UNCLASSIFIED

AD NUMBER

ADB011143

NEW LIMITATION CHANGE

TO

Approved for public release, distribution unlimited

FROM

Distribution authorized to U.S. Gov't. agencies only; Test and Evaluation; 28 NOV 1975. Other requests shall be referred to Air Force Flight Dynamics Lab., Wright-Patterson AFB, OH 45433.

AUTHORITY

AFFDL ltr, 27 Dec 1977

THIS PAGE IS UNCLASSIFIED

AFFDL-TR-75-131

AD B011143

B-52E CCV FLIGHT TEST DATA APPLICABLE TO PARAMETER ESTIMATION

THE BOEING COMPANY
3801 SOUTH OLIVER
WICHITA, KANSAS 67210

DECEMBER 1975

DDC
RECEIVED
MAY 20 1976
B

TECHNICAL REPORT AFFDL-TR-75-131
FOR PERIOD FEBRUARY 1975 – DECEMBER 1975

AD No.
DDC FILE COPY

Distribution limited to U.S. Government Agencies only, Test and Evaluation Statement Applied 28 November 1975. Other Requests for this document must be referred to the Air Force Flight Dynamics Laboratory (FGC).

Copy available to DDC does not permit fully legible reproduction

AIR FORCE FLIGHT DYNAMICS LABORATORY
AIR FORCE WRIGHT AERONAUTICAL LABORATORIES
Air Force Systems Command
Wright-Patterson Air Force Base, Ohio 45433

DDC
RECEIVED
[redacted] 1976

DISCLAIMER NOTICE

THIS DOCUMENT IS BEST QUALITY PRACTICABLE. THE COPY FURNISHED TO DTIC CONTAINED A SIGNIFICANT NUMBER OF PAGES WHICH DO NOT REPRODUCE LEGIBLY.

NOTICE

When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data, is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related therto.

Distribution limited to U.S. Government Agencies only, Test and Evaluation Statement Applied 28 November 1975. Other Requests for this document must be referred to the Air Force Flight Dynamics Laboratory (FGC).

This technical report has been reviewed and is approved for publication.

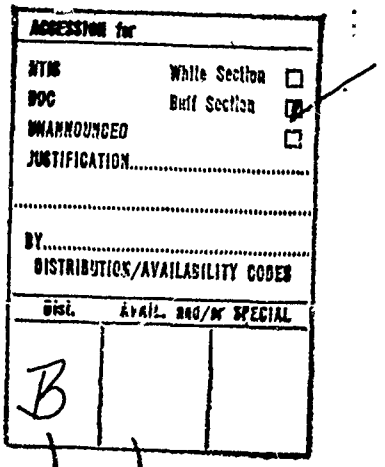
George C. Perley

Capt. George C. Perley
Project Engineer

FOR THE COMMANDER

Evard H. Flinn

Evard H. Flinn
Chief Control Criteria Branch
Air Force Flight Dynamics Laboratory



Copies of this report should not be returned unless return is required by security considerations, contractual obligations, or notice on a specific document.

AIR FORCE - 4 MAY 1976 - 150

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE	READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER: AFFDL-TR-75-131	2. GOVT ACCESSION NO. / 3. RECIPIENT'S CATALOG NUMBER: Rept.
4. TITLE (and Subtitle): B-52E CCV FLIGHT TEST DATA APPLICABLE TO PARAMETER ESTIMATION,	5. TYPE OF REPORT & PERIOD COVERED: FINAL, DEC 1975
	6. PERFORMING ORG. REPORT NUMBER: D3-9880-1
7. AUTHOR(s): DONALD L. HULL, KENNETH L. ROGER	8. CONTRACT OR GRANT NUMBER(s): F33615-75-C-3024
9. PERFORMING ORGANIZATION NAME AND ADDRESS: AIR FORCE FLIGHT DYNAMICS LABORATORY, WRIGHT-PATTERSON AIR FORCE BASE, OHIO	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS: PROJECT 8219, TASK 8219-02
11. CONTROLLING OFFICE NAME AND ADDRESS	12. REPORT DATE: DEC 1975; 13. NUMBER OF PAGES: 455
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)	15. SECURITY CLASS. (of this report): UNCLASSIFIED; 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Distribution limited to U.S. Government Agencies Only, Test and Evaluation Statement Applied 28 November 1975. Other Requests for this document must be referred to the Air Force Flight Dynamics Laboratory (FGC).

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Parameter Estimation
Control Configured Vehicles
B-52E CCV
Flight Tests
Flight Controls
Canards

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Flight test data and a test vehicle description are presented for dual purposes; (a) to provide a means of verifying predictive flexible airplane response computer programs, and (b) to provide data for developing methods of parameter estimation suitable for such aircraft. The B-52 test data for five transient response maneuvers and three control surface frequency sweep conditions is available on digital computer tapes. A preliminary parameter

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

059650

estimation study introduces techniques for selecting and measuring state vectors, for permitting variations of rate and displacement aerodynamic derivatives with frequency, and for a specialized conversion of difference equation coefficients to differential equation coefficients. Good agreement of theoretical and test derived eigenvalues is shown for rigid body and six elastic modes for the case of aileron frequency sweeps.

FOREWORD

This report was prepared for the Air Force Flight Dynamics Laboratory by The Boeing Company, Wichita Division, Wichita, Kansas, in partial fulfillment of Contract F33615-75-C-3024, Project Number 8219, Task 8219-02-22.

The work was administered and the program conducted under the direction of Capt. George C. Perley AFFDL (FGC), during the period February through December, 1975. This report is being published separately as Boeing Document D3-9880 and was submitted by the authors in Occober 1975.

TABLE OF CONTENTS

SECTION NO.		PAGE
I	INTRODUCTION	1
II	SUMMARY	3
III	TEST VEHICLE CONFIGURATION	5
3.1	Test Vehicle Modifications	5
3.2	Instrumentation	5
IV	FLIGHT TEST CONDITIONS	11
V	FLIGHT TEST DATA AND ANALYTICAL COMPARISONS	13
5.1	Flight Test Data	13
5.2	Analytical Comparisons	13
5.3	Analytical Frequency Responses	14
VI	PARAMETER ESTIMATION BY CORRELATIONS AND LEAST SQUARES	189
6.1	Development of the Parameter Estimation Method	189
6.2	Parameter Estimation Data	194
VII	CONCLUSIONS	209
VIII	RECOMMENDATIONS	211
APPENDICES		
A	FLEXIBLE AIRPLANE ANALYSIS MODEL	213
B	TEST VEHICLE THEORETICAL EQUATIONS OF MOTION, RESPONSE COEFFICIENTS AND FUEL CONDITION GENERALIZED MASS	239
C	FLIGHT TEST DATA TAPE FORMAT	451
REFERENCES		455

PRECEDING PAGE BLANK-NOT FILMED

LIST OF ILLUSTRATIONS

FIGURE		PAGE
1	CCV Flight Control Surfaces	6
2	Sensor Locations	7
3	Locations of Bending Moment Measurements	8
4	Flight Test and Analytical Response Comparisons for Flight Condition 44.2.7	16
5	Flight Test and Analytical Response Comparisons for Flight Condition 44.3.17	30
6	Flight Test and Analytical Response Comparisons for Flight Condition 44.3.9	44
7	Flight Test and Analytical Response Comparisons for Flight Condition 44.2.48.2	58
8	Flight Test and Analytical Response Comparisons for Flight Condition 45.2.5	72
9	Flight Test Response Data for Flight Condition 44.1.1	85
10	Flight Test Response Data for Flight Condition 44.1.5	105
11	Flight Test Response Data for Flight Condition 45.1.1	125
12	Frequency Responses - Outboard Aileron Frequency Sweep, .005 to 5.0 Hz, 1.6 Degree Amplitude Sine Wave Input	147
13	Frequency Responses - Outboard Flaperon Frequency Sweep, .005 to 5.0 Hz, 2.0 Degree Amplitude Sine Wave Input	160
14	Frequency Responses - Vertical Canard Frequency Sweep, .005 to 5.0 Hz, 2.2 Degree Amplitude Sine Wave Input	173
15	Estimated Eigenvalues, from Outboard Aileron Frequency Sweep Test - Bending Moment Data	196
16	Generalized Responses for Outboard Aileron Transient, Derived from System Coefficients Estimated from the Outboard Aileron Frequency Sweep Condition - Bending Moment Data	197
17	Bending Moments for Outboard Aileron Transient, Derived from System Coefficients Estimated from the Outboard Aileron Frequency Sweep Condition - Bending Moment Data	198

PRECEDING PAGE BLANK-NOT FILMED

LIST OF ILLUSTRATIONS (CONT'D)

FIGURE		PAGE
18	Estimated Eigenvalues, from Outboard Aileron Frequency Sweep Test - Acceleration Data	200
19	Estimated Eigenvalues, from Outboard Flaperon Frequency Sweep Test - Bending Moment Data	201
20	Estimated Eigenvalues, from Vertical Canard Frequency Sweep Test - Bending Moment Data	202
21	Estimated Eigenvalues from Elevator Sine Wave Input Transient Test - Bending Moment Data	203
22	Estimated Eigenvalues from Elevator Rectangle Input Transient Test - Bending Moment Data	204
23	Estimated Eigenvalues from Elevator Triangle Input Transient Test - Bending Moment Data	205
24	Estimated Eigenvalues from Outboard Aileron Sine Wave Input Transient Test - Bending Moment Data	206
25	Estimated Eigenvalues from Rudder Sine Wave Input Transient Test - Bending Moment Data	207
26	Bar Element Model of Airplane Structure	221
27	Aerodynamic Patches for the CCV Airplane	233
28	Electronic Yaw Damper Functional Block Diagram	241

LIST OF TABLES

TABLE		PAGE
1	Recorded Flight Test Measurements	9
2	Flight Test Conditions	12
3	Reference Values of Amplitude and Phase Angle from Each Frequency Response Plot - Values are for a Frequency of 1.0 Hertz	145
4	Total Airplane Mass and Vibration Data	215
5	Component Vibration Data	216
6	Theoretical System Eigenvalues - Light Gross Weight, 21,000 Ft., 305 KCAS, Symmetric	218
7	Theoretical System Eigenvalues - Light Gross Weight, 21,000 Ft., 305 KCAS, Antisymmetric	219
8	Definition of Mass Data Orientation Systems	222
9	Forward Body Weight and Stiffness Data (No Usable Fuel)	223
10	Aft Body Weight and Stiffness Data (No Usable Fuel)	224
11	Left Horizontal Tail Weight and Stiffness Data	225
12	Vertical Tail Weight and Stiffness Data	226
13	Left Wing Weight and Stiffness Data (No Usable Fuel)	227
14	Left Inboard Nacelle Weight and Stiffness Data	228
15	Left Outboard Nacelle Weight and Stiffness Data	228
16	Left External Tank Weight and Stiffness Data	228
17	Aft Body Fuel Weight Data	229
18	Aft Body Fuel Delta Weight to Match Flight Test Conditions	230
19	Left Wing Fuel Weight Data	231
20	Aerodynamic Patch Numerical Description	234
21	Auxiliary Data for Aerodynamic Patch Description	237
22	Structural Reference Point Orientation Systems	238

LIST OF TABLES (CONT'D)

TABLE		PAGE
23	Gust Reference Station Locations	238
24	Recorded Flight Test Measurements	242
25	Equation of Motion and Modal Coefficient Matrices for Symmetric Analyses	244
26	Rigid Airplane Stability Derivatives - Symmetric Model, Mach = .687, Altitude = 21,000 Ft., CG = .33 MAC	245
27	Equation of Motion and Modal Coefficient Matrices for Antisymmetric Analyses	353
28	Rigid Airplane Stability Derivatives - Antisymmetric Model, Mach = .687, Altitude = 21,000 Ft., CG = .33 MAC	354
29	Recorded Flight Test Measurements	453

LIST OF SYMBOLS

SYMBOL	DESCRIPTION	UNITS
ALPHA	Angle of Attack	Degrees
A/S	Antisymmetric	-
AXIS-i	i=1, 4 Axis of Rotation for Lofting	-
BBL	Body Buttock Line	In.
BETA	Angle of Sideslip	Degrees
BS	Body Station	In.
BWL	Body Water Line	In.
C_1, C_2, C_3, D_i	Aerodynamic Parameters	-
C.G.	Center-of-Gravity	-
d_i,B_i	Lift Growth Parameters	-
DD	Signifies Acceleration	-
DOT	Signifies Velocity	-
EI	Bar Element Bending Stiffness	Lb-In.^{2}
EI_L	Bar Element Lateral Bending Stiffness	Lb-In.^{2}
EI_V	Bar Element Vertical Bending Stiffenss	Lb-In.^{2}
EOM	Equations of Motion	-
FS	Fin Station	In.
GJ	Bar Element Torsional Stiffness	Lb-In.^{2}
H	Altitude	Ft
Hz	Hertz (Frequency)	Cycles/ Second
I. NAC	Inboard Nacelle	-
INBD	Inboard Edge Aerodynamic Panel	-
$I_{xx, yy, zz}$	Moment of Inertia About x, y or z Axes	Lb-In.^{2}
I_{xz}	Cross Product of Inertia	Lb-In.^{2}

LIST OF SYMBOLS (Continued)

SYMBOL	DESCRIPTION	UNITS
L. EX. TANK	Left External Tank	-
LEAD	Leading Edge Aerodynamic Panel	-
LHTBL	Left Horizontal Tail Buttock Line	In.
LWBL	Left Wing Buttock Line	In.
LWS	Left Wing Station	In.
MX	Moment About Local x Axis	In.-Lbs.
MY	Moment About Local y Axis	In.-Lbs.
MZ	Moment About Local z Axis	In.-Lbs.
NY	Lateral Acceleration	g's
NZ	Vertical Acceleration	g's
O. NAC.	Outboard Nacelle	-
OUTBD	Outboard Edge Aerodynamic Panel	-
PHI	Rotation About x Axis	Degrees
PSI	Rotation About z Axis	Degrees
q(s)	Generalized Coordinates	-
R. EX. TANK	Right External Tank	-
R_l, R_o	Lateral and Vertical Gust Coefficients	-
RHTBL	Right Horizontal Tail Buttock Line	In.
RWBL	Right Wing Buttock Line	In.
RWS	Right Wing Station	In.
s	LaPlace Variable	Sec^{-1}
STR	Structure Reference Point	-
THETA	Rotation About y Axis	Degrees or Radians

LIST OF SYMBOLS (Continued)

SYMBOL	DESCRIPTION	UNITS
$THETA_i$	Angle of Rotation about i^{th} axis, i = 1, 4	Degrees
TRAIL	Trailing Edge Aerodynamic Panel	--
U_o	Velocity	In./Sec
V	Velocity	Ft/Sec
$V_g(s)$	Lateral Gust	Ft/Sec
W	Weight at Node	Lb
$W_g(s)$	Vertical Gust	Ft/Sec
$W_{w,y,z}$	Static Unbalance of Nodal Weight	Lb-In.
XGST	X-Location, Gust Reference Points	In.
YGST	Y-Location, Gust Reference Points	In.
ZGST	Z-Location, Gust Reference Points	In.
β_i, BG_i	Lift Growth Parameters for Gust	-
ρ	Air Density	$\frac{Lb\text{-}Sec^2}{In^4}$
ϕ, PHI	Modal Coefficients for the Flight Test Sensor Locations	-
ϕ_{AF}	Modal Deflections and Slopes for the Aft Fuselage	-
ϕ_{FF}	Modal Deflections and Slopes for the Forward Fuselage	-
ϕ_{HT}	Modal Deflections and Slopes for the Left Horizontal Tail	-
ϕ_{IN}	Modal Deflections and Slopes for the Inboard Nacelle	-
ϕ_{ON}	Modal Deflections and Slopes for the Outboard Nacelle	-
ϕ_{VT}	Modal Deflections and Slopes for the Vertical Tail	-

LIST OF SYMBOLS (Continued)

SYMBOL	DESCRIPTION	UNITS
ϕ_{WG}	Modal Deflections and Slopes for the Left Wing	

SECTION I

INTRODUCTION

Engineering techniques for predicting and measuring stability and controllability of flexible airplanes are in a state of rapid development. Increased attention to the problem results from complexity of current design requirements, promise of future performance improvements, and recent theoretical advances.

Historically, interaction of structural flexibility with flight modes has been important for very large airplanes, such as the B-52. New design requirements, especially flight at high dynamic pressures, are increasing the severity of the effects so that smaller aircraft now must be aeroelastically designed and tested.

Modern automatic stability and control augmentation systems are incorporated on flexible airplanes only after thorough design and testing, often with testing revealing design deficiencies. The utility of more complex systems is readily foreseen. A promising use of control systems is to provide stability to the extent that the configurator may select a low drag or highly maneuverable design that would otherwise be unflyable. The same systems can also control elastic modes to relieve stresses and prevent flutter. This is the Control Configured Vehicle (CCV) concept. Substantial cost savings and performance improvements can be predicted for this approach. However, the economic risk of constructing such a vehicle can be justified only if the analysis methods used to predict aeroelastic controllability have been proven accurate.

A theoretical development which has provided the analytical accuracy needed is the finite element approach to numerical solution of linear aerodynamic theory, both steady and unsteady. An example of a computer program system which incorporates this type of analytical aerodynamics is Level 2 FLEXSTAB (Ref. 1). This program will require verification using actual flight test data of aircraft with significant control and elastic mode interaction. The specific type of flight testing required and the method of verification are themselves subjects of theoretical interest.

A comprehensive theory of testing, known generally as "parameter estimation," has been developing. Reference 2 is a compendium of current approaches to extending this theory to aircraft testing. The procedure is to record aircraft control inputs and responses during maneuvers, and then use the measured data to compute refinements to a theoretical model of the aircraft. Application of these methods to flexible aircraft, including coupling of flight and vibration modes, has not been attempted because of a lack of suitable quality flight test data.

A suitable set of flight test data for verification of predictive analyses and development of parameter estimation techniques now exists, created during B-52 CCV program flight testing completed in December 1973. Analytical data required for parameter estimation and for verification of program systems such as FLEXSTAB 2 are also available. Since the tests were not conducted for these

specific purposes, a considerable amount of data processing and qualification has been done.

1.1 Background

The Boeing Company, Wichita Division, has conducted, in conjunction with AFFDL, under Contract F33615-71-C-1926, the B-52 phase of the CCV program. This program was begun in 1971, flight testing was completed by the end of 1973, and final reports were released early in 1975. The program included flight demonstration of five CCV concepts --- Ride Control, Maneuver Load Control, Gust-induced Structural Fatigue Relief, Flutter Mode Control, and Augmented Stability.

Although the use of the data for parameter estimation was not foreseen, the large number of stress and motion sensors used and recorded, and the type of maneuvers performed to demonstrate the systems provided a set of data highly suitable for parameter estimation study. The data existed on the raw flight test tapes, it had not heretofore been put in a suitable form. Data from most of the sensors were processed during the CCV program for low level turbulence flights -- but only a few items were reduced and documented for the maneuvering flights.

In addition, theoretical models of the B-52E using state-of-the-art aerodynamic numerical methods were developed during the CCV program. These were of the type required for parameter estimation studies. Data of the form required to verify predictive programs such as FLEXSTAB 2 were also available.

References 3, 4, and 5 document the parts of the previous work applicable to this program.

1.2 Program Objective

This program provides a set of B-52E test data, analytical model of the test airplane, and a preliminary parameter estimation analysis of the data using a method suitable for multiple mode elastic airplanes.

The test data are on digital computer tapes in a form suitable for further parameter estimation studies. Airplane descriptive data are sufficient so that the flight maneuvers can be modelled with programs such as FLEXSTAB 2. Test and analytical responses are compared as part of the qualification process. The cross-correlation parameter estimation has extracted eigenvalues for the flight modes and several flexible modes from the test data. Recommendations are made concerning use of this analysis method.

SECTION II

SUMMARY

Flight test data and a test vehicle description are presented for dual purposes; (a) to provide a means of verifying predictive flexible airplane response computer programs, and (b) to provide data for developing methods of parameter estimation suitable for such aircraft. The tests were conducted during the AFFDL-Boeing CCV program using the Air Force Flight Research airplane NB52E AF56-632.

The test data for the five transient response maneuvers and three control surface frequency sweep conditions are available on digital computer tapes. Comparisons with theoretical responses are made to verify both the airplane descriptive data and the test data calibration and digitizing process.

Eigenvalues for rigid-body and six elastic modes were obtained from symmetric aileron sweep test data, showing excellent agreement with theoretical eigenvalues. Transient responses to aileron motion computed using equation coefficients derived from the sweep test data compared favorable with actual responses. Consistent eigenvalues were not obtained from the transient test data.

The parameter estimation conducted introduces techniques for selecting and measuring state vectors, for permitting variation of rate and displacement aerodynamic derivatives with frequency, and for a specialized conversion of difference equation coefficients to differential equation coefficients. These techniques are recommended to future investigators of parameter estimation for flexible airplanes. In addition, the value of structural deformation instrumentation (i.e., strain gages) is emphasized.

SECTION III

TEST VEHICLE CONFIGURATION

The test vehicle for the Control Configured Vehicles program was an Air Force flight research airplane, NB-52E AF56-632. This airplane was previously used as the test vehicle for the Load Alleviation and Mode Stabilization (LAMS) program.

This airplane was chosen for the CCV program because it represents a class of large flexible aircraft which could be expected to benefit greatly from the concepts to be demonstrated. The airplane has a wing span of 185 feet, fuselage length of 157 feet and fin height of 48 feet. Maximum gross weight is approximately 450,000 pounds and for this program a range of weights from 242,000 to 373,000 pounds was utilized.

The data required for the application of parameter estimation methods were selected from the light gross weight configuration. The gross weights for the eight flight tests selected ranged from 242,000 to 272,300 pounds.

3.1 Test Vehicle Modification

Modifications previously incorporated for the LAMS program included installation of two Electronic Associates, Inc. Model TR-48 analog computers in the lower nose section, installation of integrated electrohydraulic servoactuators on existing elevators, rudder, inboard ailerons and spoilers, conversion of the pilot's control system to fully Fly-By-Wire (FBW), and installation of extensive interface electronics and instrumentation.

The major CCV modifications include the addition of two horizontal and one vertical canard for the ride control system, new three-segment flaperons and an outboard aileron for the maneuver load and flutter mode control systems, and 2,000 pounds of lead ballast in the nose of each external fuel tank to create a wing flutter mode within the operational envelope of the airplane. The new and existing surfaces and ballast locations are shown in Figure 1.

A detailed discussion of airplane modifications is presented in Reference 6.

3.2 Instrumentation

The measurement station locations of the data acquired for this program are shown in Figures 2 and 3. The locations of the gust probe, accelerometer and rate gyros are shown in Figure 2. Bending moments were recorded at the locations shown in Figure 3.

In addition to the measurements shown in Figures 2 and 3, there are position indicator recordings for the control surfaces shown in Figure 1.

A complete list of recorded measurements is shown in Table 1. The measurements are shown in the order used in transmitting the flight test data on the magnetic data tapes. The data tapes are described in Appendix C.

PRECEDING PAGE BLANK-NOT FILMED

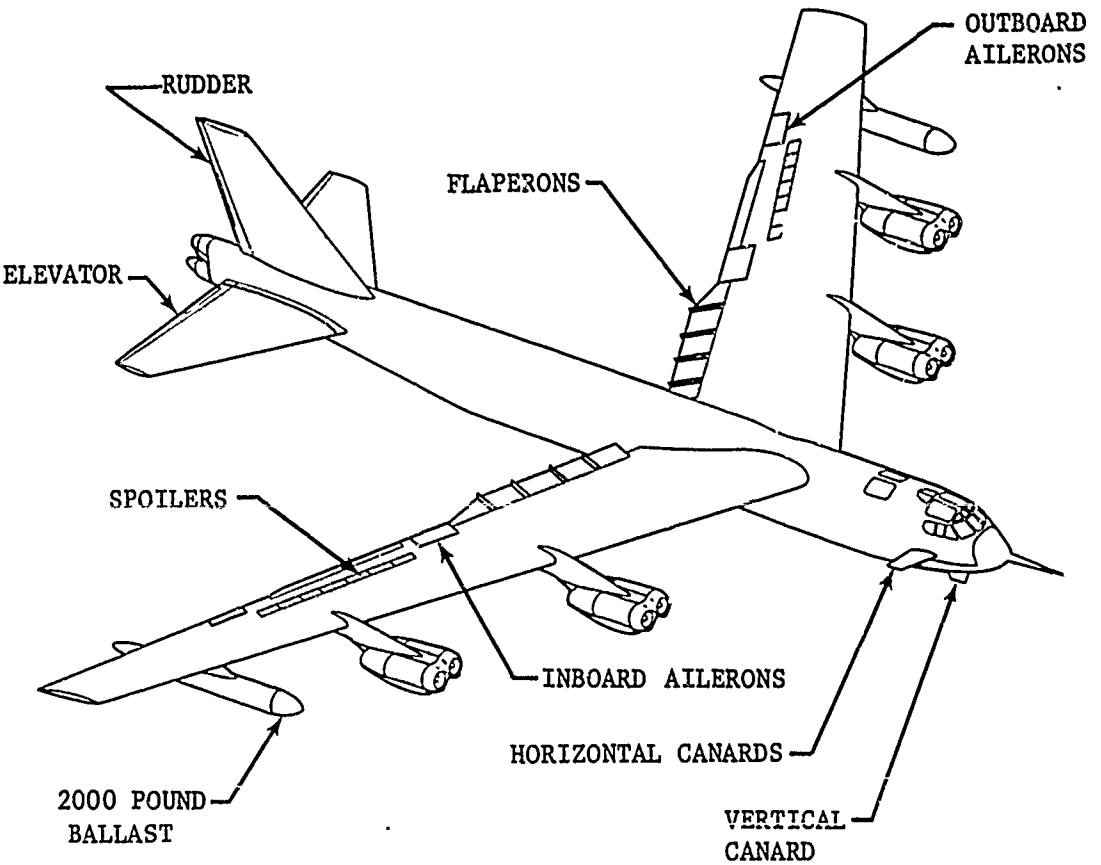


Figure 1. CCV Flight Control Surfaces

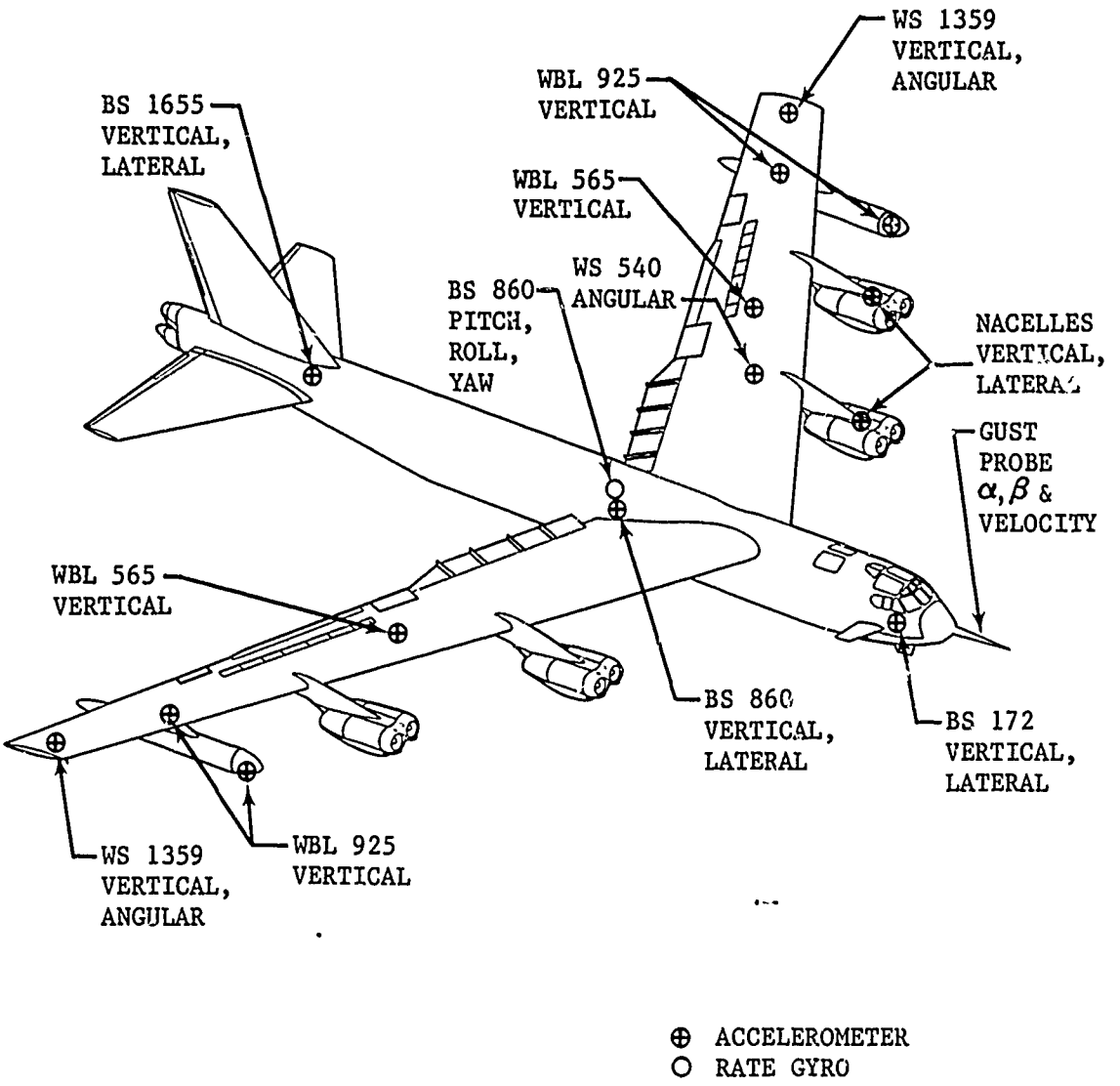


Figure 2. Sensor Locations

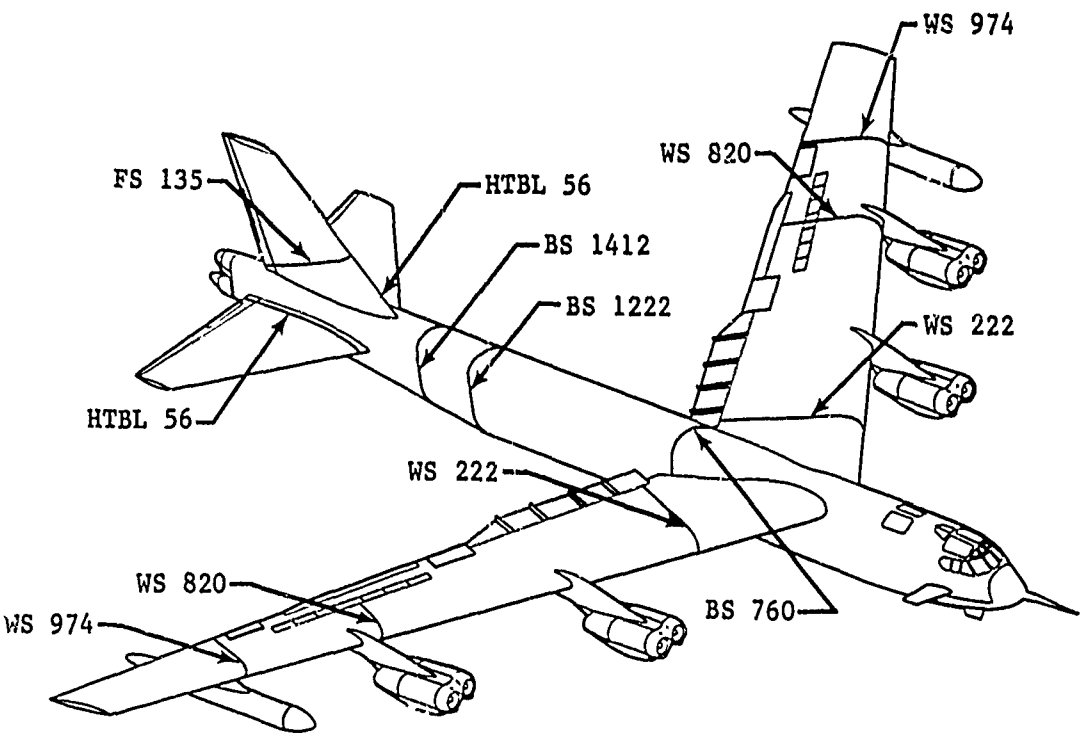


Figure 3. Locations of Bending Moment Measurements

TABLE 1. RECORDED FLIGHT TEST MEASUREMENTS

NO.	ITEM	LOCATION	UNITS
1	Vertical Bending Moment	BS760	In.-LBS
2	Vertical Bending Moment	BS1222	
3	Vertical Bending Moment	BS1412	
4	Lateral Bending Moment	BS760	
5	Lateral Bending Moment	BS1222	
6	Lateral Bending Moment	BS1412	
7	Vertical Bending Moment	LWS222	
8	Vertical Bending Moment	LWS820	
9	Vertical Bending Moment	LWS974	
10	Chordwise Bending Moment	LWS222	
11	Chordwise Bending Moment	LWS820	
12	Chordwise Bending Moment	LWS974	
13	Vertical Bending Moment	RWS222	
14	Vertical Bending Moment	RWS820	
15	Vertical Bending Moment	RWS974	
16	Chordwise Bending Moment	RWS222	
17	Chordwise Bending Moment	RWS820	
18	Chordwise Bending Moment	RWS974	
19	Vertical Bending Moment	LHTBL56	
20	Vertical Bending Moment	RHTBL56	
21	Vertical Bending Moment	FS135	In.-LBS
22	Pitch Rate	BS860	Deg/Sec
23	Roll Rate	BS860	Deg/Sec
24	Yaw Rate	BS860	Deg/Sec
25	Vertical Acceleration	BS172	g's
26	Vertical Acceleration	BS860	
27	Vertical Acceleration	BS1655	
28	Lateral Acceleration	BS172	
29	Lateral Acceleration	BS860	
30	Lateral Acceleration	BS1655	
31	Vertical Acceleration	LWBL565	
32	Vertical Acceleration	LWBL925	
33	Vertical Acceleration	LWS1359	
34	Vertical Acceleration	Left Ext. Tank, Nose	
35	Vertical Acceleration	RWBL565	
36	Vertical Acceleration	RWBL925	
37	Vertical Acceleration	RWS1359	
38	Vertical Acceleration	Right Ext. Tank, Nose	
39	Vertical Acceleration	Left Inboard Nacelle	
40	Lateral Acceleration	Left Inboard Nacelle	
41	Vertical Acceleration	Left Outboard Nacelle	
42	Lateral Acceleration	Left Outboard Nacelle	g's
43	Angular Acceleration, Y-Axis	LWS540	Rad/Sec^2
44	Angular Acceleration, Y-Axis	LWS1359	Rad/Sec^2
45	Angular Acceleration, Y-Axis	RWS1359	Rad/Sec^2

TABLE 1. RECORDED FLIGHT TEST MEASUREMENTS (Concluded)

NO.	ITEM	LOCATION	UNITS
46	Delta Inboard Aileron	-	Deg
47	Delta Rudder	-	
48	Delta Elevator	-	
49	Delta Vertical Canard	-	
50	Delta Left Horizontal Canard	-	
51	Delta Right Horizontal Canard	-	
52	Delta Outboard Aileron	-	
53	Delta Outboard Flaperon	-	
54	Delta Inboard Flaperon	-	
55	Angle of Attack	Gust Boom	
56	Angle of Side Slip	Gust Boom	Deg
57	Forward Velocity	Gust Boom	Ft/Sec

MEASUREMENT SIGN CONVENTION

Vertical Bending Moments	Fuselage, + Tail Up Wing, + Tip Up Horizontal Tail, + Tip Up
Lateral Bending Moment	Fuselage, + Tail Right Fin, + Tip Right
Chordwise Bending Moment	Wing, + Tip Aft
Pitch Rate	+ Nose Up
Roll Rate	+ Left Wing Up
Yaw Rate	+ Nose Right
Vertical Acceleration	+ Up
Lateral Acceleration	+ Right*
Angular Acceleration, Y-Axis	+ Leading Edge Up
Control Surface Deflection	+ Trailing Edge Down or Left
Angle of Attack	+ Nose Up
Angle of Side Slip	+ Nose Left

*Lateral acceleration at BS 1655 is + Left

SECTION IV

FLIGHT TEST CONDITIONS

The data acquired for application of parameter estimation methods was obtained from the CCV Flight Test Program. The nominal test conditions were; an altitude of 21,000 feet, an airspeed of 305 KCAS, and a gross weight of 260,731 pounds. The test conditions for the eight flight tests selected are shown in Table 2. For seven of the eight test conditions, the Lateral Augmental Stability (LAS) system was in operation. For the rudder transient input condition (45.2.5) the LAS was not operating.

TABLE 2. FLIGHT TEST CONDITIONS

CONDITION NO.	ALTITUDE (FEET)	AIRSPEED (KCAS)	GR. WT. LBS X 10^{-3}	CONTROL SURFACE	INPUT FORM
44.2.7	21,000	305	250.0	Elevator	Transient, 2-cycle sine wave
44.3.17	21,000	304	258.9	Elevator	Transient, rectangle
44.3.9	21,000	305	248.0	Elevator	Transient, triangle
44.2.48.2	21,000	309	242.0	Outboard Aileron	Transient, 4-cycle sine wave
45.2.5	21,000	305	246.5	Rudder	Transient, 2-cycle sine wave
44.1.1	21,000	306	272.3	Outboard Aileron	Frequency Sweep, 0.5 to 5.0 Hz sine wave
44.1.5	21,000	304	262.4	Outboard Flaperon	Frequency Sweep, 0.5 to 5.0 Hz sine wave
45.1.1	21,000	305	254.0	Vertical Canard	Frequency Sweep, 0.5 to 5.0 Hz sine wave

SECTION V

FLIGHT TEST DATA AND ANALYTICAL COMPARISONS

This section presents plots of the flight test data selected as being suitable for parameter estimation methods; with plots of analytical responses calculated for each test condition. Flight test and analytical response data are presented in Figures 4 through 8 for the five flight test conditions with transient control inputs. Flight test data for the three flight test conditions with frequency sweep control inputs is presented in Figures 9, 10 and 11. Analytical frequency response calculations were made for each of the frequency sweep conditions.

5.1 Flight Test Data

The plots of measured flight test data presented in this section are for the eight flight test conditions shown in Table 2. The time history plots of the measured responses represent only the dynamic part of the response (i.e., the initial values of the responses were subtracted from the respective responses prior to plotting). The plots of control position represent the actual control position. For ease of viewing, all of the plotted test data were smoothed via a three-point running average of the data.

5.2 Analytical Comparisons

Analytical responses were calculated for the five flight conditions with transient control inputs. Responses were calculated for a period of ten seconds for each condition; even though the flight tests varied in length from 5.2 to 16.4 seconds.

The analytical responses were computed from the equations of motion and response coefficients presented in Appendix B. The computations were made using a linear time response program which uses a modified Fast Fourier Transform solution. For the symmetric control input conditions, the equations of motion were used as presented. However, the antisymmetric equations of motion for the airplane without yaw damper did not have sufficient Dutch Roll stability. As a simple correction for purposes of verifying the flight test data reduction process, a fictitious yaw-rate-to-rudder damper was added. The yaw damper used was that used on the CCV airplane, but with gain reduced by two-thirds. The damper equation is shown, in a block diagram form, in Appendix B.

Responses calculated using the basic symmetric equations of motion and the augmented antisymmetric equations of motion are presented with the corresponding test data in Figures 4 through 8. These response plots show reasonable agreement between the flight test measurements and the analytical responses.

It was concluded from this comparison that the flight test data reduction process was satisfactory, that sensor identification was correct,

and that the calibration and algebraic sense were correct for all responses. Further, it was concluded that the airplane structural and geometric description given in the appendices, when used with computer programs such as FLEXSTAB 2 (which predicts aerodynamic influence and forms equations of motion and response equations) is satisfactory for the verification of such programs.

5.3 Analytical Frequency Responses

Analytical frequency responses were calculated using the control inputs from the three frequency sweep flight test conditions. The amplitudes used for the control surface deflection were the same as those used in the flight tests. However, for the frequency sweep the analytical calculations were started at .005 Hertz rather than the .5 Hertz starting frequency used in the flight tests. The change in starting frequency allows the effects of the rigid body modes to be observed in the frequency response plots. Frequency responses are shown in Figures 12, 13 and 14 for outboard aileron input, outboard flaperon input and vertical canard input, respectively.

Each of the frequency response plots presents two items of data as a function of frequency. The data referenced to the left hand scale is the amplitude of the response. The units for the response amplitude are given at the top of each plot along with the response identification. The phase relationship between the response and the input is referenced to the right hand scale with the phase angle reduced to fall within the limits of the ±180 degrees.

In order to observe the cyclic nature of the phase angle, trace the path of the plotted symbols as it disappears at the top (bottom) of the plot and reappears at the bottom (top). For each complete cycle across the plot, add (subtract) 360 to (from) the plotted angle.

As a guide for reading the frequency response plots, Table 3 on page 145, has been included to show the amplitude and phase angle for each of the plotted responses at a frequency of 1.0 Hertz.

This page intentionally left blank.

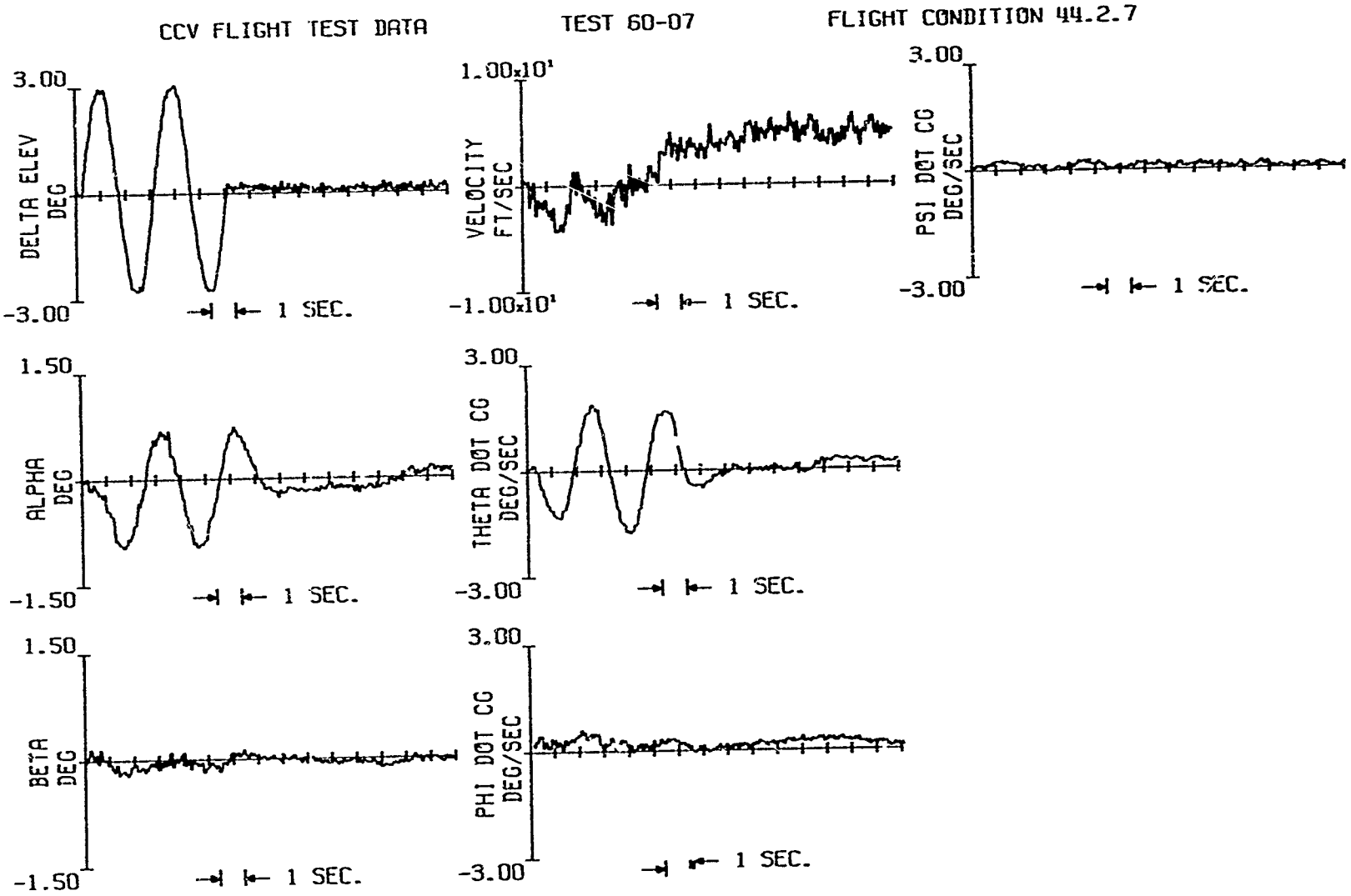


Figure 4. Flight Test and Analytical Response Comparisons for Flight Condition 44.2.7

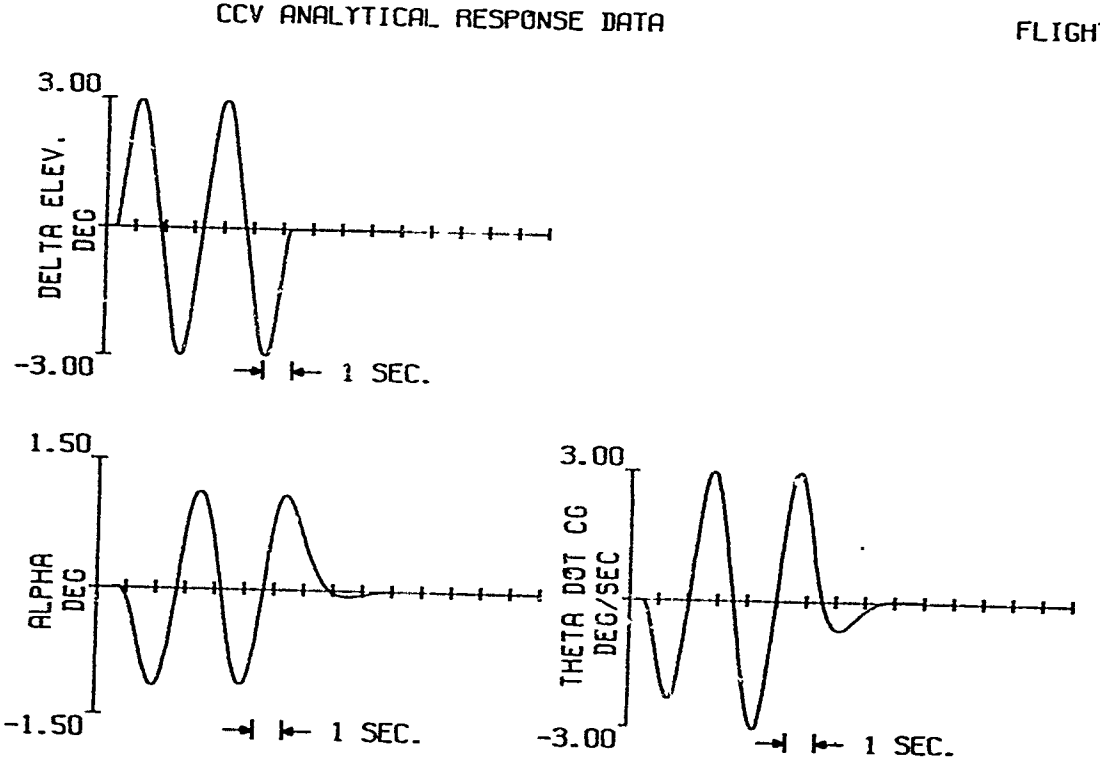


Figure 4. Flight Test and Analytical Response Comparisons for Flight Condition 44.2.7 (Continued)

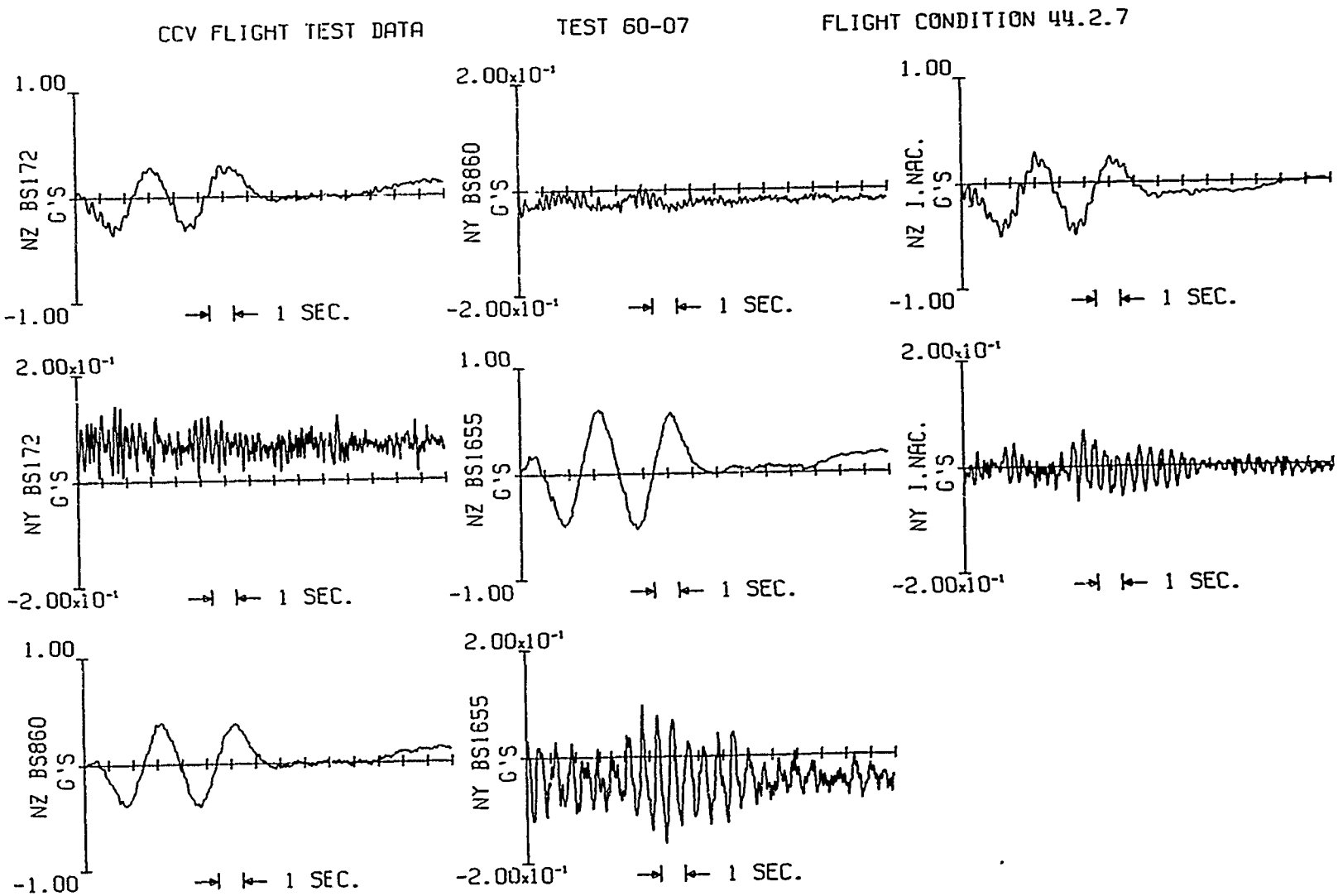


Figure 4. Flight Test and Analytical Response Comparisons for Flight Condition 44.2.7 (Continued)

