-	FORCE	4	1563		0.001	0.0	0.0	437.539		
999-	FORCE	5	1662		0.001	0.0	0.0	326.589		
1000-	FORCE	5	1761		0.001	0.0	0.0	203.930		

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CARD COUNT	1	2	3	4	5	6	7	8	9	10
1001-	FORCE	5	1762		0.001	0.0	0.0	469.481		
1002-	FORCE	6	1861		0.001	0.0	0.0	189.985		
1003-	FORCE	6	1862		0.001	0.0	0.0	621.826		
1004-	FORCE	6	1962		0.001	0.0	0.0	188.189		
1005-	FORCE	7	1961		0.001	0.0	0.0	116.668		
1006-	FORCE	7	2061		0.001	0.0	0.0	158.682		
1007-	FORCE	7	2062		0.001	0.0	0.0	724.650		
1008-	FORCE	8	2361		0.001	0.0	0.0	101.995		
1009-	FORCE	8	2362		0.001	0.0	0.0	771.455		
1010-	FORCE	8	2461		0.001	0.0	0.0	126.551		
1011-	FORCE	9	2562		0.001	0.0	0.0	457.132		
1012-	FORCE	9	2661		0.001	0.0	0.0	180.696		
1013-	FORCE	9	2662		0.001	0.0	0.0	362.173		
1014-	FORCE	10	1202		0.001	0.0	0.0	46.104		
1015-	FORCE	10	1302		0.001	0.0	0.0	414.629		
1016-	FORCE	10	1342		0.001	0.0	0.0	539.266		
1017-	FORCE	11	1312		0.001	0.0	0.0	281.803		
1018-	FORCE	11	1412		0.001	0.0	0.0	529.237		
1019-	FORCE	11	1413		0.001	0.0	0.0	188.960		
1020-	FORCE	12	1611		0.001	0.0	0.0	612.324		
1021-	FORCE	12	1612		0.001	0.0	0.0	122.945		
1022-	FORCE	12	1711		0.001	0.0	0.0	264.731		
1023-	FORCE	13	1711		0.001	0.0	0.0	19.040		
1024-	FORCE	13	1811		0.001	0.0	0.0	892.896		
1025-	FORCE	13	1812		0.001	0.0	0.0	88.064		
1026-	FORCE	14	1911		0.001	0.0	0.0	843.460		
1027-	FORCE	14	1912		0.001	0.0	0.0	56.828		
1028-	FORCE	14	2011		0.001	0.0	0.0	99.712		
1029-	FORCE	15	2101		0.001	0.0	0.0	19.027		
1030-	FORCE	15	2111		0.001	0.0	0.0	681.709		
1031-	FORCE	15	2211		0.001	0.0	0.0	299.264		
1032-	FORCE	16	2301		0.001	0.0	0.0	7.935		
1033-	FORCE	16	2311		0.001	0.0	0.0	684.656		
1034-	FORCE	16	2411		0.001	0.0	0.0	307.409		
1035-	FORCE	17	2511		0.001	0.0	0.0	600.240		
1036-	FORCE	17	2512		0.001	0.0	0.0	150.316		
1037-	FORCE	17	2611		0.001	0.0	0.0	249.444		
1038-	FORCE	19	1202		0.001	0.0	46.104	0.0		
1039-	FORCE	19	1302		0.001	0.0	631.483	0.0		
1040-	FORCE	19	1304		0.001	0.0	322.412	0.0		
1041-	FORCE	20	1892		0.001	0.0	8.559	0.0		
1042-	FORCE	20	1894		0.001	0.0	697.291	0.0		
1043-	FORCE	20	1994		0.001	0.0	294.150	0.0		
1044-	FORCE	22	2491		0.001	0.0	166.863	0.0		
1045-	FORCE	22	2493		0.001	0.0	788.916	0.0		
1046-	FORCE	22	2593		0.001	0.0	44.221	0.0		
1047-	FORCE	24	1842		0.001	500.000	0.0	0.0		
1048-	FORCE	24	1892		0.001	166.782	0.0	0.0		
1049-	FORCE	24	1894		0.001	333.218	0.0	0.0		
1050-	FORCE	25	1892		0.001	0.0	389.285	0.0		

S O R T E D B U L K D A T A E C H O

CARD		1	2	3	4	5	6	7	8	9	10
COUNT											
1051-	FORCE	25	1894			0.001	0.0	369.130	0.0		
1052-	FORCE	25	1992			0.001	0.0	241.585	0.0		
1053-	FORCE	26	1842			0.001	0.0	0.0	235.223		
1054-	FORCE	26	1892			0.001	0.0	0.0	523.192		
1055-	FORCE	26	1942			0.001	0.0	0.0	241.585		
1056-	FORCE	30	2084			0.001	506.253	0.0	0.0		
1057-	FORCE	30	2093			0.001	1160.746	0.0	0.0		
1058-	FORCE	30	2094			0.001	-667.000	0.0	0.0		
1059-	FORCE	31	2093			0.001	0.0	185.274	0.0		
1060-	FORCE	31	2481			0.001	0.0	14.989	0.0		
1061-	FORCE	31	2493			0.001	0.0	879.737	0.0		
1062-	FORCE	32	2084			0.001	0.0	0.0	574.954		
1063-	FORCE	32	2093			0.001	0.0	0.0	-469.679		
1064-	FORCE	32	2493			0.001	0.0	0.0	894.726		
1065-	FORCE	36	2034			0.001	506.310	0.0	0.0		
1066-	FORCE	36	2043			0.001	1160.839	0.0	0.0		
1067-	FORCE	36	2044			0.001	-667.150	0.0	0.0		
1068-	FORCE	37	2043			0.001	0.0	104.400	0.0		
1069-	FORCE	37	2431			0.001	0.0	15.058	0.0		
1070-	FORCE	37	2443			0.001	0.0	880.542	0.0		
1071-	FORCE	38	2034			0.001	0.0	0.0	588.625		
1072-	FORCE	38	2044			0.001	0.0	0.0	-484.225		
1073-	FORCE	38	2443			0.001	0.0	0.0	895.600		
1074-	FORCE	42	2001			0.001	0.0	0.0	1000.0		
1075-	FORCE	51	2001			1.0	.0	.0	10000.		
1076-	FORCE	52	1709			1.0	.8	5000.	.0		
1077-	FORCE	52	1809			1.0	.0	5000.	.0		
1078-	FORCE	53	2034			10.	506.310	0.0	0.0		
1079-	FORCE	53	2043			10.	1160.839	0.0	0.0		
1080-	FORCE	53	2044			10.	-667.150	0.0	0.0		
1081-	FOPCE	53	2084			10.	506.253	0.0	0.0		
1082-	FORCE	53	2093			10.	1160.746	0.0	0.0		
1083-	FORCE	53	2094			10.	-667.000	0.0	0.0		
1084-	FORCE	54	1201			1.0	.0	10000.	.0		
1085-	FORCE	54	1709			1.0	.0	10000.	.0		
1086-	FORCE	55	2043			10.	0.0	104.400	0.0		
1087-	FORCE	55	2093			10.	0.0	185.274	0.0		
1088-	FORCE	55	2431			10.	0.0	15.058	0.0		
1089-	FORCE	55	2443			10.	0.0	880.542	0.0		
1090-	FORCE	55	2481			10.	.0	14.989	.0		
1091-	FORCE	55	2493			10.	0.0	879.737	0.0		
1092-	FORCE	56	2034			10.	0.0	0.0	588.625		
1093-	FORCE	56	2044			10.	0.0	0.0	-484.225		
1094-	FORCE	56	2084			10.	0.0	0.0	574.954		
1095-	FORCE	56	2093			10.	0.0	0.0	-469.679		
1096-	FORCE	56	2443			10.	0.0	0.0	895.600		
1097-	FORCE	56	2493			10.	0.0	0.0	894.726		
1098-	GRAV	101		10.		1.0	.0	.0			
1099-	GRAV	102		10.		.0	1.0	.0			
1100-	GRAV	103		10.		.0	.0	1.0			

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SORTED BULK DATA ECHO

CARD		1	2	3	4	5	6	7	8	9	10
1101-	GRID	1101			15.000	.00	21.70		456		
1102-	GRID	1102			15.00	.00	5.21		456		
1103-	GRID	1104			15.00	.00	-14.90		456		
1104-	GRID	1109			15.00	.00	-22.90		456		
1105-	GRID	1201			36.230	.00	23.88				
1106-	GRID	1202			36.23	.00	5.45		456		
1107-	GRID	1204			36.23	.00	-14.90		456		
1108-	GRID	1209			36.23	.00	-25.11		56		
1109-	GRID	1211			36.230	-2.62	23.88		56		
1110-	GRID	1213			36.230	-10.933	21.81		56		
1111-	GRID	1231			36.23	-2.62	-25.11		56		
1112-	GRID	1233			36.23	-10.93	-23.01		56		
1113-	GRID	1242			36.23	-2.62	5.45		456		
1114-	GRID	1244			36.23	-2.62	-14.90		456		
1115-	GRID	1261			36.23	2.62	23.88		56		
1116-	GRID	1263			36.23	10.933	21.81		56		
1117-	GRID	1281			36.23	2.62	-25.11		56		
1118-	GRID	1283			36.23	10.93	-23.01		56		
1119-	GRID	1292			36.23	2.62	5.45		456		
1120-	GRID	1294			36.23	2.62	-14.90		456		
1121-	GRID	1301			71.140	.000	24.82				
1122-	GRID	1302			71.14	.00	5.84		456		
1123-	GRID	1304			71.14	.00	-14.56		456		
1124-	GRID	1309			71.14	.00	-27.80		56		
1125-	GRID	1311			71.140	-3.600	24.82		56		
1126-	GRID	1312			71.140	-13.32	24.70		56		
1127-	GRID	1313			71.140	-28.910	22.00		56		
1128-	GRID	1331			71.14	-3.00	-27.80		56		
1129-	GRID	1333			71.14	-28.91	-23.20		56		
1130-	GRID	1342			71.14	-3.00	5.84		456		
1131-	GRID	1344			71.14	-3.00	-14.56		456		
1132-	GRID	1361			71.14	3.60	24.82		56		
1133-	GRID	1362			71.14	13.32	24.7		56		
1134-	GRID	1363			71.14	28.91	22.00		56		
1135-	GRID	1381			71.14	3.00	-27.80		56		
1136-	GRID	1383			71.14	28.91	-23.20		56		
1137-	GRID	1392			71.14	3.00	5.84		456		
1138-	GRID	1394			71.14	3.00	-14.56		456		
1139-	GRID	1399			71.14	.0	28.80		123456		
1140-	GRID	1401			87.2	.000	24.85				
1141-	GRID	1402			87.20	.00	6.25		456		
1142-	GRID	1404			87.20	.00	-14.63		456		
1143-	GRID	1403			87.20	.00	-27.70		56		
1144-	GRID	1411			87.2	-5.440	24.85		56		
1145-	GRID	1412			87.2	-17.97	24.75		56		
1146-	GRID	1413			87.2	-35.100	23.30		56		
1147-	GRID	1414			87.20	-38.10	15.55		56		
1148-	GRID	1431			87.20	-4.29	-27.7		56		
1149-	GRID	1433			87.20	-34.60	-24.90		56		
1150-	GRID	1434			87.20	-38.10	-15.67		56		