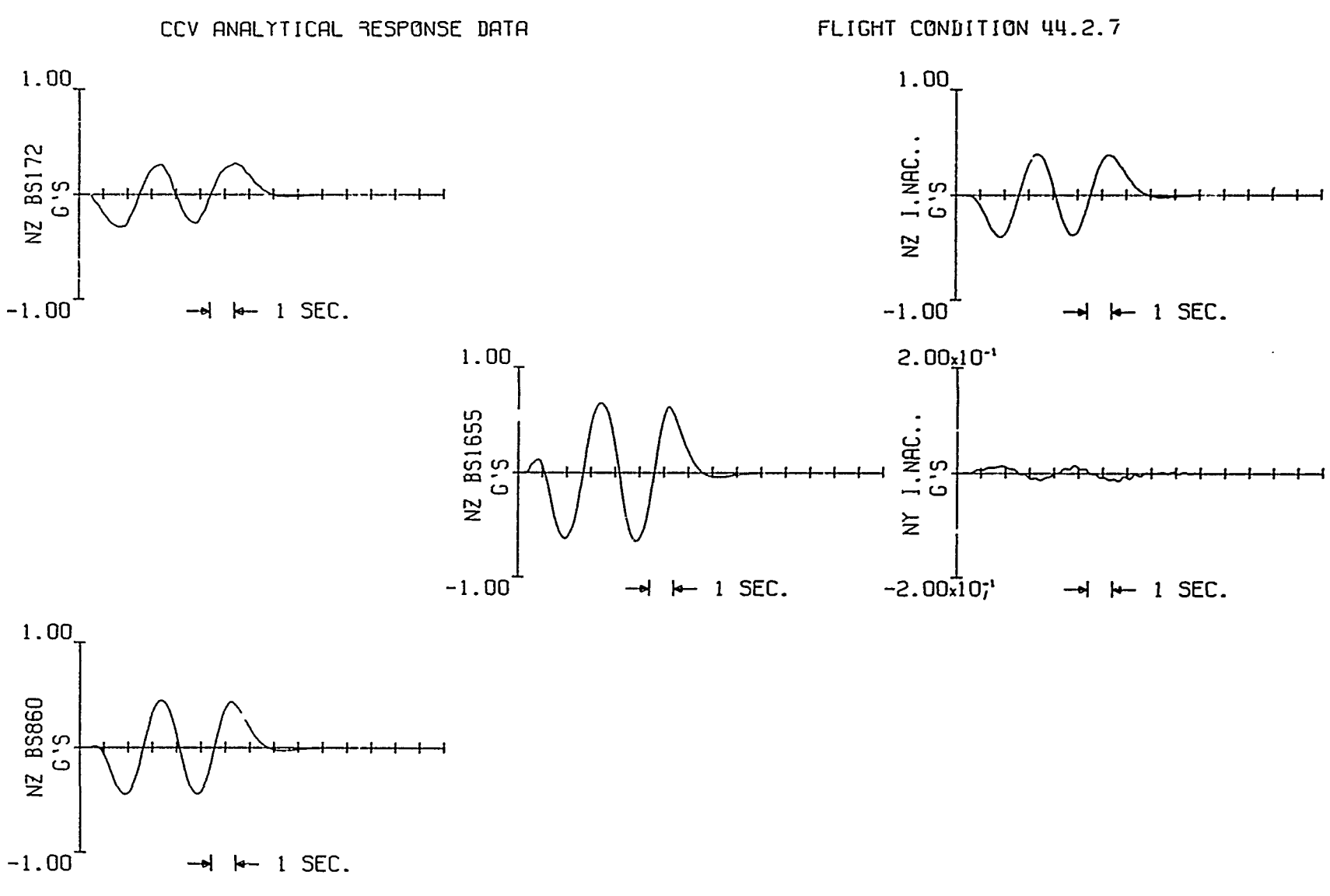


Figure 4. Flight Test and Analytical Response Comparisons for Flight Condition 44.2.7 (Continued)

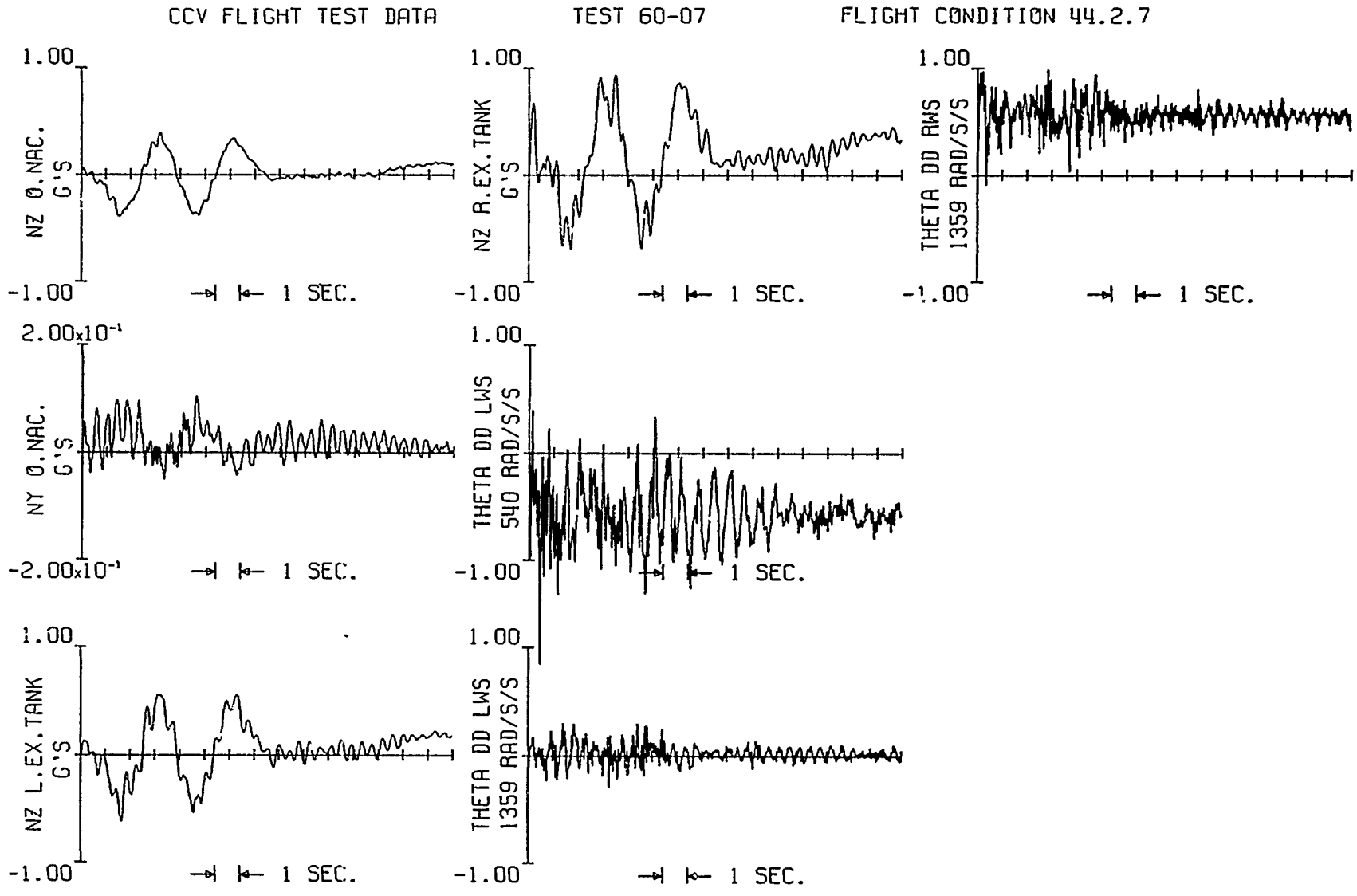


Figure 4. Flight Test and Analytical Response Comparisons for Flight Condition 44.2.7 (Continued)

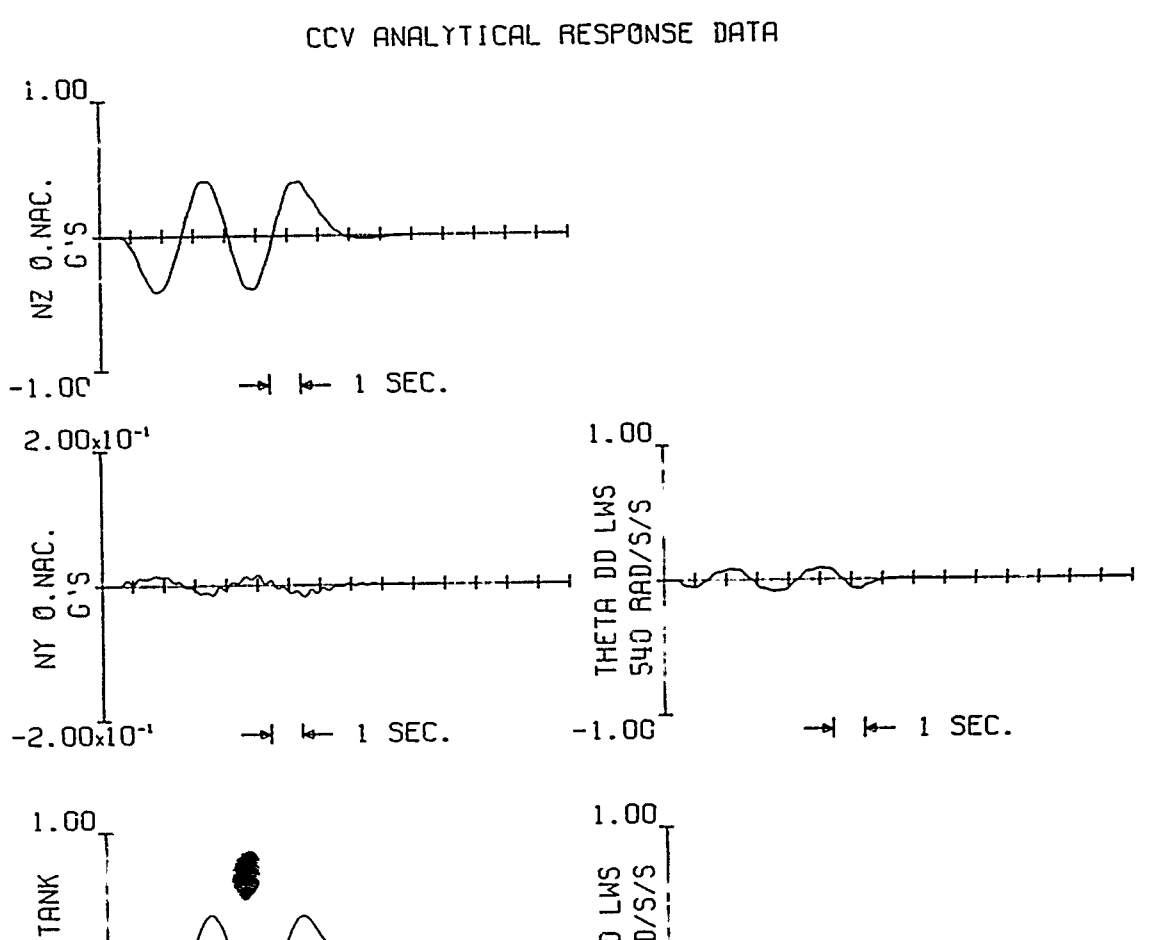


Figure 4. Flight Test and Analytical Response Comparisons for Flight Condition 44.2.7 (Continued)

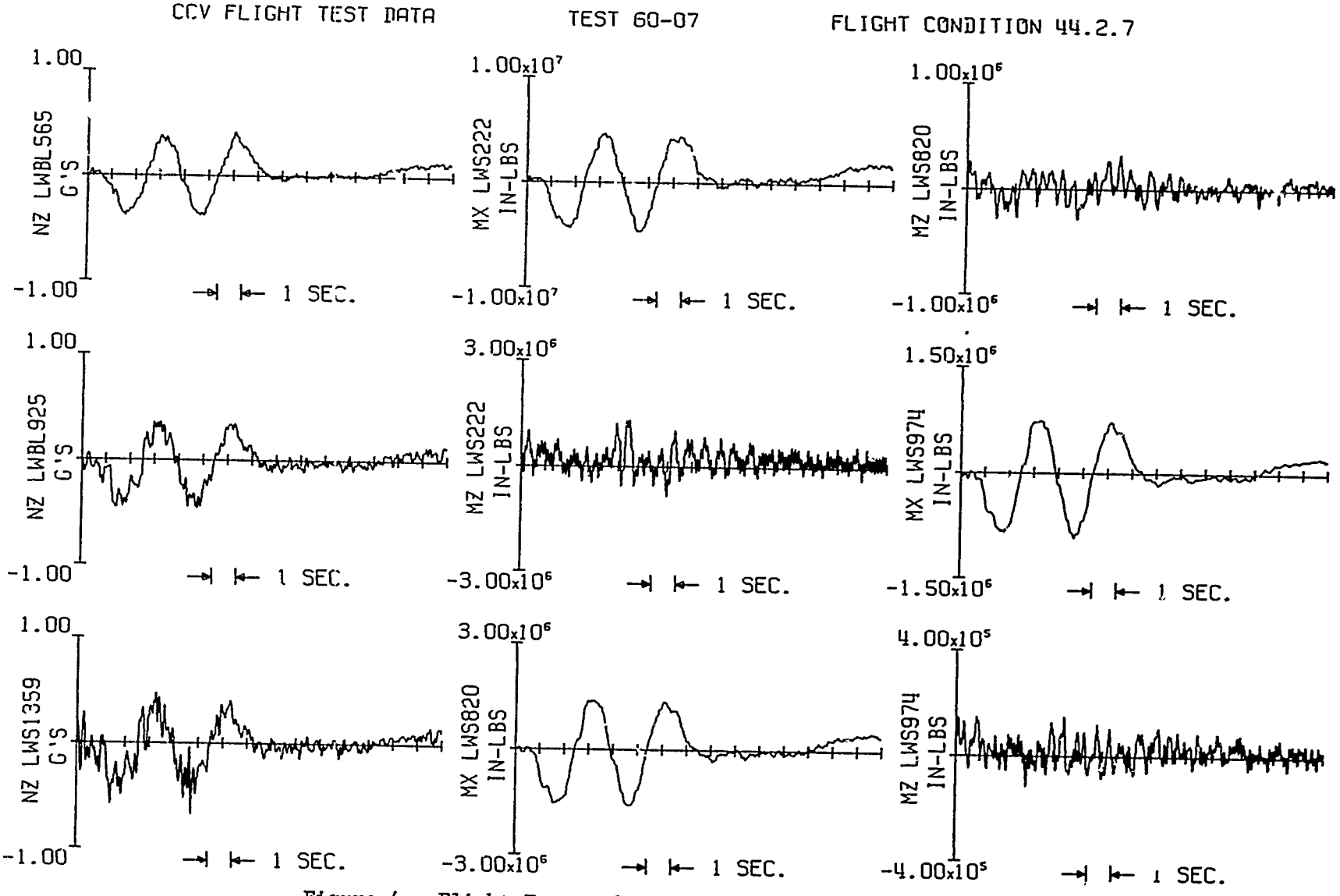


Figure 4. Flight Test and Analytical Response Comparisons for Flight Condition 44.2.7 (Continued)

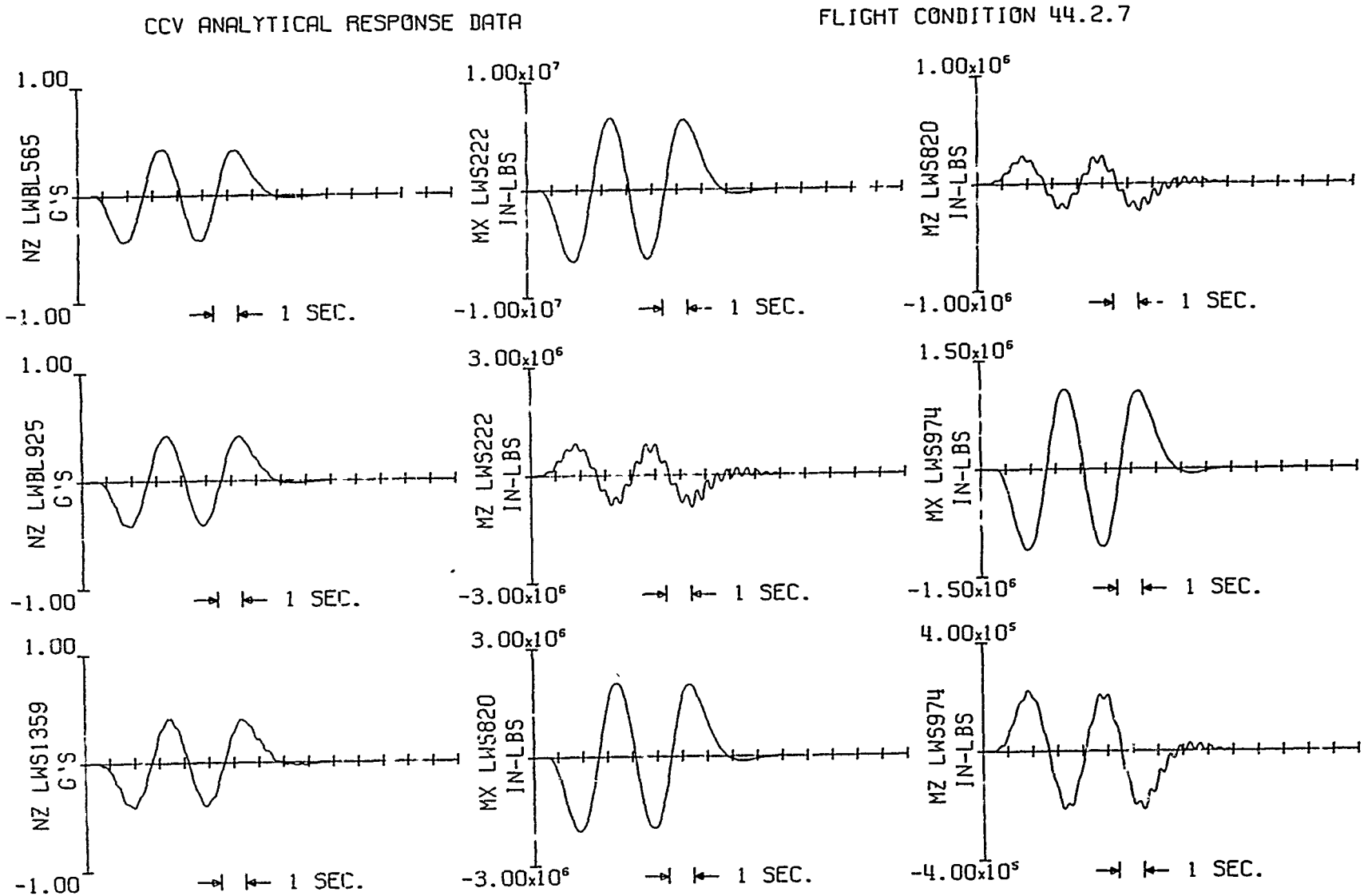


Figure 4. Flight Test and Analytical Response Comparisons for Flight Condition 44.2.7 (Continued)

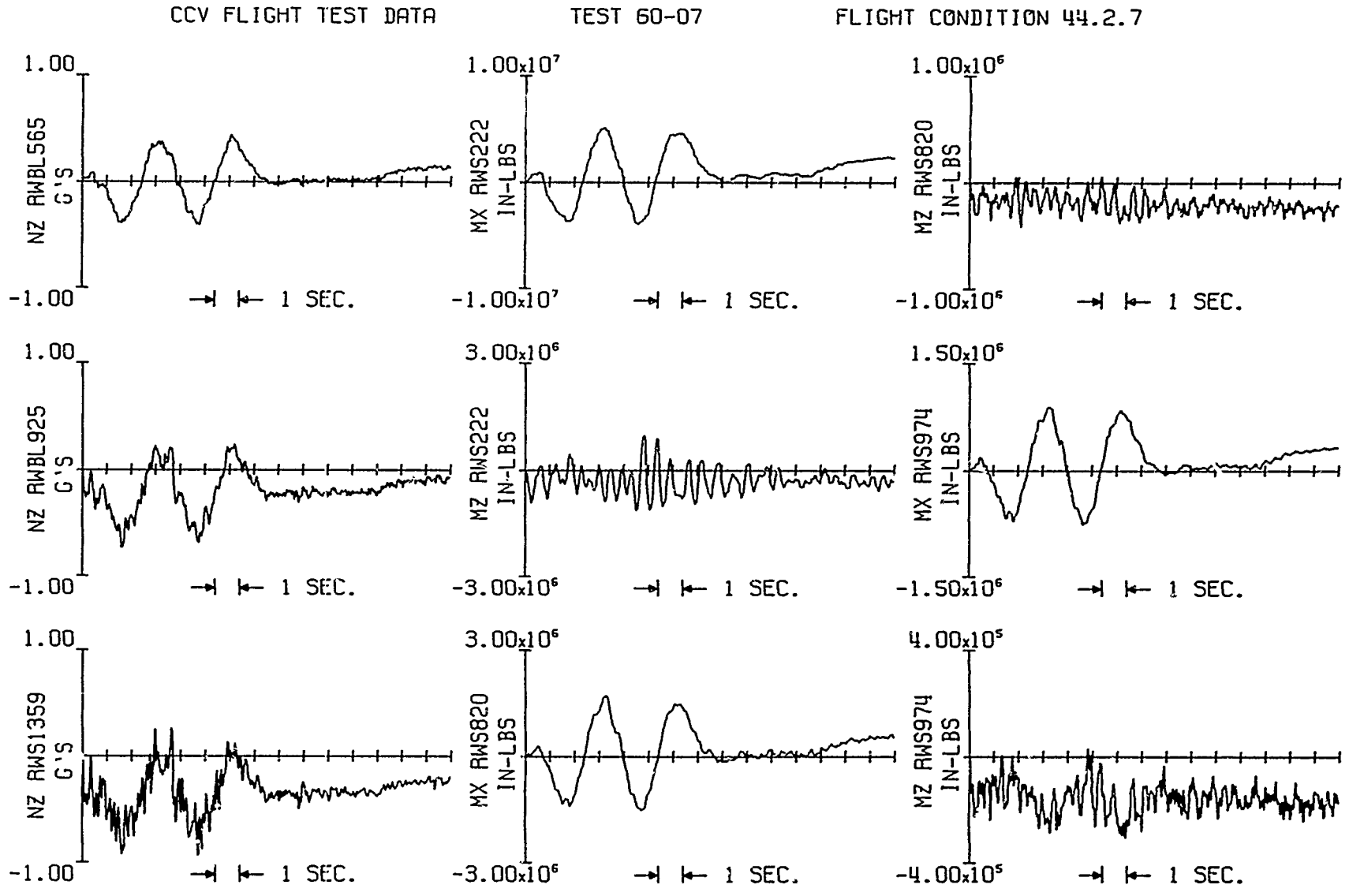


Figure 4. Flight Test and Analytical Response Comparisons for Flight Condition 44.2.7 (Continued)

Responses were not calculated for the right wing. Theoretical right wing responses are the same as the left wing responses.

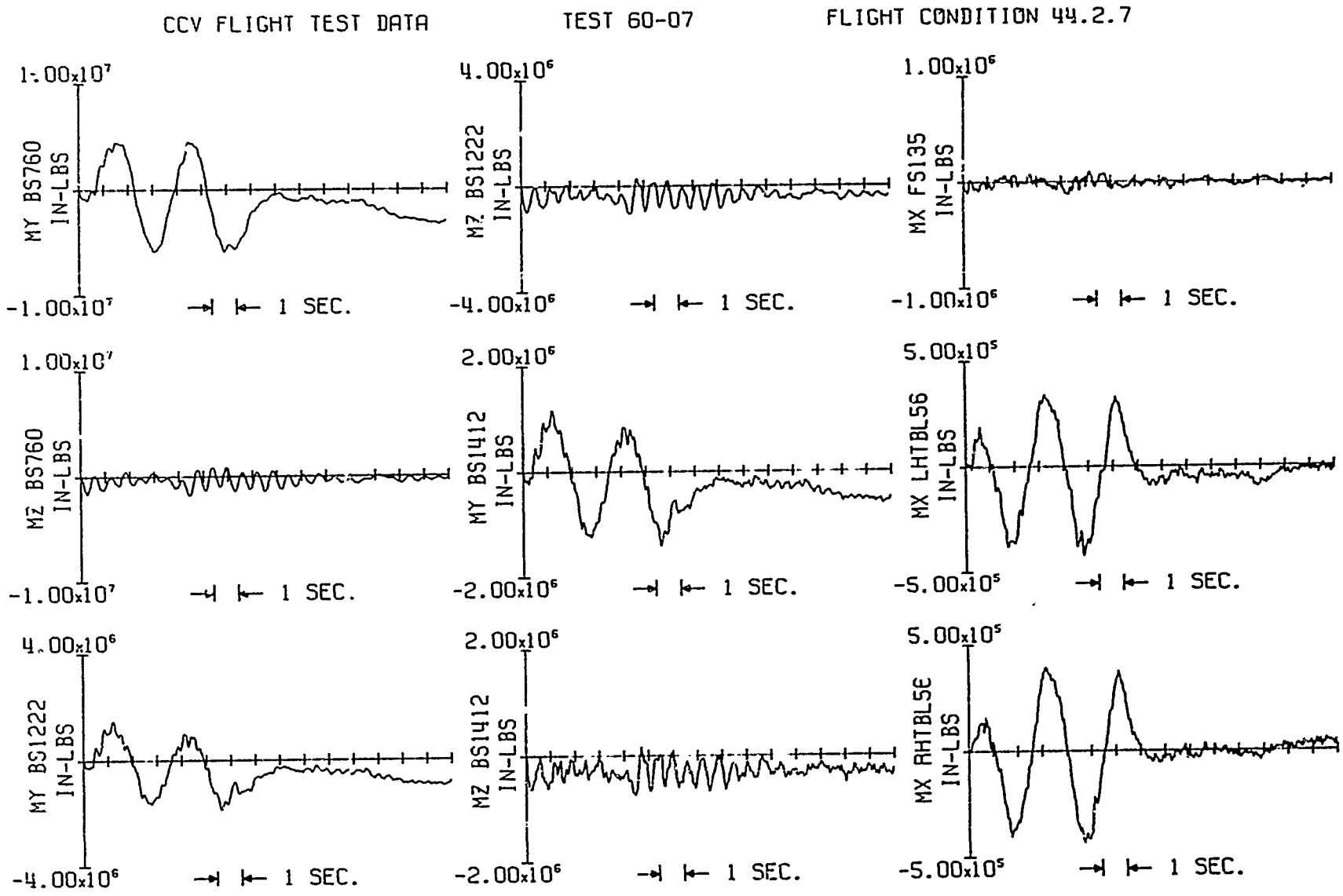


Figure 4. Flight Test and Analytical Response Comparisons for Flight Condition 44.2.7 (Continued)

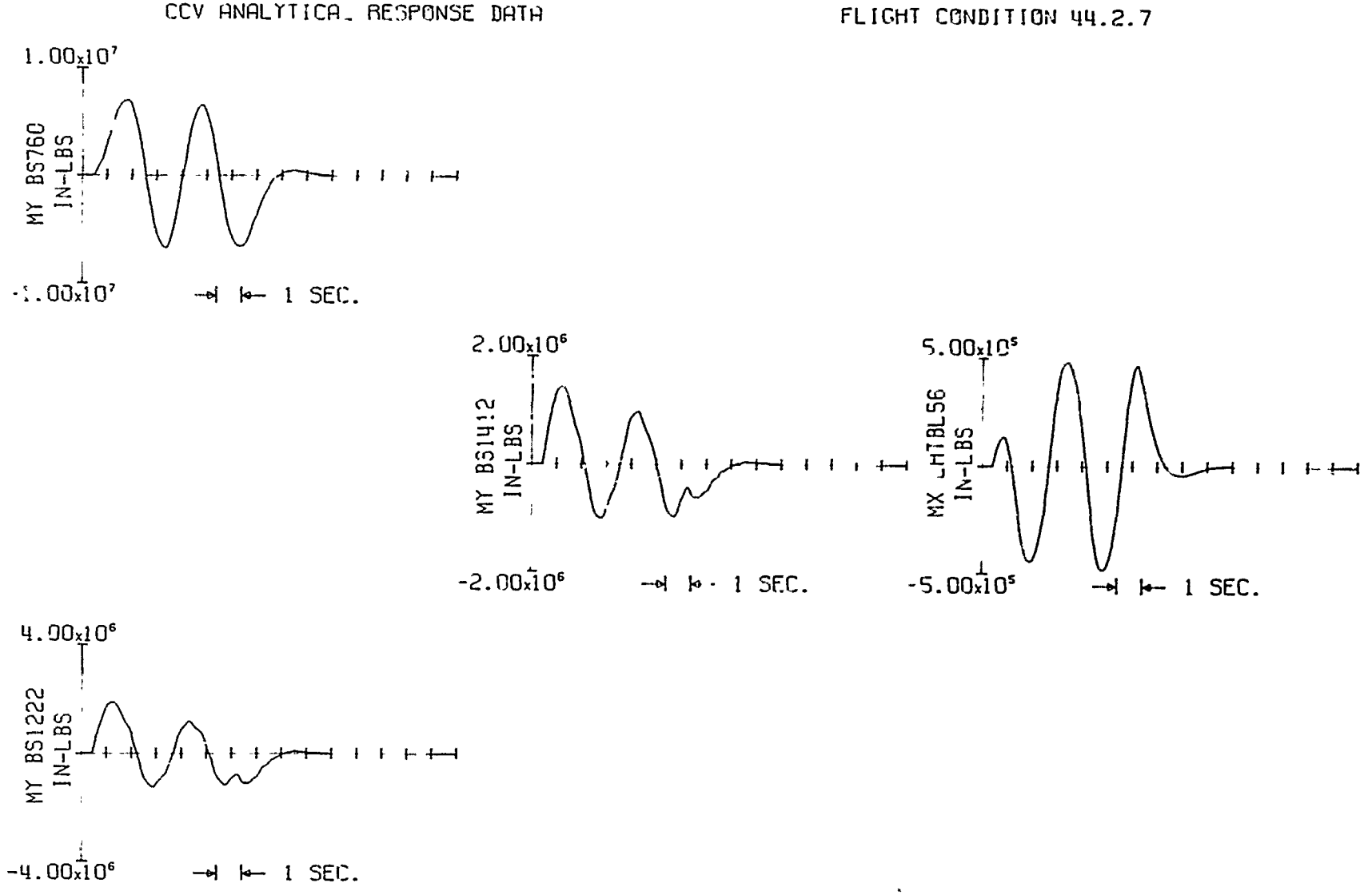


Figure 4. Flight Test and Analytical Response Comparisons for Flight Condition 44.2.7 (Continued)

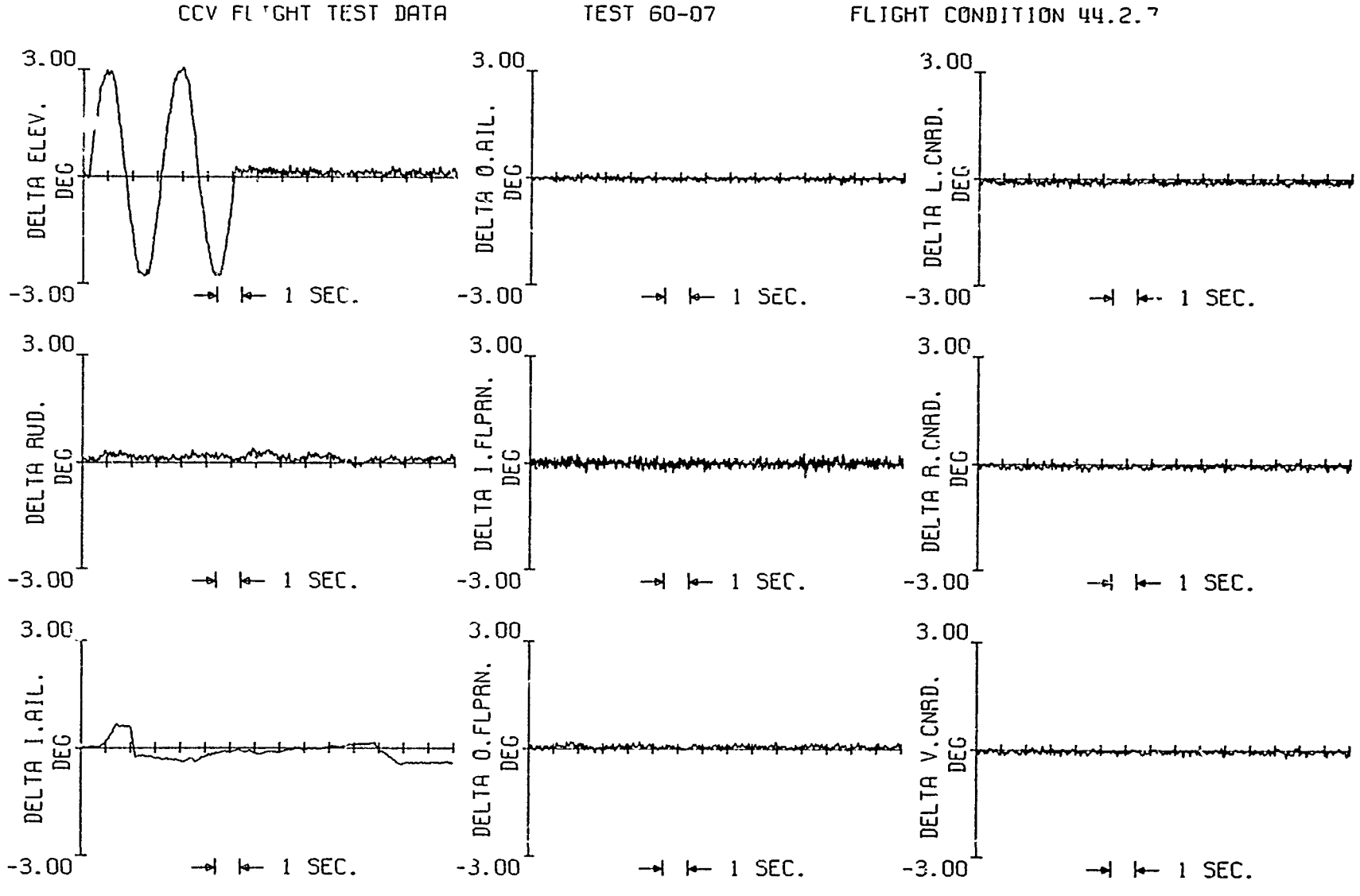


Figure 4. Flight Test and Analytical Response Comparisons for Flight Condition 44.2.7 (Concluded)

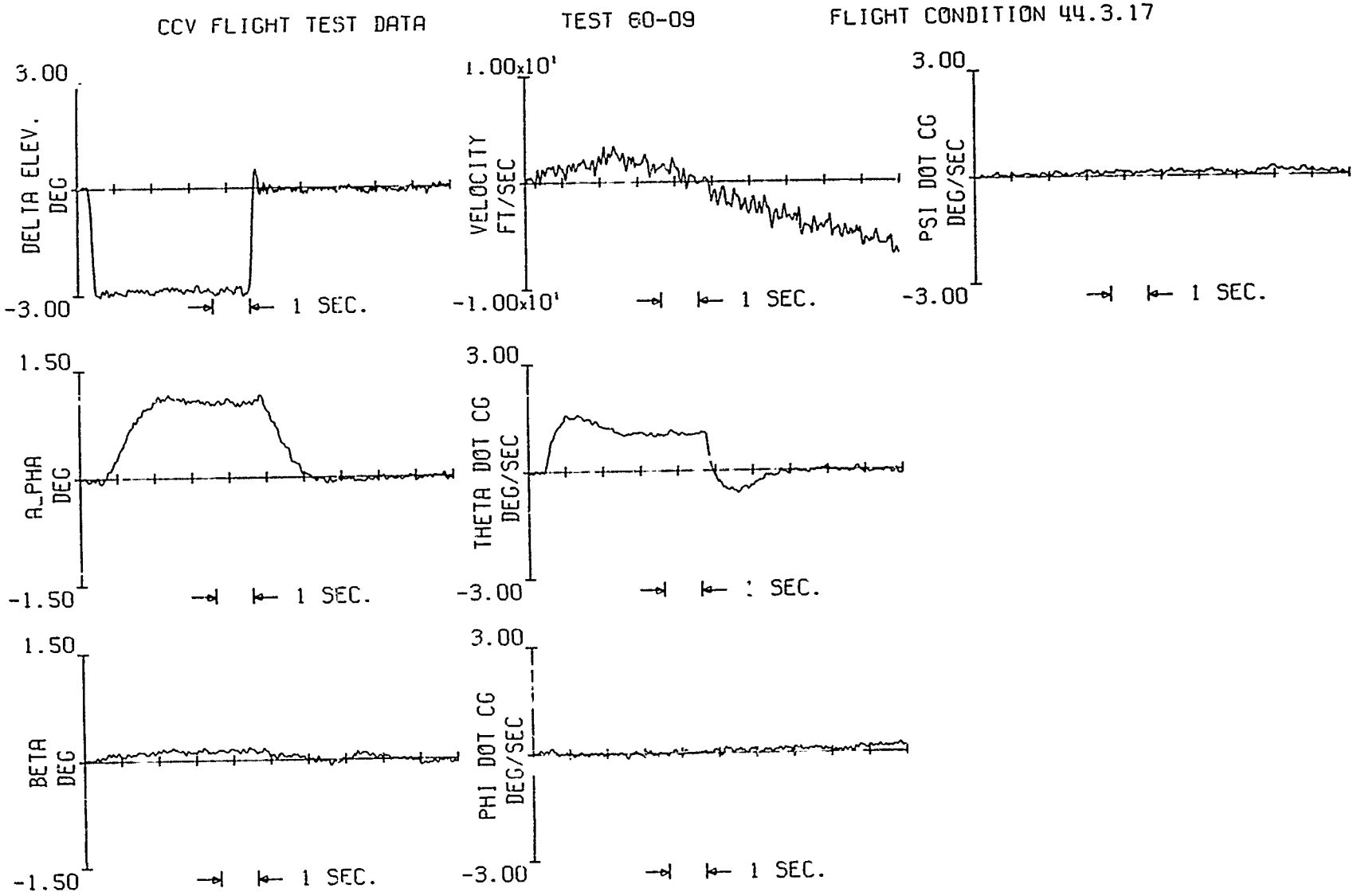


Figure 5. Flight Test and Analytical Response Comparisons for Flight Condition 44.3.17

PRECEDING PAGE BLANK-NOT FILMED

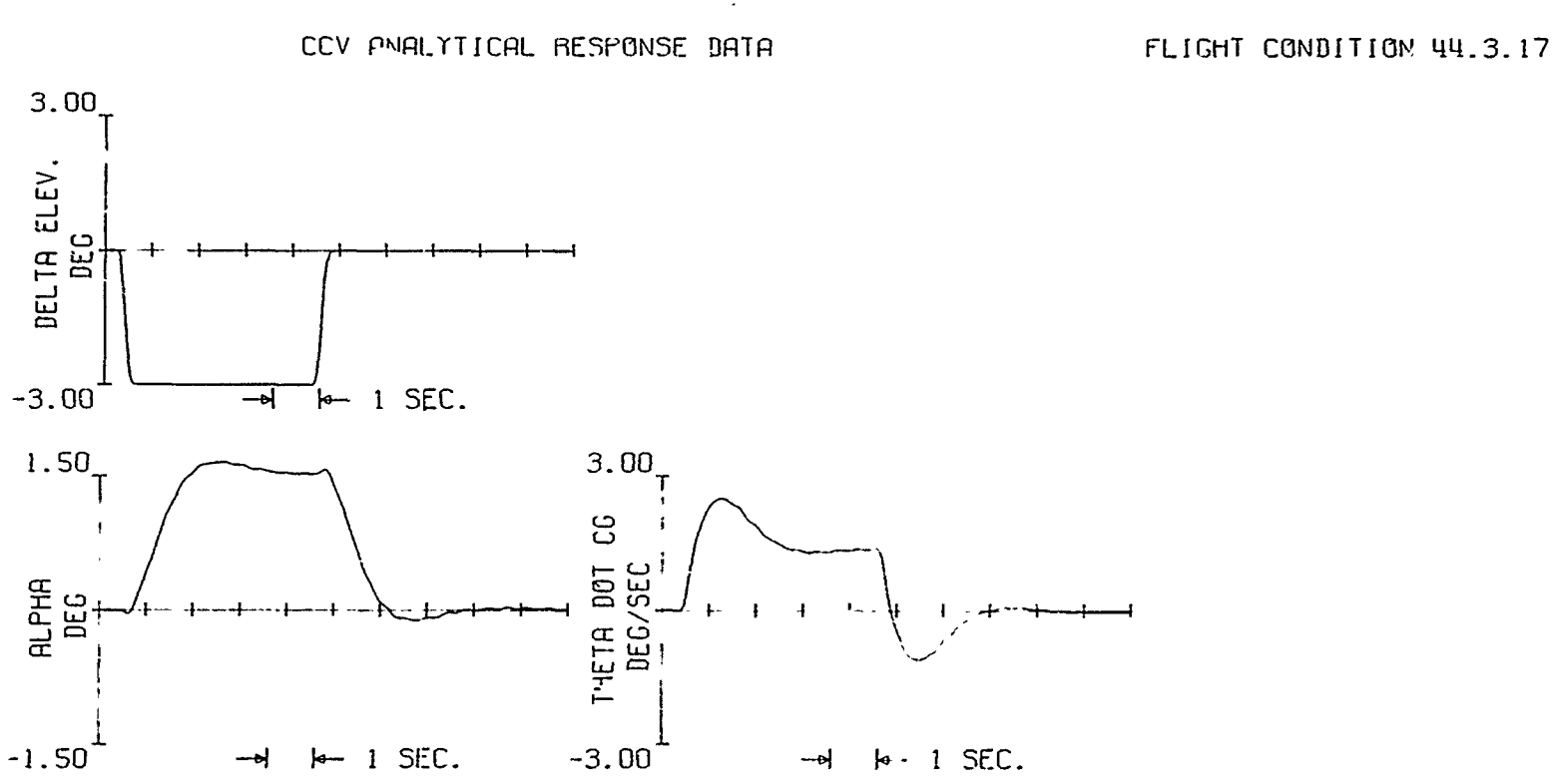


Figure 5. Flight Test and Analytical Response Comparisons for Flight Condition 44.3.17 (Continued)

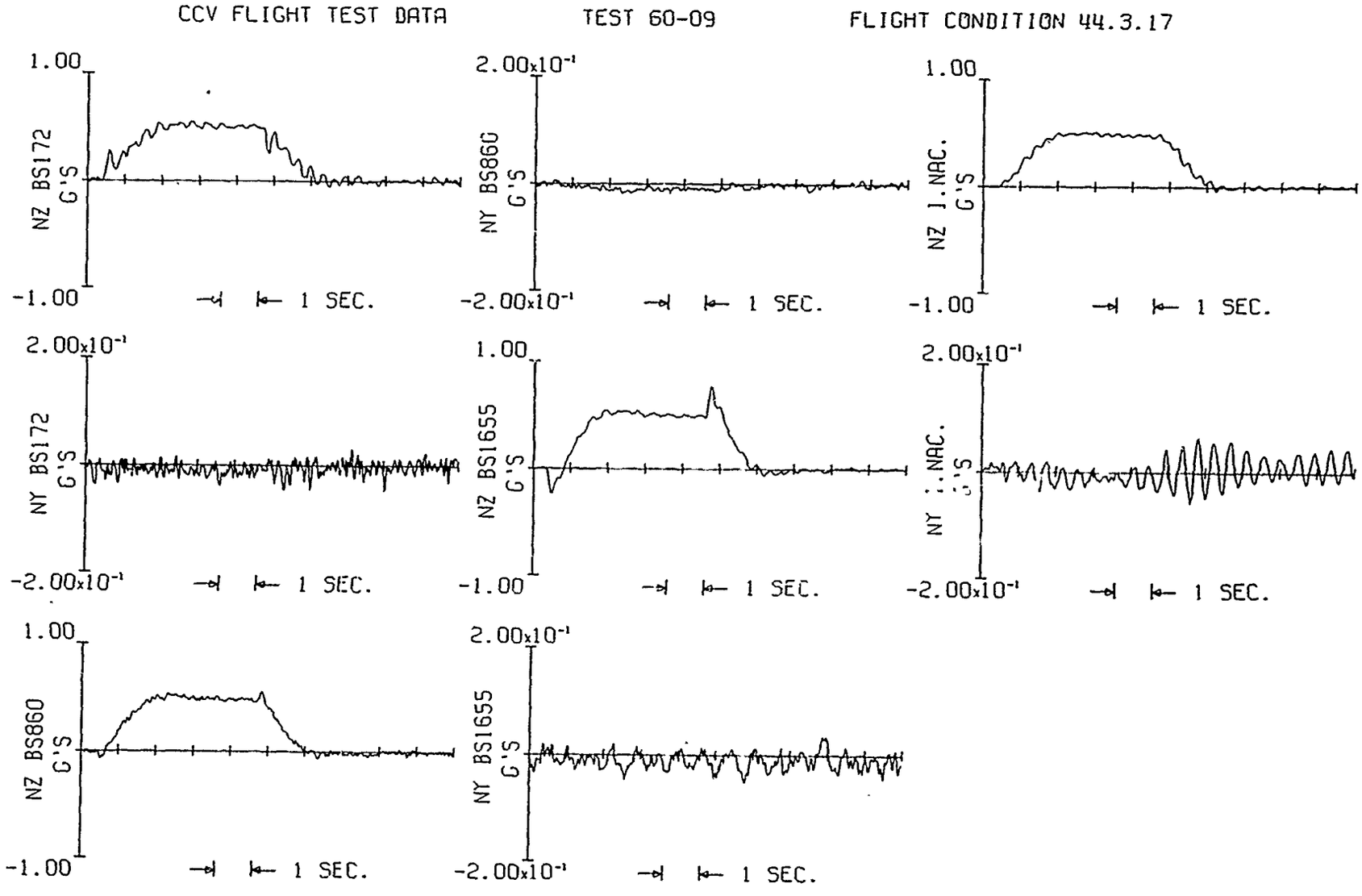


Figure 5. Flight Test and Analytical Response Comparisons for Flight Condition 44.3.17 (Continued)

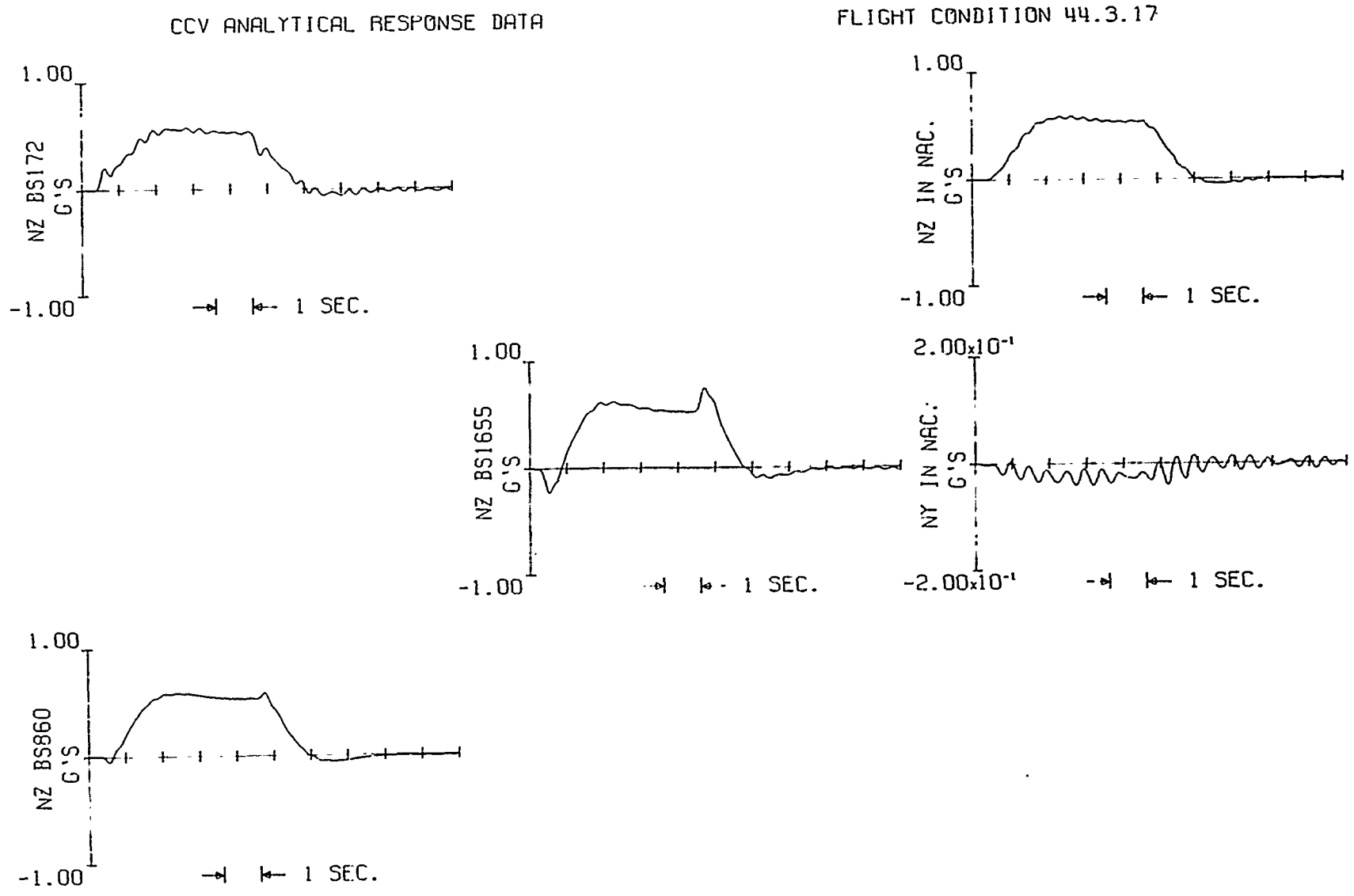


Figure 5. Flight Test and Analytical Response Comparisons for Flight Condition 44.3.17 (Continued)