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S O R T E D B U L K D A T A E C H O

CARD COUNT	1	2	3	4	5	6	7	8	9	10
1151-	GRID	1442		87.20	-3.00	6.25		456		
1152-	GRID	1444		87.20	-3.00	-14.63		456		
1153-	GRID	1461		87.20	5.44	24.85		56		
1154-	GRID	1462		87.20	17.97	24.75		56		
1155-	GRID	1463		87.20	35.10	23.30		56		
1156-	GRID	1464		87.20	38.1	15.55		56		
1157-	GRID	1481		87.20	4.29	-27.7		56		
1158-	GRID	1483		87.20	34.60	-24.90		56		
1159-	GRID	1484		87.20	38.1	-15.67		56		
1160-	GRID	1492		87.20	3.00	6.25		456		
1161-	GRID	1494		87.20	3.00	-14.63		456		
1162-	GRID	1501		107.00	.00	25.00		56		
1163-	GRID	1502		107.00	.00	6.25		456		
1164-	GRID	1504		107.00	.00	-14.73		456		
1165-	GRID	1509		107.00	.00	-27.92		56		
1166-	GRID	1511		107.0	-10.360	25.00		56		
1167-	GRID	1512		107.000	-22.75	25.00		56		
1168-	GRID	1513		107.0	-36.900	24.45		56		
1169-	GRID	1514		107.00	-41.00	15.83		56		
1170-	GRID	1531		107.00	-5.28	-27.92		56		
1171-	GRID	1533		107.00	-36.60	-26.75		56		
1172-	GRID	1534		107.00	-40.93	-15.35		56		
1173-	GRID	1542		107.0	-7.05	6.25		1456		
1174-	GRID	1544		107.0	-7.05	-14.73		1456		
1175-	GRID	1561		107.00	10.36	25.00		56		
1176-	GRID	1562		107.0	22.75	25.0		56		
1177-	GRID	1563		107.00	36.90	24.45		56		
1178-	GRID	1564		107.00	41.0	15.83		56		
1179-	GRID	1581		107.00	5.28	-27.92		56		
1180-	GRID	1583		107.00	36.60	-26.75		56		
1181-	GRID	1584		107.00	40.93	-15.35		56		
1182-	GRID	1592		107.0	7.05	6.25		1456		
1183-	GRID	1594		107.0	7.05	-14.73		1456		
1184-	GRID	1601		144.900	.000	25.60		56		
1185-	GRID	1602		144.90	.00	6.68		456		
1186-	GRID	1604		144.90	.00	-14.40		456		
1187-	GRID	1609		144.90	.00	-28.00		56		
1188-	GRID	1611		144.900	-17.800	25.60		56		
1189-	GRID	1612		144.900	-29.990	25.60		56		
1190-	GRID	1613		144.900	-41.900	24.55		56		
1191-	GRID	1614		144.90	-46.35	16.25		56		
1192-	GRID	1631		144.90	-7.10	-28.00		56		
1193-	GRID	1633		144.90	-37.65	-28.65		56		
1194-	GRID	1634		144.90	-46.35	-14.75		56		
1195-	GRID	1642		144.90	-10.75	6.68		456		
1196-	GRID	1644		144.90	-10.75	-14.40		456		
1197-	GRID	1661		144.90	17.80	25.60		56		
1198-	GRID	1662		144.90	29.99	25.60		56		
1199-	GRID	1663		144.90	41.90	24.55		56		
1200-	GRID	1664		144.90	46.35	16.25		56		

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SORTED BULK DATA ECHO										
CARD	1	2	3	4	5	6	7	8	9	10
1201-	GRID	1681		144.90	7.10	-28.00		56		
1202-	GRID	1683		144.90	37.65	-28.65		56		
1203-	GRID	1684		144.90	46.35	-14.75		56		
1204-	GRID	1692		144.90	10.75	6.68		456		
1205-	GRID	1694		144.90	10.75	-14.40		456		
1206-	GRID	1701		168.8	.000	26.70		56		
1207-	GRID	1709		168.80	.00	-27.60		56		
1208-	GRID	1711		168.8	-17.800	26.70		56		
1209-	GRID	1712		168.8	-29.900	26.65		56		
1210-	GRID	1713		168.8	-44.200	25.30		56		
1211-	GRID	1714		168.80	-49.05	16.25		56		
1212-	GRID	1731		168.80	-8.25	-27.60		56		
1213-	GRID	1733		168.80	-39.00	-30.25		56		
1214-	GRID	1734		168.80	-49.35	-14.75		56		
1215-	GRID	1742		168.80	-11.50	7.83		456		
1216-	GRID	1744		168.80	-11.50	-13.00		456		
1217-	GRID	1761		168.80	17.80	26.70		56		
1218-	GRID	1762		168.80	29.99	26.65		56		
1219-	GRID	1763		168.80	44.20	25.3		56		
1220-	GRID	1764		168.80	49.05	16.25		56		
1221-	GRID	1781		168.80	8.25	-27.60		56		
1222-	GRID	1783		168.80	39.00	-30.25		56		
1223-	GRID	1784		168.80	49.35	-14.75		56		
1224-	GRID	1792		168.80	11.50	7.83		456		
1225-	GRID	1794		168.80	11.50	-13.00		456		
1226-	GRID	1809		200.60	.00	-26.10		56		
1227-	GRID	1811		200.600	-17.800	29.20		56		
1228-	GRID	1812		200.600	-29.990	29.15		56		
1229-	GRID	1813		200.600	-46.600	27.10		56		
1230-	GRID	1814		200.60	-52.70	16.25		56		
1231-	GRID	1831		200.6	-9.75	-26.1		56		
1232-	GRID	1833		200.60	-39.90	-31.80		56		
1233-	GRID	1834		200.60	-53.60	-13.38		56		
1234-	GRID	1842		200.60	-12.50	9.35		456		
1235-	GRID	1844		200.60	-12.50	-11.10		456		
1236-	GRID	1861		200.60	17.80	29.20		56		
1237-	GRID	1862		200.60	29.99	29.15		56		
1238-	GRID	1863		200.60	46.60	27.10		56		
1239-	GRID	1864		200.60	52.7	16.25		56		
1240-	GRID	1881		200.60	9.75	-26.10		56		
1241-	GRID	1883		200.60	39.90	-31.80		56		
1242-	GRID	1884		200.60	53.6	-13.38		56		
1243-	GRID	1892		200.60	12.50	9.35		456		
1244-	GRID	1894		200.60	12.50	-11.10		456		
1245-	GRID	1909		232.50	.00	-23.993		56		
1246-	GRID	1911		232.5	-17.800	32.65		56		
1247-	GRID	1912		232.500	-31.200	32.57		56		
1248-	GRID	1913		232.5	-48.850	29.55		56		
1249-	GRID	1914		232.50	-55.23	20.25		56		
1250-	GRID	1931		232.50	-10.75	-23.99		56		