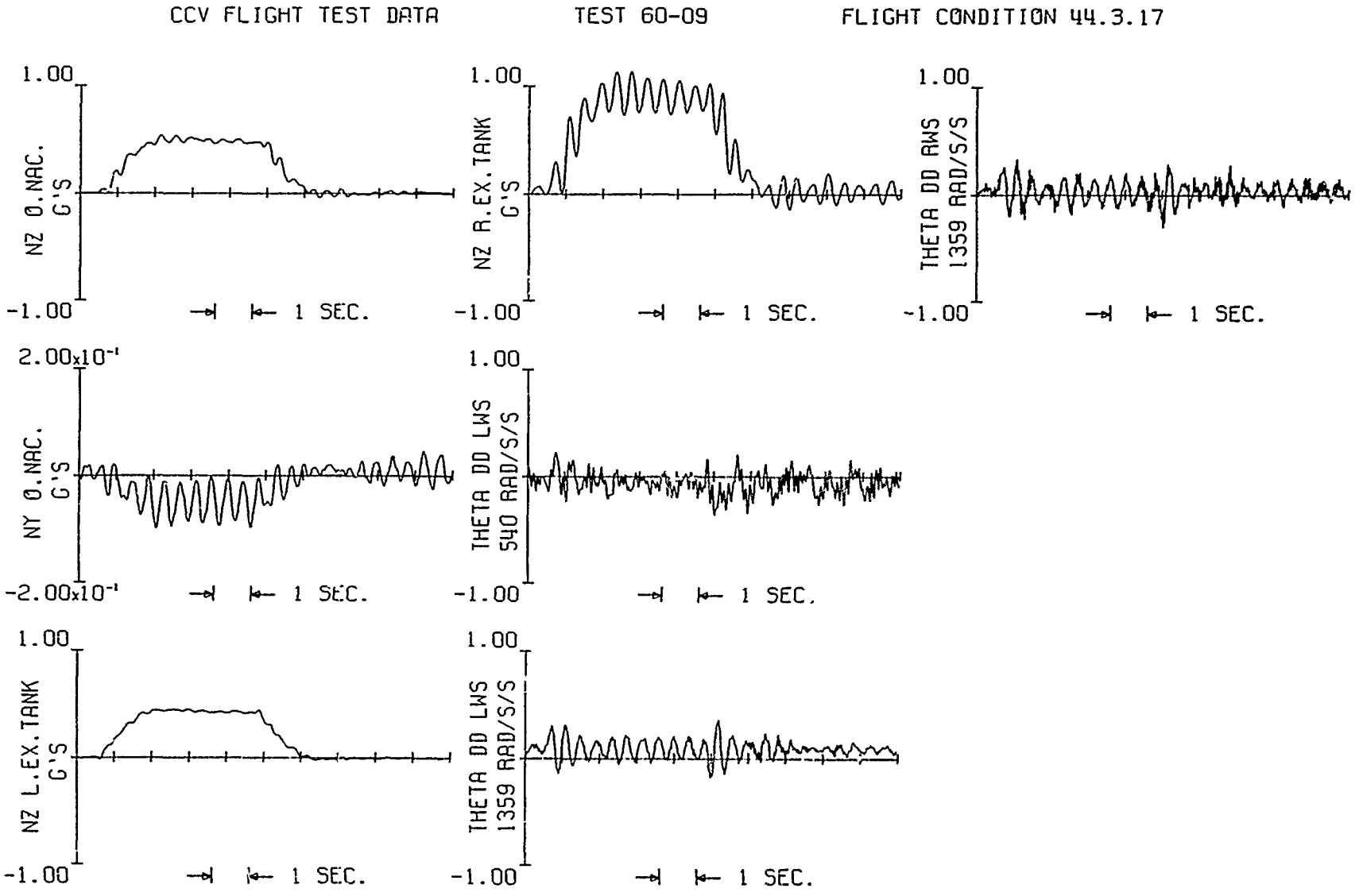


Figure 5. Flight Test and Analytical Response Comparisons for Flight Condition 44.3.17 (Continued)

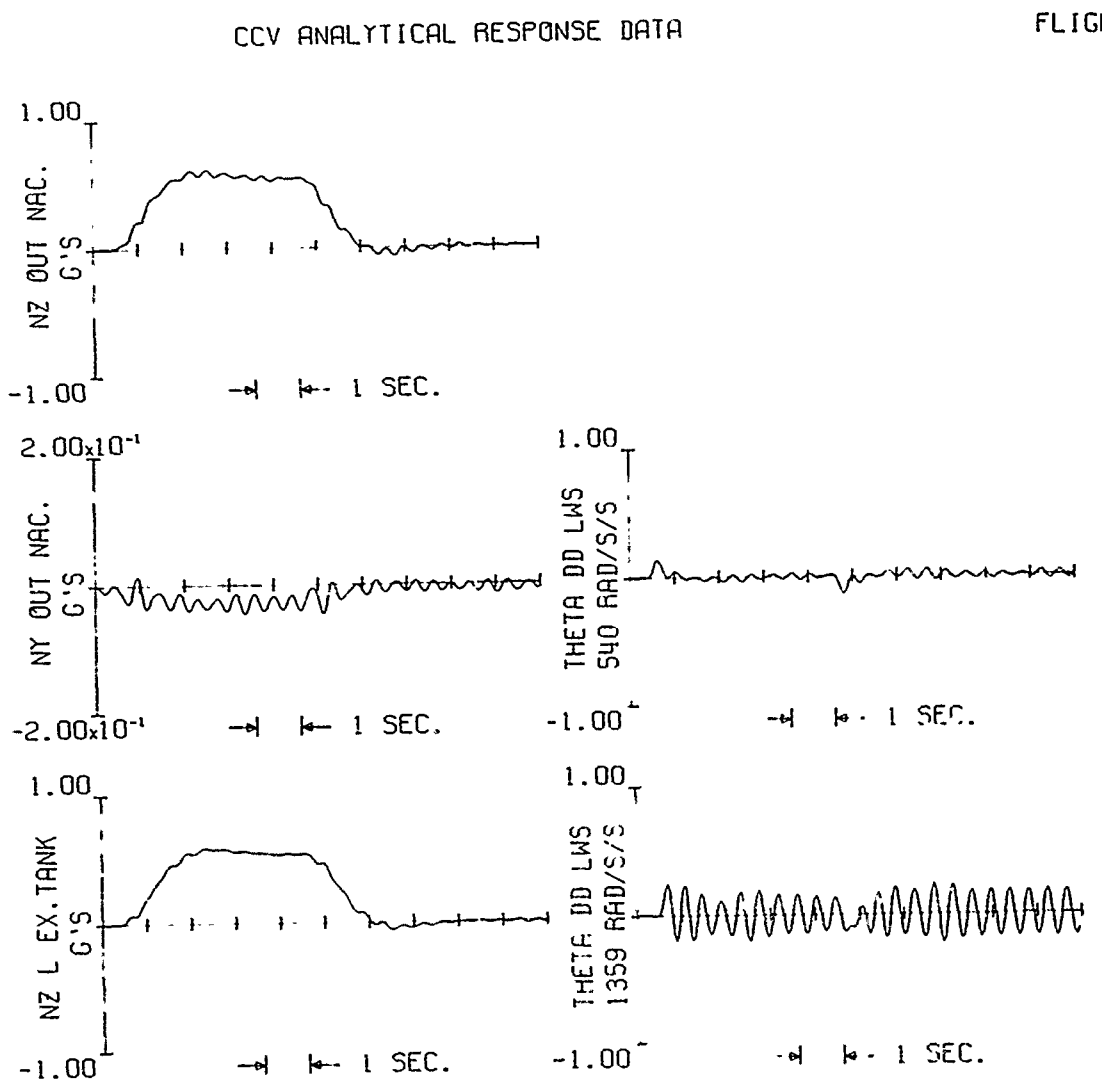


Figure 5. Flight Test and Analytical Response Comparisons for Flight Condition 44.3.17 (Continued)

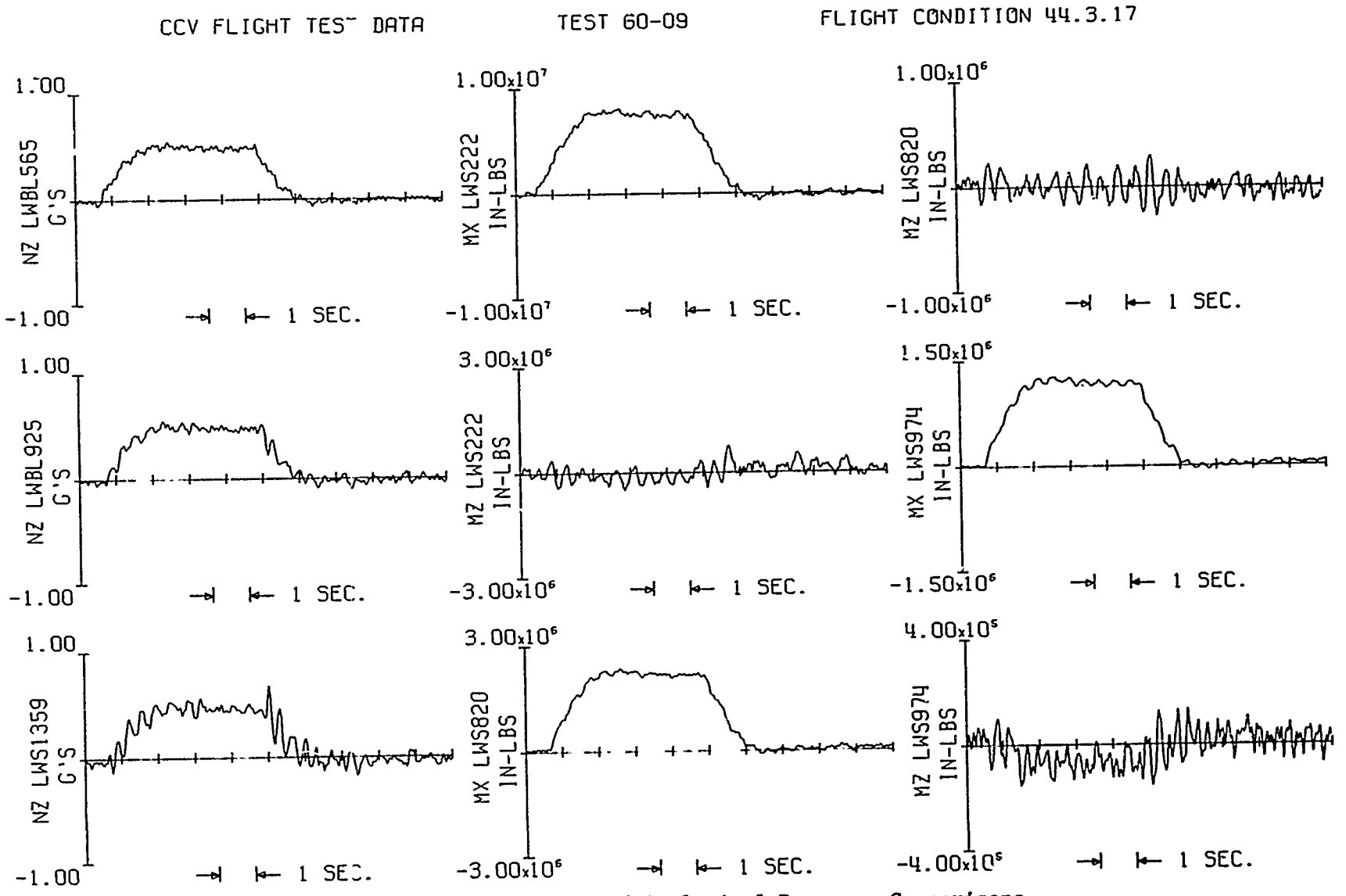


Figure 5. Flight Test and Analytical Response Comparisons for Flight Condition 44.3.17 (Continued)

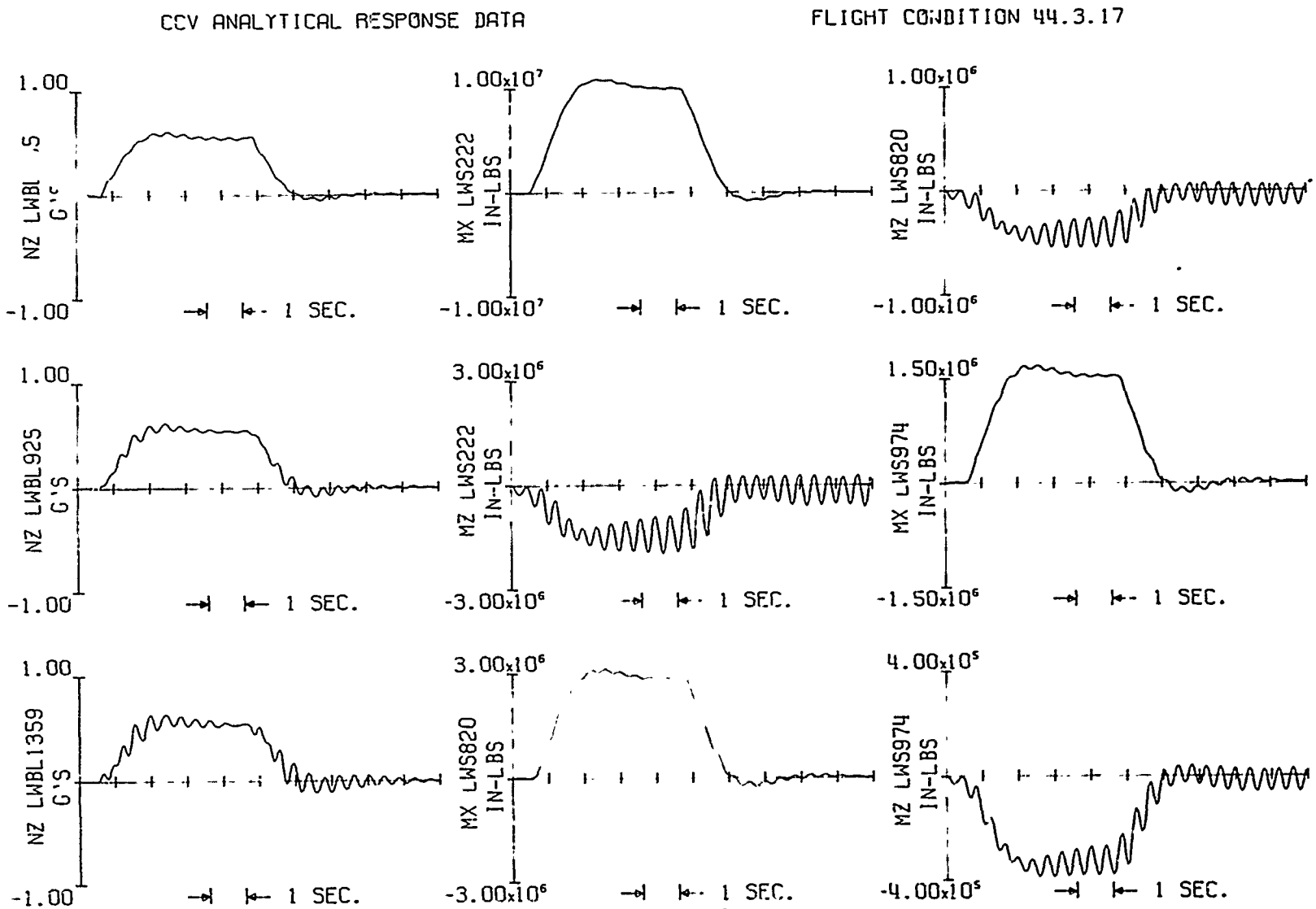


Figure 5. Flight Test and Analytical Response Comparisons for Flight Condition 44.3.17 (Continued)

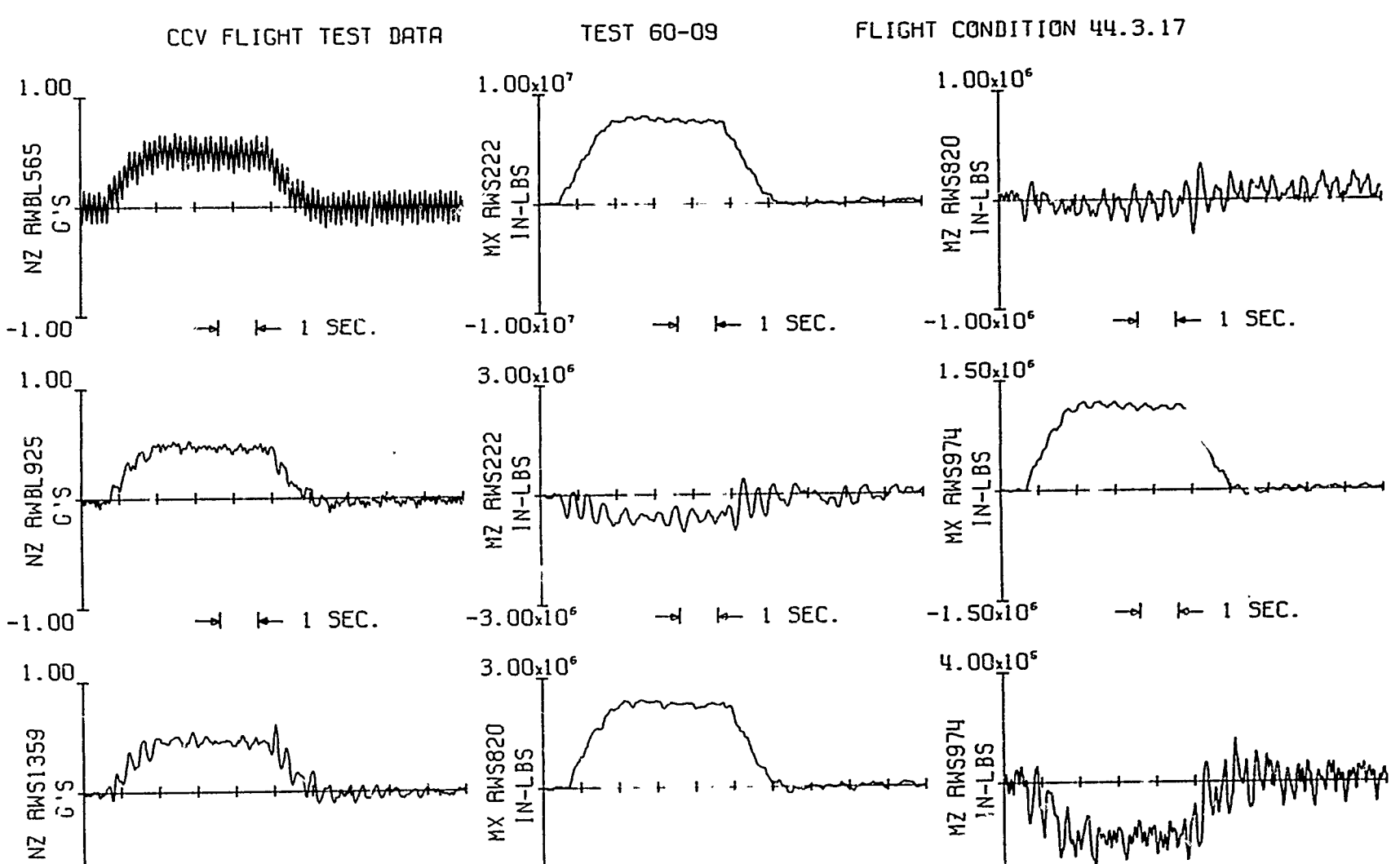


Figure 5. Flight Test and Analytical Response Comparisons for Flight Condition 44.3.17 (Continued)

Responses were not calculated for the right wing. Theoretical right wing responses are the same as the left wing responses.

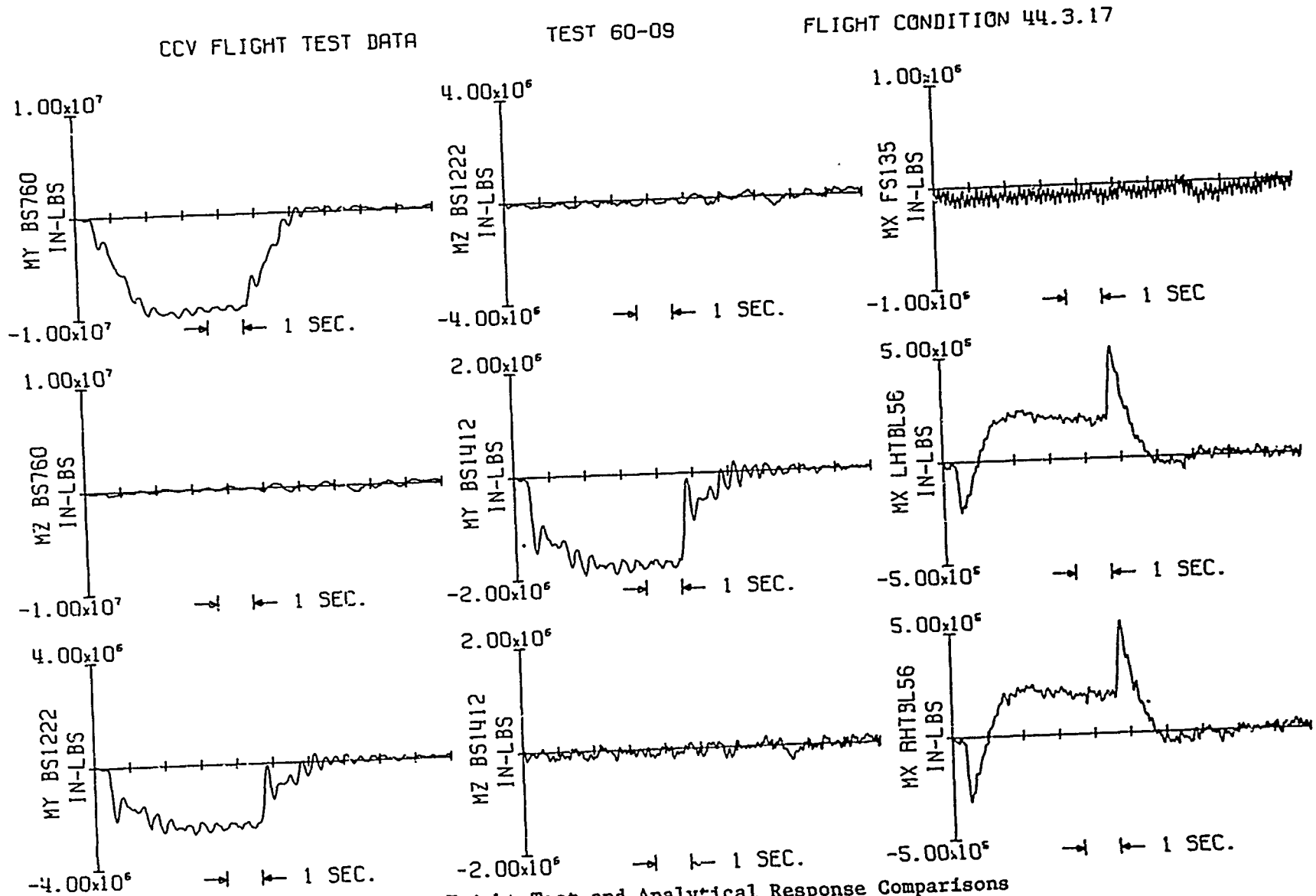


Figure 5. Flight Test and Analytical Response Comparisons for Flight Condition 44.3.17 (Continued)

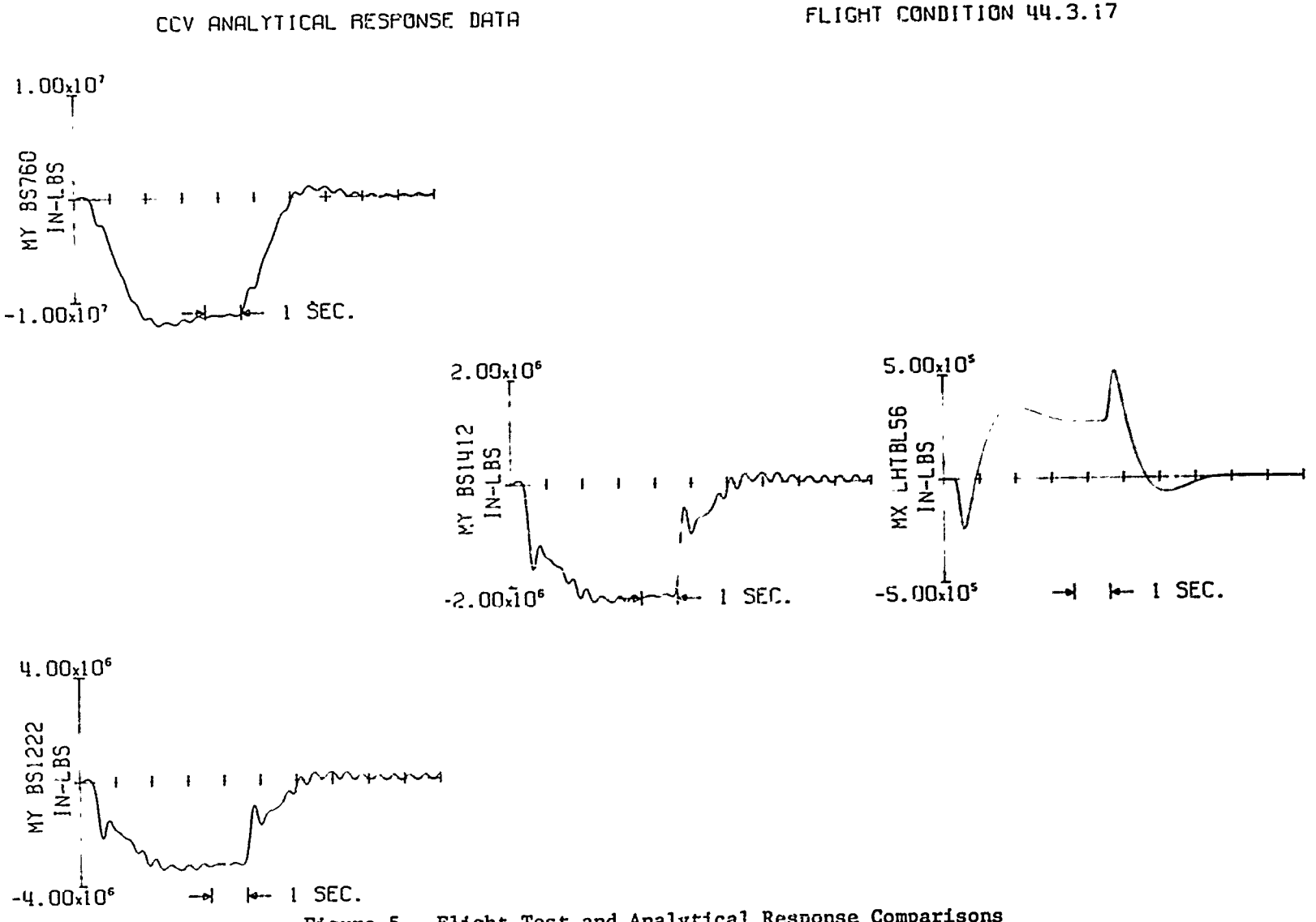


Figure 5. Flight Test and Analytical Response Comparisons for Flight Condition 44.3.17 (Continued)

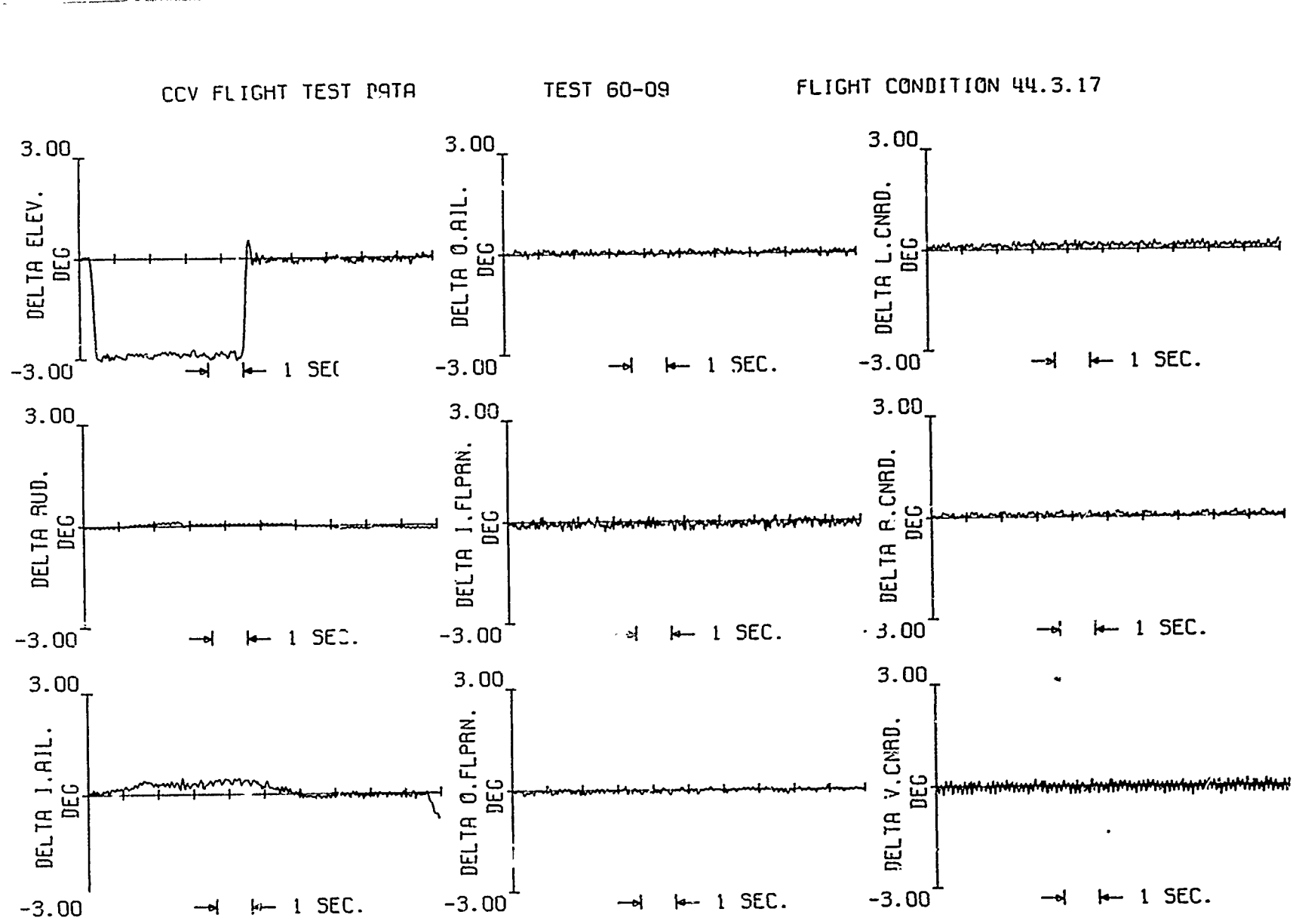


Figure 5. Flight Test and Analytical Response Comparisons for Flight Condition 44.3.17 (Concluded)

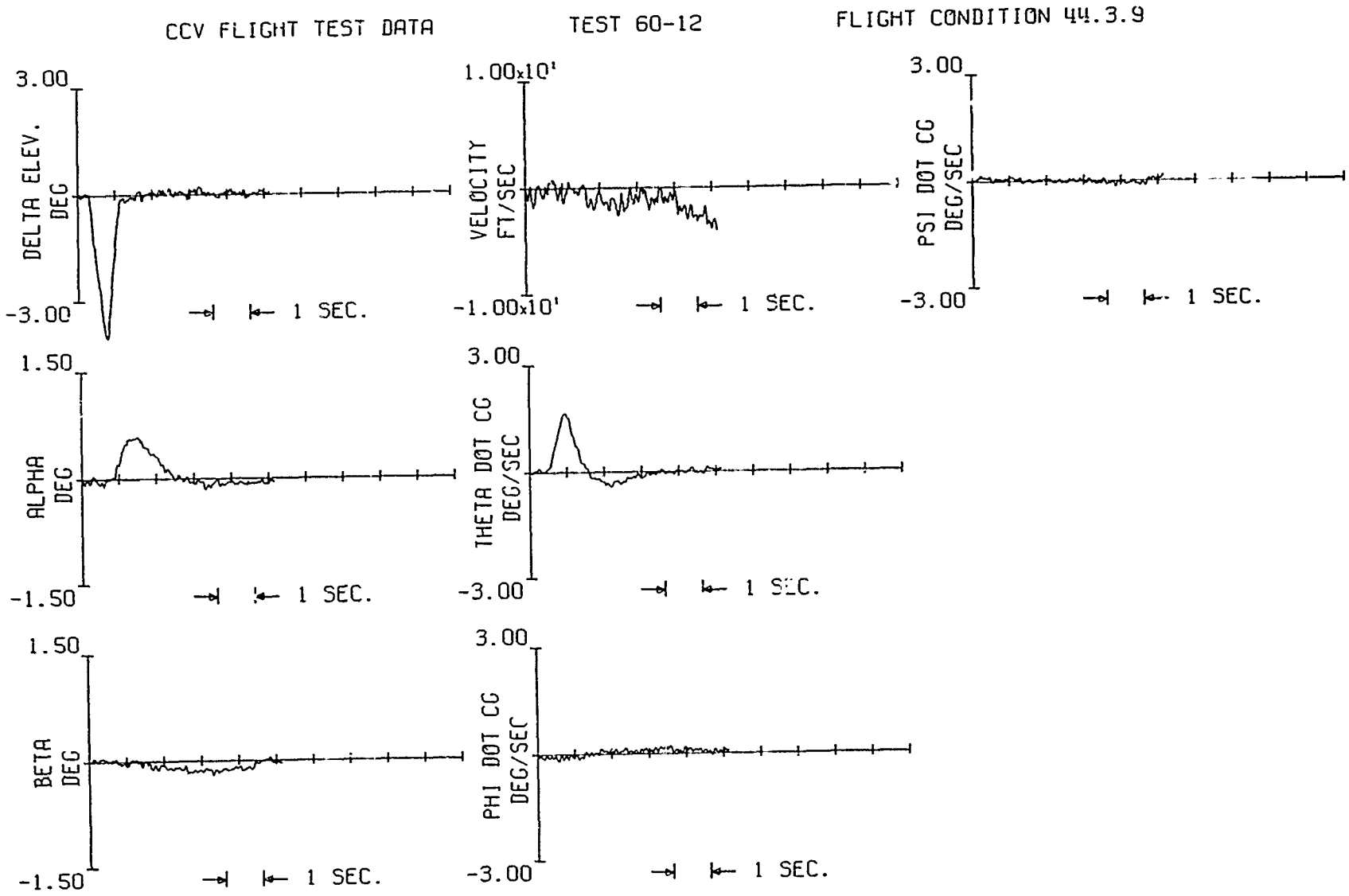


Figure 6. Flight Test and Analytical Response Comparisons for Flight Condition 44.3.9

PRECEDING PAGE BLANK-NOT FILMED

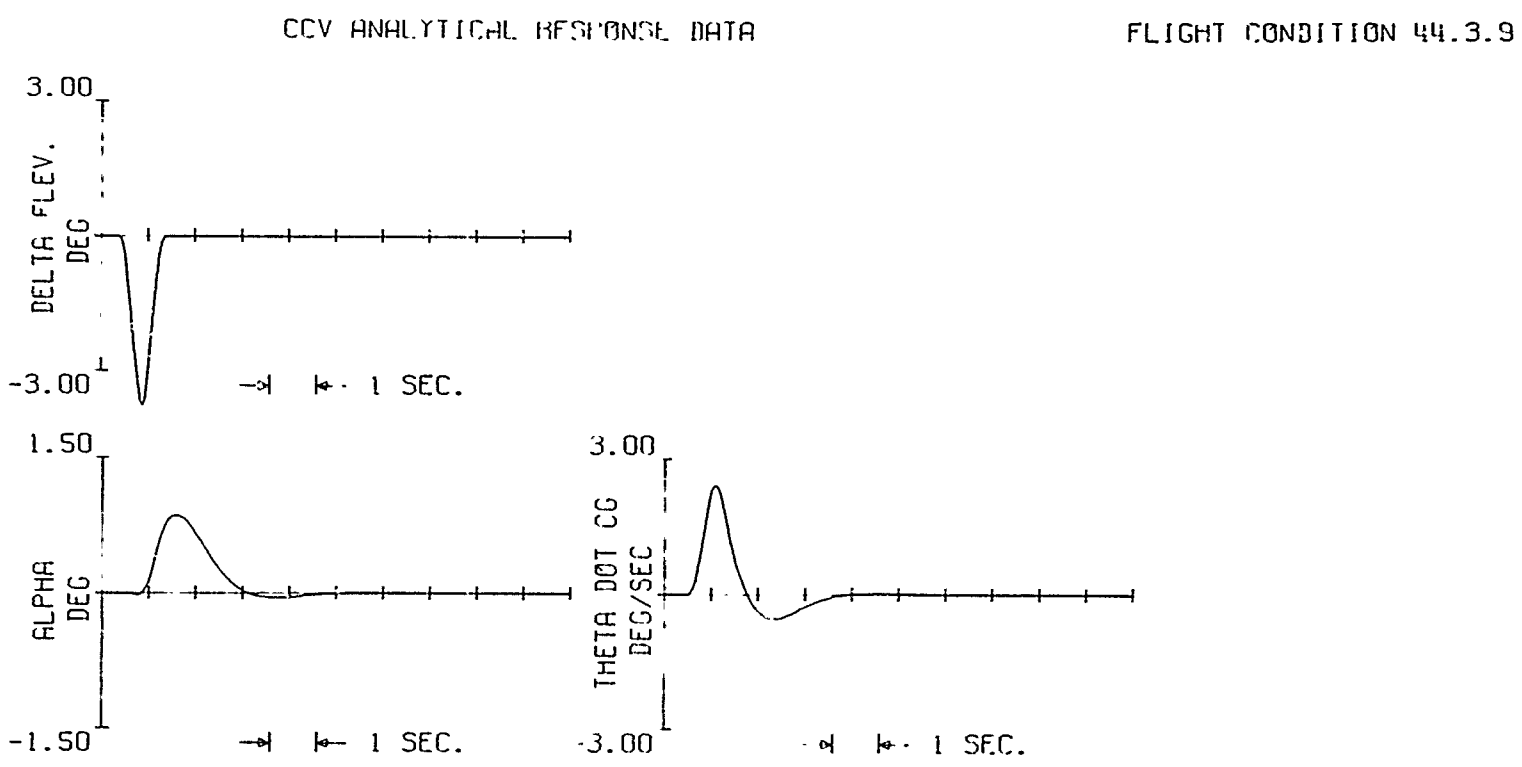


Figure 6. Flight Test and Analytical Response Comparisonc for Flight Condition 44.3.9 (Continued)

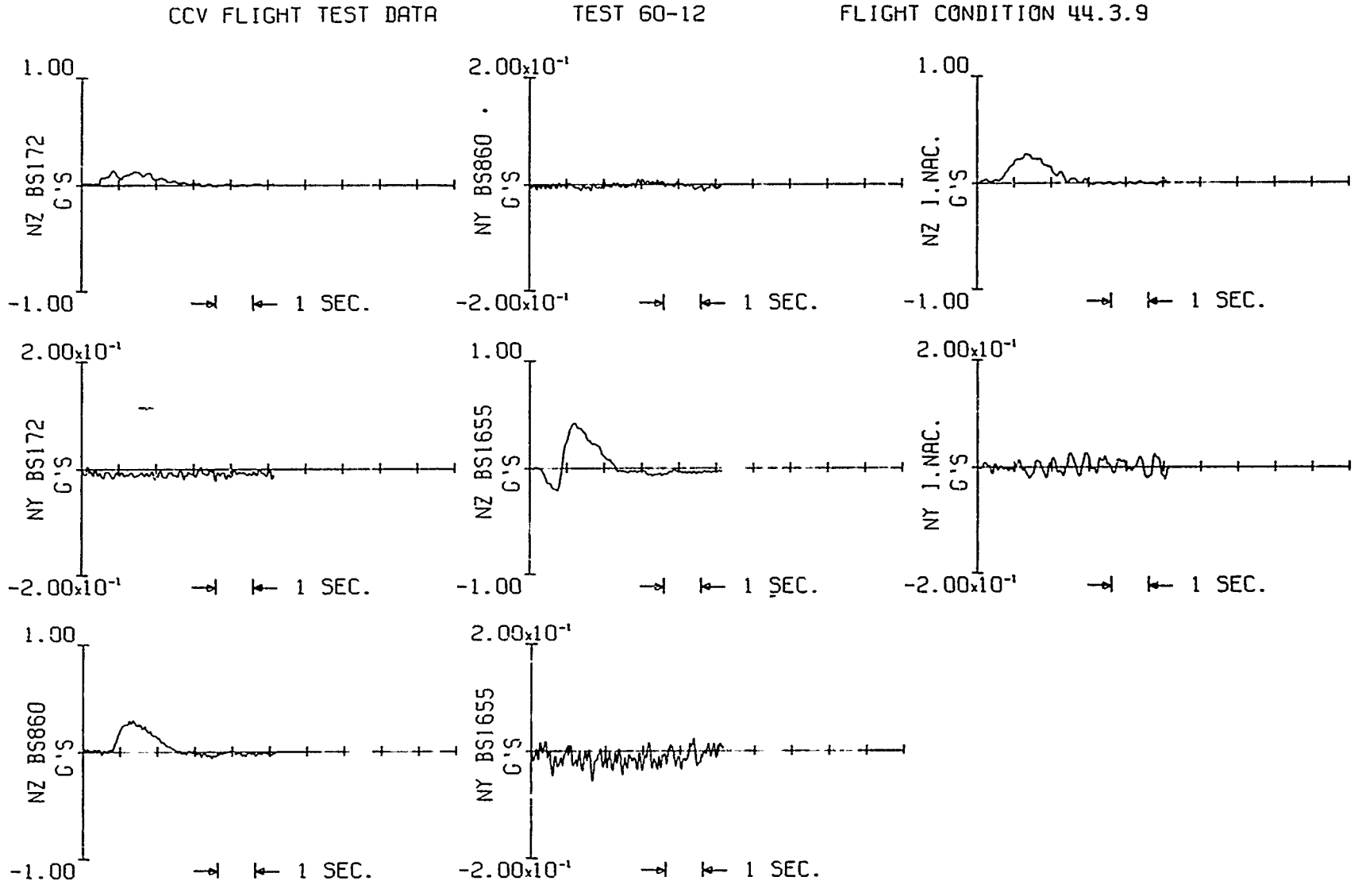


Figure 6. Flight Test and Analytical Response Comparisons for Flight Condition 44.3.9 (Continued)

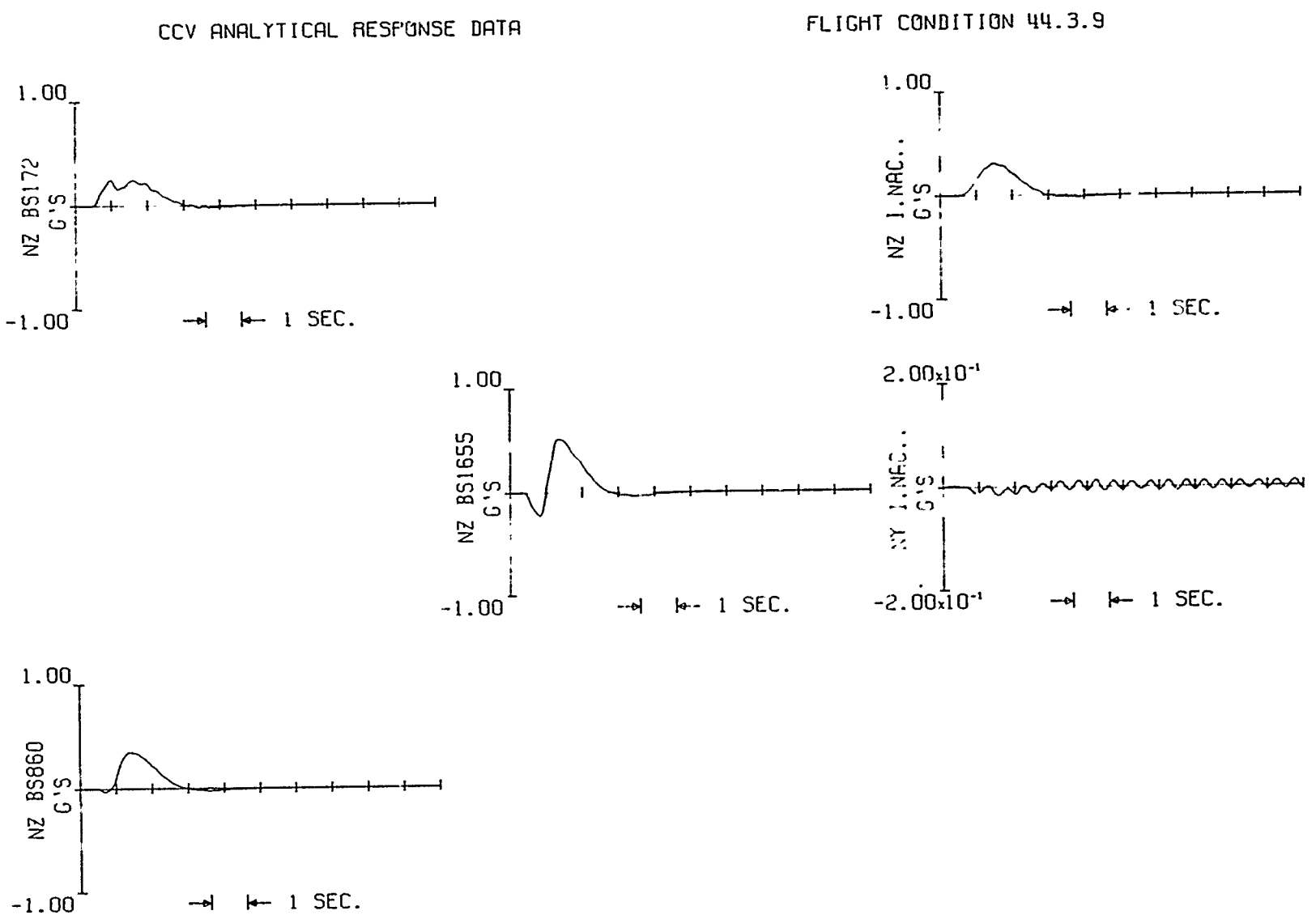


Figure 6. Flight Test and Analytical Response Comparisons for Flight Condition 44.3.9 (Continued)

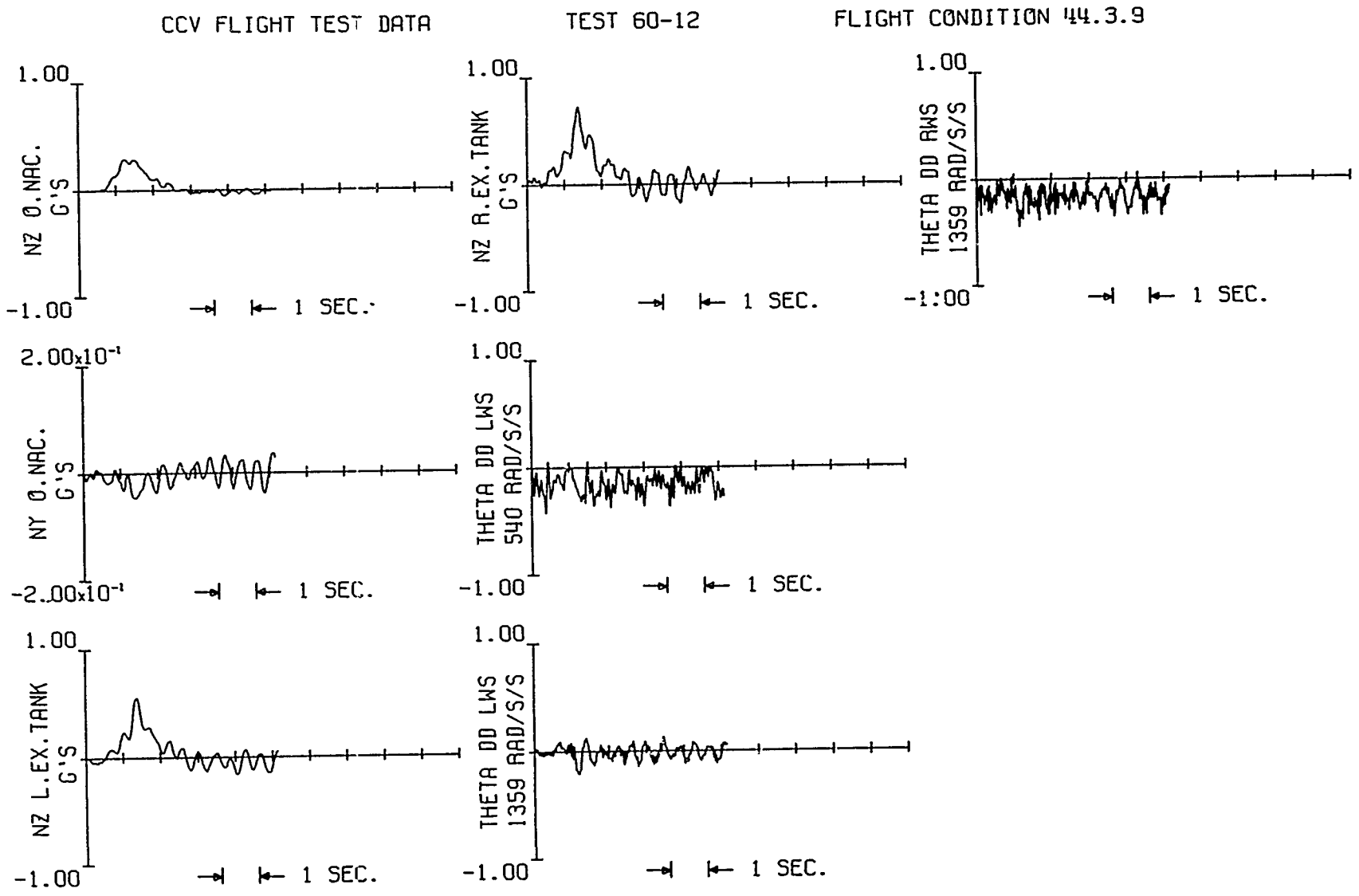


Figure 6. Flight Test and Analytical Response Comparisons for Flight Condition 44.3.9 (Continued)

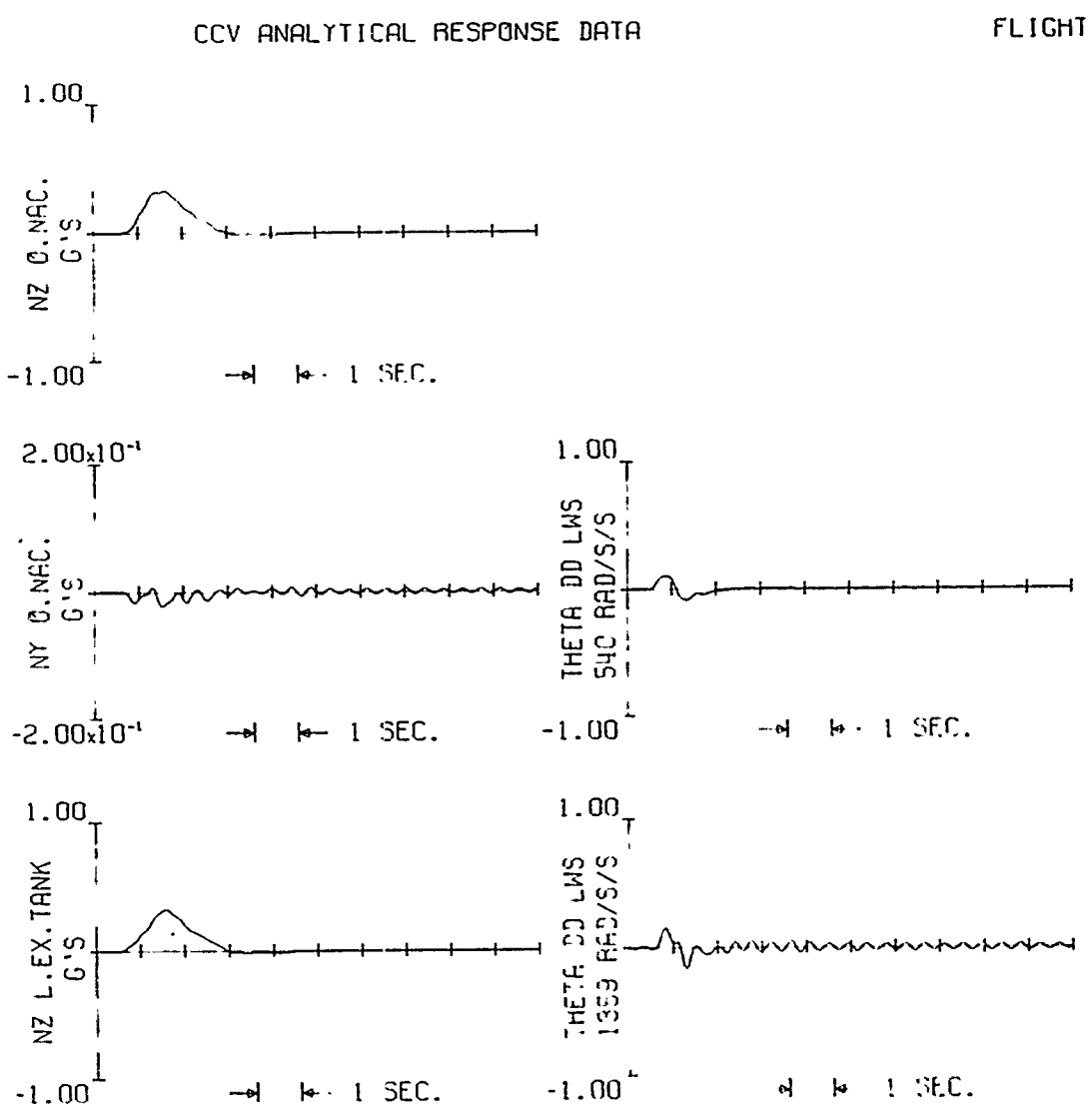


Figure 6. Flight Test and Analytical Response Comparisons for Flight Condition 44.3.9 (Continued)

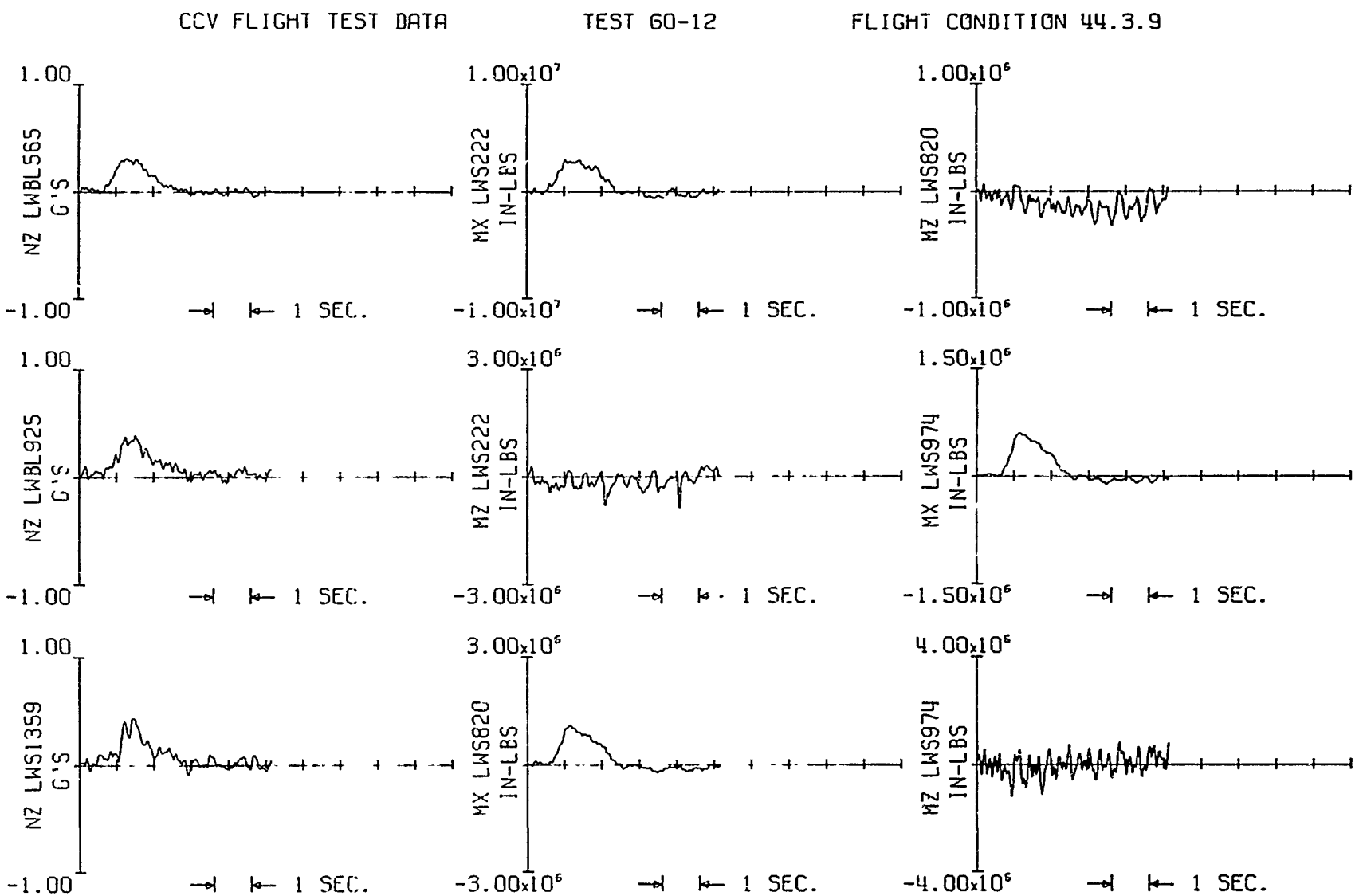


Figure 6. Flight Test and Analytical Response Comparisons for Flight Condition 44.3.9 (Continued)

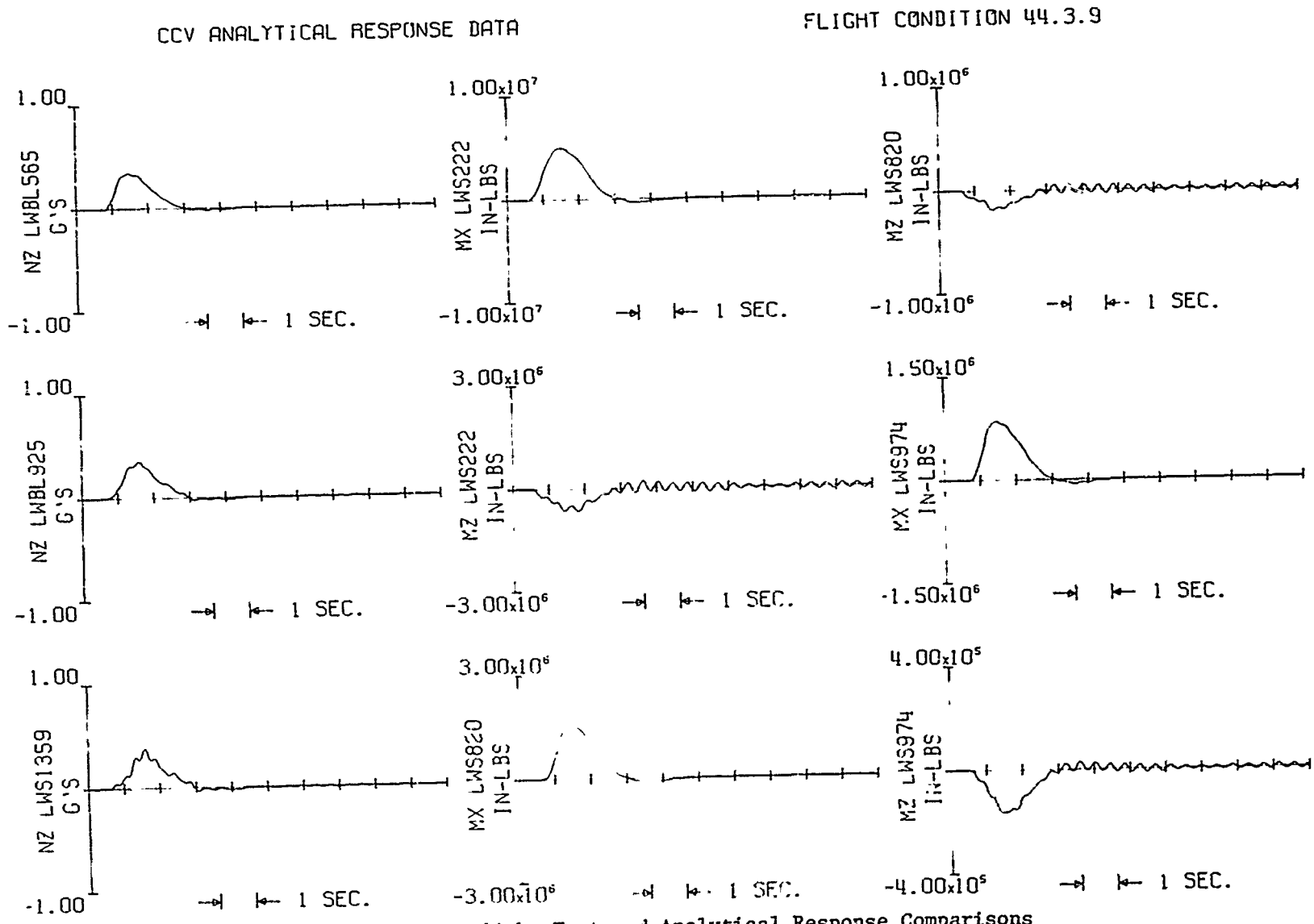


Figure 6. Flight Test and Analytical Response Comparisons for Flight Condition 44.3.9 (Continued)

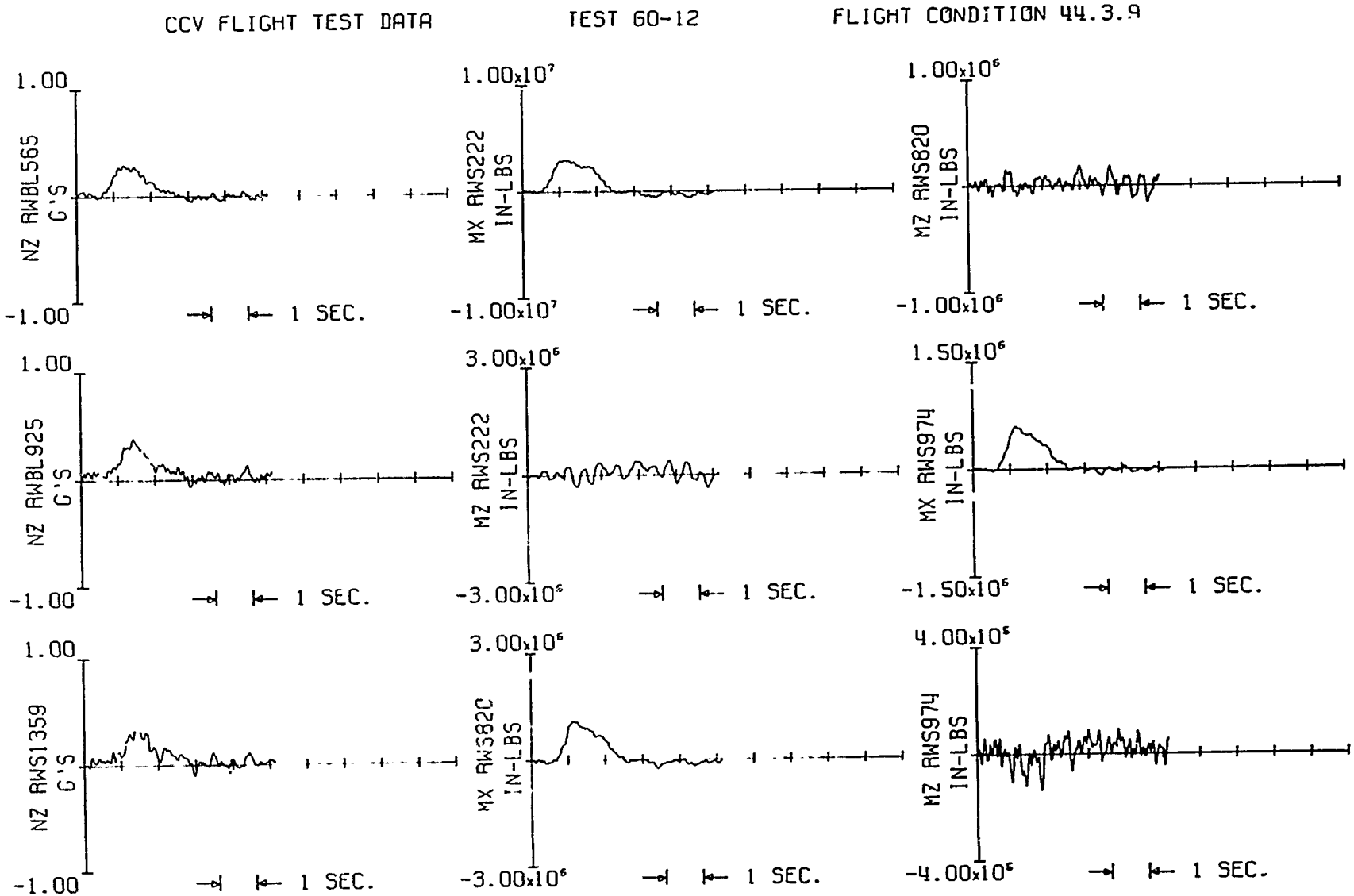


Figure 6. Flight Test and Analytical Response Comparisons for Flight Condition 44.3.9 (Continued)

Responses were not calculated for the right wing. Theoretical right wing responses are the same as the left wing responses.

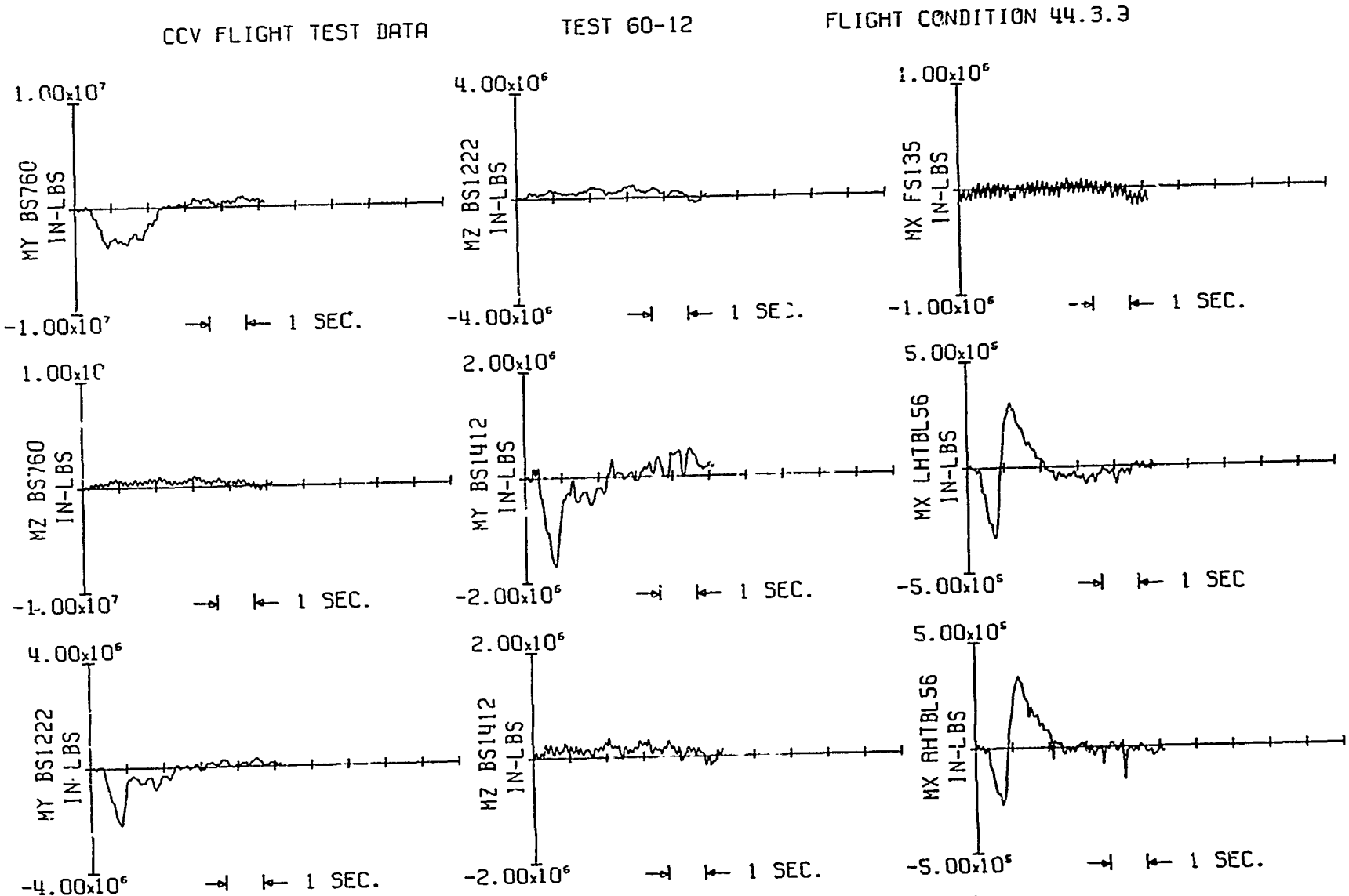


Figure 6. Flight Test and Analytical Response Comparisons for Flight Condition 44.3.9 (Continued)

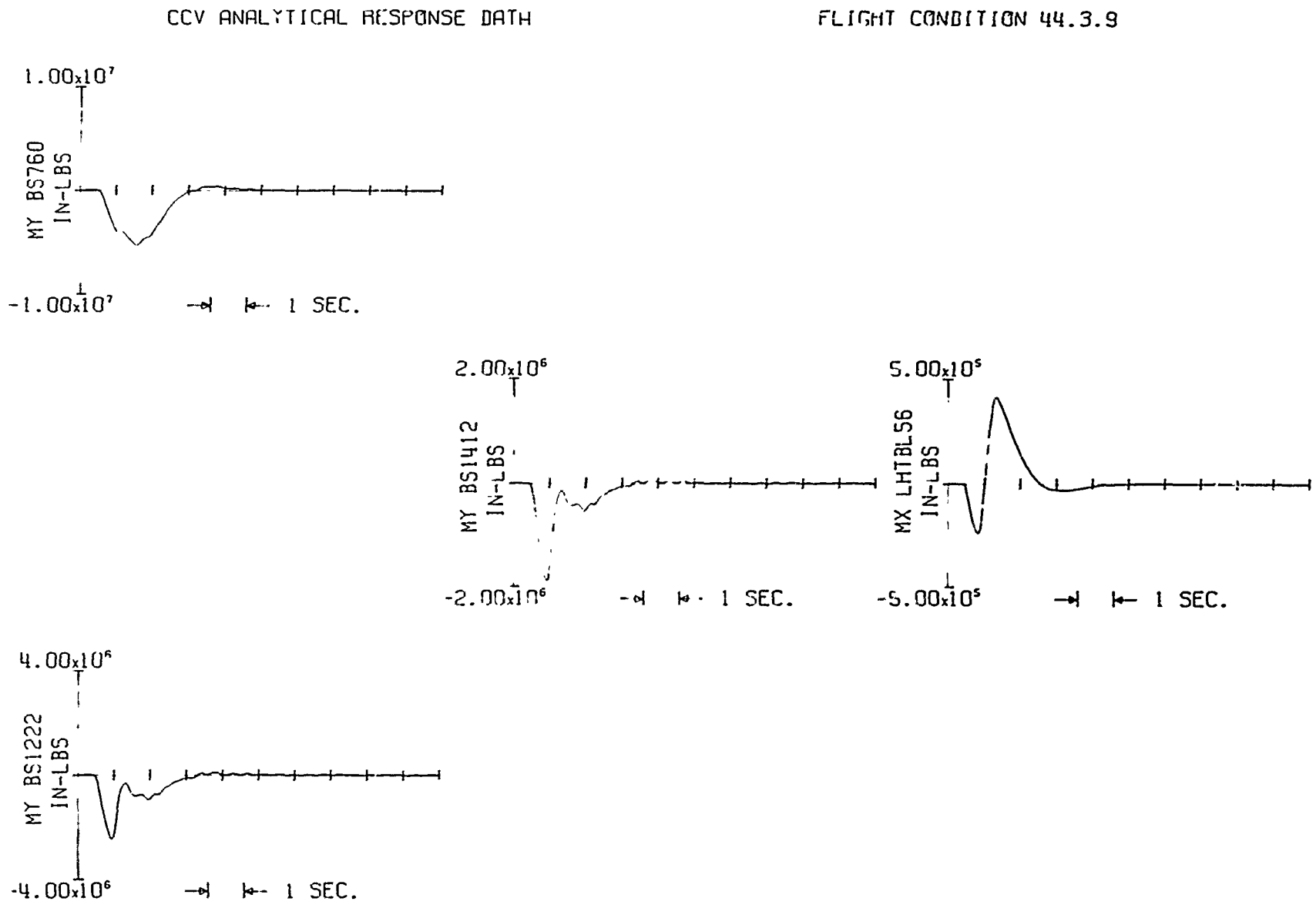


Figure 6. Flight Test and Analytical Response Comparisons for Flight Condition 44.3.9 (Continued)

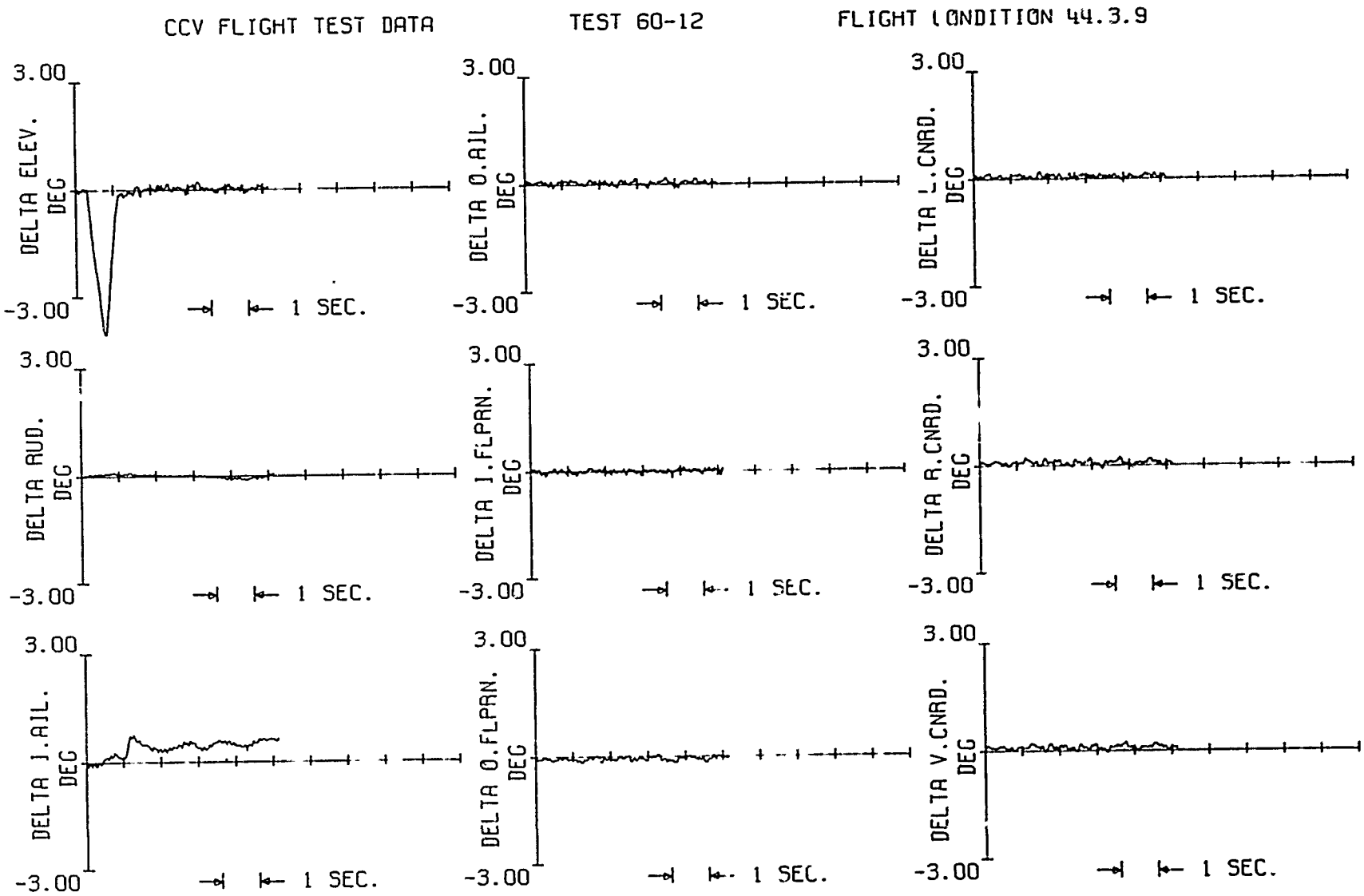


Figure 6. Flight Test and Analytical Response Comparisons for Flight Condition 44.3.9 (Concluded)

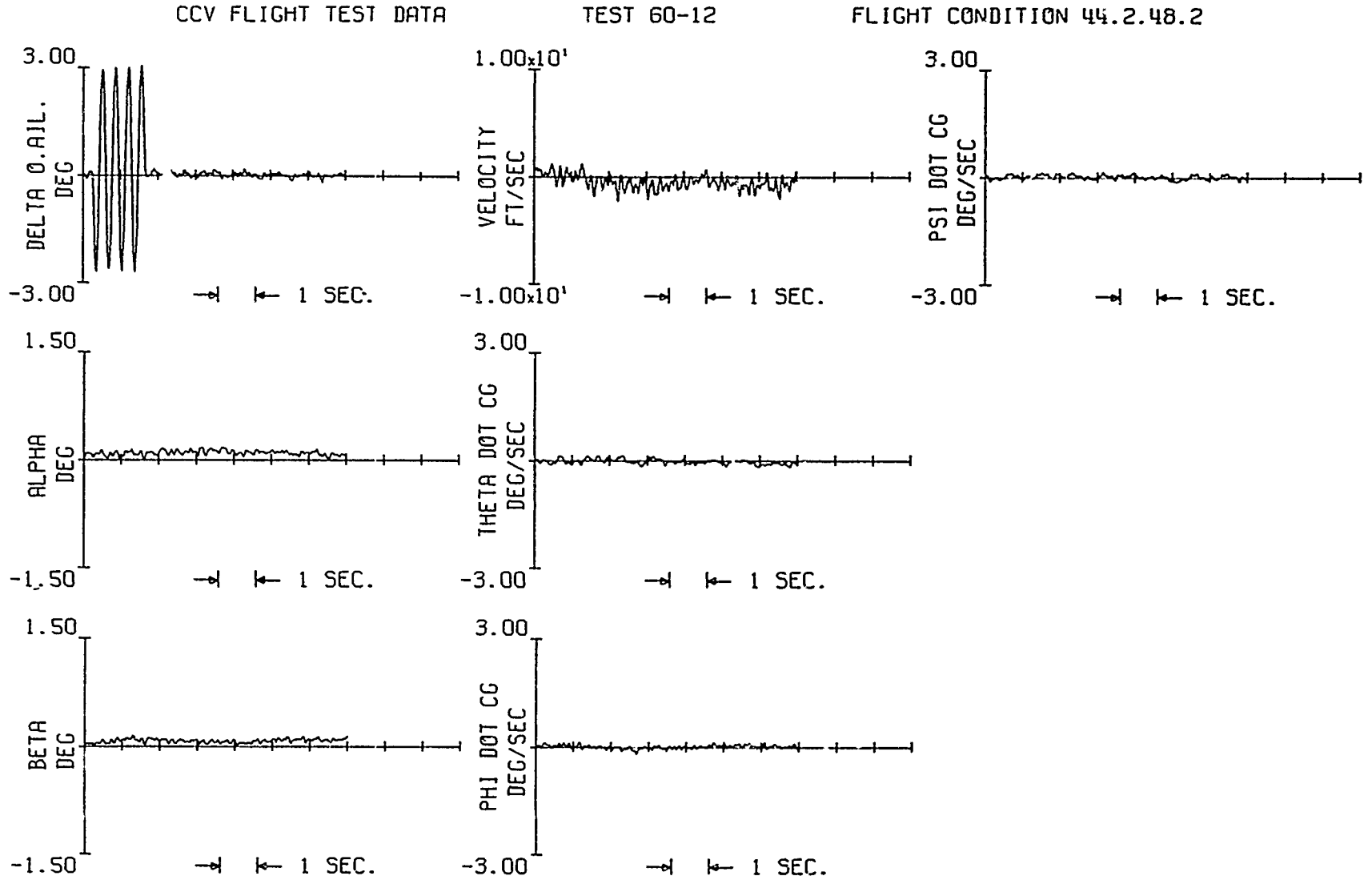


Figure 7. Flight Test and Analytical Response Comparisons for Flight Condition 44.2.48.2

PRECEDING PAGE BLANK-NOT FILMED

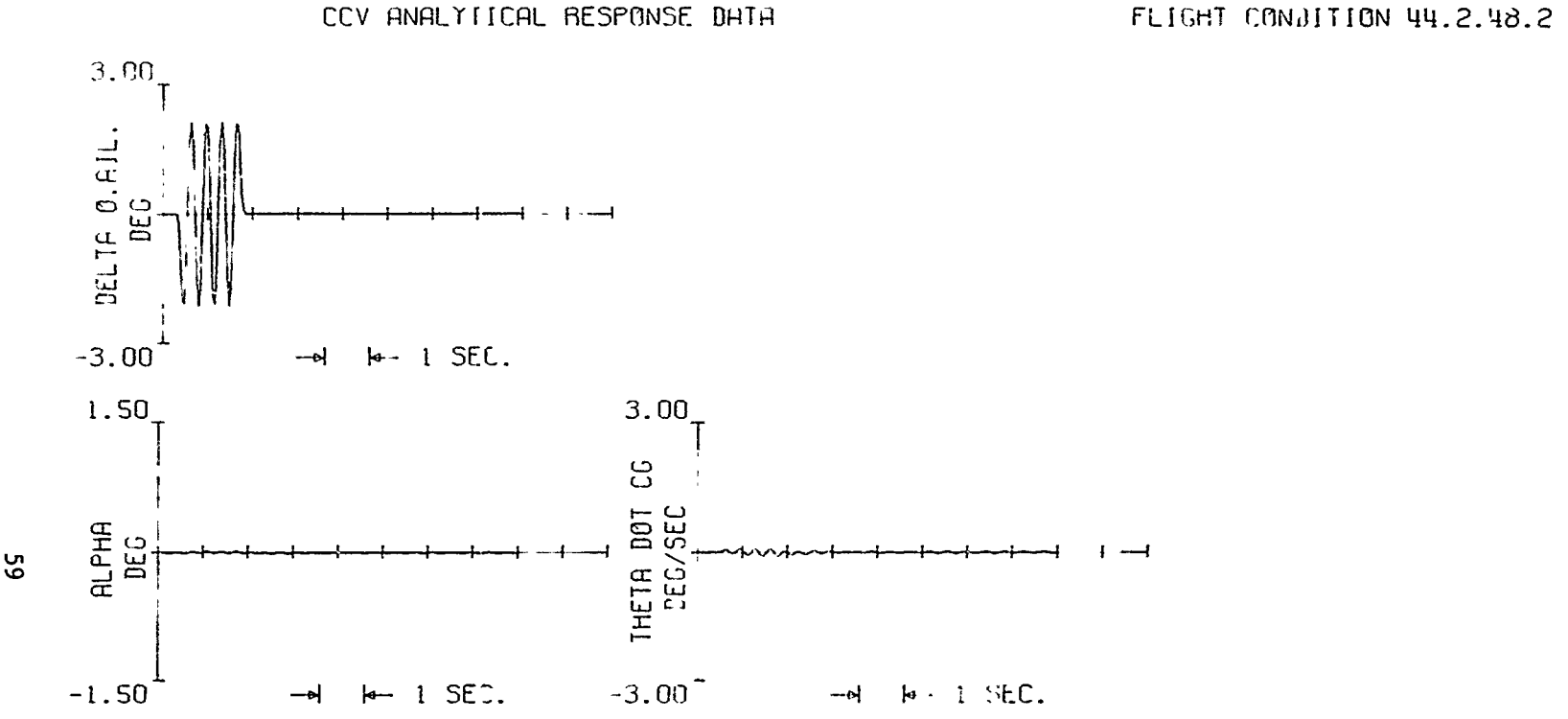


Figure 7. Flight Test and Analytical Response Comparisons for Flight Condition 44.2.48.2 (Continued)

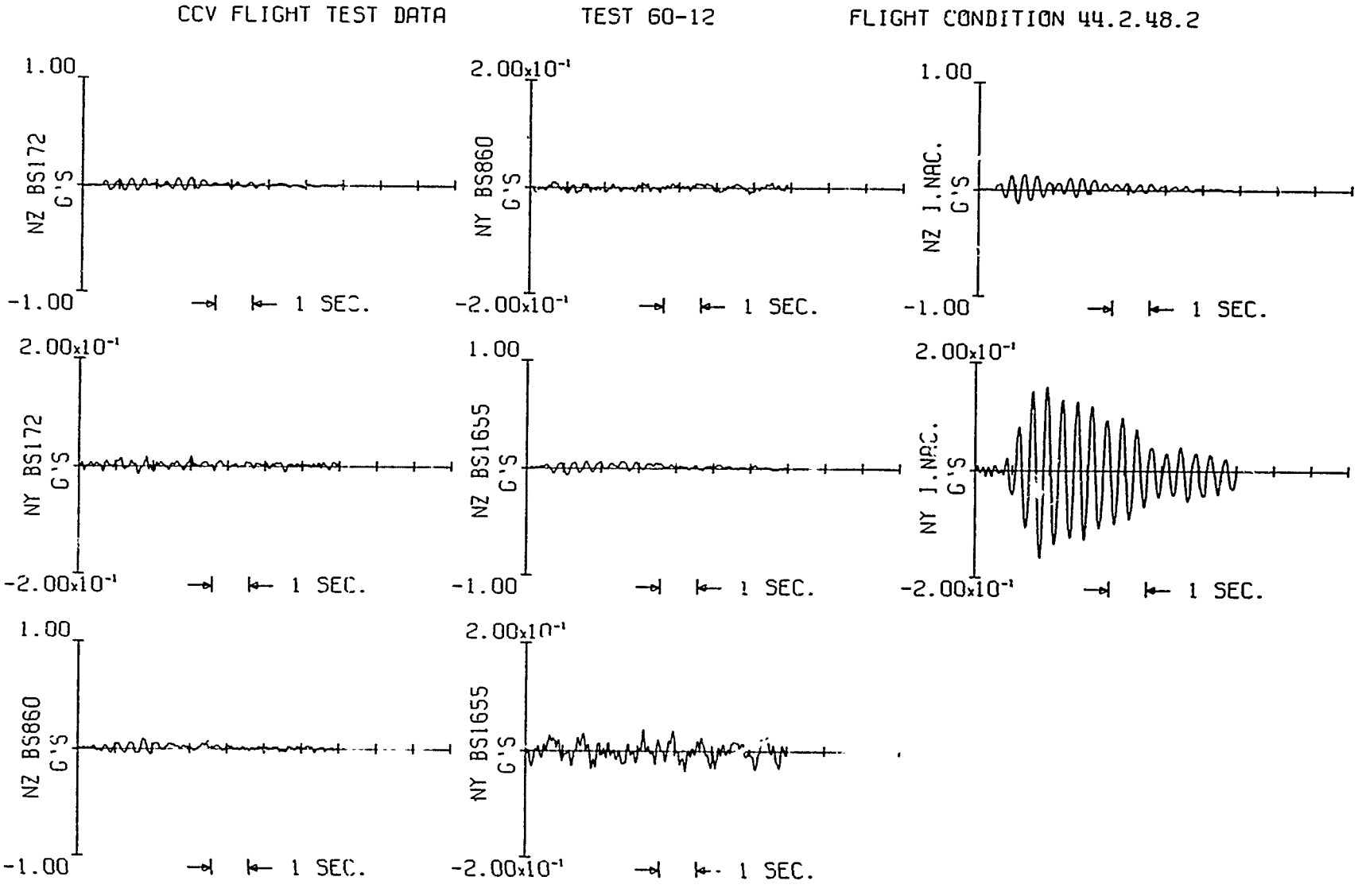


Figure 7. Flight Test and Analytical Response Comparisons for Flight Condition 44.2.48.2 (Continued)

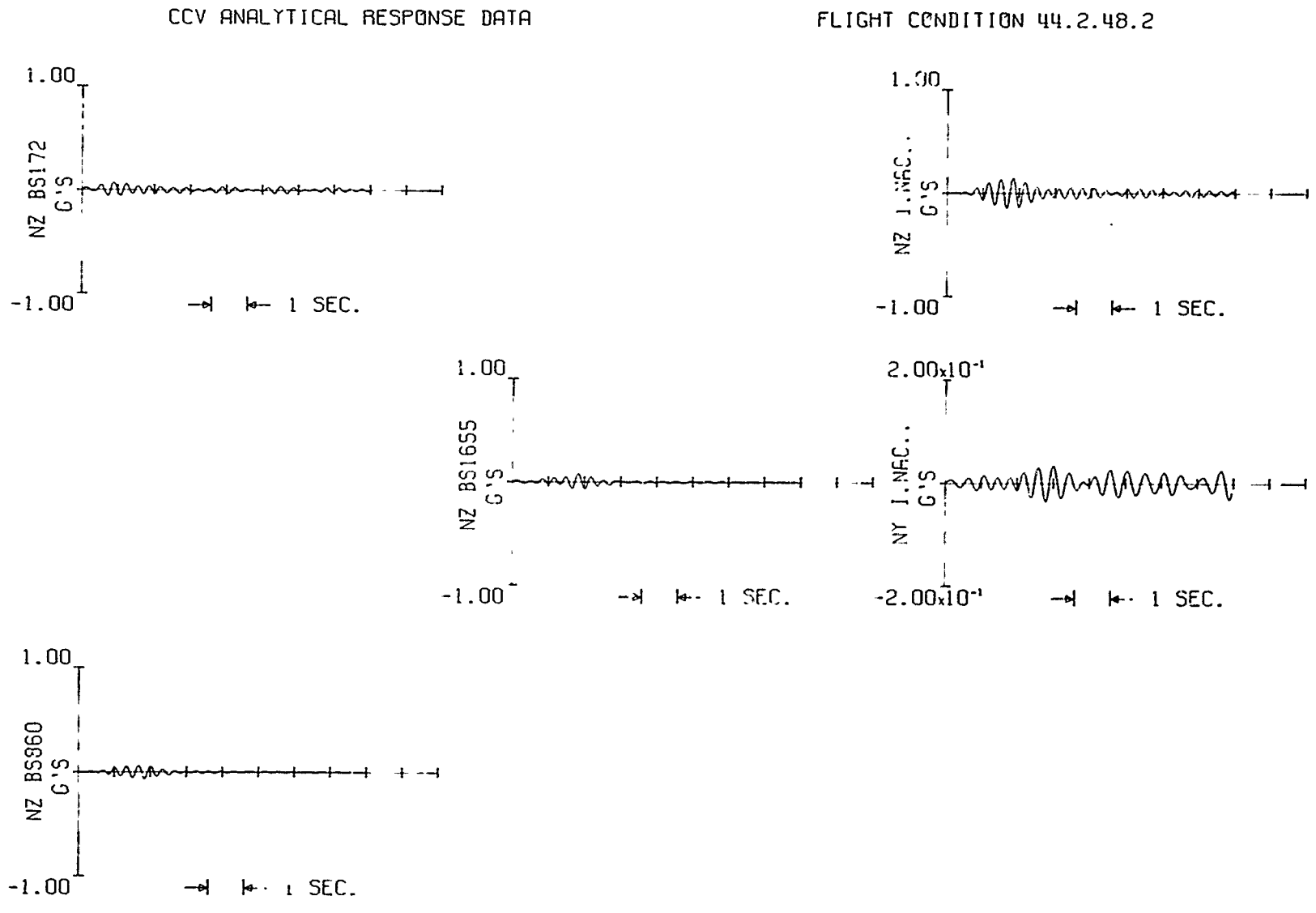


Figure 7. Flight Test and Analytical Response Comparisons for Flight Condition 44.2.48.2 (Continued)

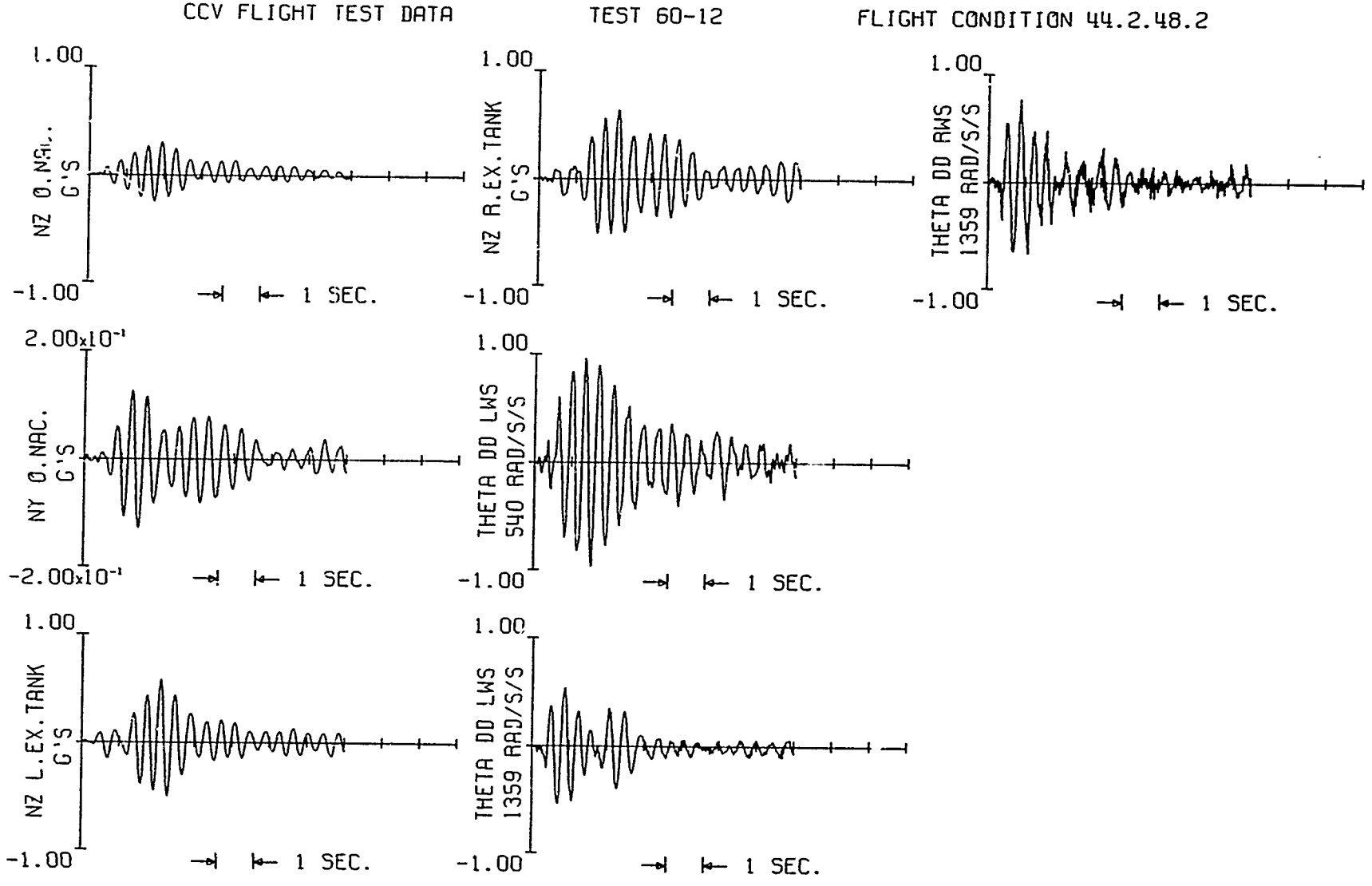


Figure 7. Flight Test and Analytical Response Comparisons for Flight Condition 44.2.48.2 (Continued)

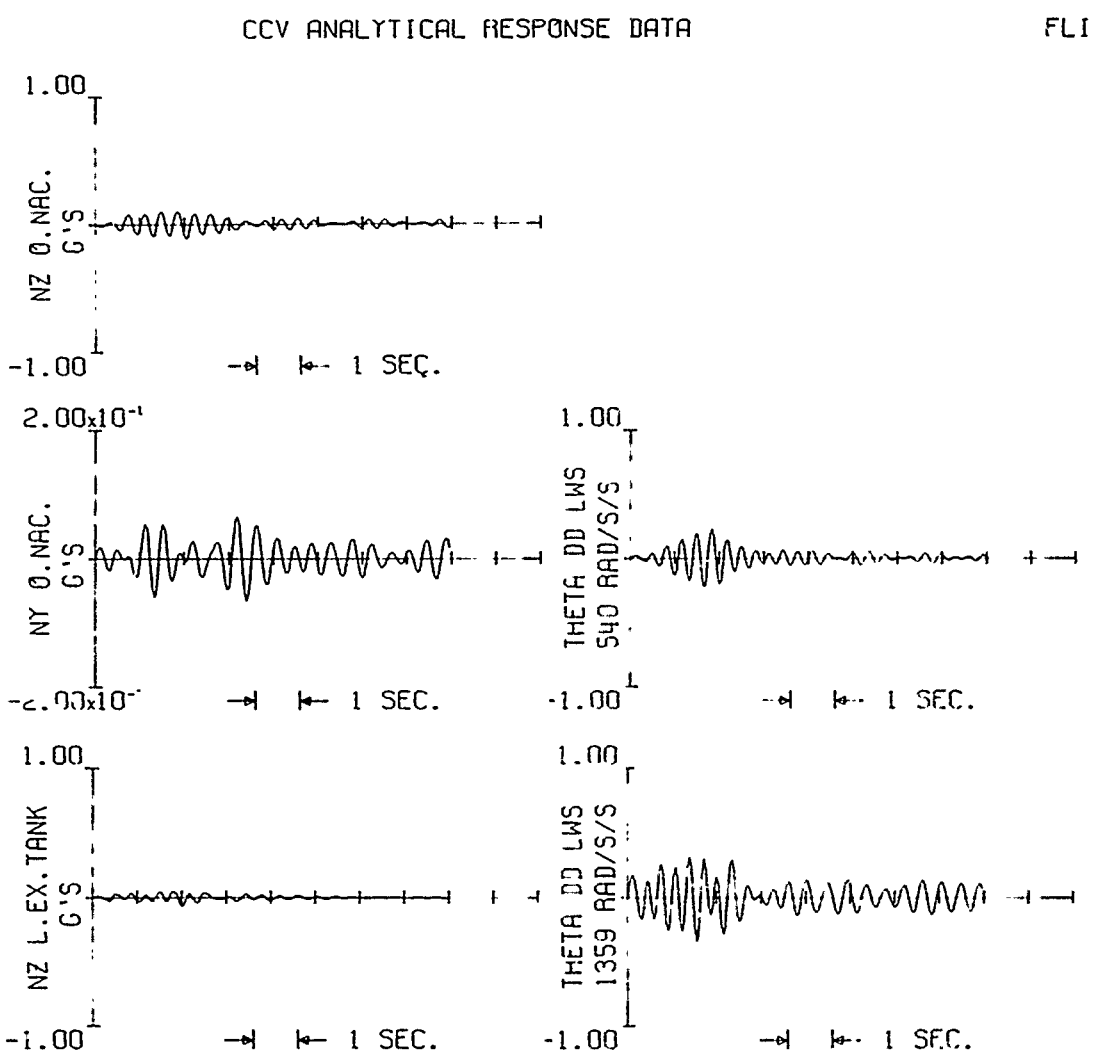


Figure 7. Flight Test and Analytical Response Comparisons for Flight Condition 44.2.48.2 (Continued)