S O R T E D B U L K D A T A E C H O

CARD COUNT	1	2	3	4	5	6	7	8	9	10
1251-	GRID	1933		232.50	-40.95	-32.25		56		
1252-	GRID	1934		232.50	-56.06	-11.27		56		
1253-	GRID	1942		232.50	-14.90	12.39		456		
1254-	GRID	1944		232.50	-14.90	-9.30		56		
1255-	GRID	1961		232.50	17.80	32.65		56		
1256-	GRID	1962		232.50	31.20	32.50		56		
1257-	GRID	1963		232.50	48.85	29.55		56		
1258-	GRID	1964		232.50	55.23	20.25		56		
1259-	GRID	1981		232.50	10.75	-23.99		56		
1260-	GRID	1983		232.50	40.95	-32.25		56		
1261-	GRID	1984		232.50	56.06	-11.27		56		
1262-	GRID	1992		232.50	14.90	12.39		456		
1263-	GRID	1994		232.50	14.90	-9.30		56		
1264-	GRID	2001		265.25	.000	38.74		56		
1265-	GRID	2009		265.25	.00	-21.22		56		
1266-	GRID	2011		265.25	-17.800	37.15		56		
1267-	GRID	2012		265.25	-32.400	35.95		56		
1268-	GRID	2013		265.25	-50.500	31.85		56		
1269-	GRID	2014		265.25	-57.750	24.25		56		
1270-	GRID	2019		265.25	-57.75	24.25				
1271-	GRID	2031		265.25	-16.75	-21.22		56		
1272-	GRID	2033		265.25	-42.12	-30.61		56		
1273-	GRID	2034		265.25	-58.59	-9.08		56		
1274-	GRID	2036		265.25	-10.75	-21.22				
1275-	GRID	2038		265.25	-42.12	-30.61				
1276-	GRID	2039		265.25	-58.59	-9.08				
1277-	GRID	2041		265.25	-13.40	21.55		56		
1278-	GRID	2043		265.25	-7.78	3.40		56		
1279-	GRID	2044		265.25	-9.20	-9.32		56		
1280-	GRID	2061		265.25	17.80	37.15		56		
1281-	GRID	2062		265.25	32.40	35.95		56		
1282-	GRID	2063		265.25	50.50	31.85		56		
1283-	GRID	2064		265.25	57.75	24.25		56		
1284-	GRID	2069		265.25	57.75	24.25				
1285-	GRID	2081		265.25	10.75	-21.22		56		
1286-	GRID	2083		265.25	42.12	-30.61		56		
1287-	GRID	2084		265.25	58.59	-9.08		56		
1288-	GRID	2085		265.25	10.75	-21.22				
1289-	GRID	2088		265.25	42.12	-30.61				
1290-	GRID	2089		265.25	58.59	-9.08				
1291-	GRID	2091		265.25	13.40	21.55		56		
1292-	GRID	2093		265.25	7.78	3.40		56		
1293-	GRID	2094		265.25	9.20	-9.32		56		
1294-	GRID	2101		272.35	.000	38.94		56		
1295-	GRID	2111		272.35	-18.410	37.52		56		
1296-	GRID	2112		272.35	-32.400	36.29		56		
1297-	GRID	2113		272.35	-50.500	32.34		56		
1298-	GRID	2114		272.35	-57.850	24.95				
1299-	GRID	2131		272.35	-9.52	-20.77				
1300-	GRID	2133		272.35	-42.46	-29.43				

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SORTED BULK DATA ECHO

CARD COUNT	1	2	3	4	5	6	7	8	9	10
1301-	GRID	2134		272.35	-54.79	-20.07				
1302-	GRID	2135		272.35	-60.93	-1.83				
1303-	GRID	2141		272.35	-10.02	17.21		56		
1304-	GRID	2143		272.35	-7.33	3.64		56		
1305-	GRID	2161		272.35	18.41	37.52		56		
1306-	GRID	2162		272.35	32.40	36.29		56		
1307-	GRID	2163		272.35	50.50	32.34		56		
1308-	GRID	2164		272.35	57.85	24.95				
1309-	GRID	2181		272.35	9.52	-20.77				
1310-	GRID	2183		272.35	42.46	-29.43				
1311-	GRID	2184		272.35	54.79	-20.07				
1312-	GRID	2185		272.35	60.93	-1.83				
1313-	GRID	2191		272.35	10.02	17.21		56		
1314-	GRID	2193		272.35	7.33	3.64		56		
1315-	GRID	2201		293.65	.000	40.35				
1316-	GRID	2211		293.65	-10.980	38.89				
1317-	GRID	2212		293.65	-32.400	37.71		56		
1318-	GRID	2213		293.65	-50.500	33.81		56		
1319-	GRID	2214		293.65	-58.560	26.29				
1320-	GRID	2231		293.65	-5.00	-17.69				
1321-	GRID	2233		293.65	-42.64	-27.08				
1322-	GRID	2234		293.65	-55.25	-17.49				
1323-	GRID	2235		293.65	-61.33	-0.03				
1324-	GRID	2241		293.65	-9.17	18.95		56		
1325-	GRID	2243		293.65	-5.97	4.39		456		
1326-	GRID	2261		293.65	18.98	38.89				
1327-	GRID	2262		293.65	32.40	37.71		56		
1328-	GRID	2263		293.65	50.50	33.81		56		
1329-	GRID	2264		293.65	58.56	26.29				
1330-	GRID	2281		293.65	5.00	-17.69				
1331-	GRID	2283		293.65	42.64	-27.08				
1332-	GRID	2284		293.65	55.25	-17.49				
1333-	GRID	2285		293.65	61.33	-0.03				
1334-	GRID	2291		293.65	9.17	18.95		56		
1335-	GRID	2293		293.65	5.97	4.39		456		
1336-	GRID	2301		315.00	.000	41.36				
1337-	GRID	2311		315.00	-19.450	39.85				
1338-	GRID	2312		315.00	-32.400	38.72		56		
1339-	GRID	2313		315.00	-50.500	34.57		56		
1340-	GRID	2314		315.00	-58.660	27.13				
1341-	GRID	2331		315.00	-3.74	-14.61				
1342-	GRID	2333		315.00	-42.81	-24.73				
1343-	GRID	2334		315.00	-55.71	-14.93				
1344-	GRID	2335		315.00	-61.72	1.76				
1345-	GRID	2341		315.00	-8.68	21.19		56		
1346-	GRID	2343		315.00	-4.61	5.13		456		
1347-	GRID	2361		315.00	19.45	39.85				
1348-	GRID	2362		315.00	32.40	38.72		56		
1349-	GRID	2363		315.00	50.50	34.57		56		
1350-	GRID	2364		315.00	58.66	27.13				

SORTED BULK DATA ECHO

CARD	1	2	3	4	5	6	7	8	9	10
1351-	GRID	2381		315.00	3.74	-14.61				
1352-	GRID	2383		315.00	42.81	-24.73				
1353-	GRID	2384		315.00	55.71	-14.93				
1354-	GRID	2385		315.0	61.72	1.76				
1355-	GRID	2391		315.00	8.68	21.19		56		
1356-	GRID	2393		315.00	4.61	5.13		456		
1357-	GRID	2401		342.30	.000	35.16				
1358-	GRID	2410		342.30	-5.2	39.0526		12456		
1359-	GRID	2411		342.30	-15.0	35.16		36		
1360-	GRID	2412		342.30	-32.400	39.45		56		
1361-	GRID	2413		342.30	-50.500	34.37		56		
1362-	GRID	2414		342.30	-57.840	27.38				
1363-	GRID	2431		342.30	-2.10	-10.55				
1364-	GRID	2433		342.30	-43.05	-21.64				
1365-	GRID	2434		342.30	-56.32	-11.56				
1366-	GRID	2435		342.3	-62.23	4.12				
1367-	GRID	2440		342.30	-15.0	30.46		456		
1368-	GRID	2441		342.30	-7.29	22.76		456		
1369-	GRID	2443		342.30	-2.82	6.10		456		
1370-	GRID	2461		342.30	15.0	35.16		36		
1371-	GRID	2462		342.30	32.40	39.45		56		
1372-	GRID	2463		342.30	50.50	34.37		56		
1373-	GRID	2464		342.30	57.84	27.38				
1374-	GRID	2481		342.30	2.10	-10.55				
1375-	GRID	2483		342.30	43.05	-21.64				
1376-	GRID	2484		342.30	56.32	-11.56				
1377-	GRID	2485		342.3	62.23	4.12				
1378-	GRID	2490		342.30	15.00	30.46		456		
1379-	GRID	2491		342.30	7.29	22.76		456		
1380-	GRID	2493		342.30	2.82	6.10		456		
1381-	GRID	2501		362.65	.000	39.41		56		
1382-	GRID	2511		362.65	-15.000	39.41		56		
1383-	GRID	2512		362.65	-32.400	39.58		56		
1384-	GRID	2513		362.65	-50.500	33.33		56		
1385-	GRID	2514		362.65	-56.540	27.14				
1386-	GRID	2531		362.65	-1.55	-7.70				
1387-	GRID	2533		362.65	-43.21	-19.47				
1388-	GRID	2534		362.65	-56.75	-9.18				
1389-	GRID	2535		362.65	-62.59	5.78				
1390-	GRID	2540		362.65	-15.00	35.44		456		
1391-	GRID	2541		362.65	-6.00	23.90		456		
1392-	GRID	2543		362.65	-2.42	6.99		456		
1393-	GRID	2561		362.65	15.00	39.41		56		
1394-	GRID	2562		362.65	32.40	39.58		56		
1395-	GRID	2563		362.65	50.50	33.33		56		
1396-	GRID	2564		362.65	56.54	27.14				
1397-	GRID	2581		362.65	1.55	-7.70				
1398-	GRID	2583		362.65	43.21	-19.47				
1399-	GRID	2584		362.65	56.75	-9.18				
1400-	GRID	2585		362.65	62.59	5.78				