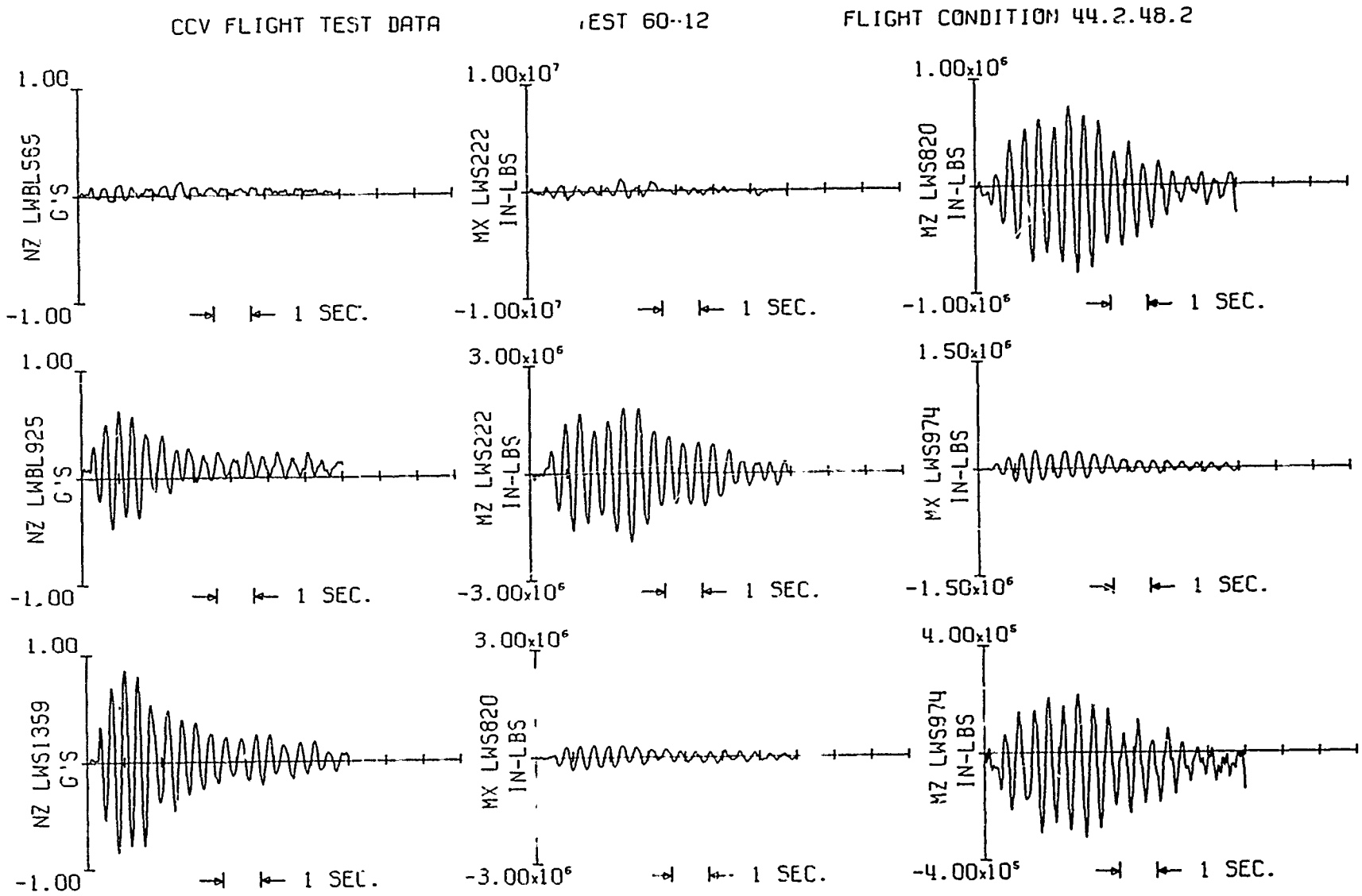


Figure 7. Flight Test and Analytical Response Comparisons for Flight Condition 44.2.48.2 (Continued)

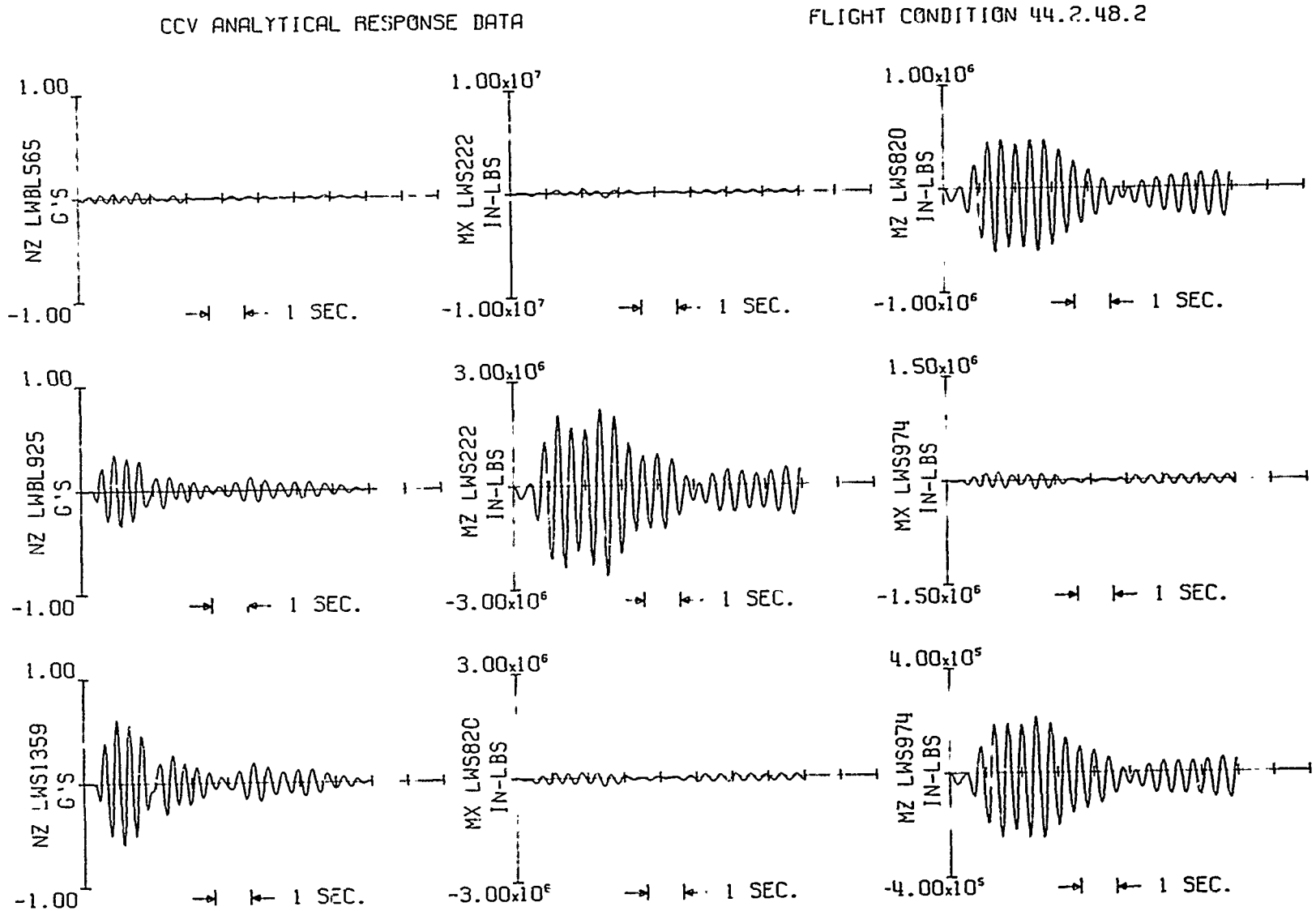


Figure 7. Flight Test and Analytical Response Comparisons for Flight Condition 44.2.48.2 (Continued)

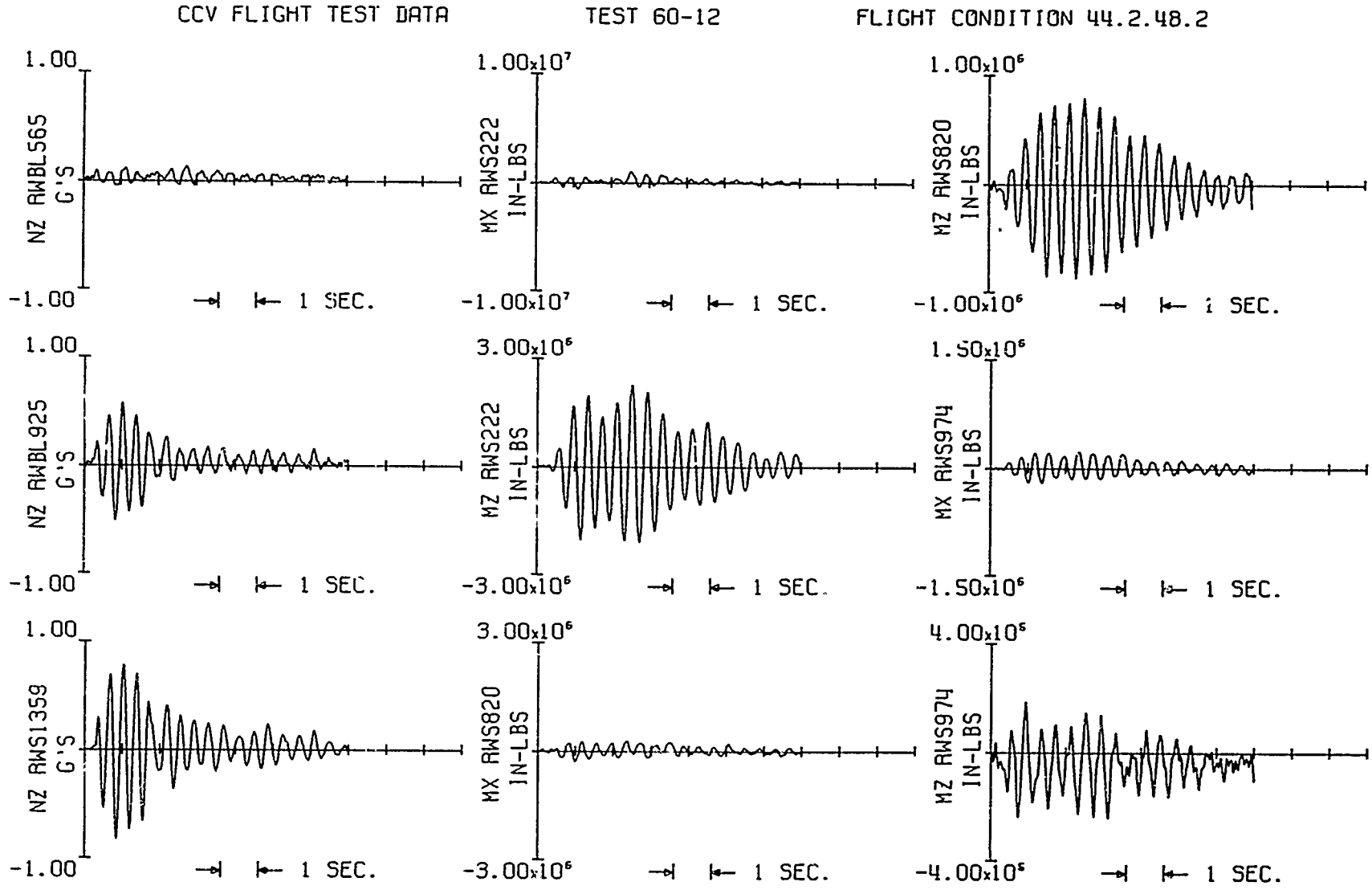


Figure 7. Flight Test and Analytical Response Comparisons for Flight Condition 44.2.48.2 (Continued)

Responses were not calculated for the right wing. Theoretical right wing responses are the same as the left wing responses.

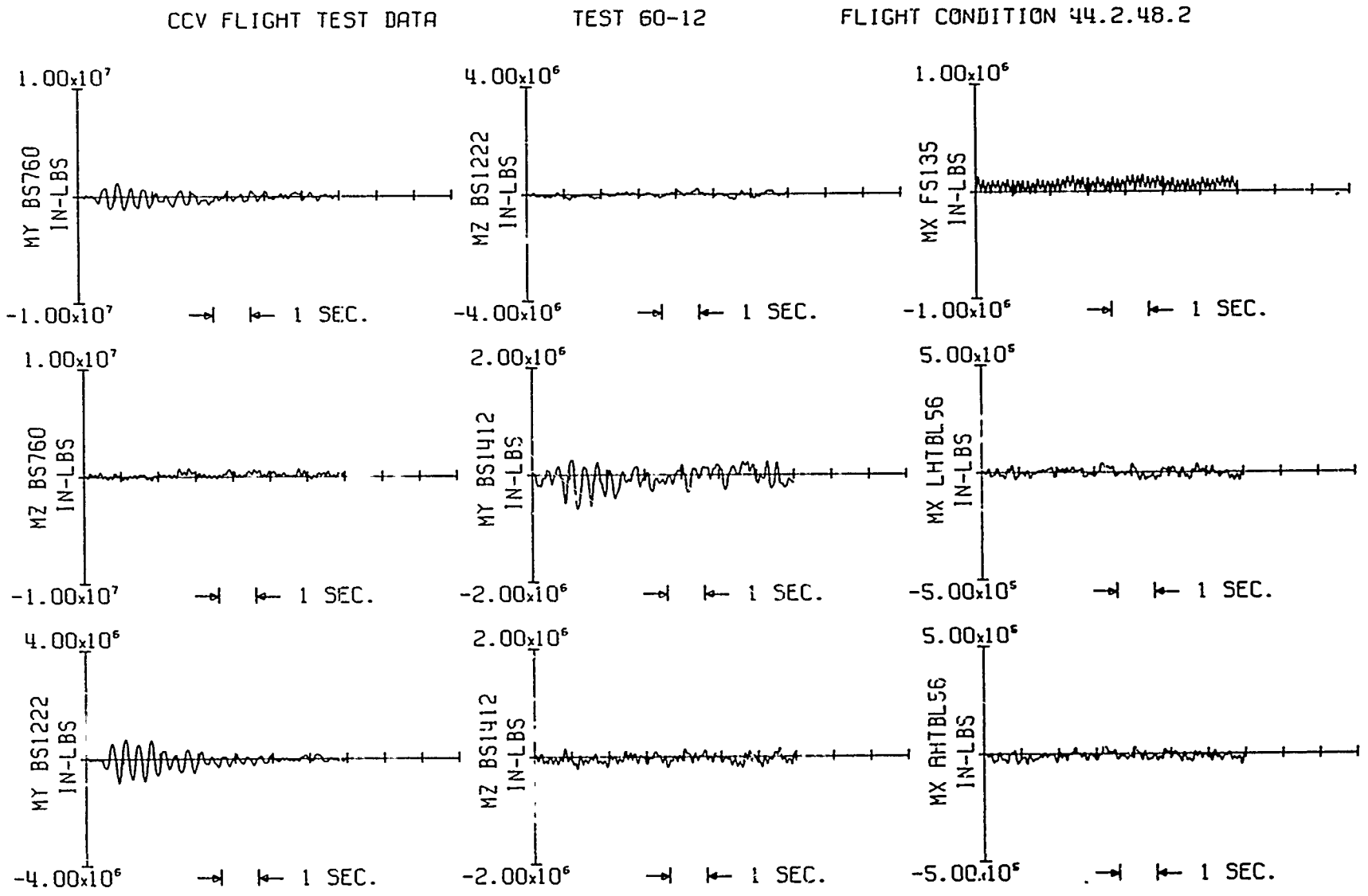


Figure 7. Flight Test and Analytical Response Comparisons for Flight Condition 44.2.48.2 (Continued)

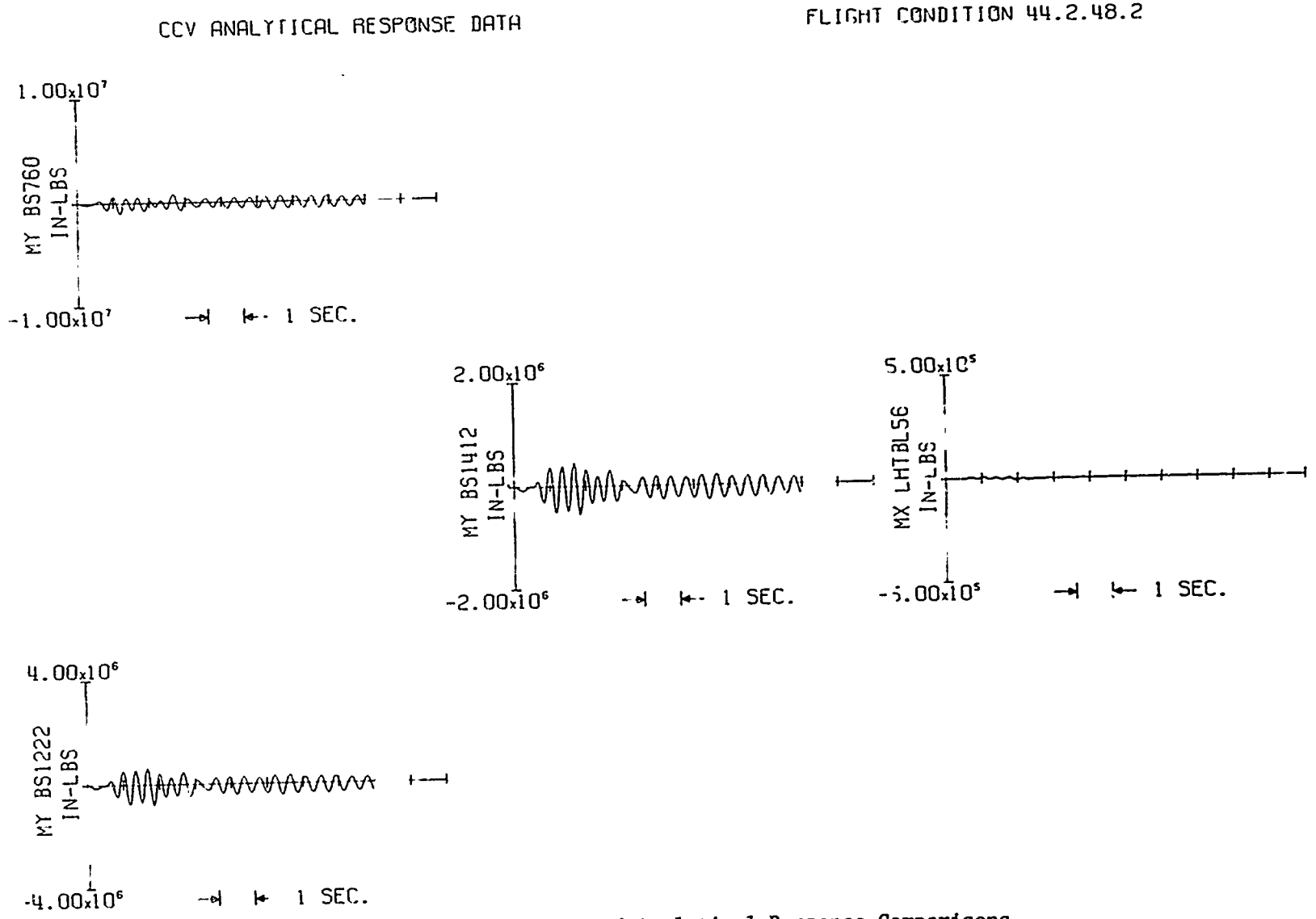


Figure 7. Flight Test and Analytical Response Comparisons for Flight Condition 44.2.48.2 (Continued)

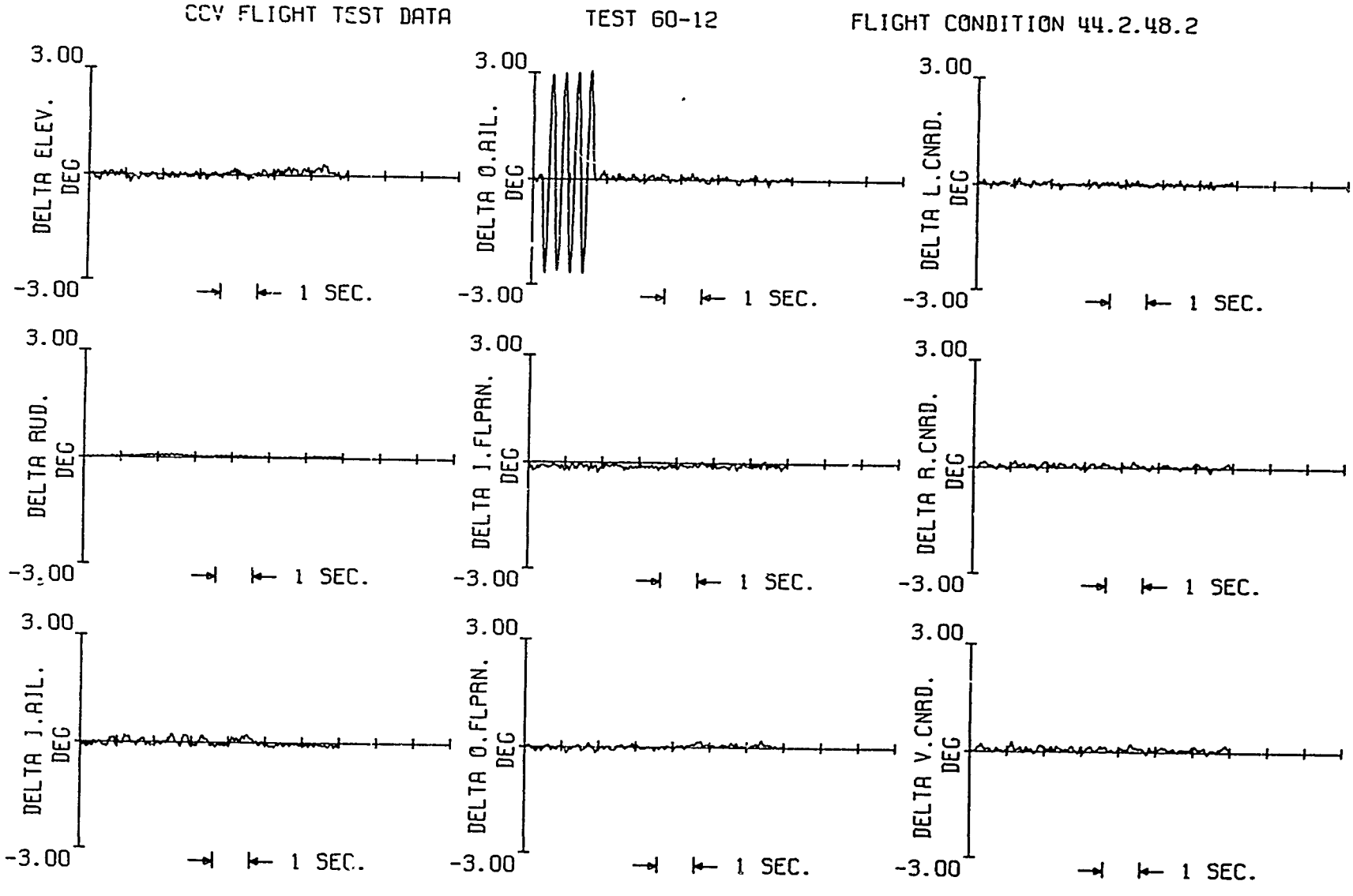


Figure 7. Flight Test and Analytical Response Comparisons for Flight Condition 44.2.48.2 (Concluded)

This page intentionally left blank.

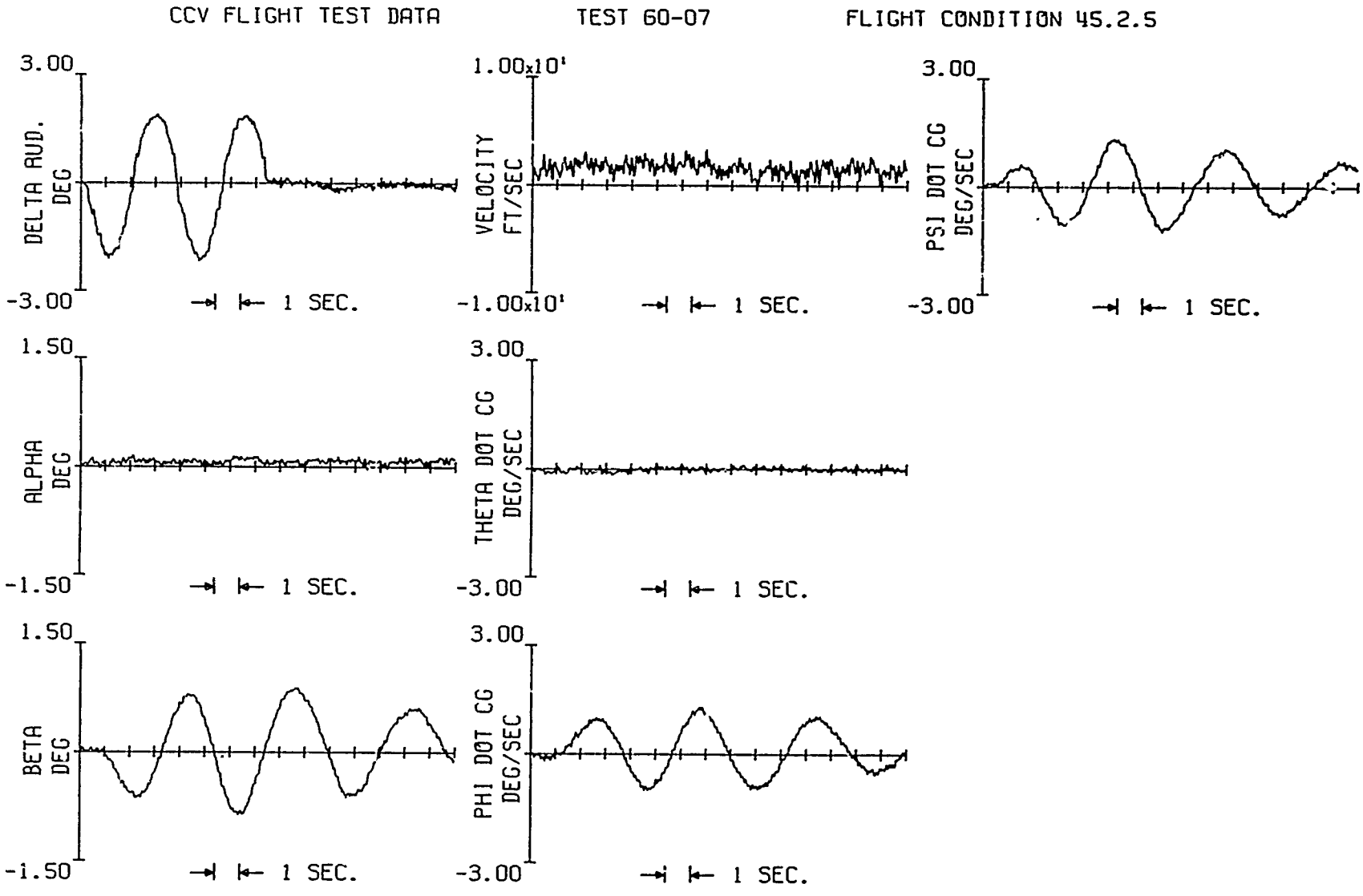


Figure 8. Flight Test and Analytical Response Comparisons for Flight Condition 45.2.5

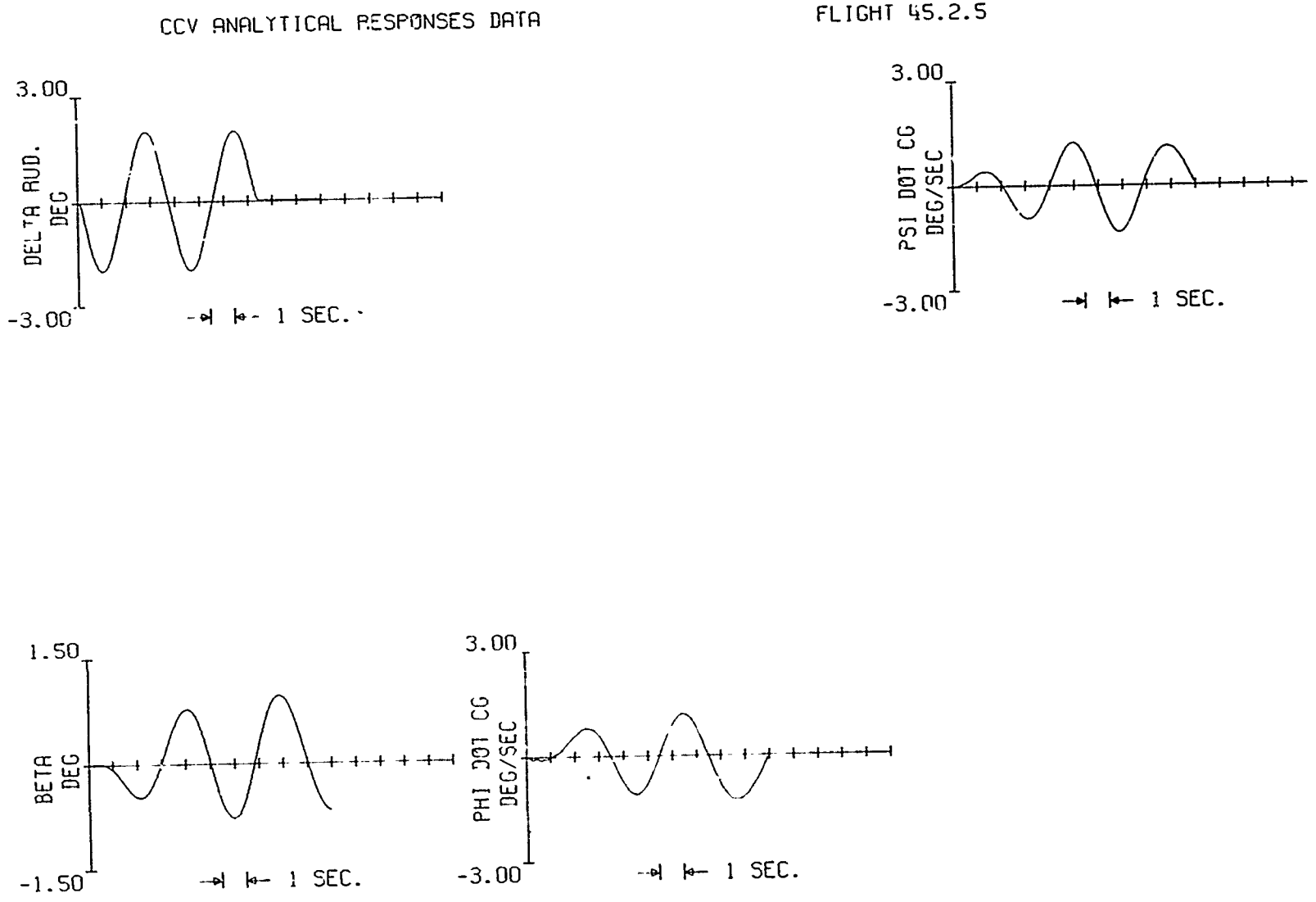


Figure 8. Flight Test and Analytical Response Comparisons for Flight Condition 45.2.5 (Continued)

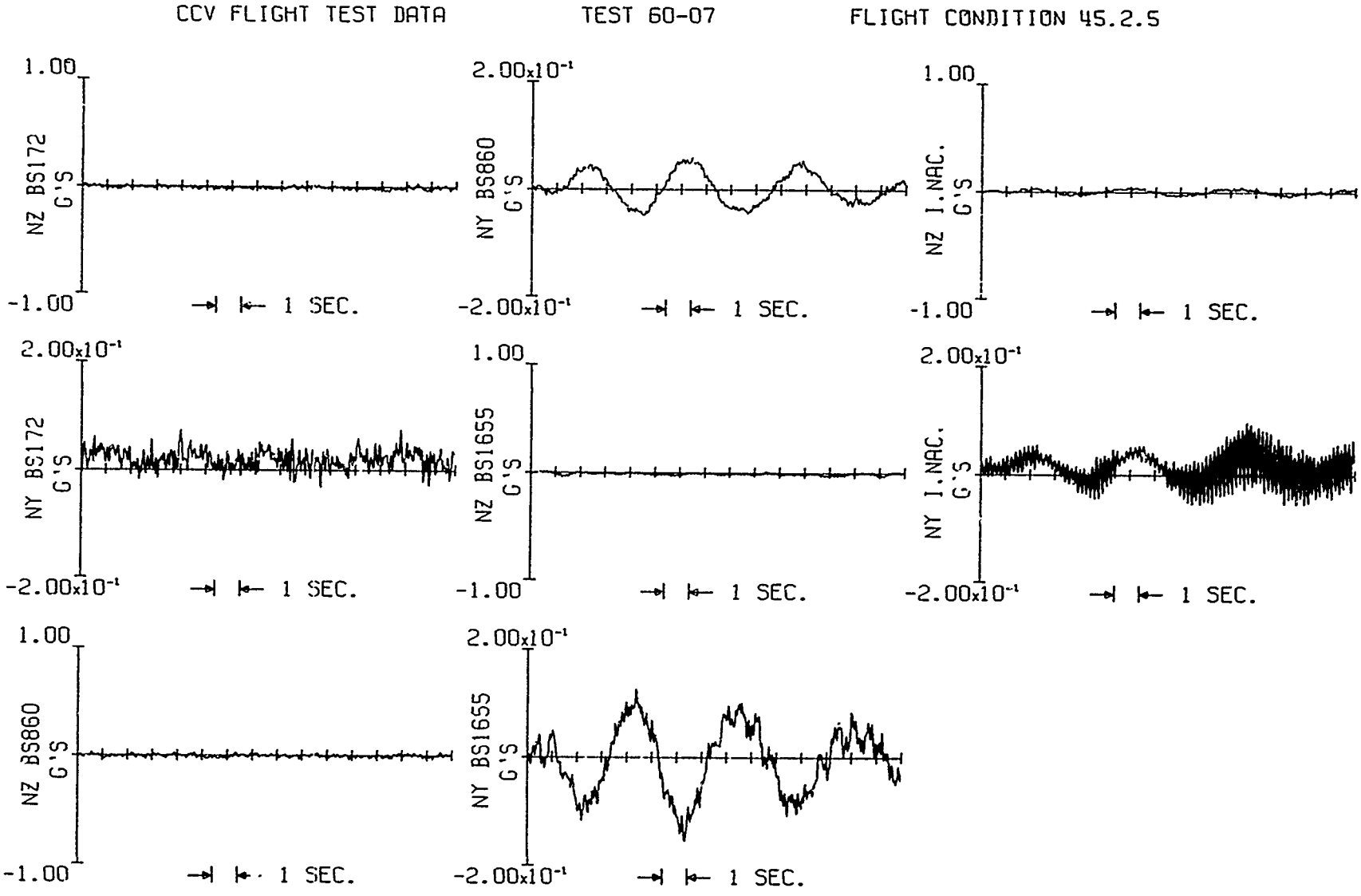


Figure 8. Flight Test and Analytical Response Comparisons for Flight Condition 45.2.5 (Continued)

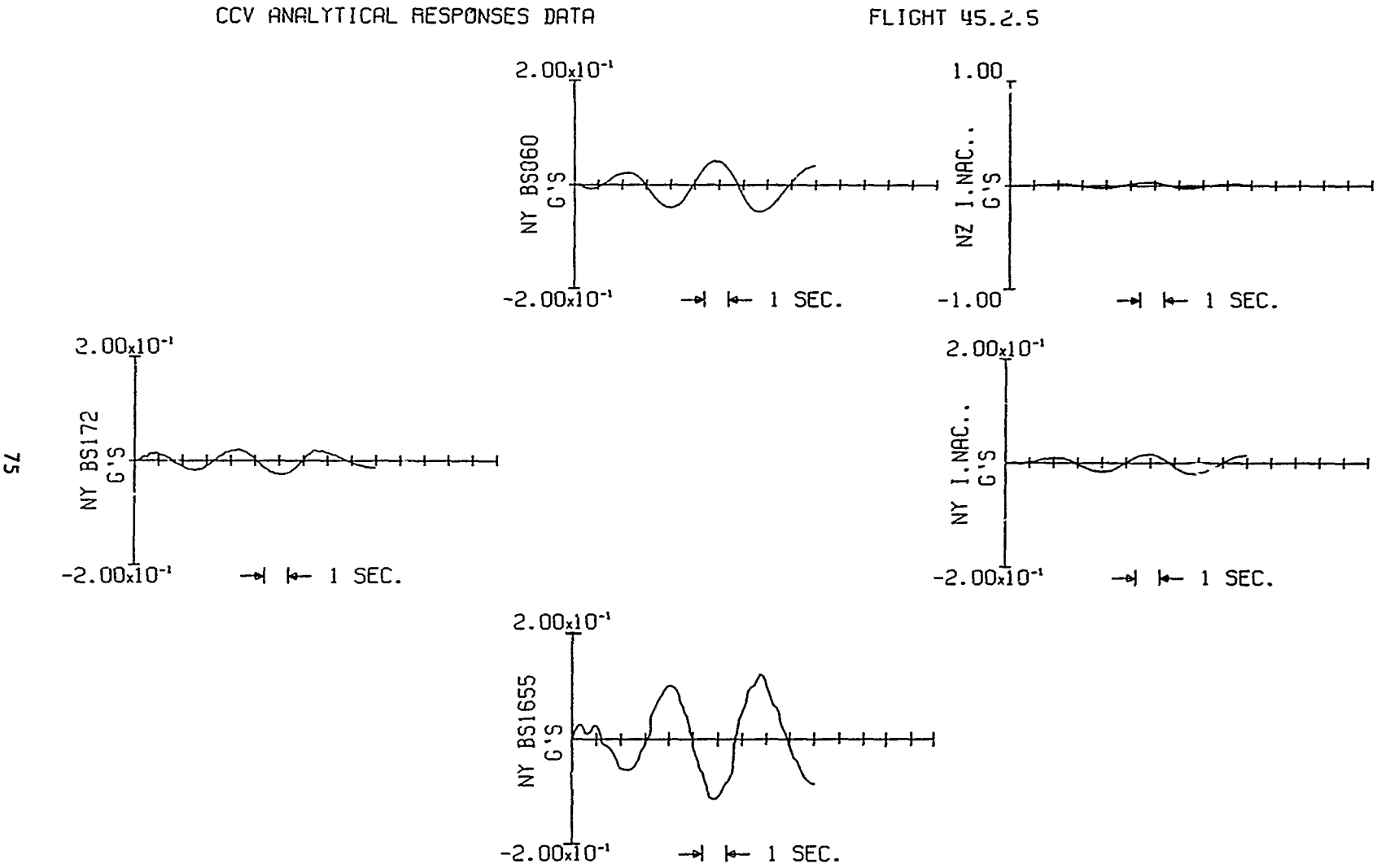


Figure 8. Flight Test and Analytical Response Comparisons for Flight Condition 45.?.5 (Continued)

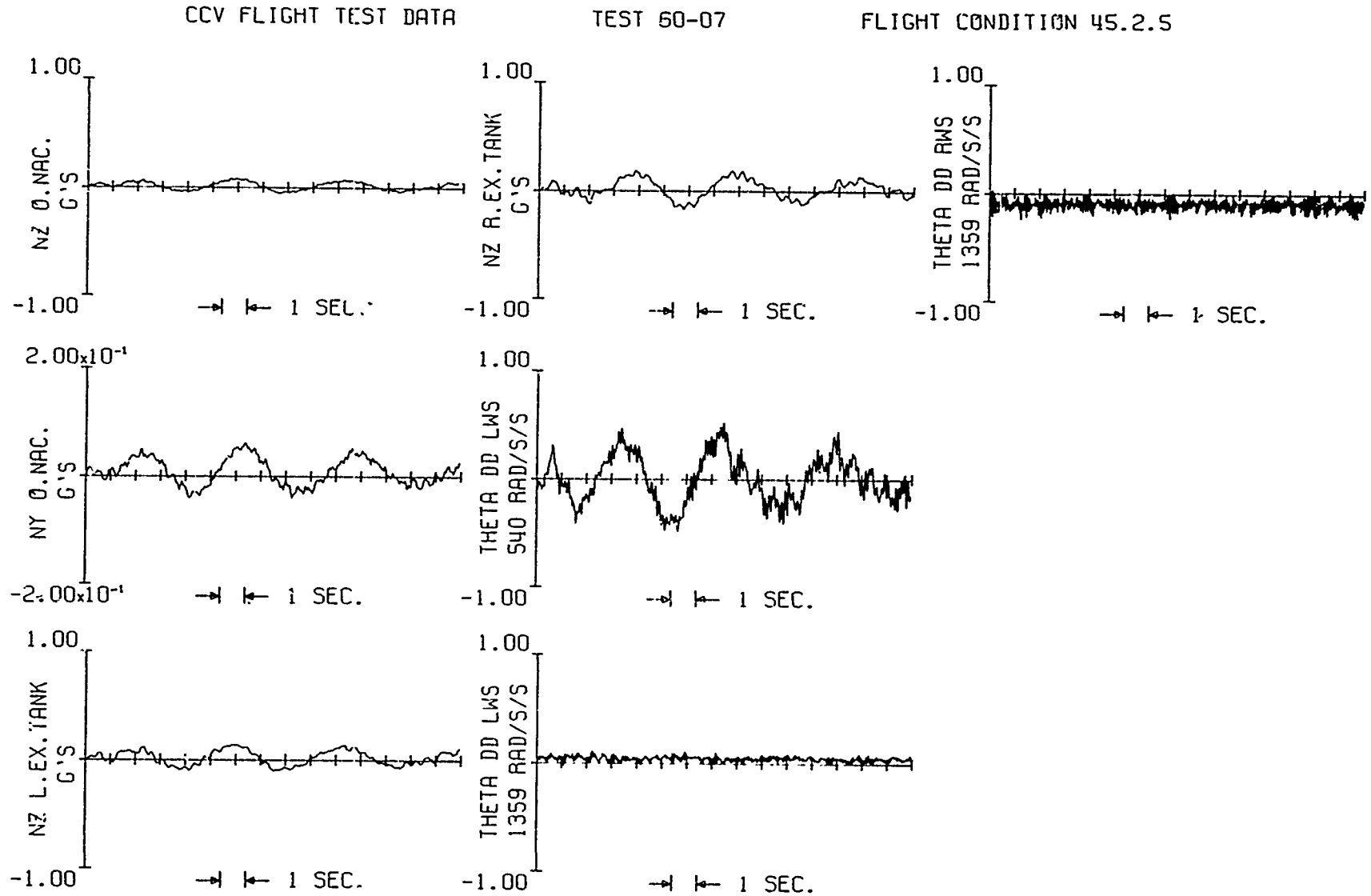


Figure 8. Flight Test and Analytical Response Comparisons for Flight Condition 45.2.5 (Continued)

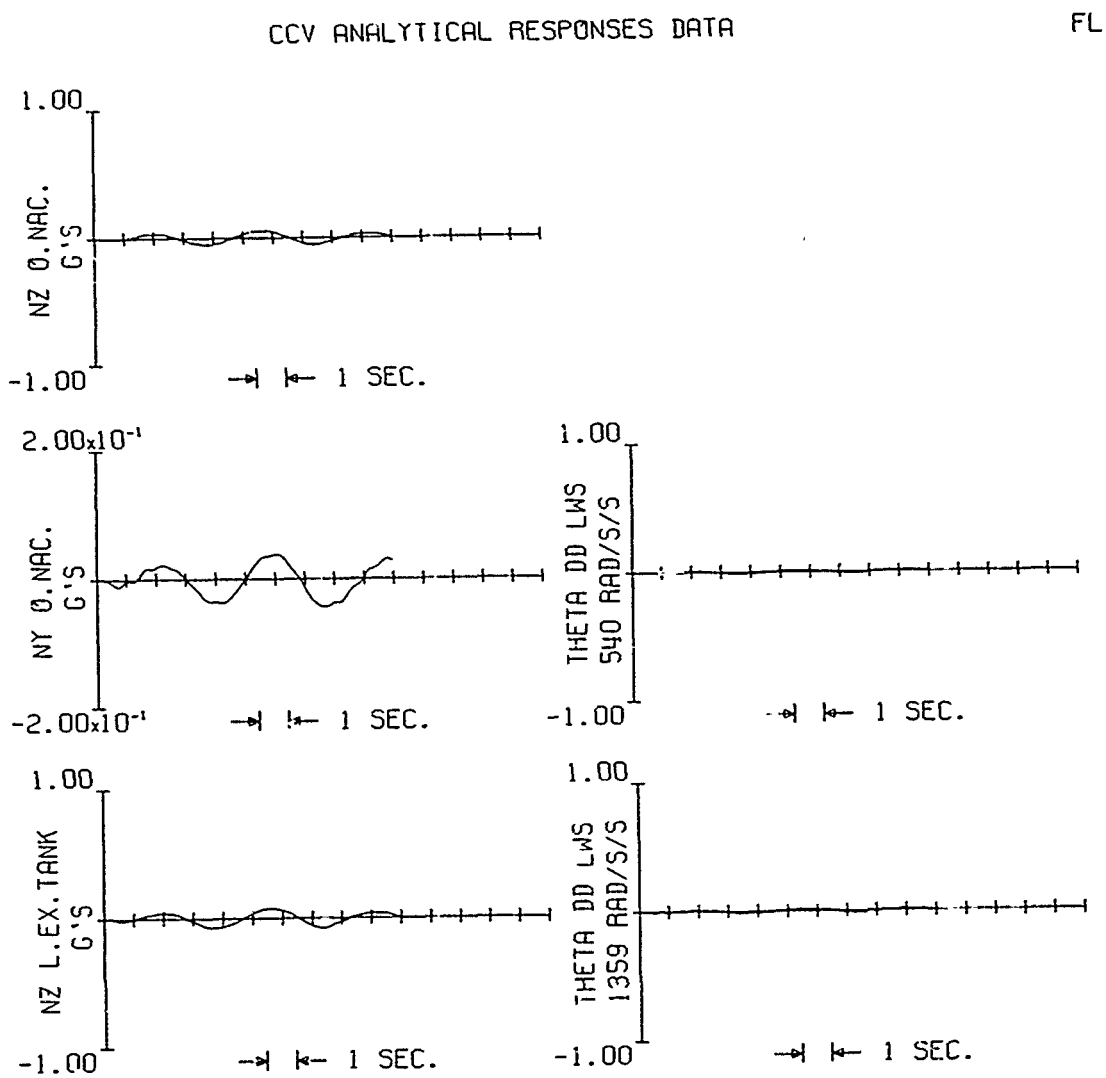


Figure 8. Flight Test and Analytical Response Comparisons for Flight Condition 45.2.5 (Continued)

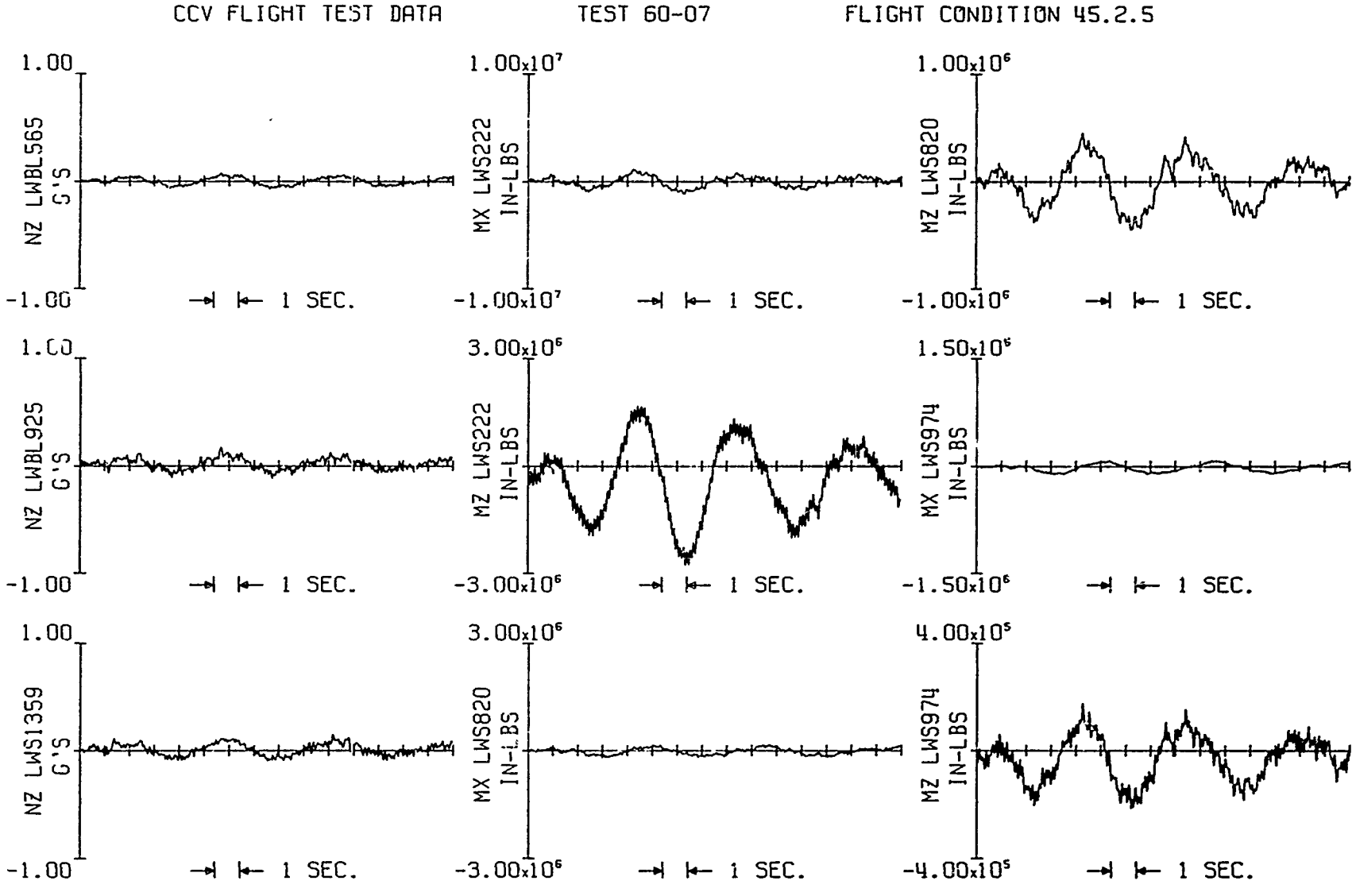


Figure 8. Flight Test and Analytical Response Comparisons for Flight Condition 45.2.5 (Continued)

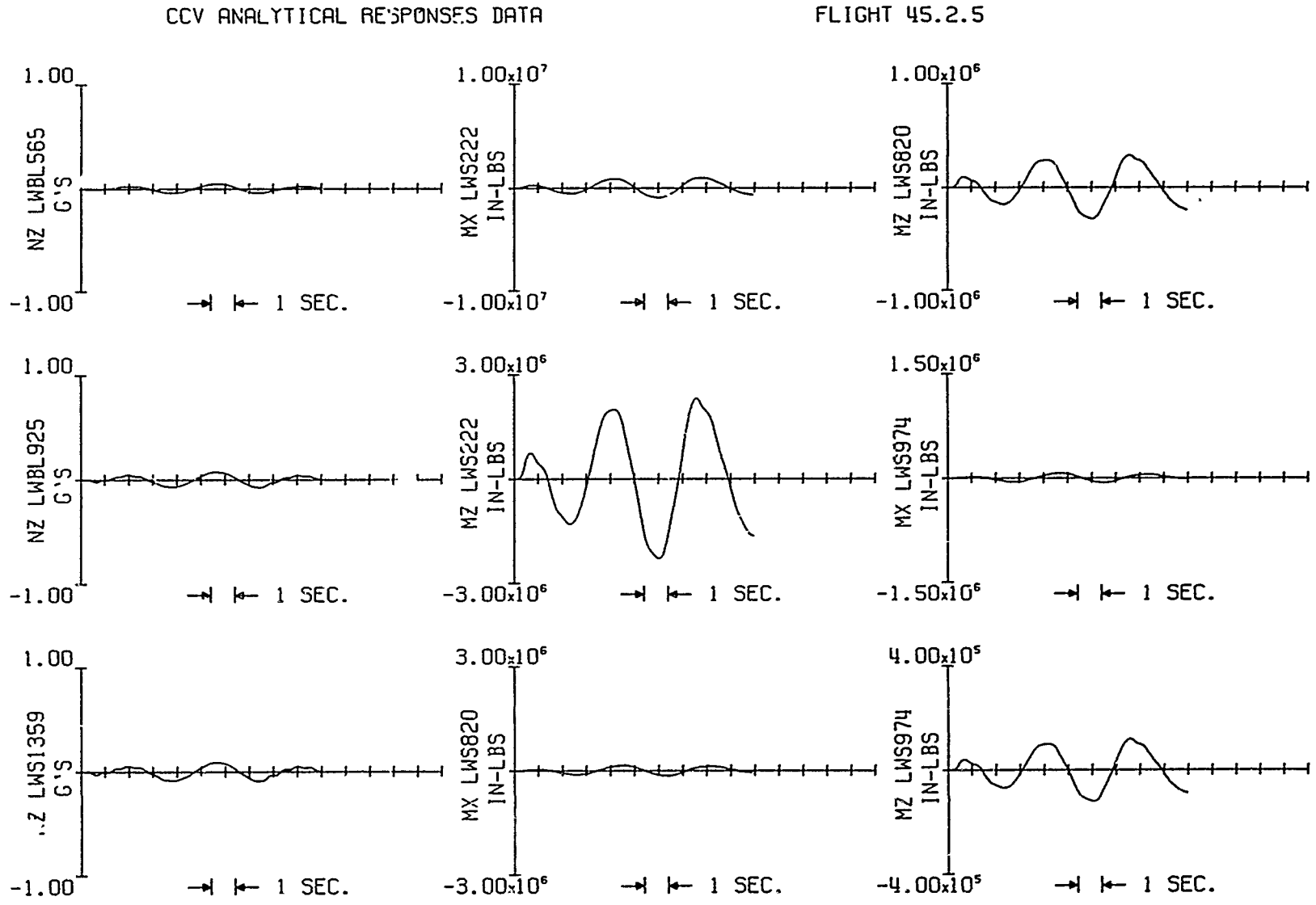


Figure 8. Flight Test and Analytical Response Comparisons for Flight Condition 45.2.5 (Continued)

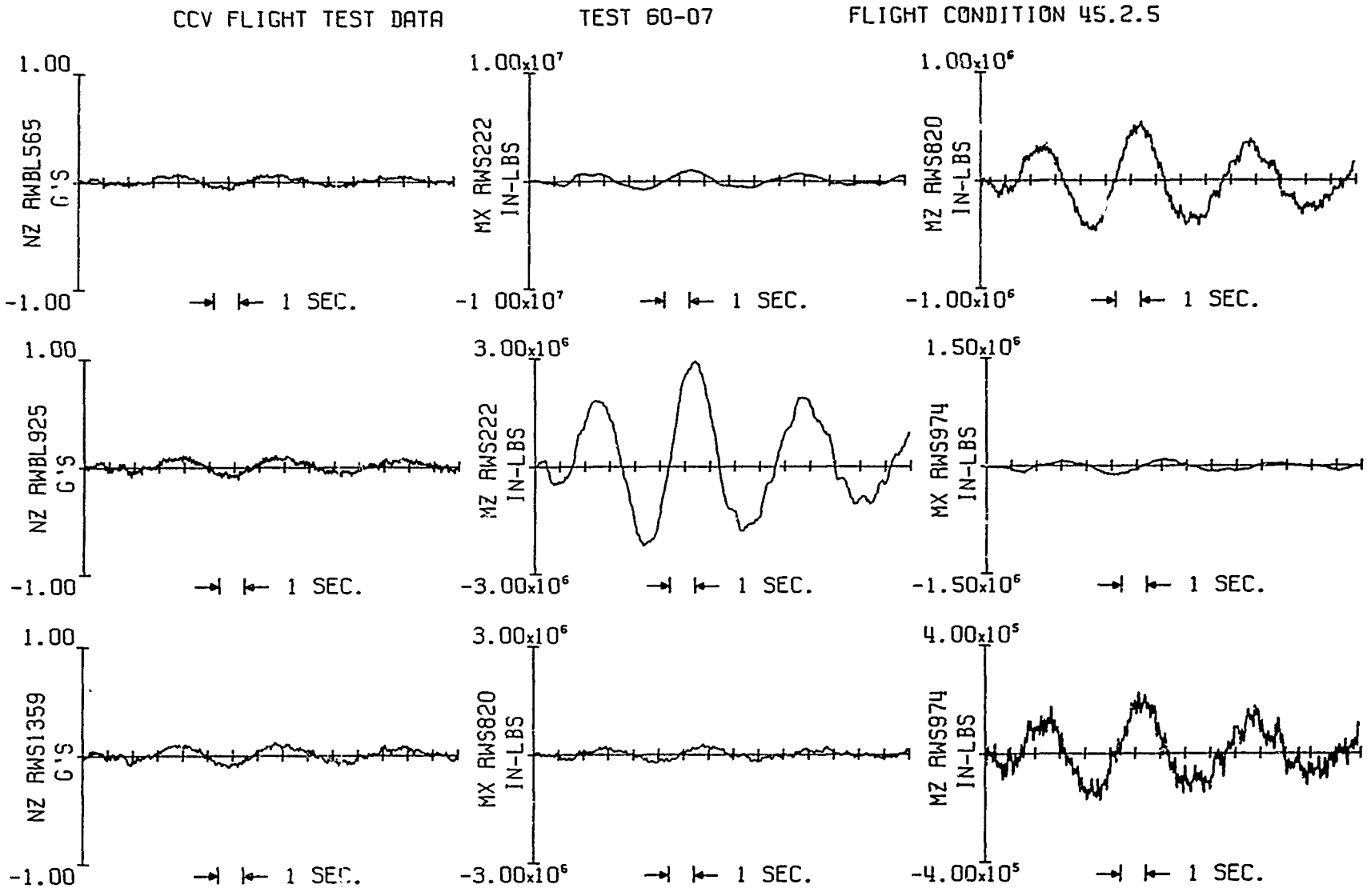


Figure 8. Flight Test and Analytical Response Comparisons for Flight Condition 45.2.5 (Continued)

Responses were not calculated for the right wing. Theoretical right wing responses are opposite the left wing responses.

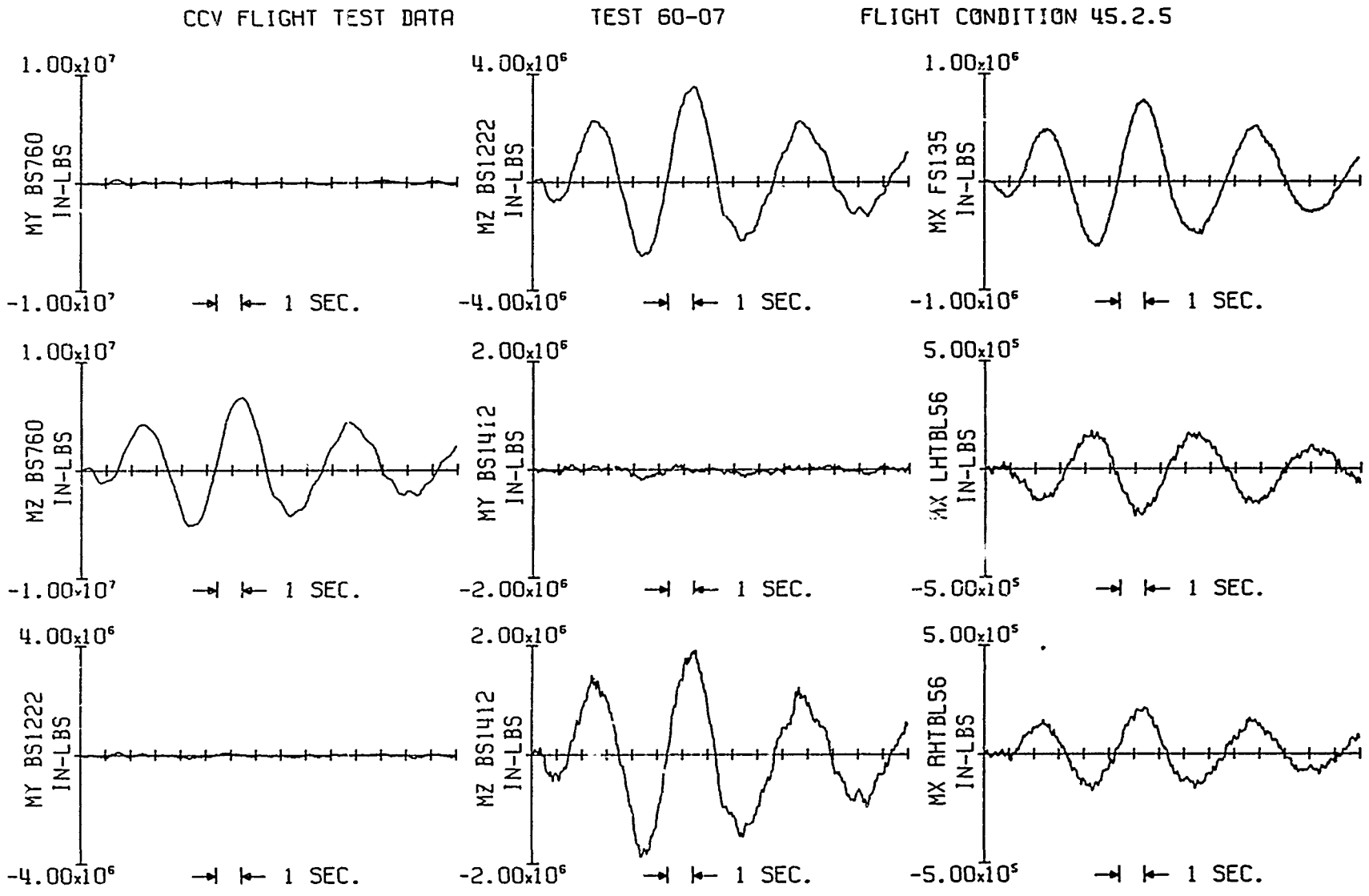


Figure 8. Flight Test and Analytical Response Comparisons for Flight Condition 45.2.5 (Continued)

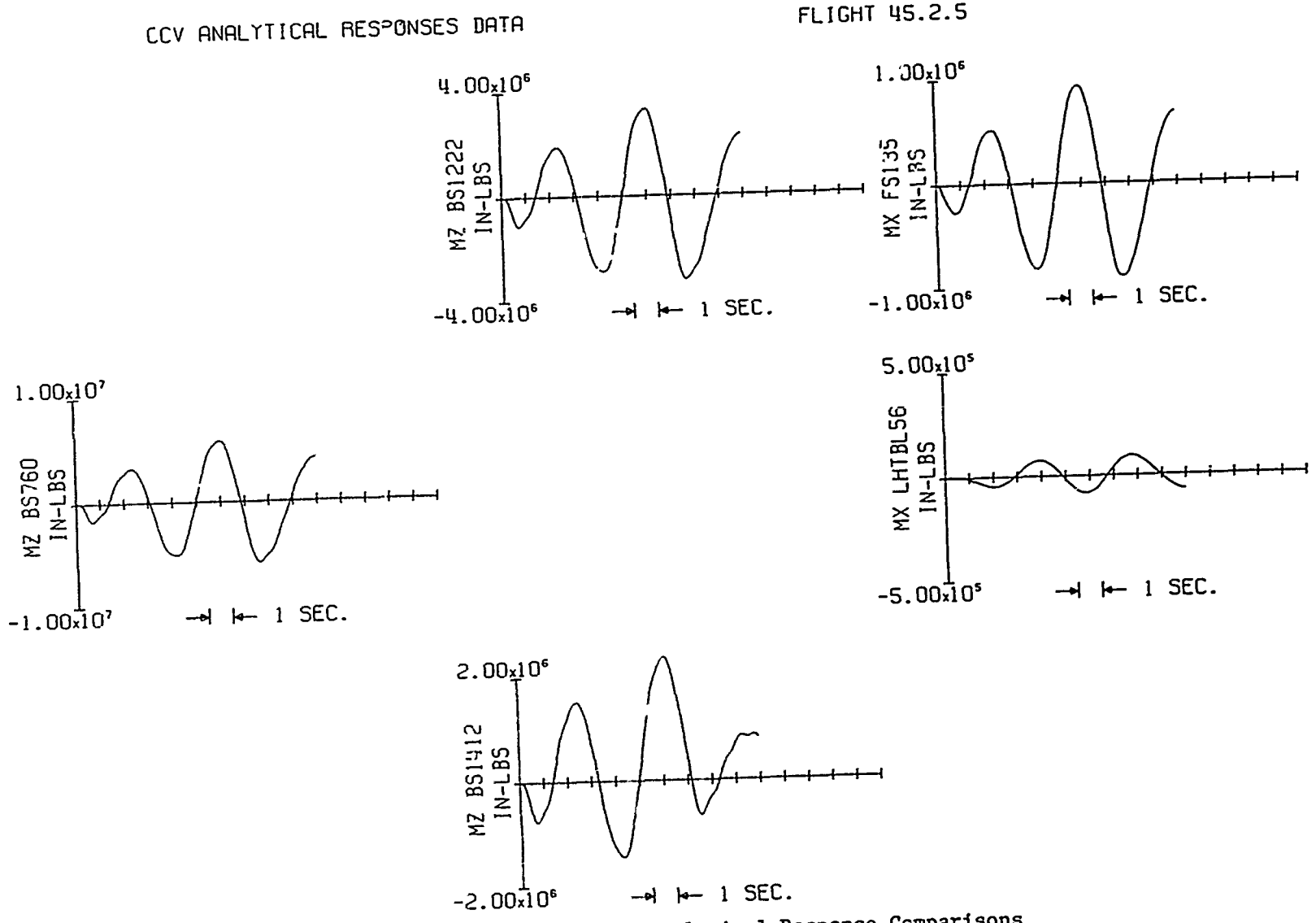


Figure 8. Flight Test and Analytical Response Comparisons for Flight Condition 45.2.5 (Continued)

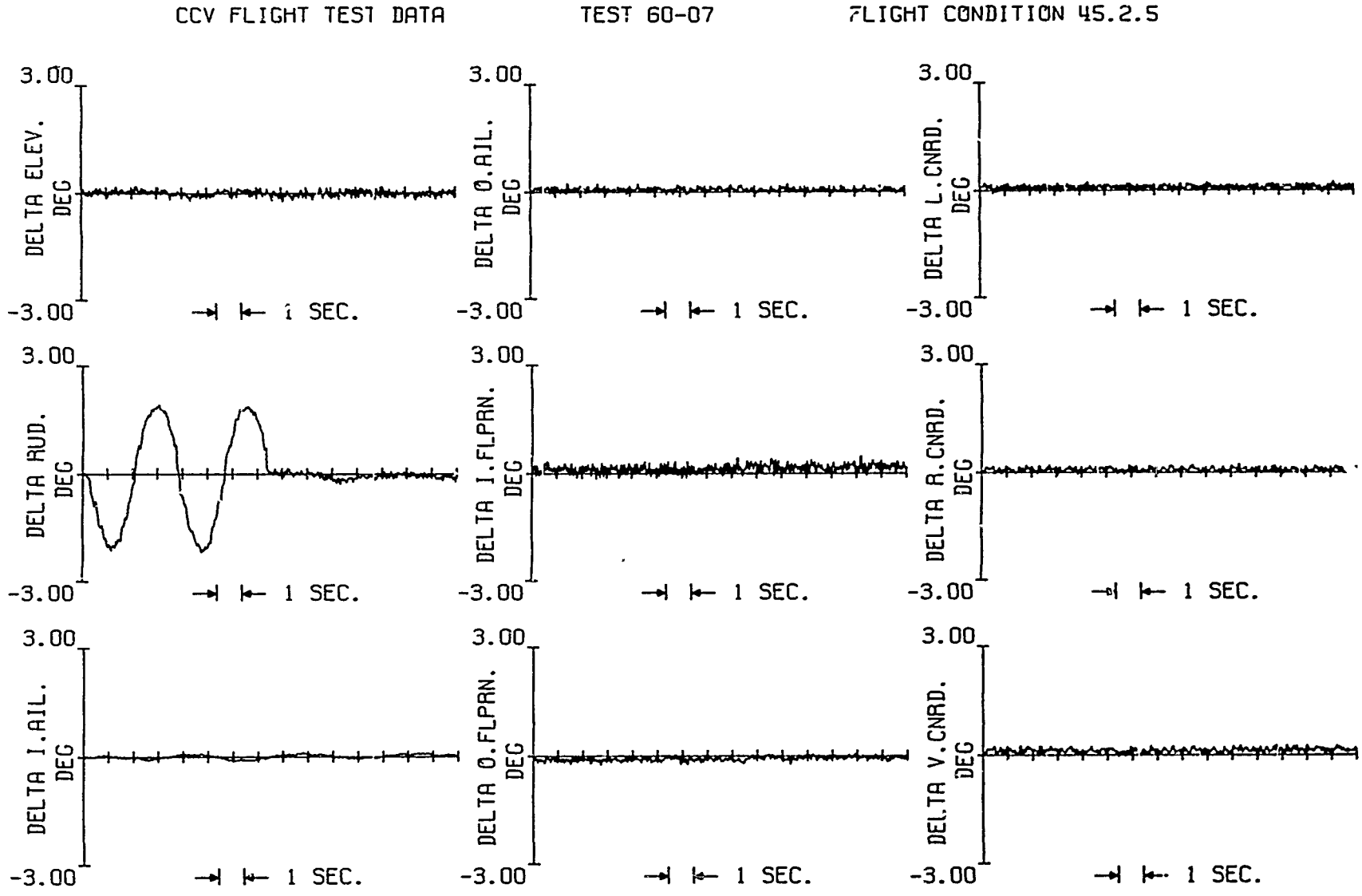


Figure 8. Flight Test and Analytical Response Comparisons for Flight Condition 45.2.5 (Concluded)

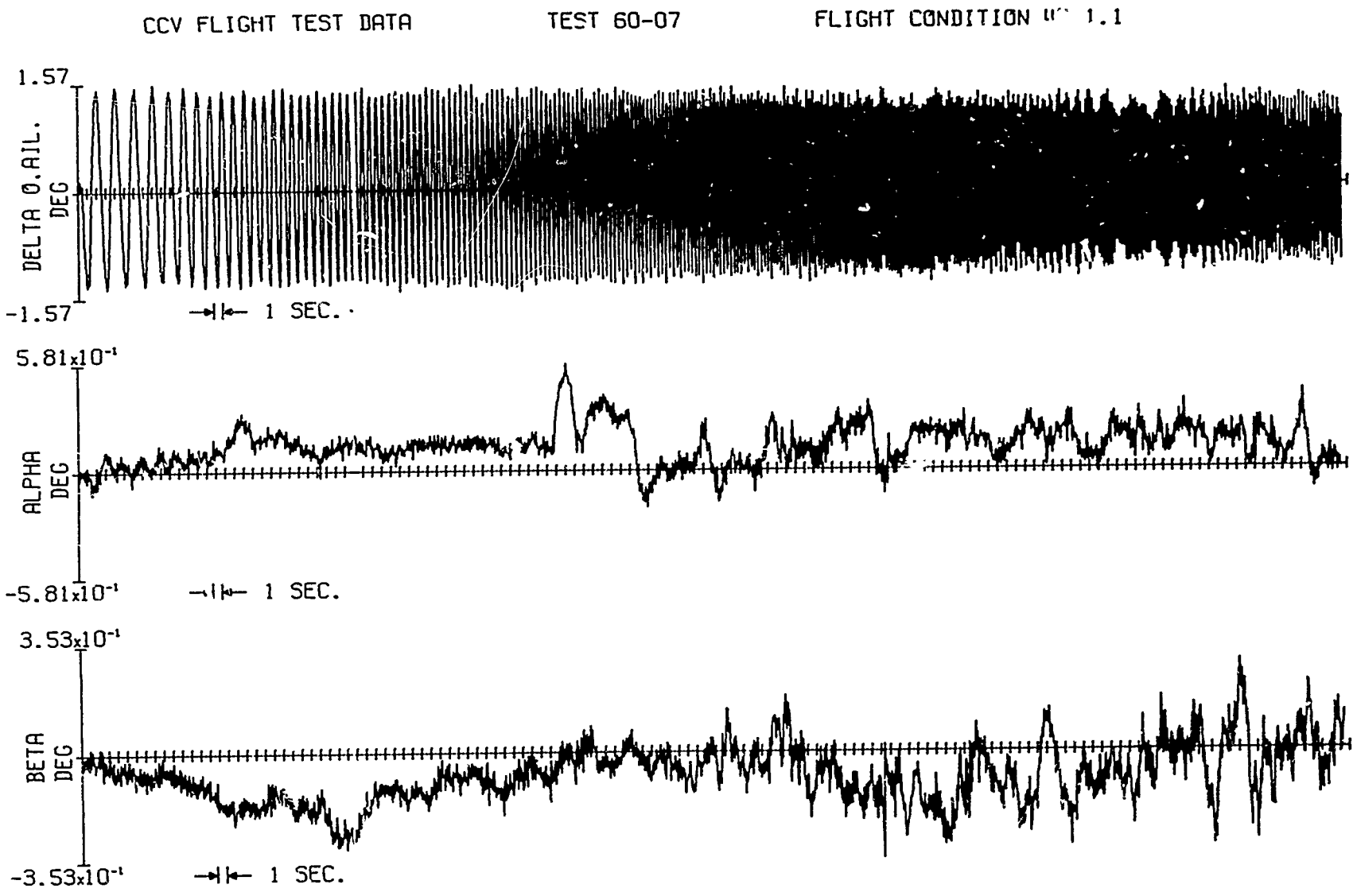


Figure 9. Flight Test Response Data for Flight Condition 44.1.1

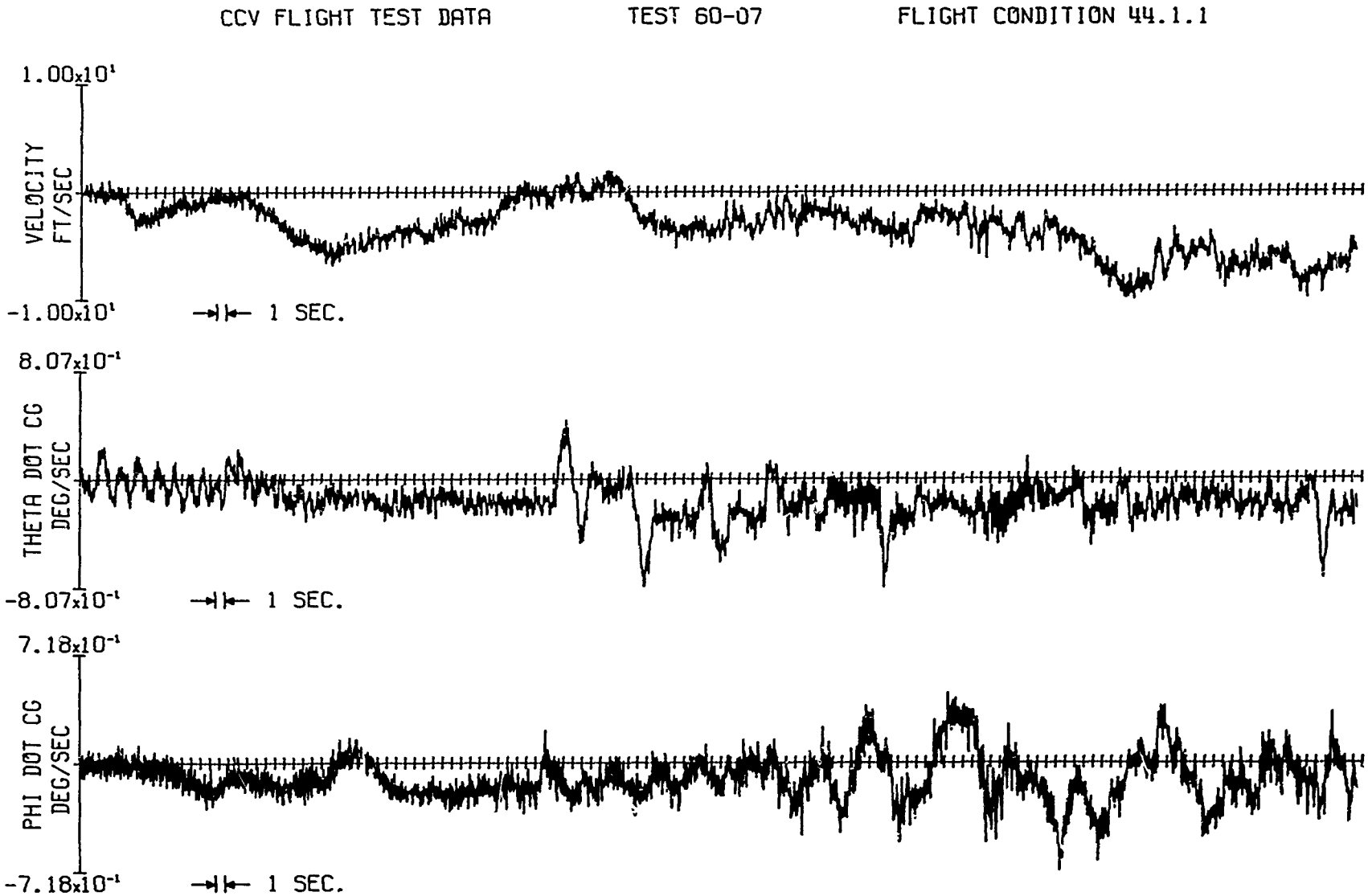


Figure 9. Flight Test Response Data for Flight Condition 44.1.1 (Continued)

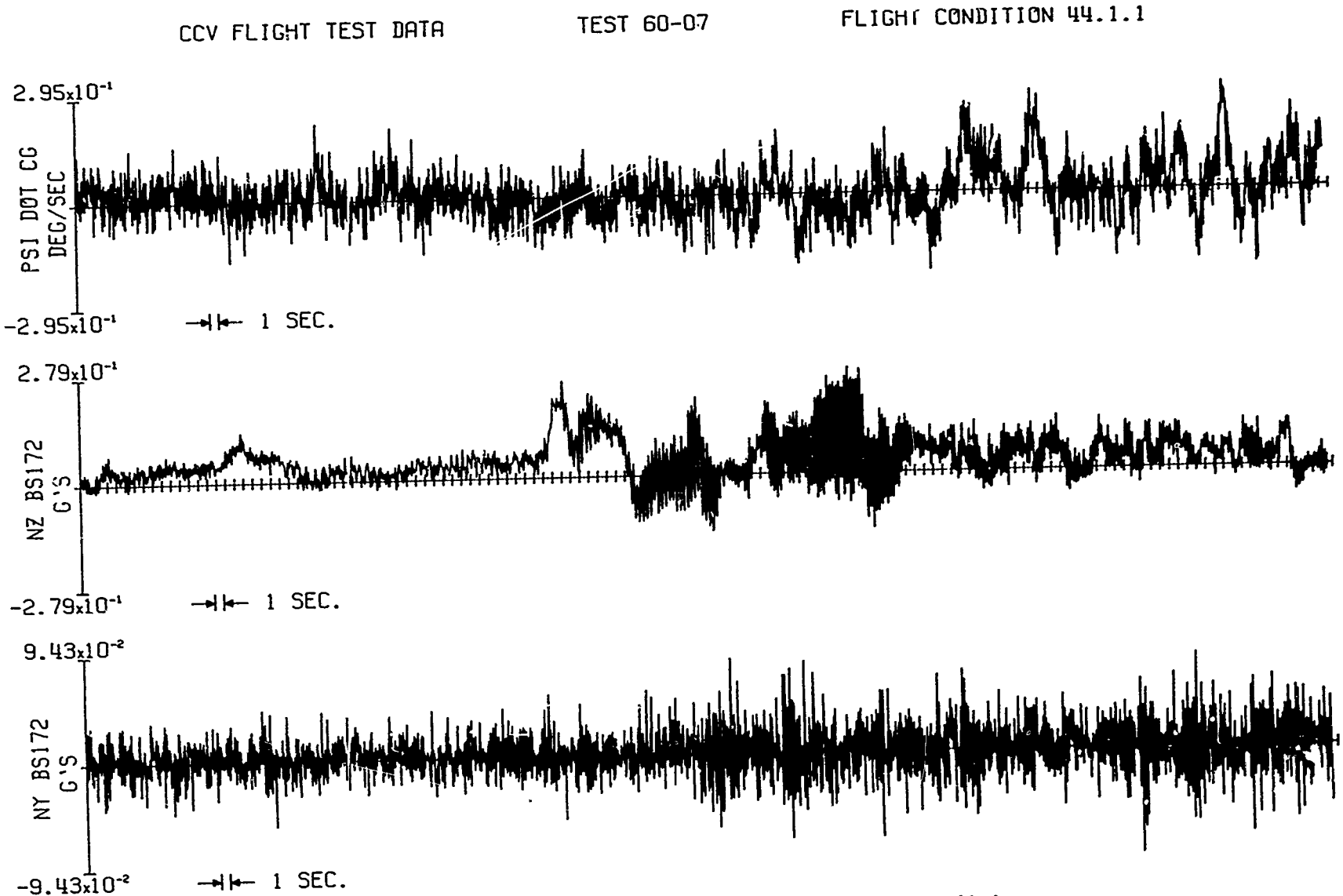


Figure 9. Flight Test Response Data for Flight Condition 44.1.1 (Continued)

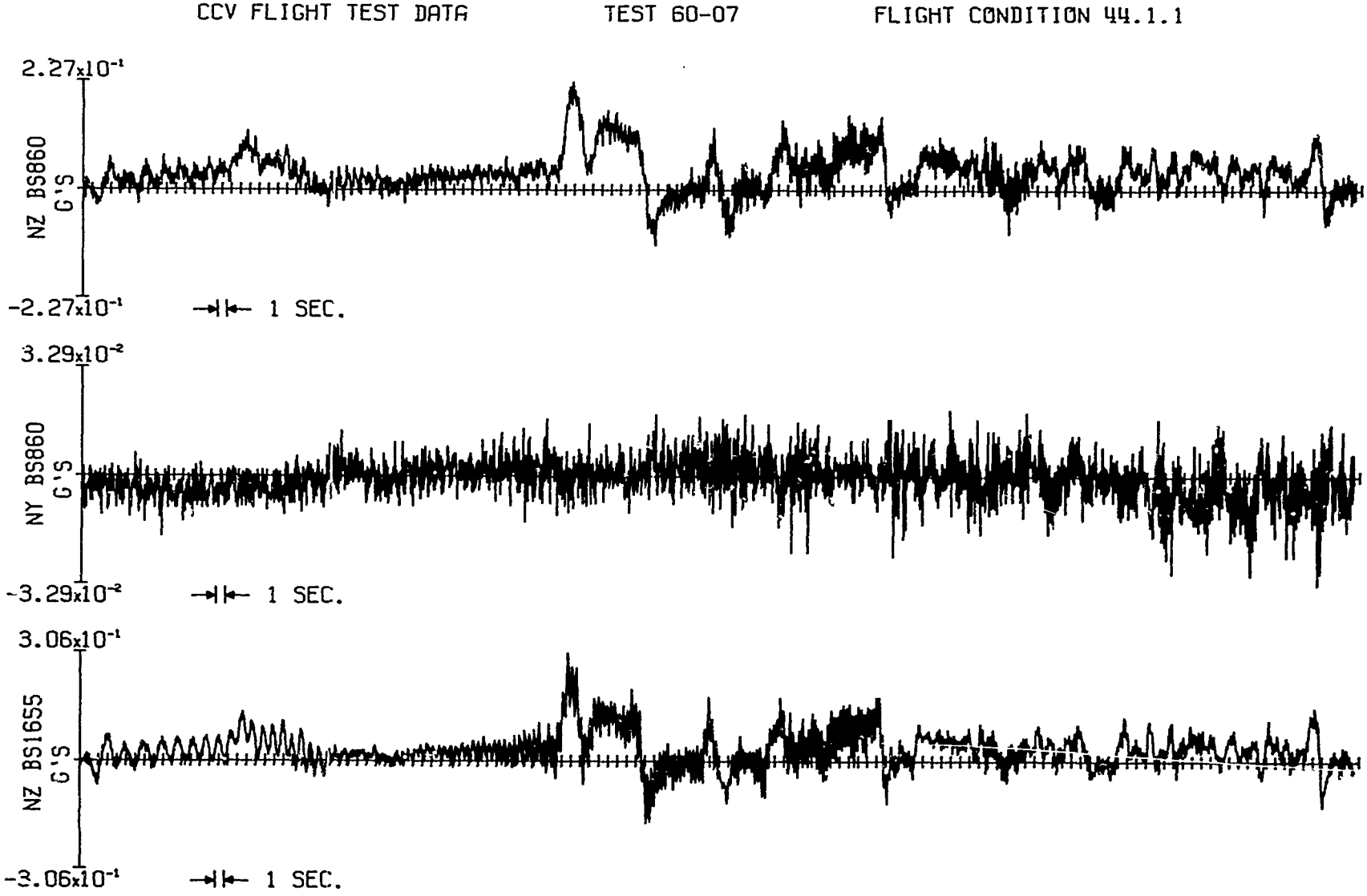


Figure 9. Flight Test Response Data for Flight Condition 44.1.1 (Continued)

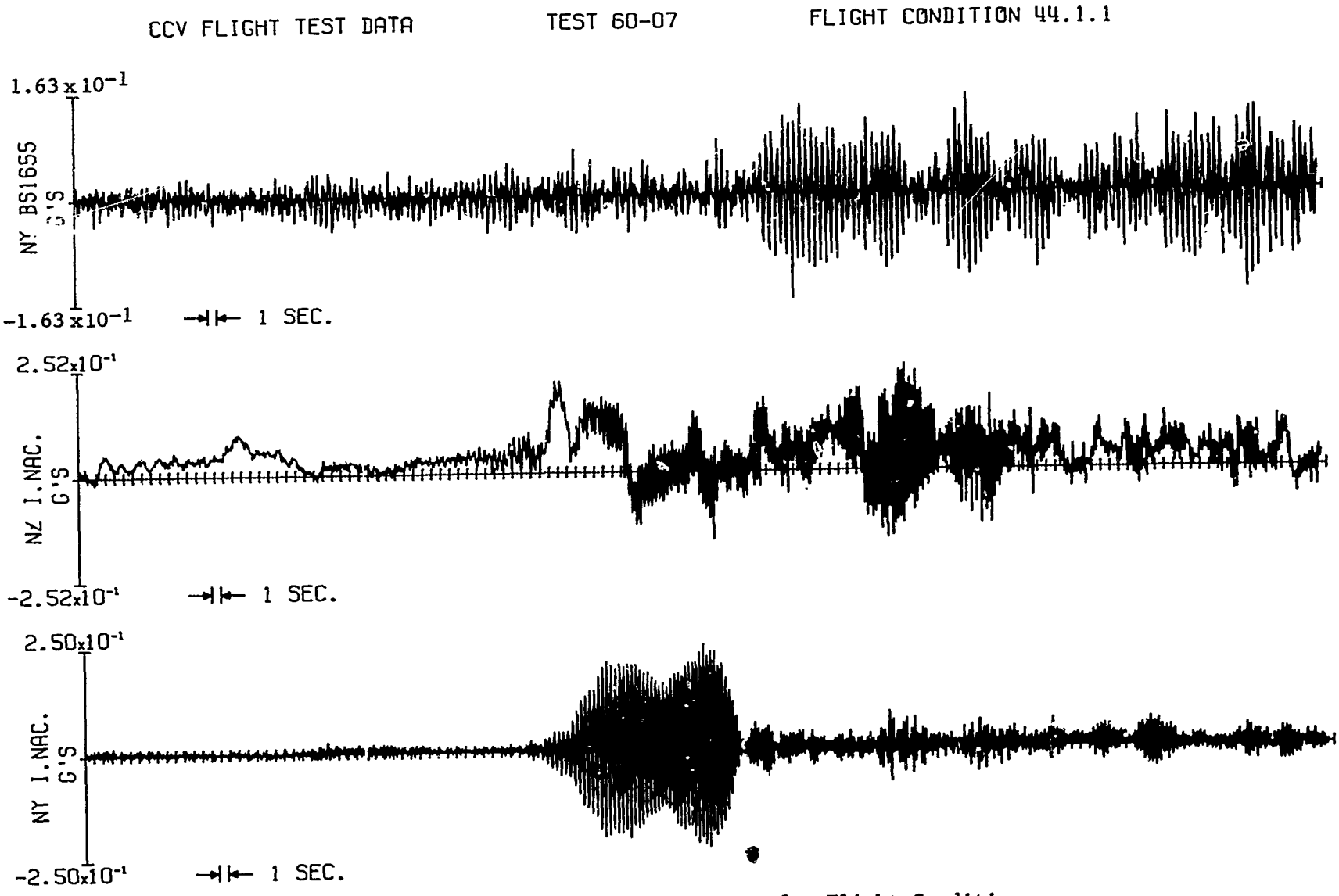


Figure 9. Flight Test Response Data for Flight Condition 44.1.1 (Continued)

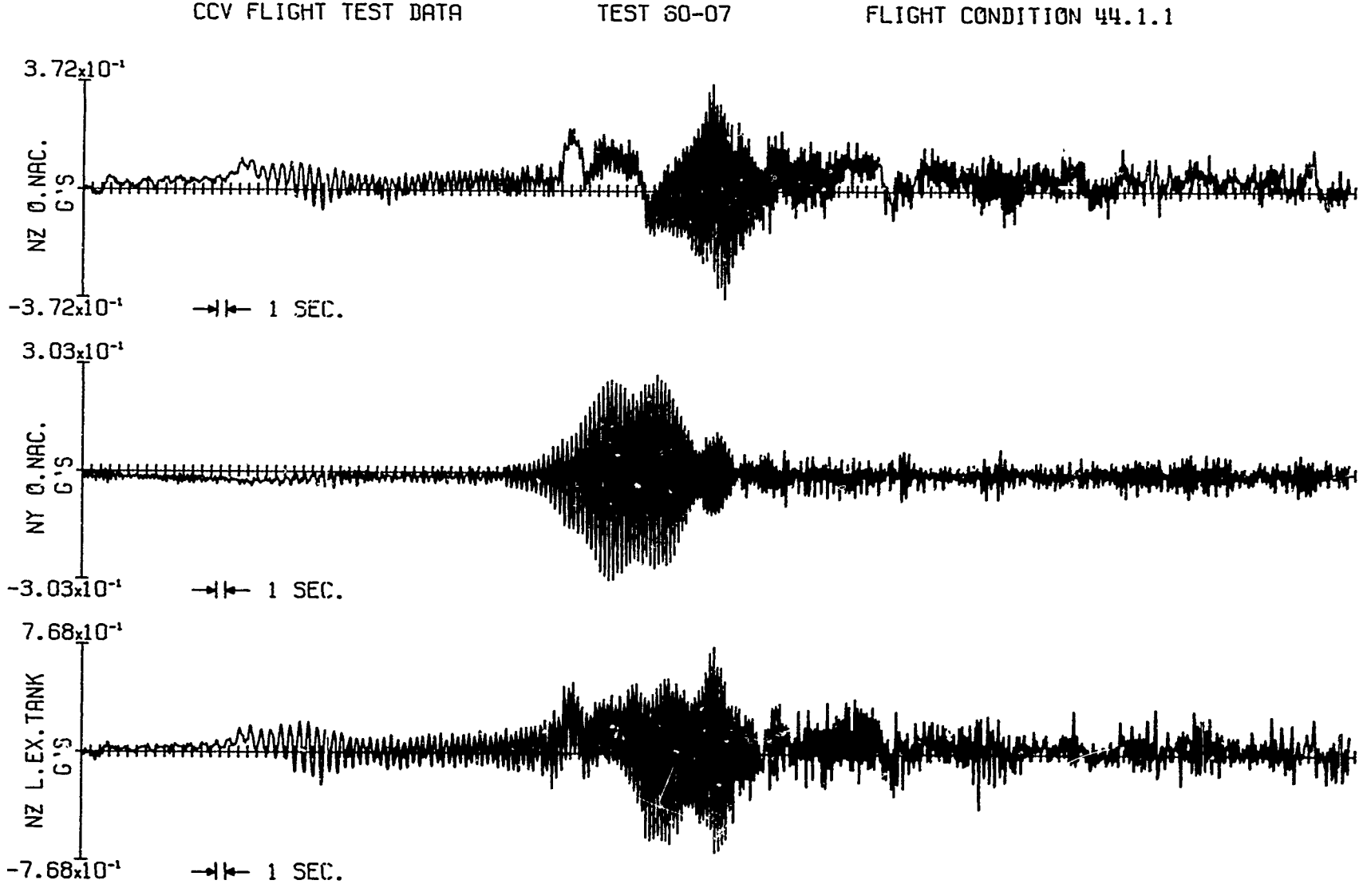


Figure 9. Flight Test Response Data for Flight Condition 44.1.1 (Continued)

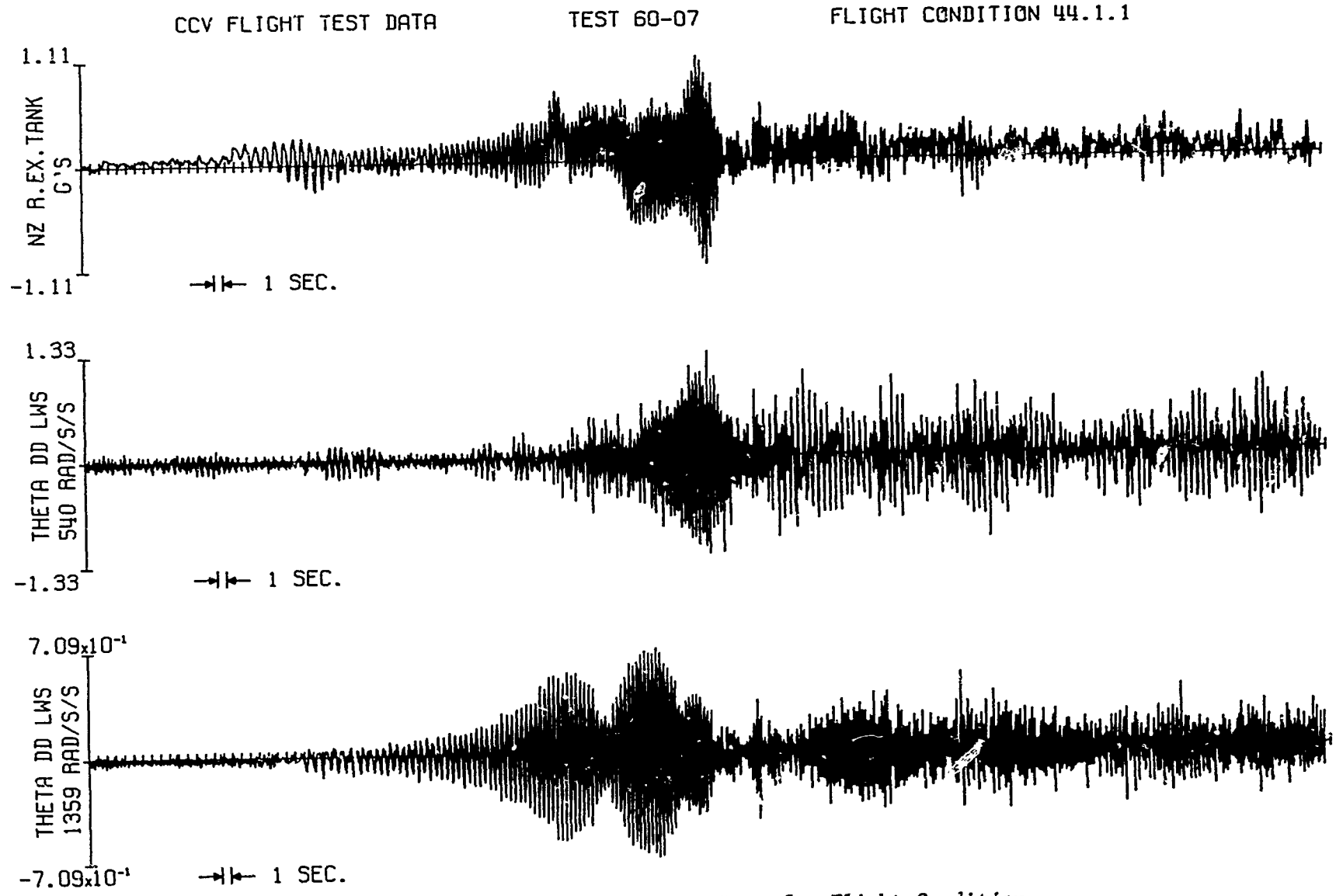


Figure 9. Flight Test Response Data for Flight Condition 44.1.1 (Continued)

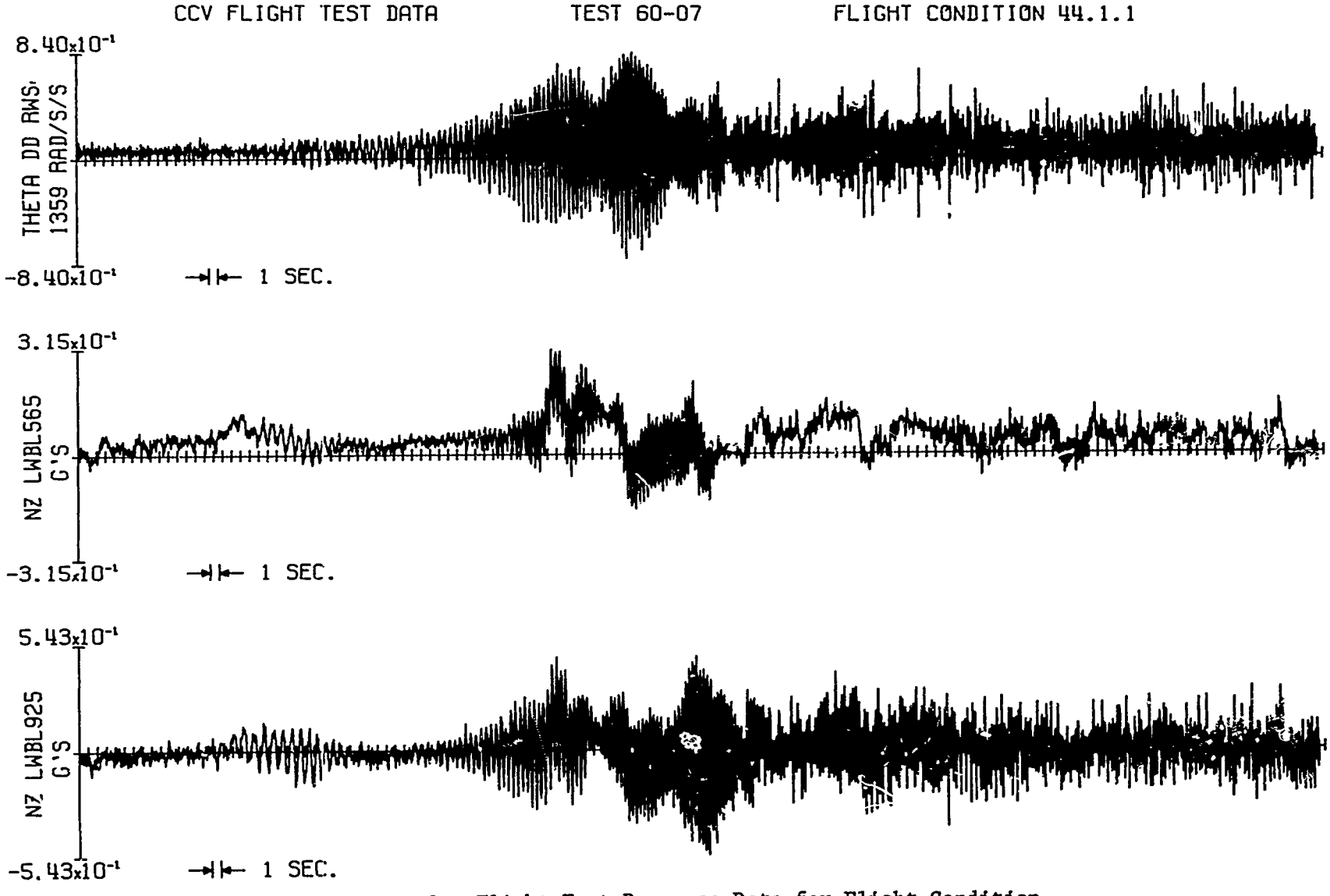


Figure 9. Flight Test Response Data for Flight Condition 44.1.1 (Continued)