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SORTED BULK DATA ECHO

CARD COUNT	1	2	3	4	5	6	7	8	9	10
1401-	GRID	2590		362.65	15.00	35.44		456		
1402-	GRID	2591		362.65	6.00	23.90		456		
1403-	GRID	2593		362.65	7.42	6.99		456		
1404-	GRID	2601		348.75	.0	38.55		56		
1405-	GRID	2611		388.75	-15.0	38.55		56		
1406-	GRID	2631		388.75	-0.7	-2.42		456		
1407-	GRID	2640		388.75	-15.0	34.96		456		
1408-	GRID	2641		388.75	-6.4	26.06		456		
1409-	GRID	2643		388.75	-0.7	10.07		456		
1410-	GRID	2661		388.75	15.0	38.55		56		
1411-	GRID	2662		388.75	32.4	40.85		456		
1412-	GRID	2663		388.75	50.5	39.55		456		
1413-	GRID	2667		388.75	32.4	39.55		1456		
1414-	GRID	2668		388.75	50.5	38.05		1456		
1415-	GRID	2681		388.75	.7	-2.42		456		
1416-	GRID	2690		388.75	15.0	34.96		456		
1417-	GRID	2691		388.75	6.4	26.06		456		
1418-	GRID	2693		388.75	.7	10.07		456		
1419-	MAT1	1	10.5+6	4.0+6	.33	.100				
1420-	MAT1	2	16.+6	6.4+6	.33	.160				
1421-	MAT1	3	30.+6	12.+6	.33	.300				
1422-	MAT1	4	3.6+6	1.4+6	.14	.075				
1423-	PBAR	200	1	1.38	1.37					
1424-	PBAR	201	1	3.04	6.12					
1425-	PBAR	202	1	1.38	1.63					
1426-	PBAR	203	1	2.46	7.07					
1427-	PBAR	204	1	2.10	1.63					
1428-	PBAR	205	1	4.51	12.44					
1429-	PBAR	206	1	10.9	32.79					
1430-	PBAR	207	1	2.42	2.89					
1431-	PBAR	208	1	3.12	7.14					
1432-	PBAR	209	1	1.89	5.64					
1433-	PBAR	210	1	3.04	9.21					
1434-	PBAR	211	1	3.26	5.98					
1435-	PBAR	212	1	6.07	38.19					
1436-	PBAR	213	1	2.54	4.33					
1437-	PBAR	214	1	1.53	8.69					
1438-	PBAR	215	1	2.46	16.36					
1439-	PBAR	216	1	4.73	12.23					
1440-	PBAR	217	1	5.65	13.37					
1441-	PBAR	218	1	3.74	9.12					
1442-	PBAR	219	1	4.89	11.44					
1443-	PBAR	220	1	5.04	19.16					
1444-	PBAR	221	1	4.14	23.68					
1445-	PBAR	222	1	4.31	25.95					
1446-	PBAR	223	1	4.85	9.14					
1447-	PBAR	224	1	5.70	10.7					
1448-	PBAR	225	1	5.47	11.89					
1449-	PBAR	226	1	5.31	11.96					
1450-	PBAR	227	1	6.33	28.17					

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SORTED BULK DATA ECHO

CARD COUNT	1	2	3	4	5	6	7	8	9	10
1451-	PBAR	228	1	5.91	46.13					
1452-	PBAR	229	1	7.03	43.76					
1453-	PBAR	230	1	7.04	16.88					
1454-	PBAR	231	1	7.80	26.52					
1455-	PBAR	232	1	7.95	27.59					
1456-	PBAR	233	1	3.48	13.22					
1457-	PBAR	234	1	7.14	103.68					
1458-	PBAR	235	1	7.77	87.09					
1459-	PBAR	236	1	4.27	24.89					
1460-	PBAR	237	1	6.43	20.97					
1461-	PBAR	238	1	7.52	31.74					
1462-	PBAR	240	1	1.85	8.38					
1463-	PBAR	241	1	7.53	142.97					
1464-	PBAR	242	1	7.38	107.25					
1465-	PBAR	243	1	2.95	19.75					
1466-	PBAR	244	1	5.22	19.78					
1467-	PBAR	245	1	4.96	31.79					
1468-	PBAR	246	1	4.00	31.73					
1469-	PBAR	247	1	2.52	13.15					
1470-	PBAR	248	1	5.32	58.72					
1471-	PBAR	249	1	5.26	124.36					
1472-	PBAR	250	1	1.06	8.71					
1473-	PBAR	251	2	4.35	11.46					
1474-	PBAR	252	2	4.17	14.15					
1475-	PBAR	253	2	4.20	24.68					
1476-	PBAR	254	2	1.51	17.49					
1477-	PBAR	257	2	1.39	30.96					
1478-	PBAR	258	2	1.05	1.65					
1479-	PBAR	259	2	1.19	3.92					
1480-	PBAR	260	2	1.31	6.45					
1481-	PBAR	261	2	1.19	.75					
1482-	PBAR	264	2	.38	1000.0					
1483-	PBAR	265	2	1.28	1.53					
1484-	PBAR	266	2	1.57	5.4					
1485-	PBAR	267	2	1.74	9.18					
1486-	PBAR	268	2	1.41	1.20					
1487-	PBAR	270	2	.67	.55					
1488-	PBAR	271	2	.38	1000.0					
1489-	PBAR	274	2	1.12	.67					
1490-	PBAR	277	2	1.32	1000.0					
1491-	PBAR	278	2	1.45	1.84					
1492-	PBAR	279	2	2.87	15.64					
1493-	PBAR	280	2	2.72	17.69					
1494-	PBAR	281	2	4.30	29.86					
1495-	PBAR	284	2	1.67	1000.0					
1496-	PBAR	285	2	.69	.95					
1497-	PBAR	286	2	4.02	5.8					
1498-	PBAR	287	2	3.11	4.3					
1499-	PBAR	288	2	1.04	9.53					
1500-	PBAR	291	2	3.50	1000.0					