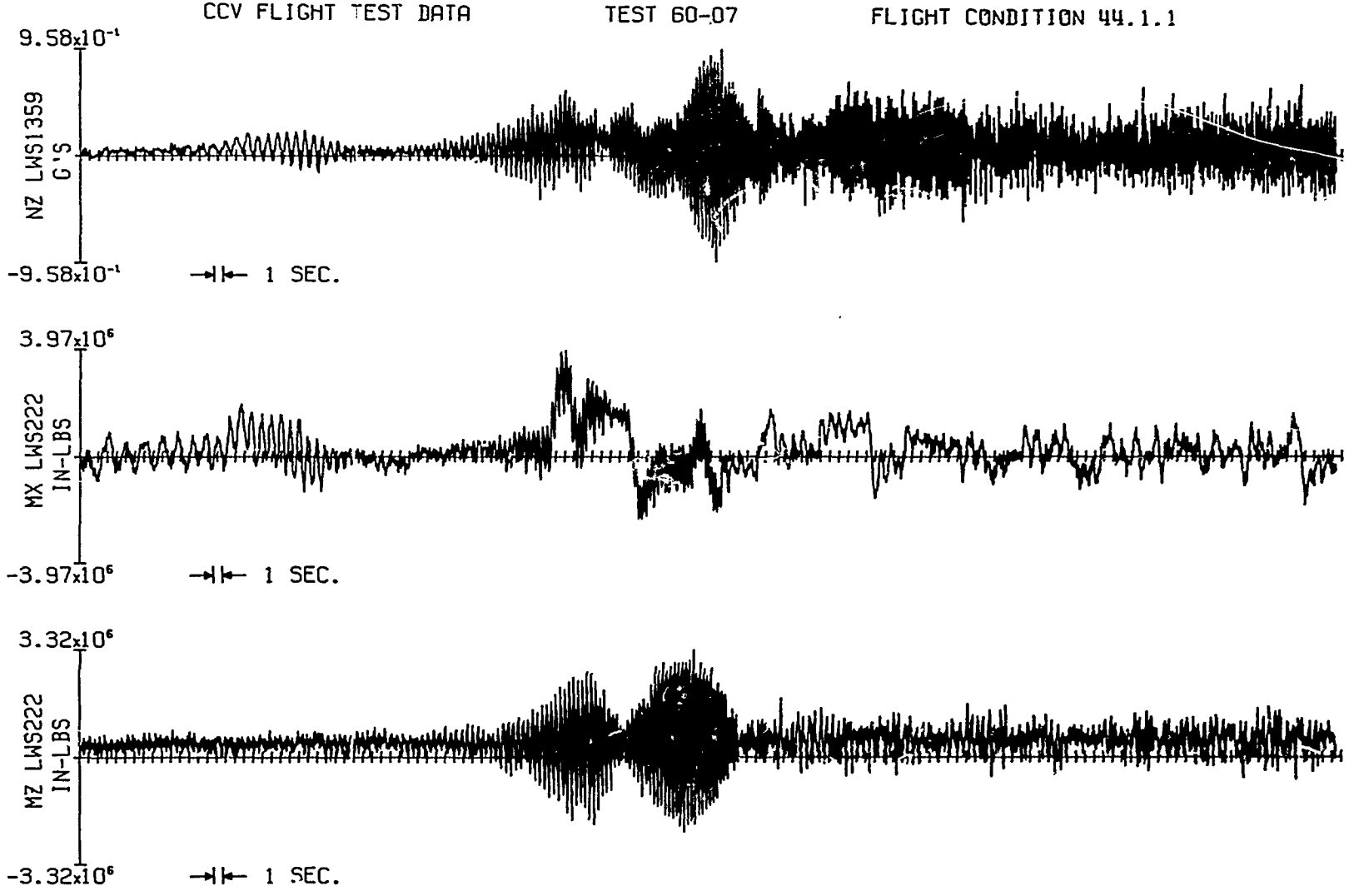


Figure 9. Flight Test Response Data for Flight Condition 44.1.1 (Continued)

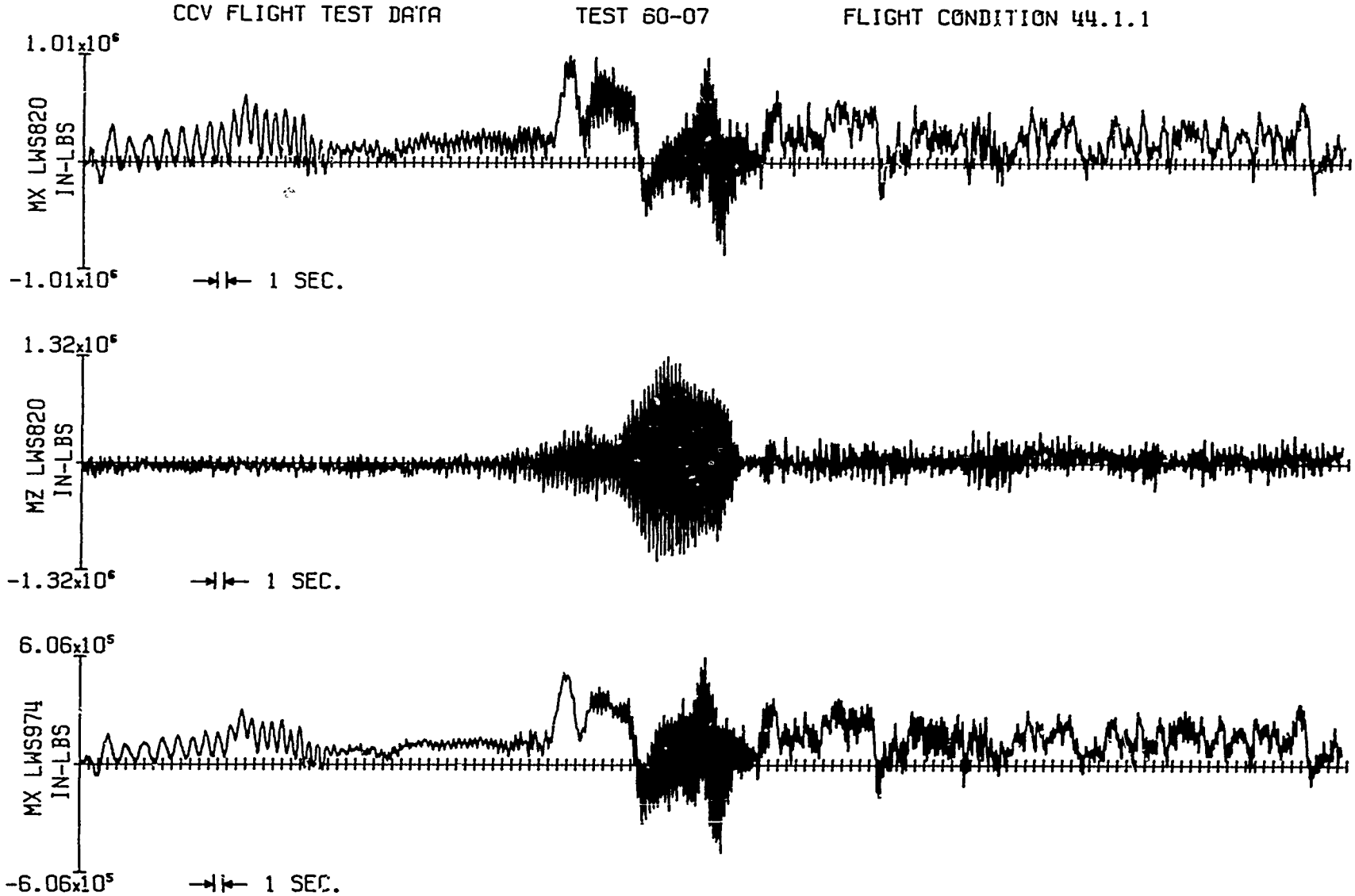


Figure 9. Flight Test Response Data for Flight Condition 44.1.1 (Continued)

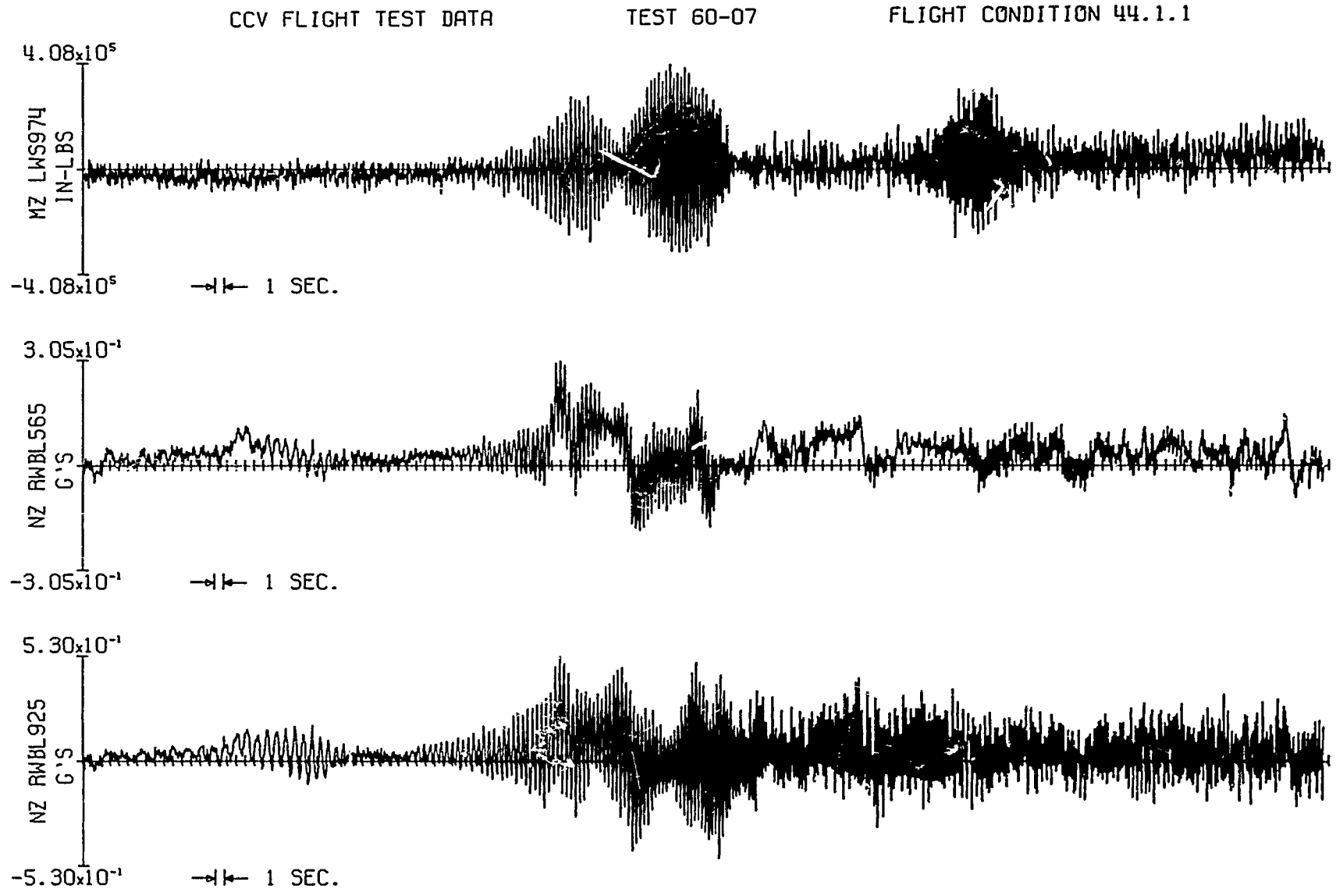


Figure 9. Flight Test Response Data for Flight Condition 44.1.1 (Continued)

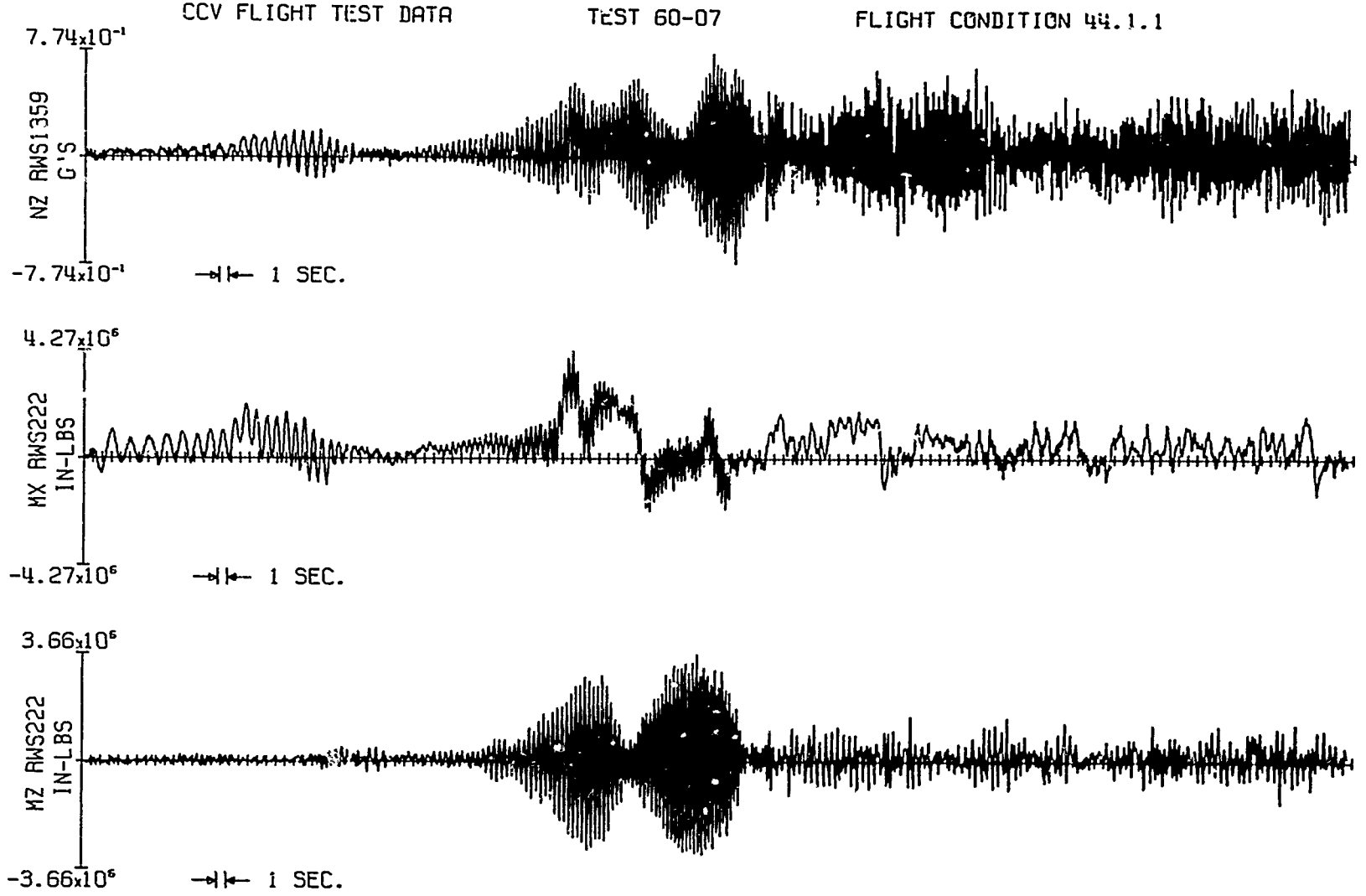


Figure 9. Flight Test Response Data for Flight Condition 44.1.1 (Continued)

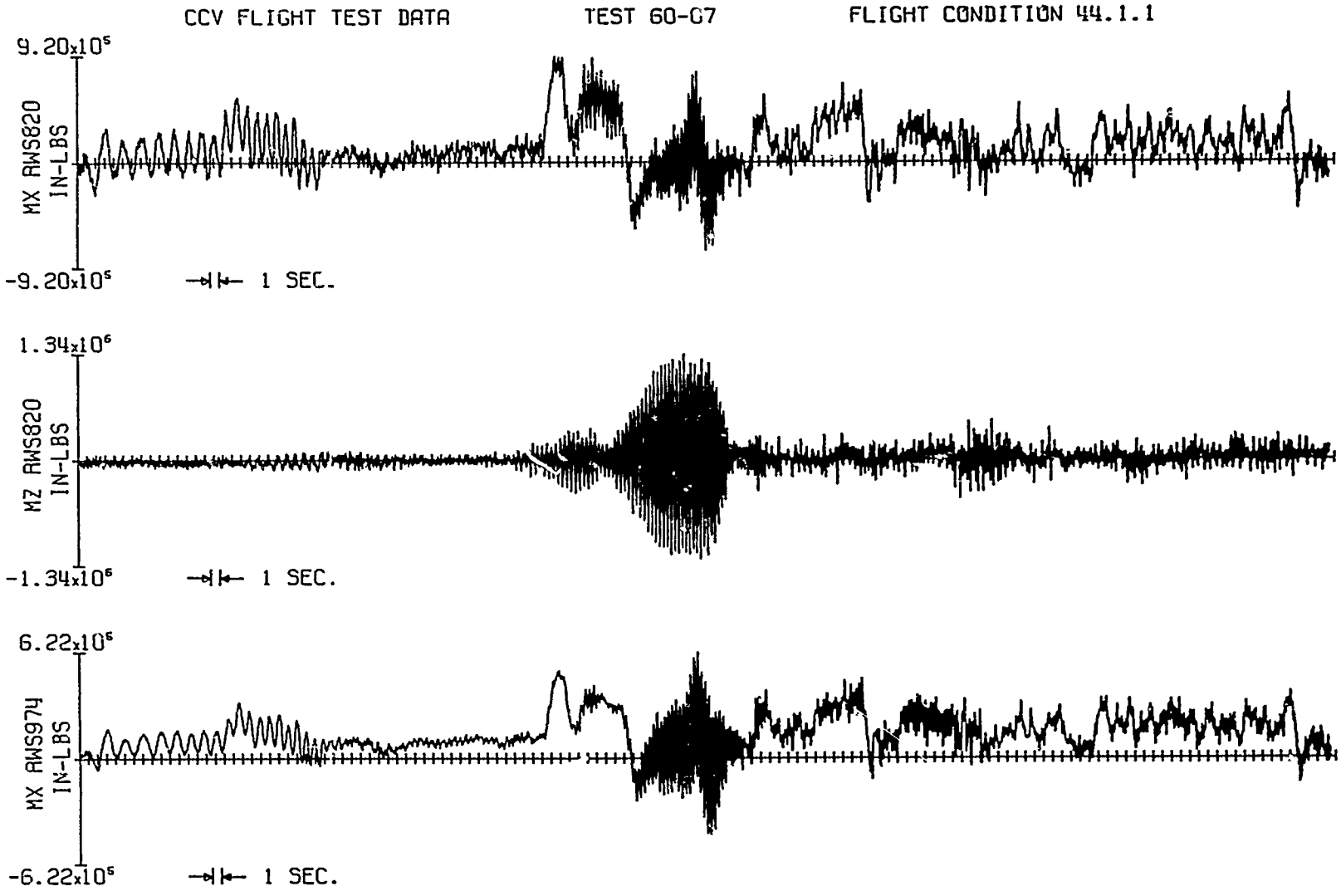


Figure 9. Flight Test Response Data for Flight Condition 44.1.1 (Continued)

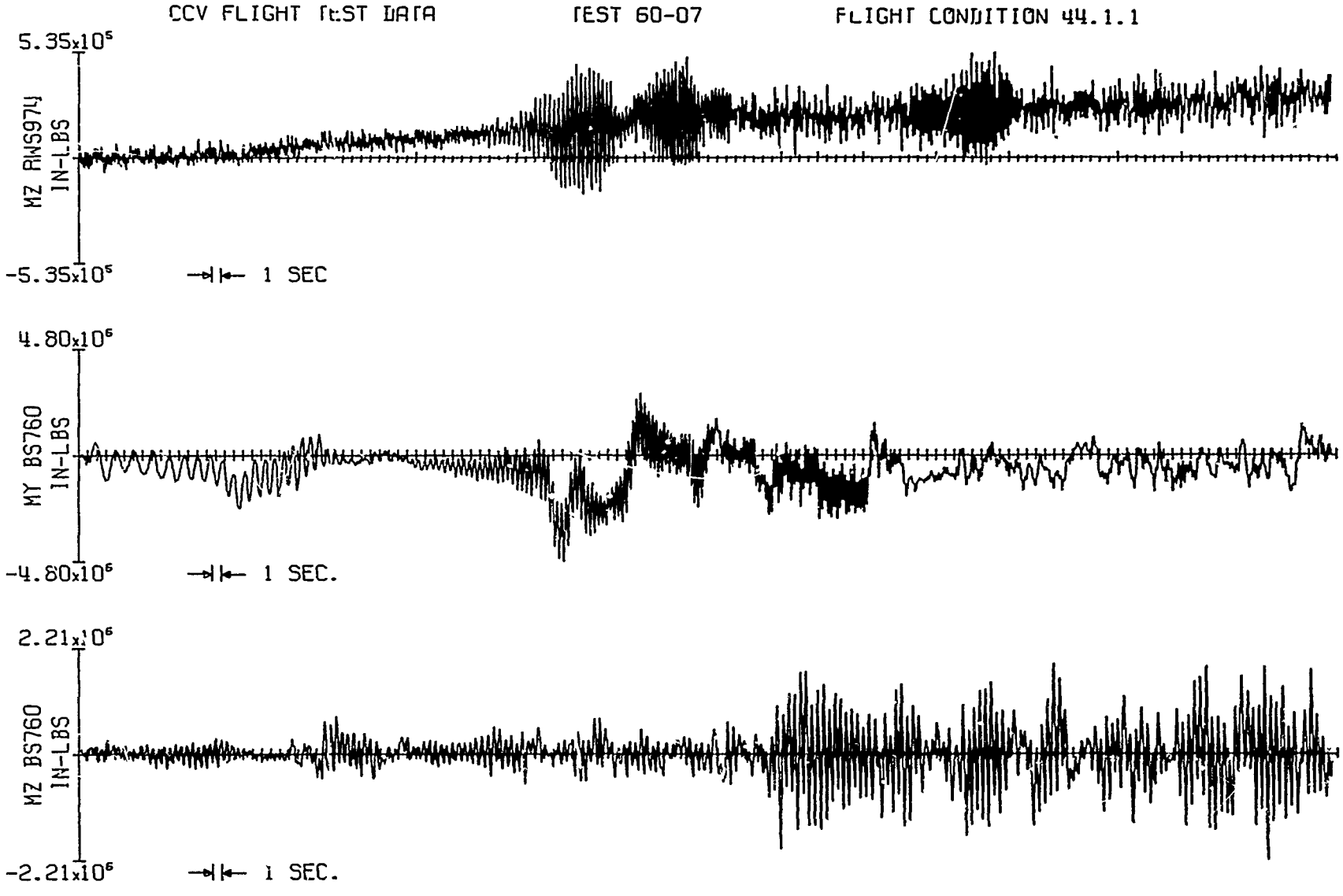


Figure 9. Flight Test Response Data for Flight Condition 44.1.1 (Continued)

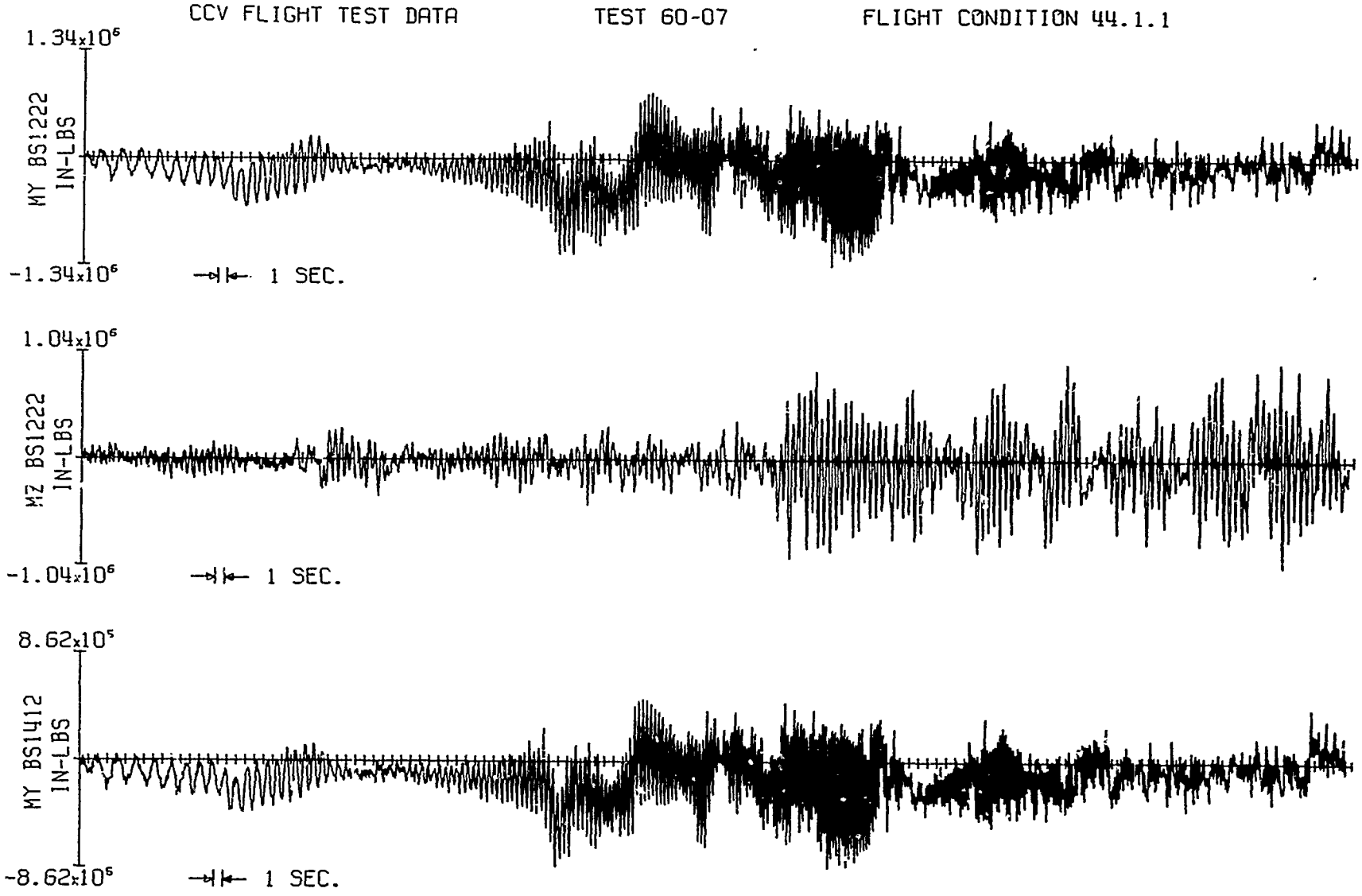


Figure 9. Flight Test Response Data for Flight Condition 44.1.1 (Continued)

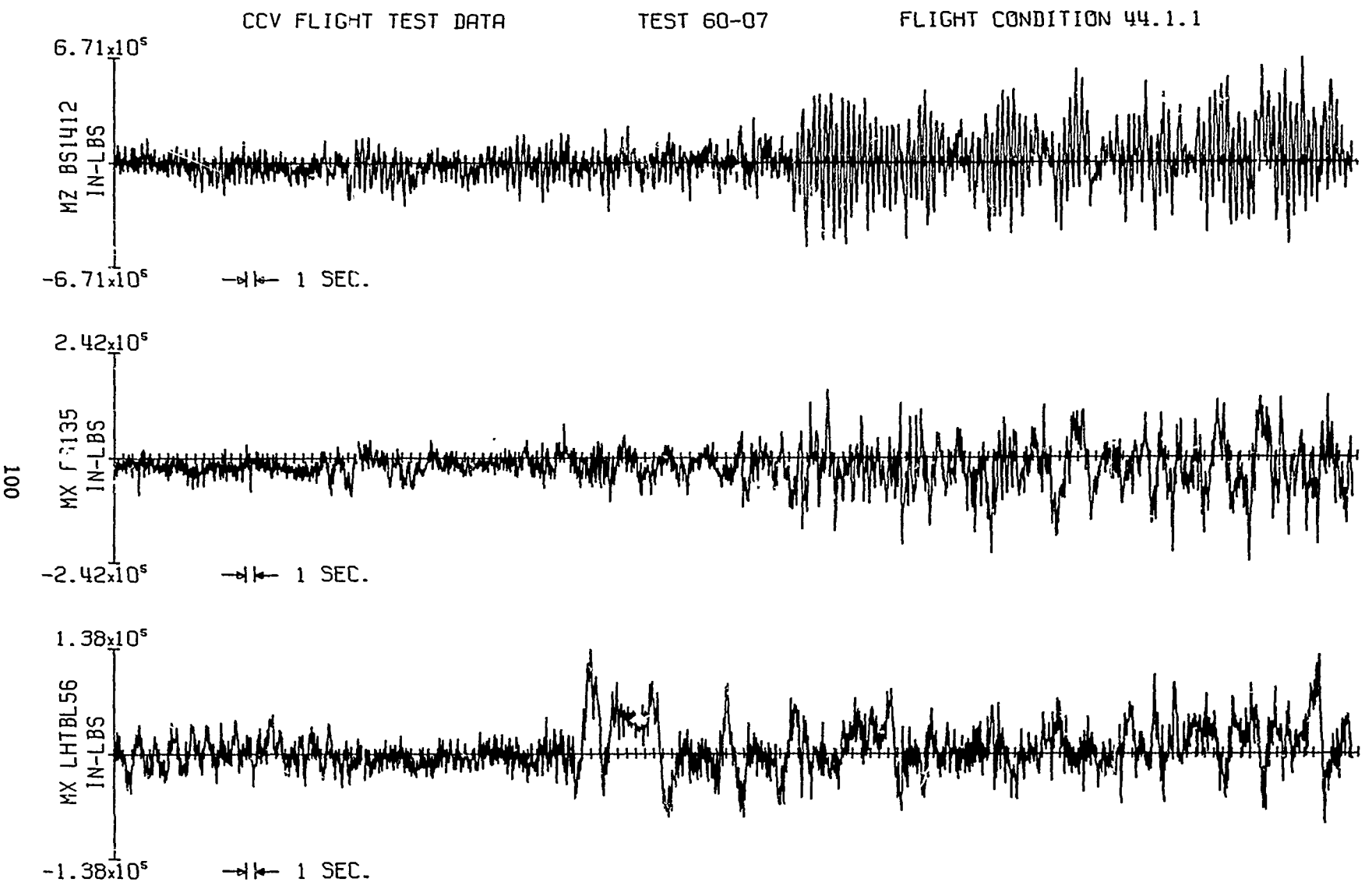


Figure 9. Flight Test Response Data for Flight Condition 44.1.1 (Continued)

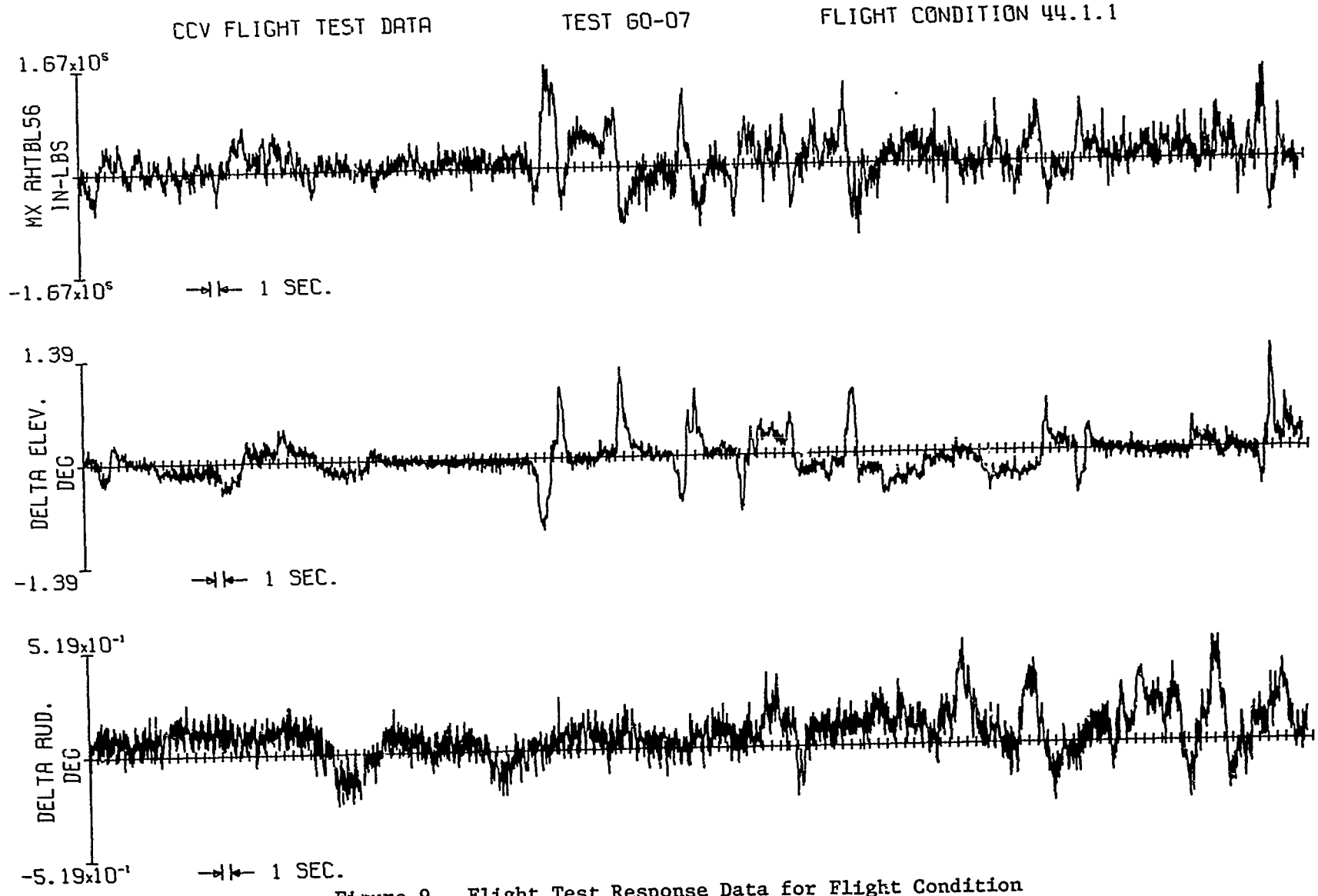


Figure 9. Flight Test Response Data for Flight Condition 44.1.1 (Continued)

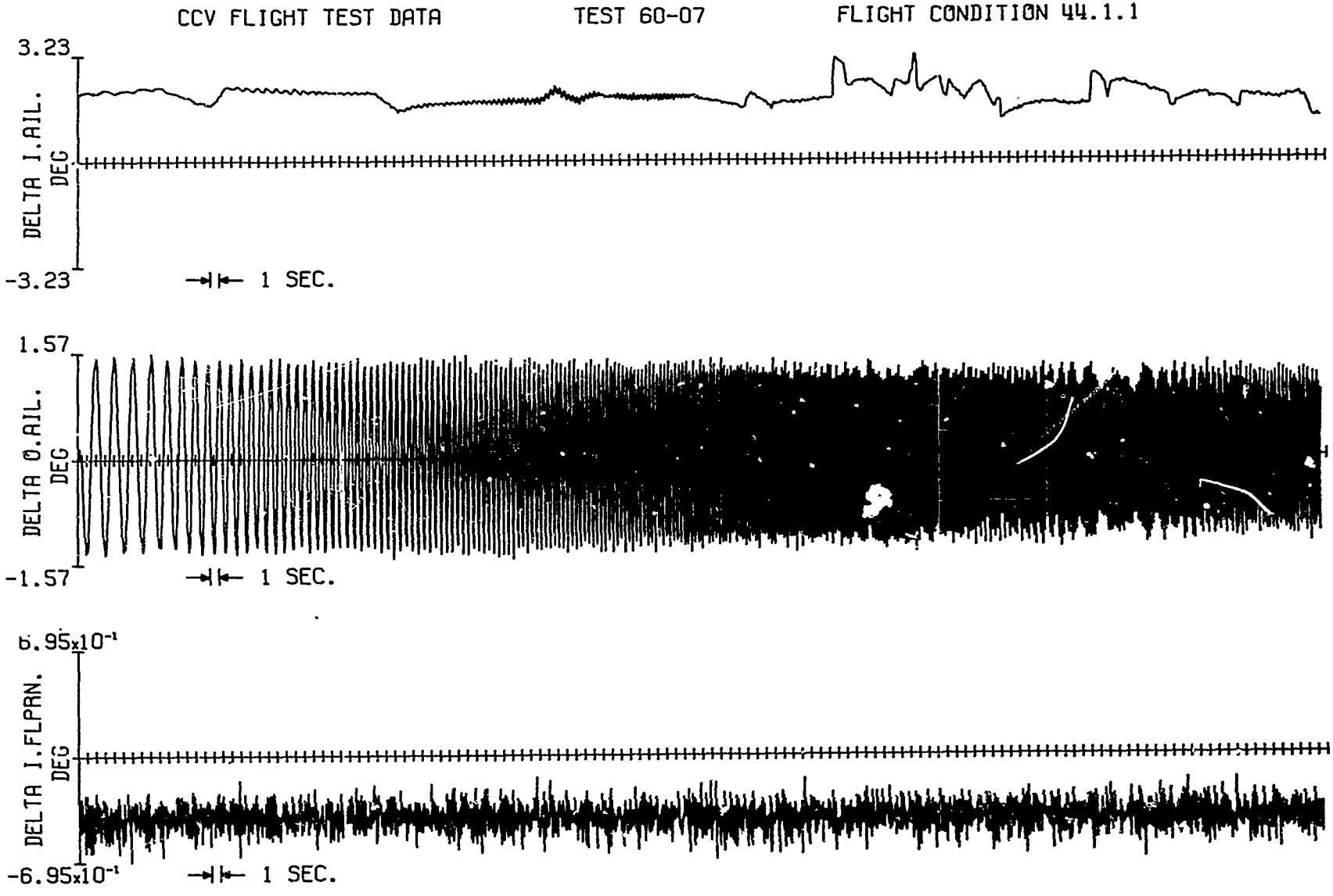


Figure 9. Flight Test Response Data for Flight Condition 44.1.1 (Continued)

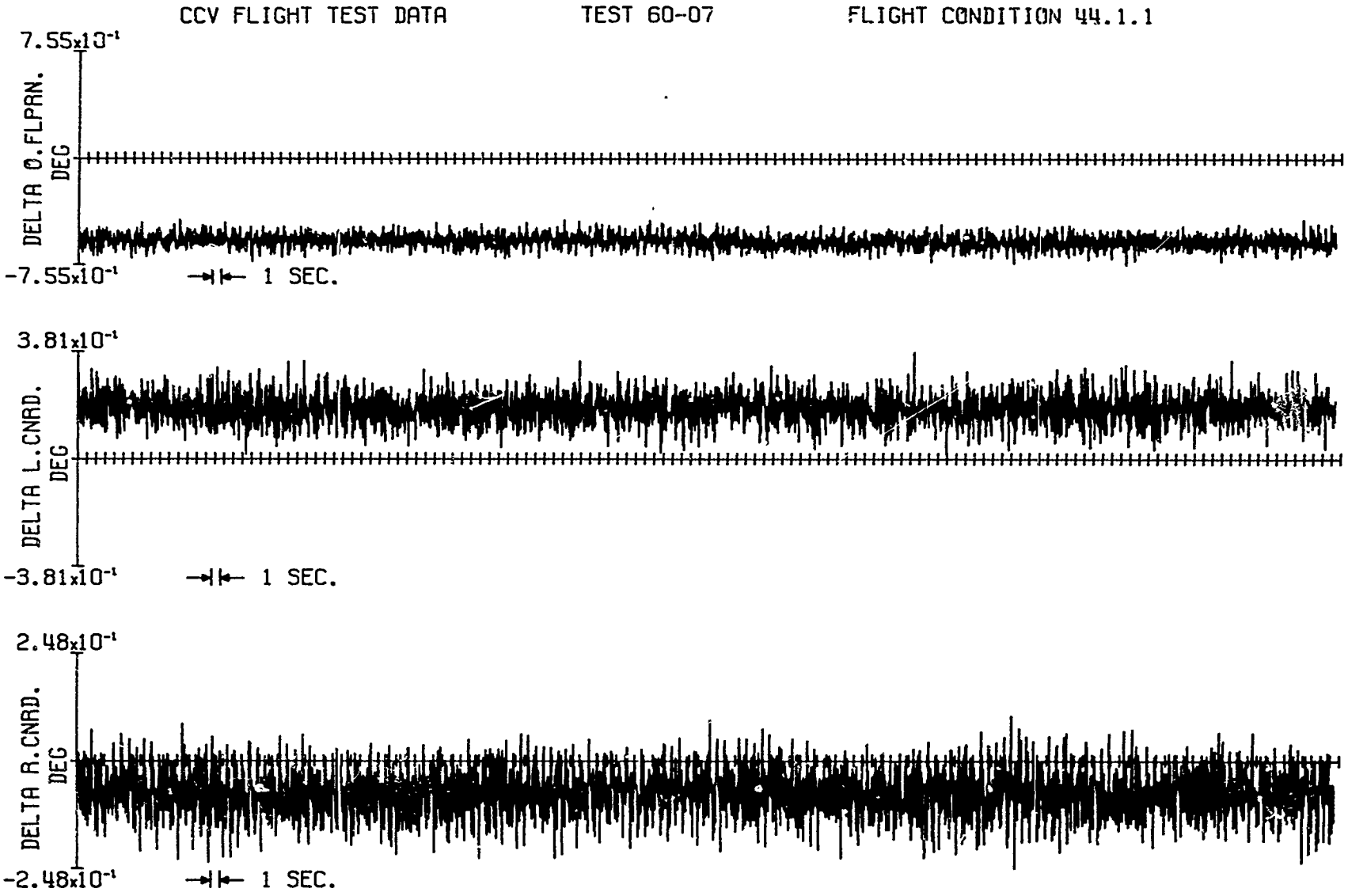


Figure 9. Flight Test Response Data for Flight Condition 44.1.1 (Continued)

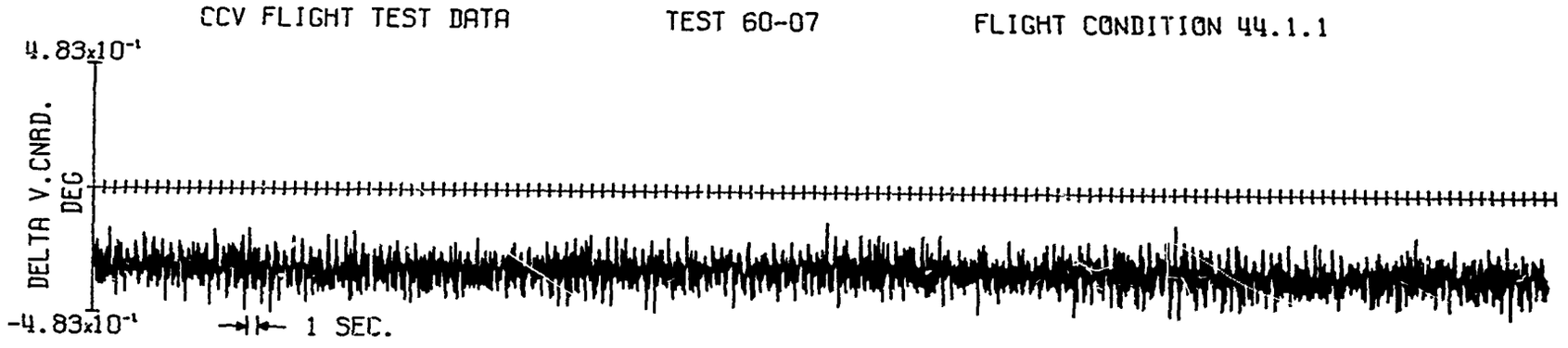


Figure 9. Flight Test Response Data for Flight Condition 44.1.1 (Concluded)

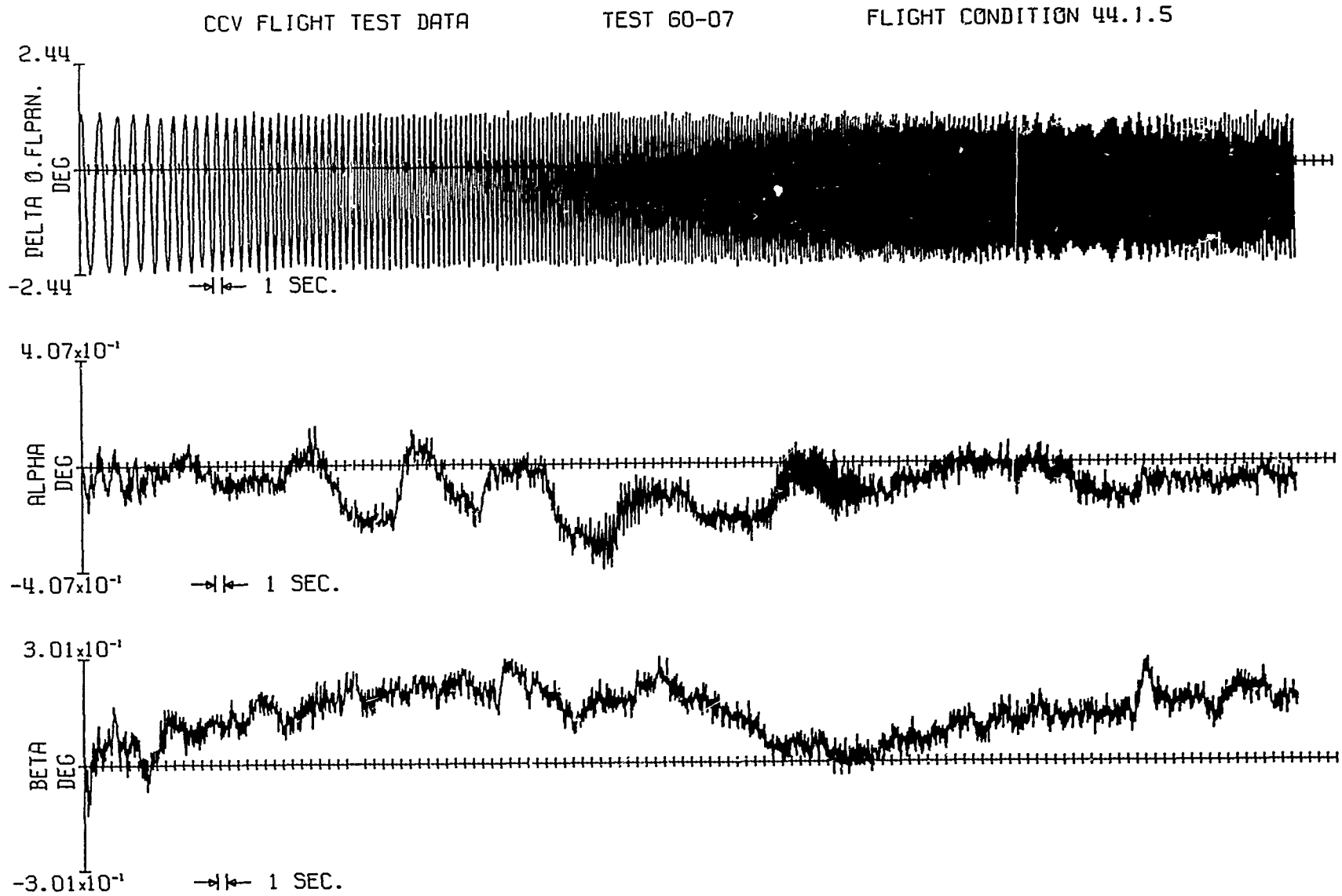


Figure 10. Flight Test Response Data for Flight Condition 44.1.5

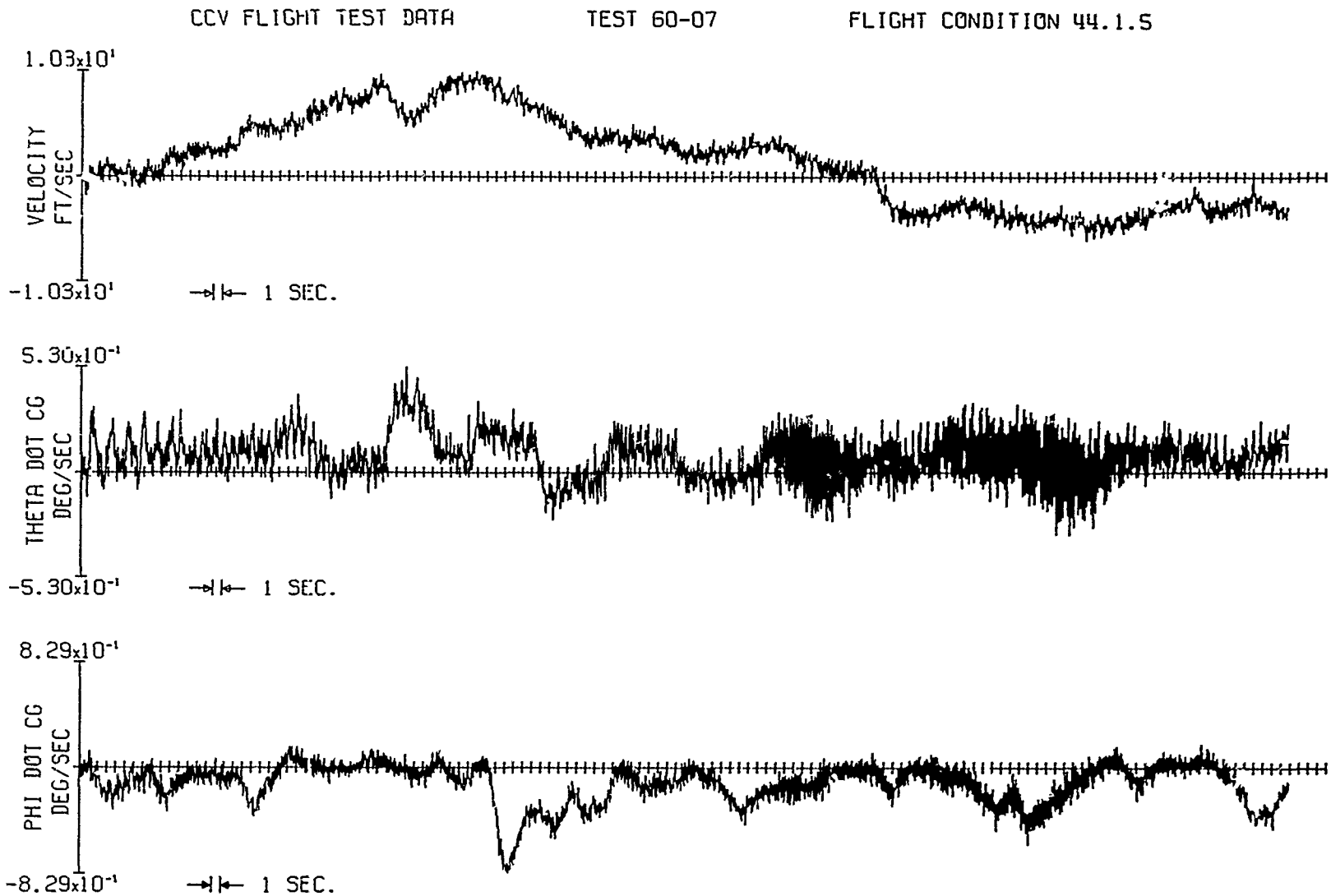


Figure 10. Flight Test Response Data for Flight Condition 44.1.5 (Continued)