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SORTED BULK DATA ECHO										
CARD	1	2	3	4	5	6	7	8	9	10
COUNT
1501-	PBAR	292	1	1.35	2.8					
1502-	PBAR	293	1	3.26	11.64					
1503-	PBAR	294	1	5.60	17.18					
1504-	PBAR	295	1	1.61	8.75					
1505-	PBAR	296	1	5.149	17.151					
1506-	PBAR	297	1	3.90	12.95					
1507-	PBAR	298	1	5.11	15.28					
1508-	PBAR	299	1	2.16	1.81					
1509-	PBAR	300	1	2.5	2.5					
1510-	PBAR	301	2	2.0	3.0					
1511-	PBAR	302	2	1.0	1.0					
1512-	PBAR	303	2	1.3	1.3					
1513-	PBAR	304	2	1.3	1.8					
1514-	PBAR	305	2	1.25	.6					
1515-	PBAR	306	1	4.715	.915	32.621				
1516-	PBAR	307	1	5.252	5.228	31.90				
1517-	PBAR	1399	1	5.25	5.994	.833				
1518-	PQUAD1	1028	1	.028	1	.01575	4		1.472	
1519-	PQLAD1	2030	2	.030	2	.00156	2		.022	
1520-	PQLAD1	2040	2	.040	2	.00156	2		.022	
1521-	PQUAD1	2060	2	.060	2	.00156	2		.022	
1522-	PSHEAR	1010	1	.010						
1523-	PSHEAR	1043	1	.04						
1524-	PSHEAR	1052	1	.052						
1525-	PSHEAR	1063	1	.063						
1526-	PSHEAR	1065	1	.065						
1527-	PSHEAR	1072	1	.072						
1528-	PSHEAR	1075	1	.075						
1529-	PSHEAR	1080	1	.08						
1530-	PSHEAR	1100	1	.100						
1531-	PSHEAR	1110	1	.110						
1532-	PSHEAR	1120	1	.120						
1533-	PSHEAR	1125	1	.125						
1534-	PSHEAR	1130	1	.130						
1535-	PSHEAR	1140	1	.140						
1536-	PSHEAR	1150	1	.150						
1537-	PSHEAR	1180	1	.180						
1538-	PSHEAR	1250	1	.250						
1539-	PSHEAR	1280	1	.280						
1540-	PSHEAR	1310	1	.310						
1541-	PSHEAR	1325	1	.325						
1542-	PSHEAR	1500	1	.500						
1543-	PSHEAR	2010	2	.01						
1544-	PSHEAR	2015	2	.015						
1545-	PSHEAR	2022	2	.022						
1546-	PSHEAR	2023	2	.023						
1547-	PSHEAR	2025	2	.025						
1548-	PSHEAR	2028	2	.028						
1549-	PSHEAR	2030	2	.03						
1550-	PSHEAR	2032	2	.032						

CARD COUNT	S O R T E D B U L K D A T A E C H O									
	1	2	3	4	5	6	7	8	9	10
1551-	PSHEAR	2034	2	.034						
1552-	PSHEAR	2035	2	.035						
1553-	PSHEAR	2040	2	.040						
1554-	PSHEAR	2050	2	.050						
1555-	PSHEAR	2055	2	.055						
1556-	PSHEAR	2060	2	.060						
1557-	PSHEAR	2063	2	.063						
1558-	PSHEAR	2065	2	.065						
1559-	PSHEAR	2067	2	.067						
1560-	PSHEAR	2070	2	.070						
1561-	PSHEAR	2074	2	.074						
1562-	PSHEAR	2100	?	.100						
1563-	PSHEAR	2150	2	.150						
1564-	PSHEAR	2170	2	.170						
1565-	PSHEAR	2190	2	.190						
1566-	PSHEAR	2200	2	.200						
1567-	PSHEAR	2220	2	.220						
1568-	PSHEAR	3039	3	.039						
1569-	PSHEAR	3045	3	.045						
1570-	PSHEAR	3060	3	.060						
1571-	PTRIA1	1028	1	.028	1	.01575	4	1.472		
1572-	PTRMEM	10045	1	.045						
1573-	PTRMEM	10125	1	.125						
1574-	PTRMEM	10250	1	.25						
1575-	PTRMEM	10350	1	.35						
1576-	PTRMEM	20035	2	.035						
1577-	PTRMEM	20053	2	.053						
1578-	PTRMEM	20060	2	.060						
1579-	PTRMEM	20075	2	.075						
1580-	PTRMEM	20500	2	.500						
1581-	PTRMEM	30065	3	.065						
	ENDDATA									

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16. Abstract <p>This report describes the planning, development, and validation of the NASTRAN models of the B-1 aircraft No. 2 structure. Volume I describes the initial planning of the entire modeling effort. Volumes II to V describe, in detail, the development and validation of component structural models. The report includes applicable engineering drawings, NASTRAN structural model plots, and listings of the NASTRAN bulk data deck for each component structure. Validation is documented by comparisons with results from static structural tests.</p> <p>The subtitles of the volumes included in this report are as follows:</p> <p>Volume I. NASTRAN Model Plans Volume II. NASTRAN Model Development—Horizontal Stabilizer, Vertical Stabilizer, and Nacelle Structures Volume III. NASTRAN Model Development—Wing Structure Volume IV. NASTRAN Model Development—Fuselage Structure Volume V. NASTRAN Model Development—Fairing Structure</p>			
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