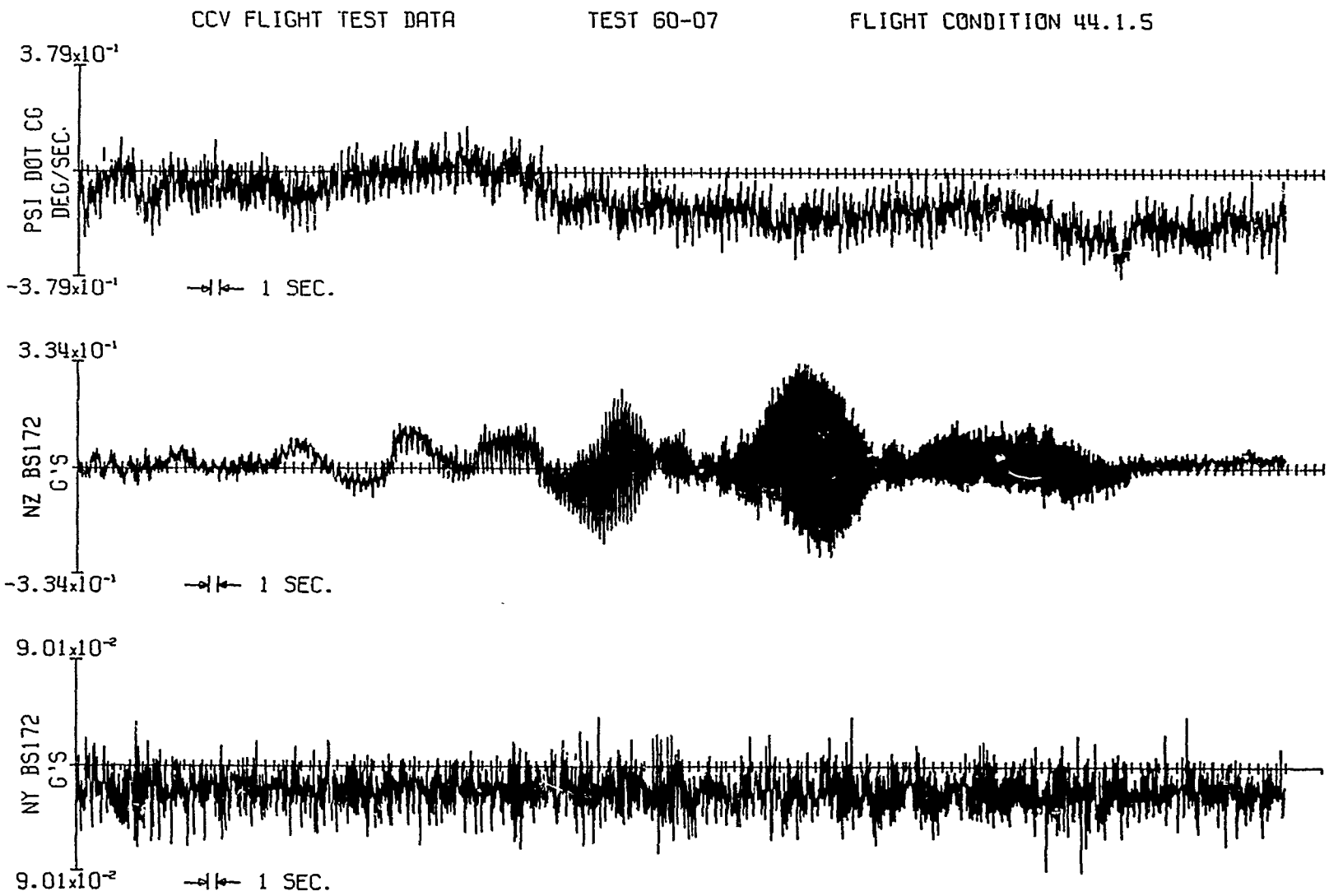


Figure 10. Flight Test Response Data for Flight Condition 44.1.5 (Continued)

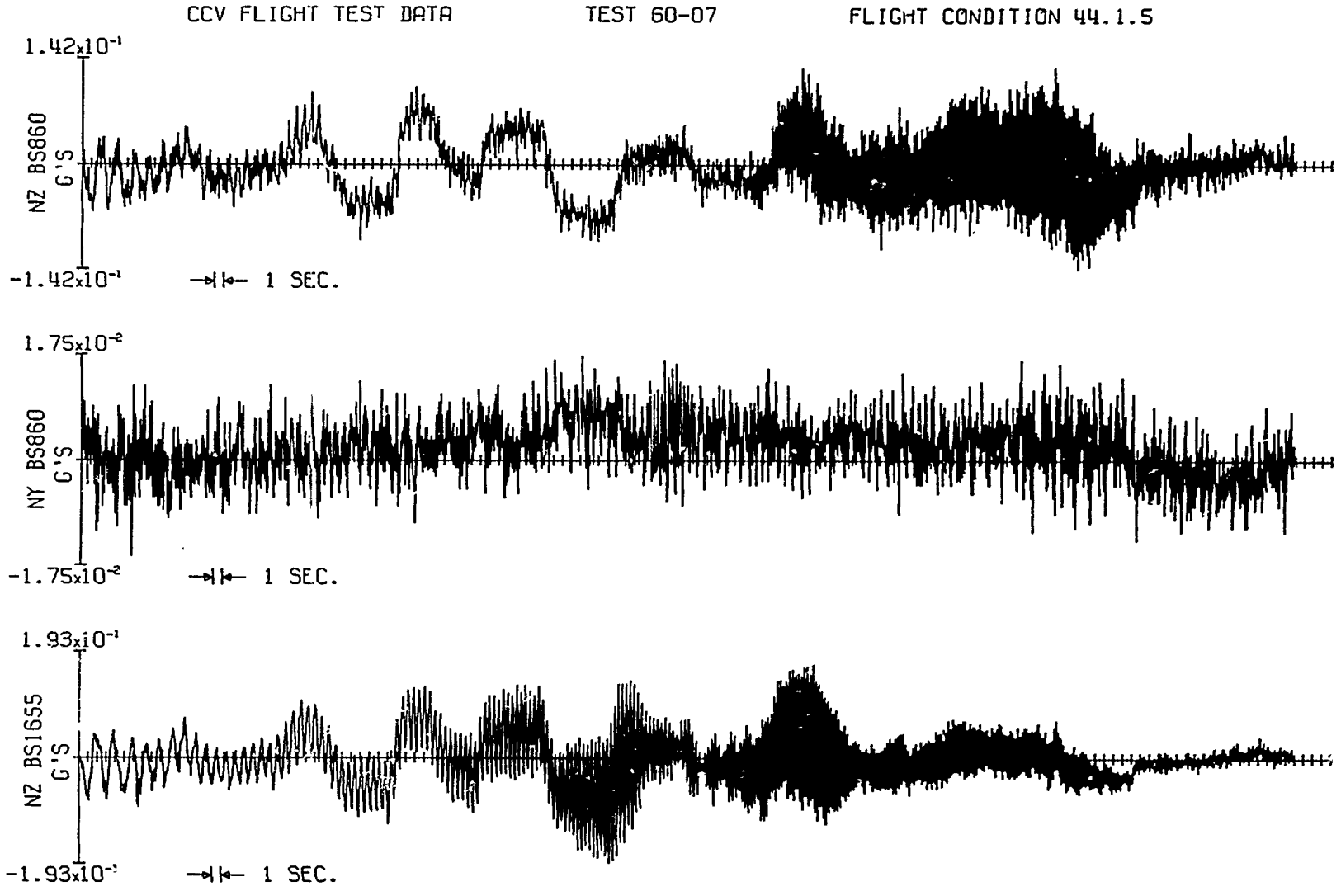


Figure 10. Flight Test Response Data for Flight Condition 44.1.5 (Continued)

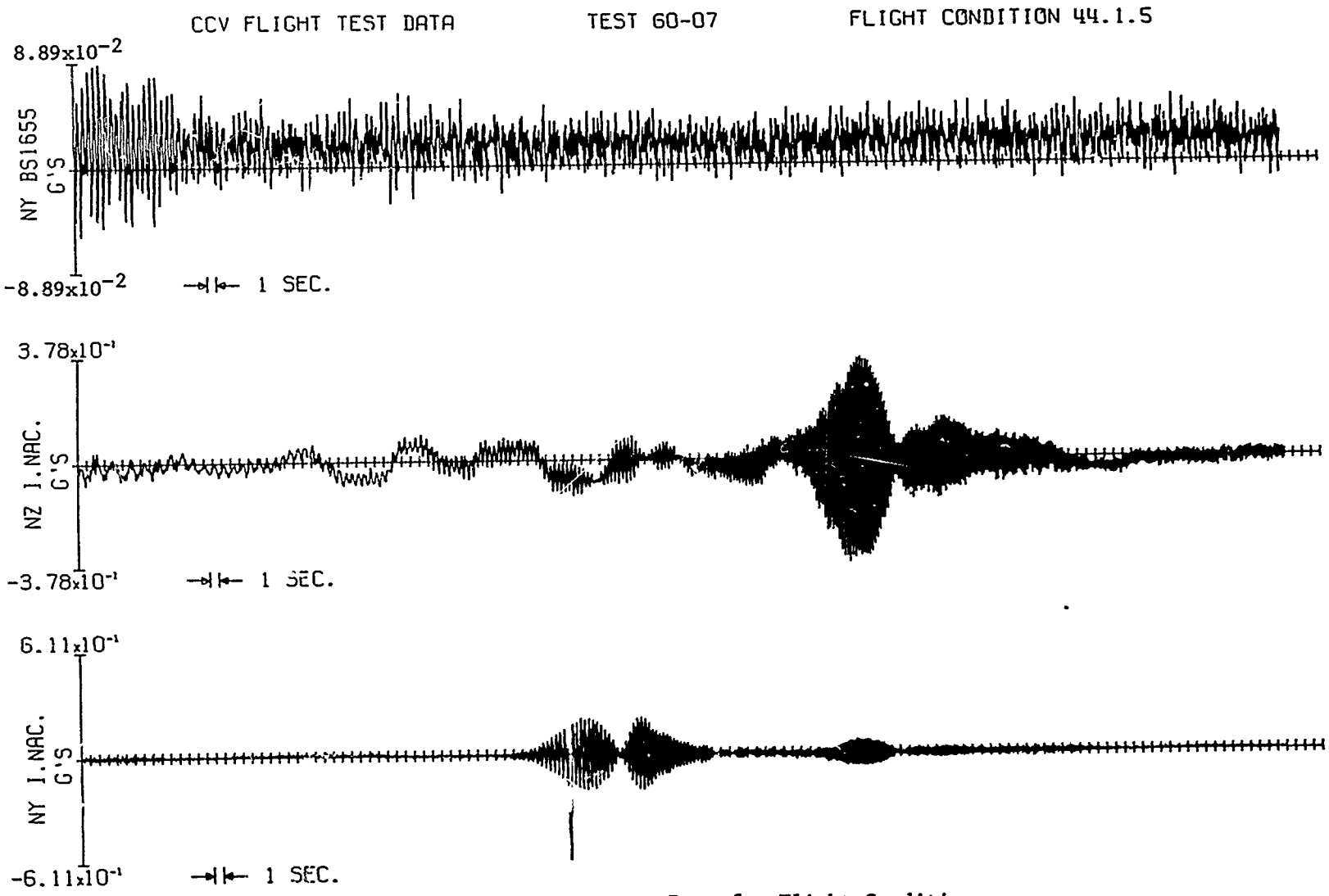


Figure 10. Flight Test Response Data for Flight Condition 44.1.5 (Continued)

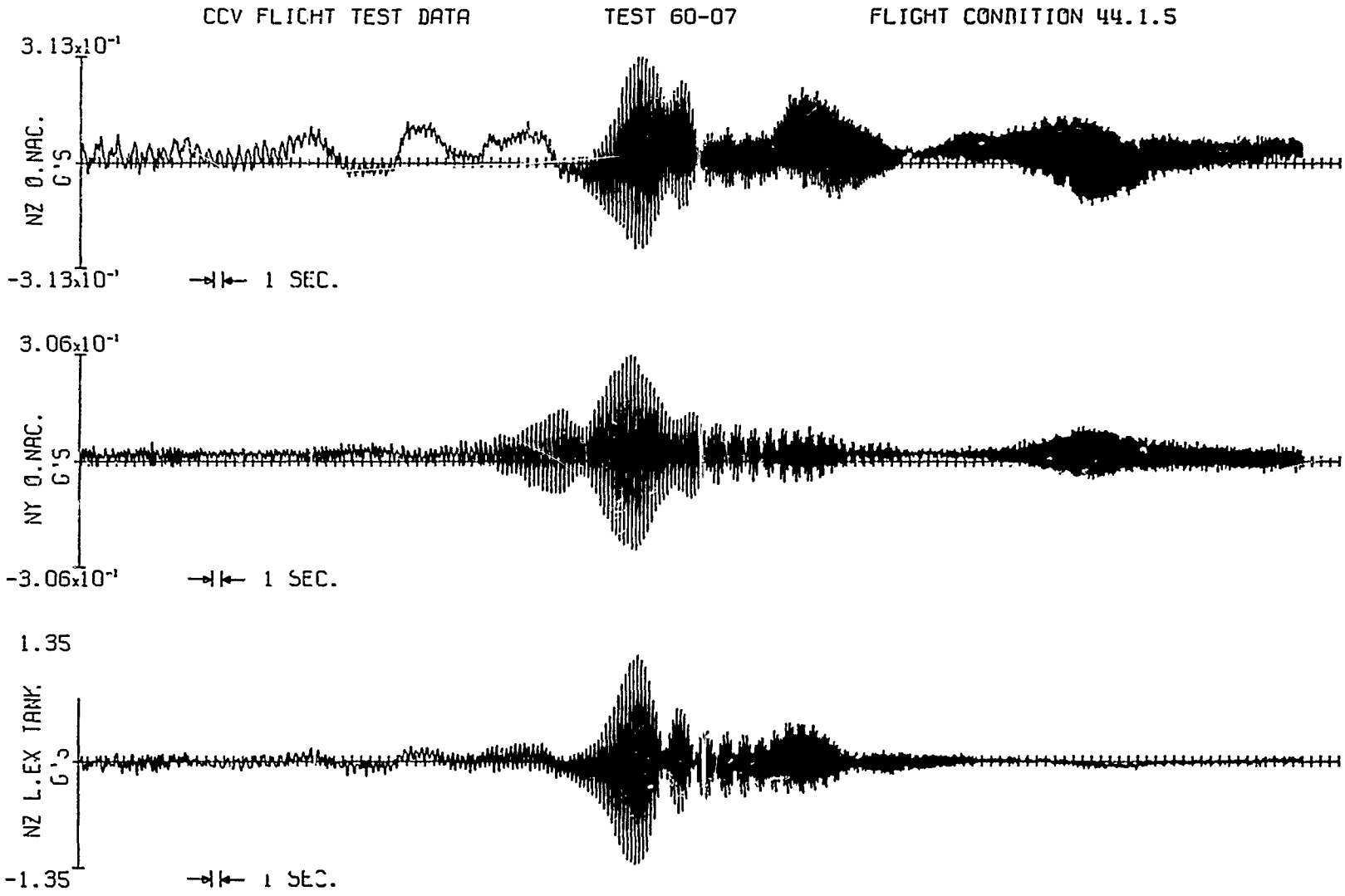


Figure 10. Flight Test Response Data for Flight Condition 44.1.5 (Continued)

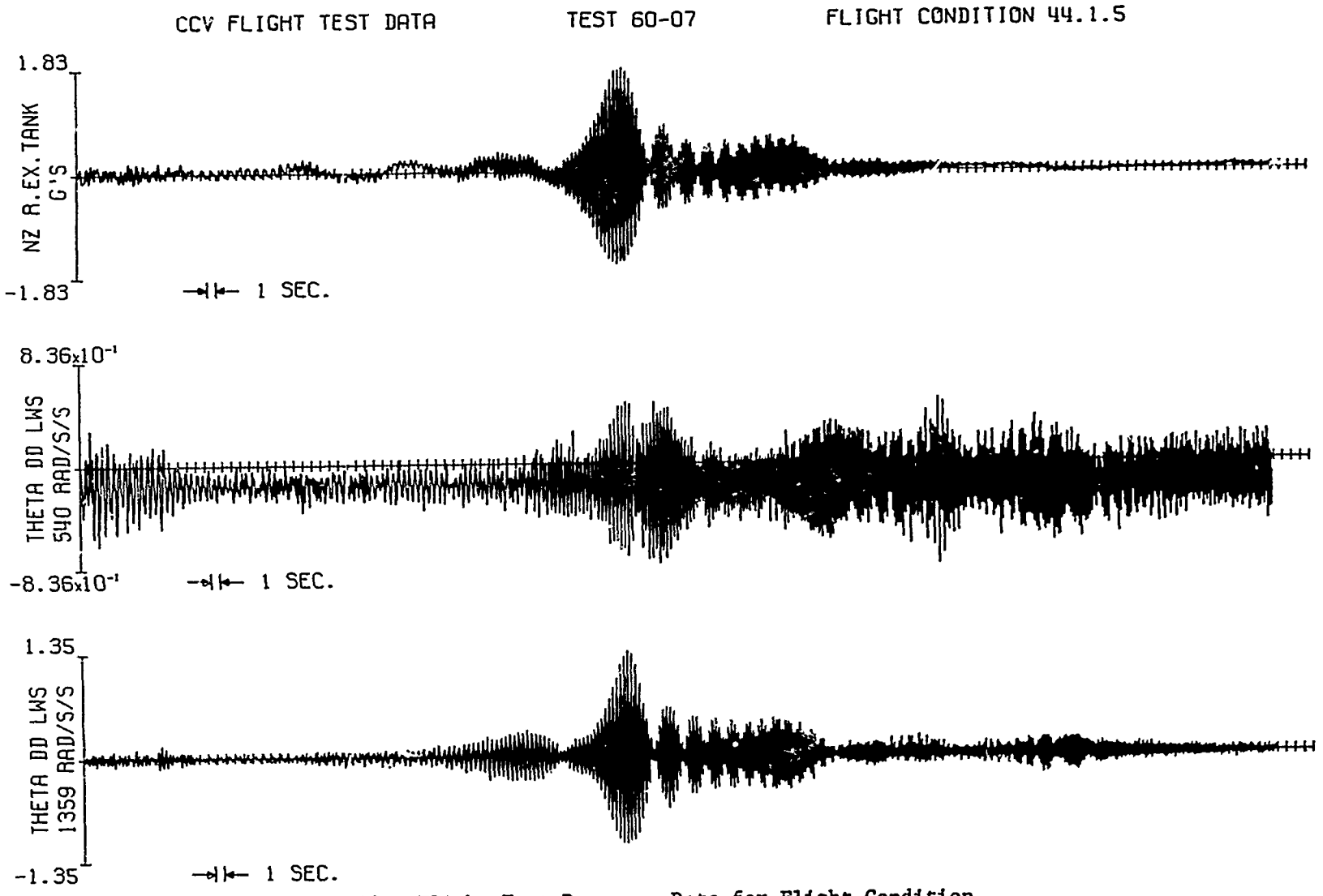


Figure 10. Flight Test Response Data for Flight Condition 44.1.5 (Continued)

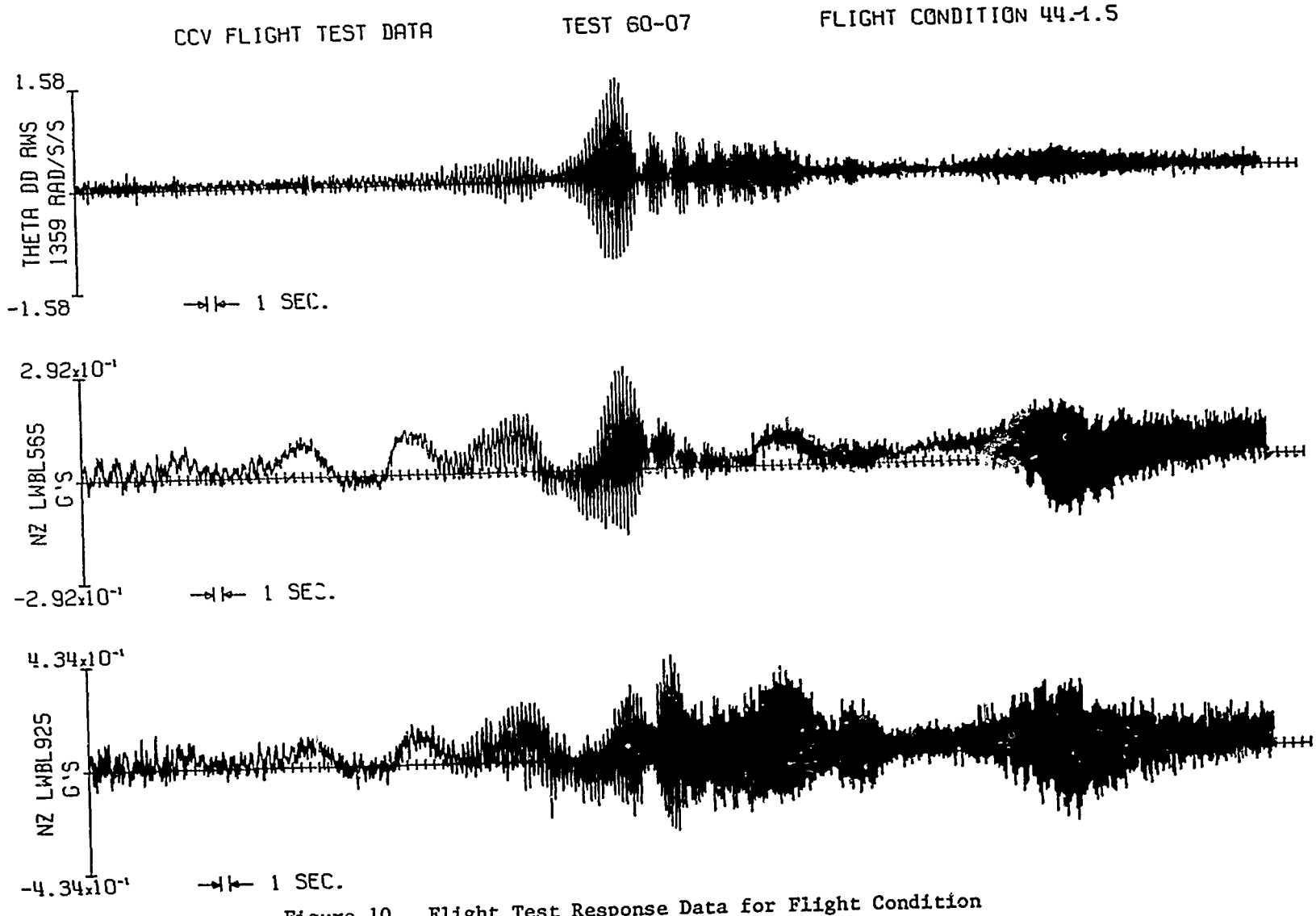


Figure 10. Flight Test Response Data for Flight Condition 44.1.5 (Continued)

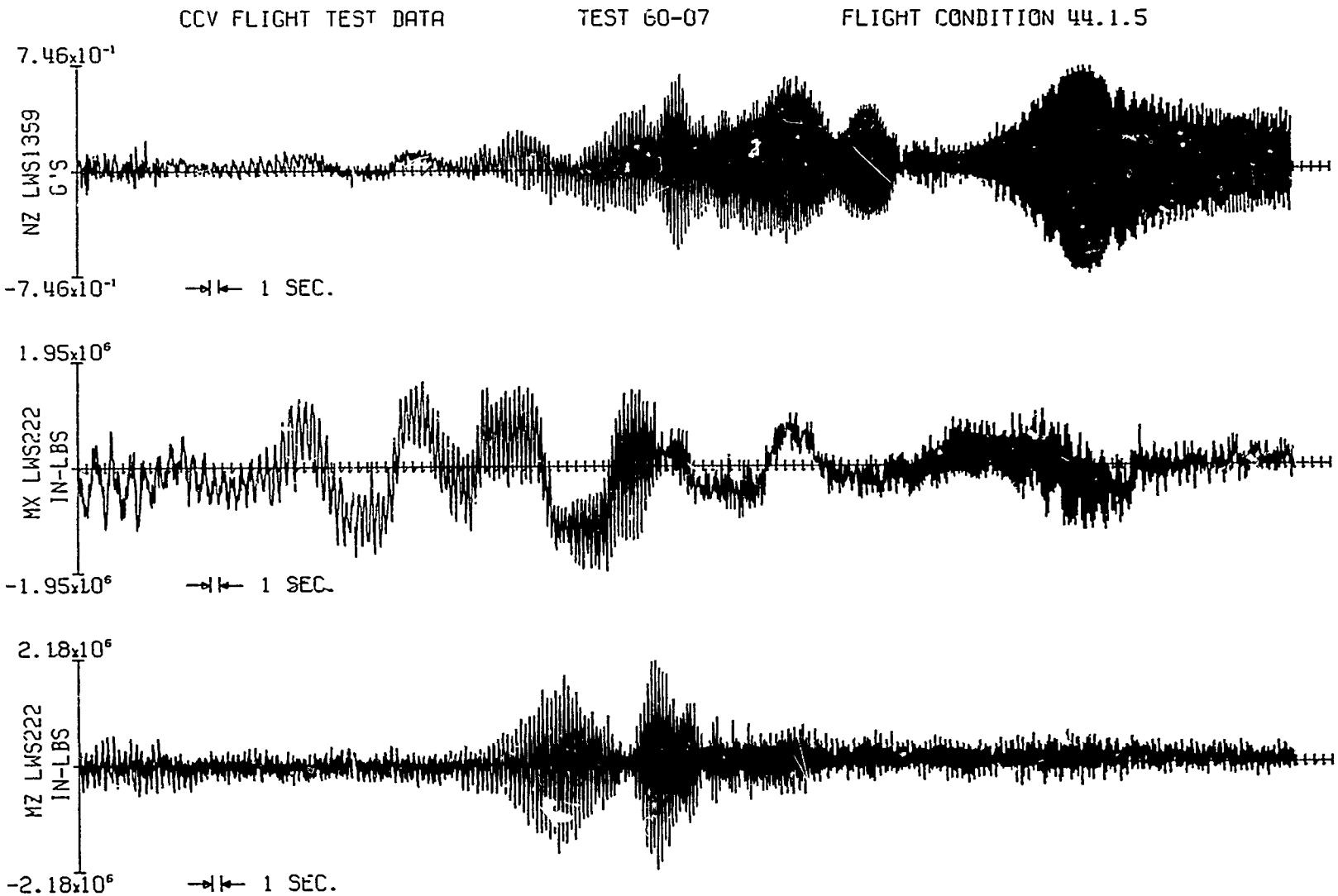


Figure 10. Flight Test Response Data for Flight Condition 44.1.5 (Continued)

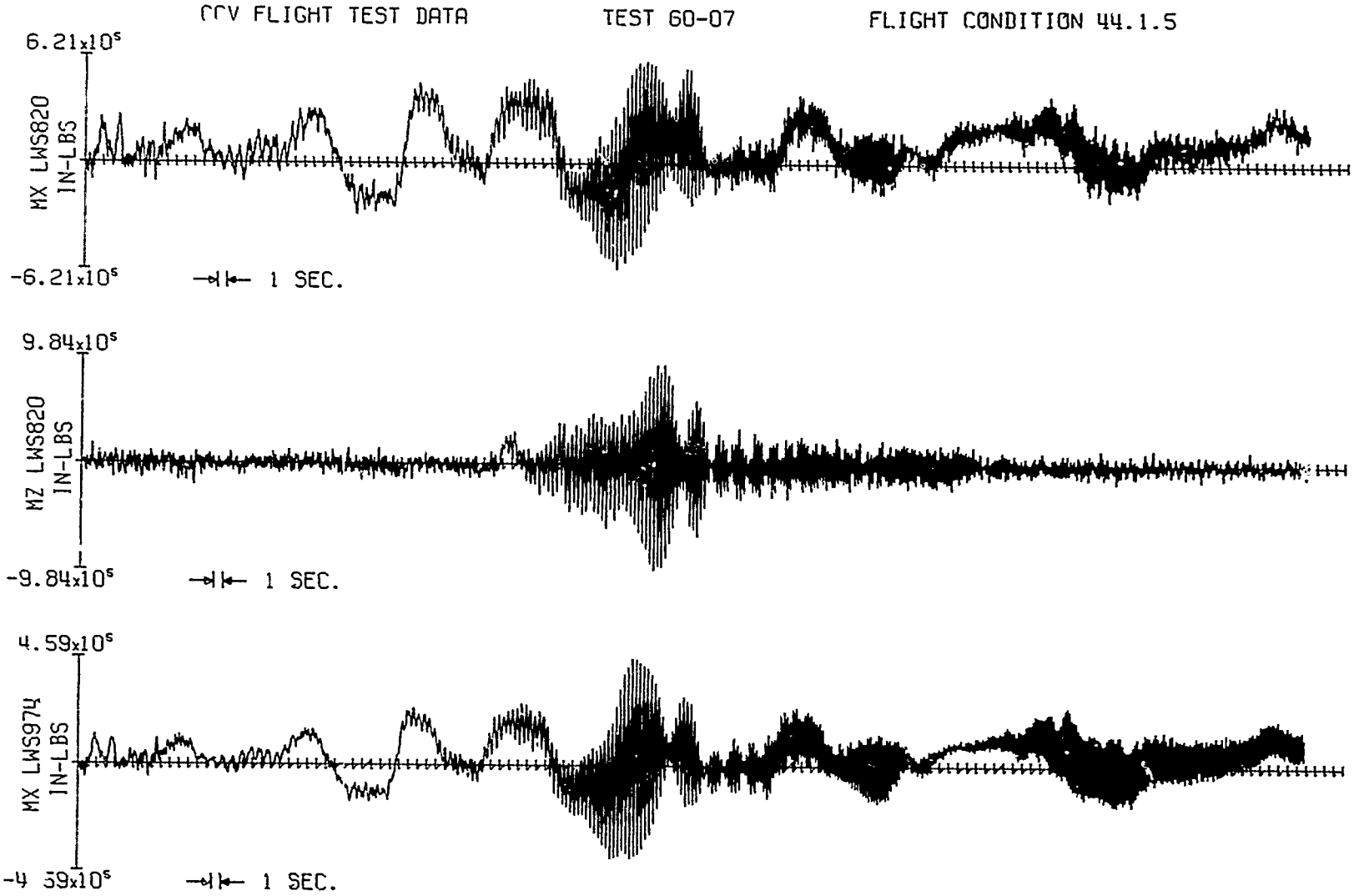


Figure 10. Flight Test Response Data for Flight Condition 44.1.5 (Continued)

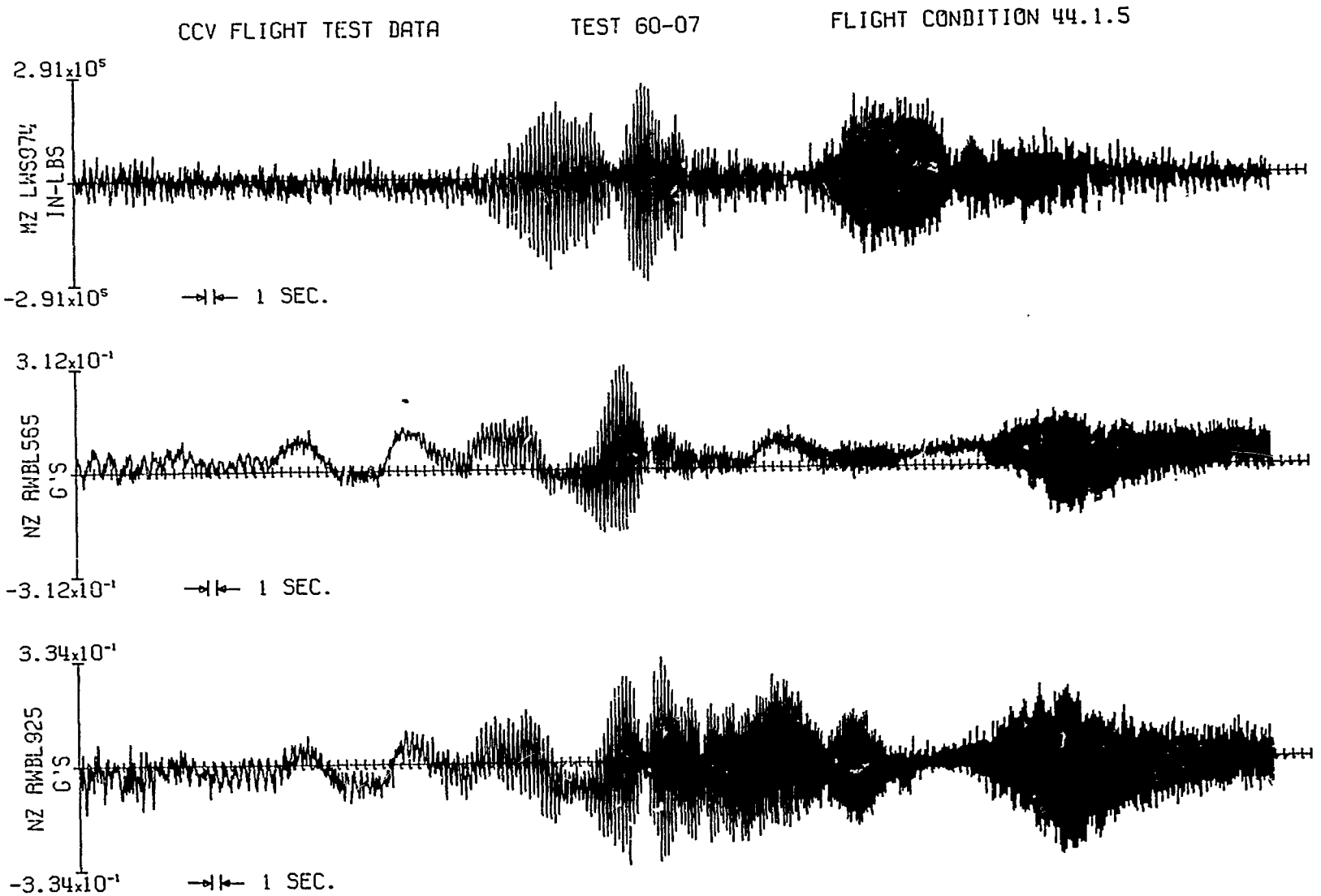


Figure 10. Flight Test Response Data for Flight Condition 44.1.5 (Continued)

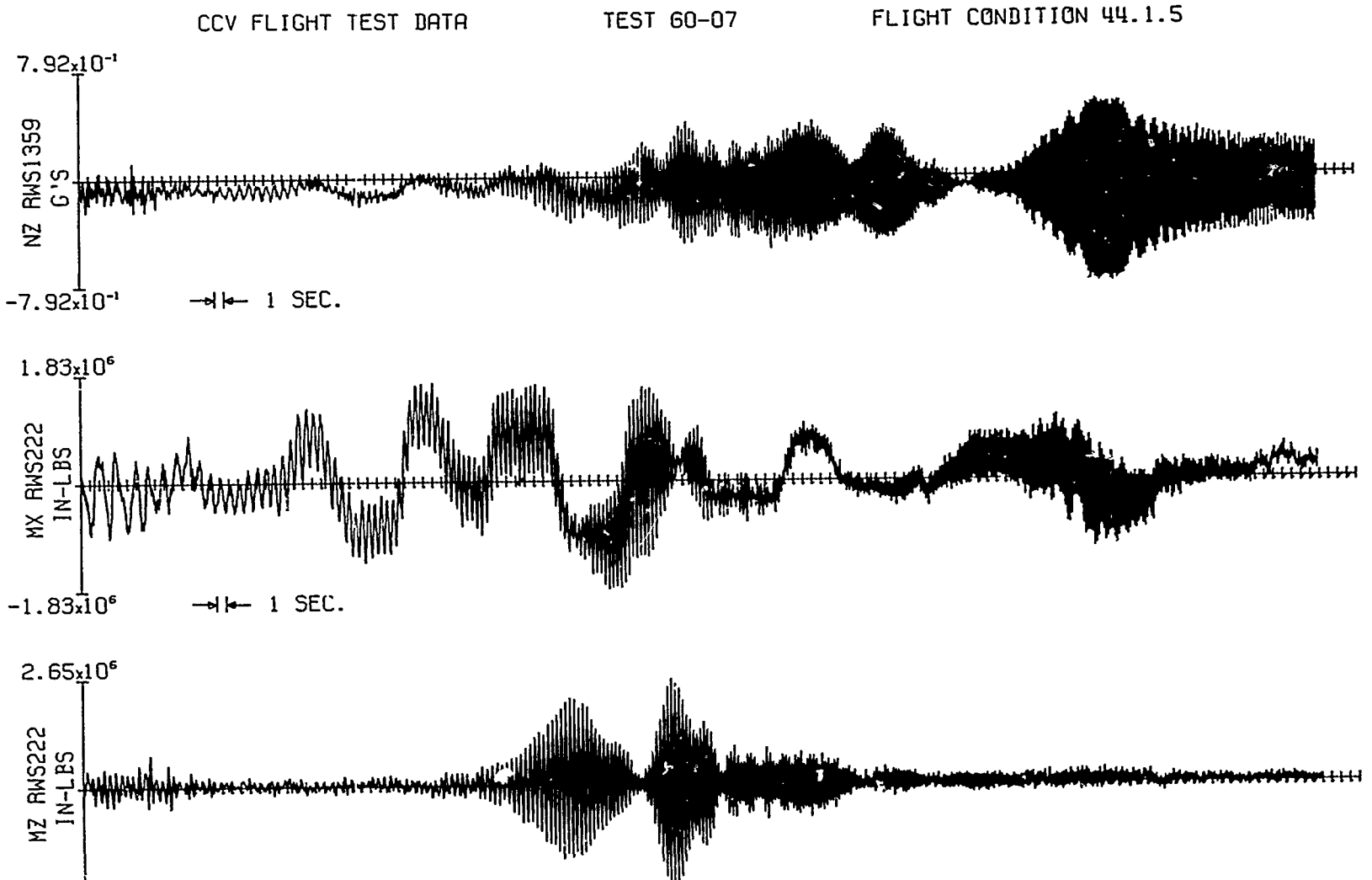


Figure 10. Flight Test Response Data for Flight Condition 44.1.5 (Continued)

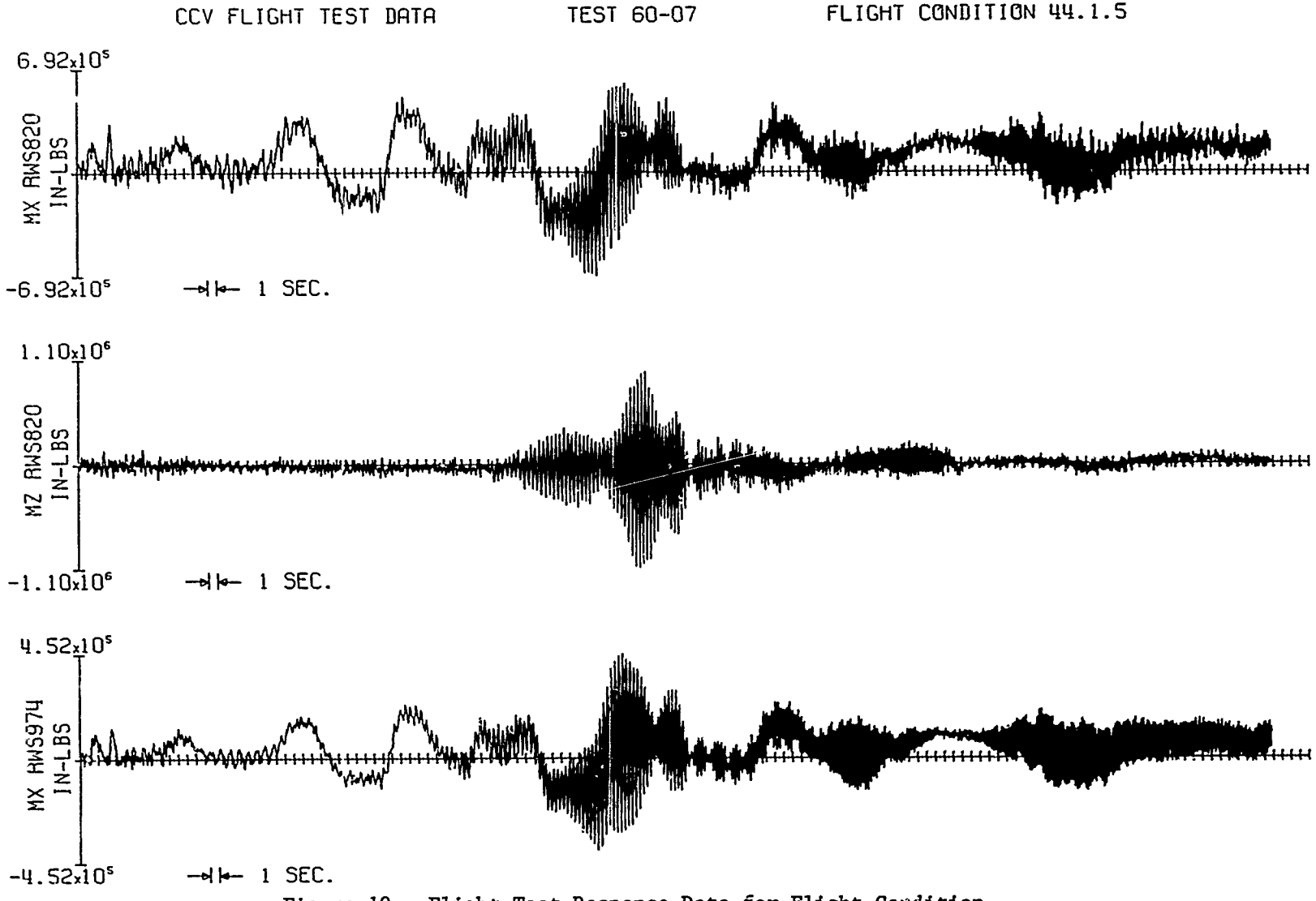


Figure 10. Flight Test Response Data for Flight Condition 44.1.5 (Continued)

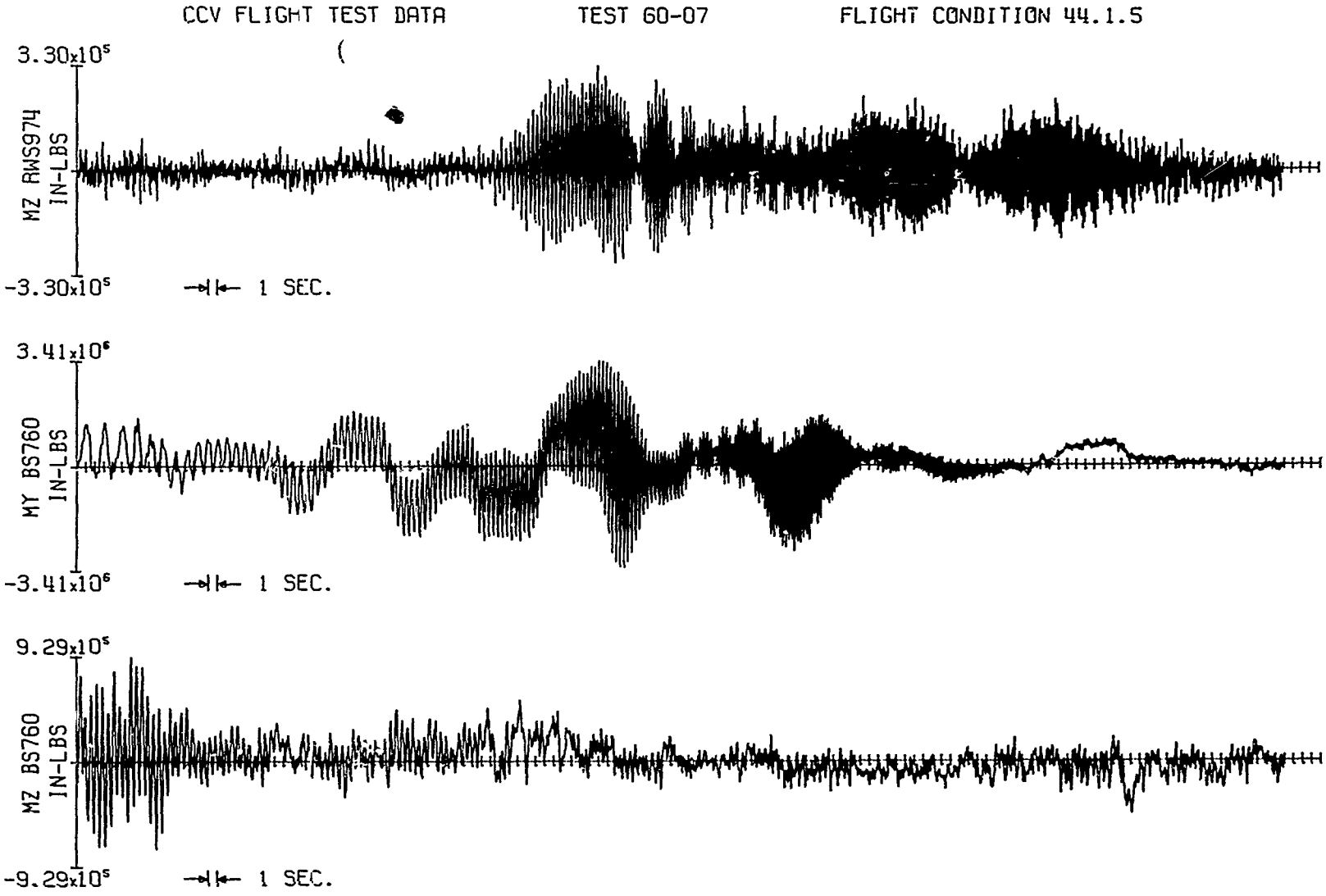


Figure 10. Flight Test Response Data for Flight Condition 44.1.5 (Continued)

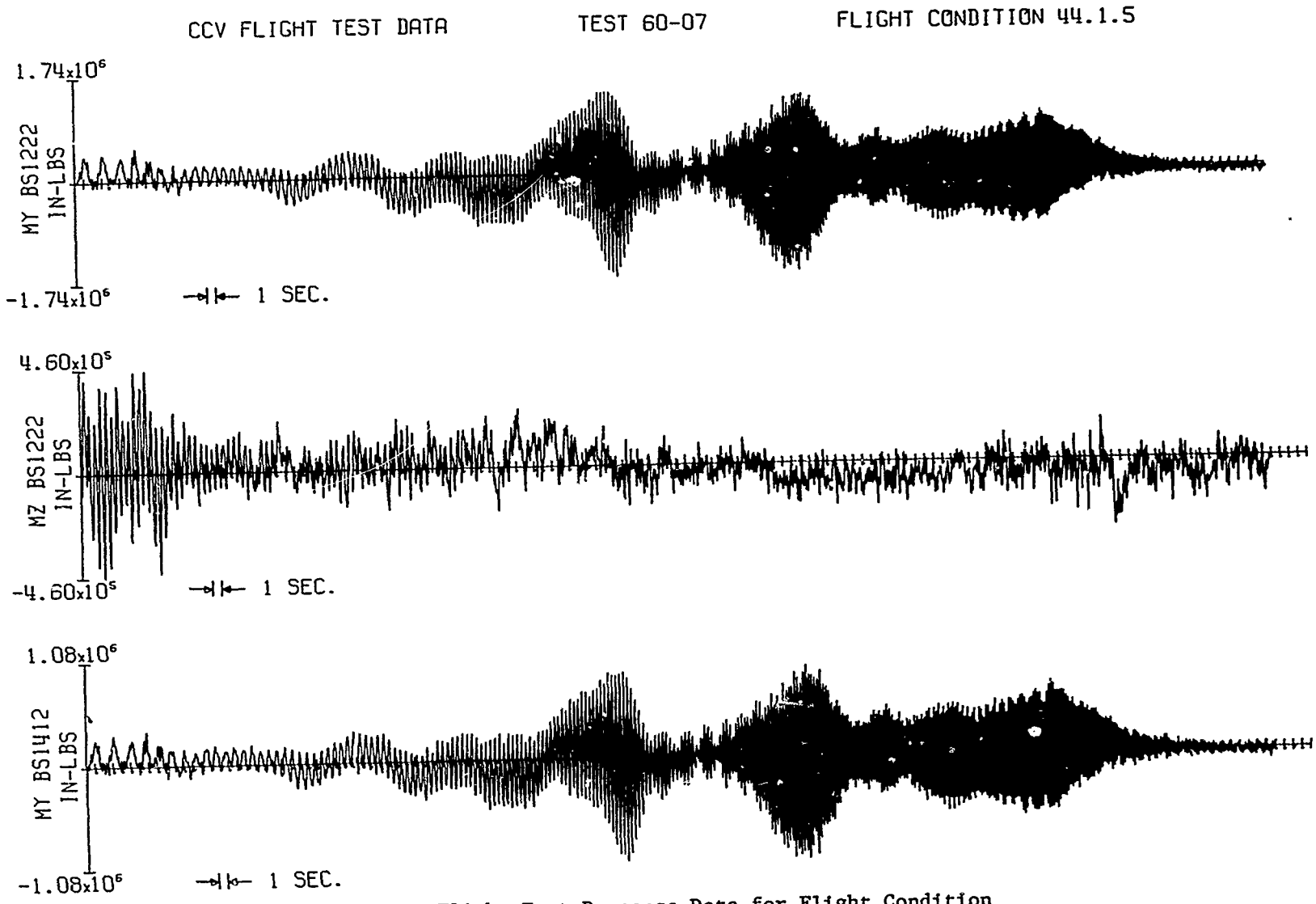


Figure 10. Flight Test Response Data for Flight Condition 44.1.5 (Continued)

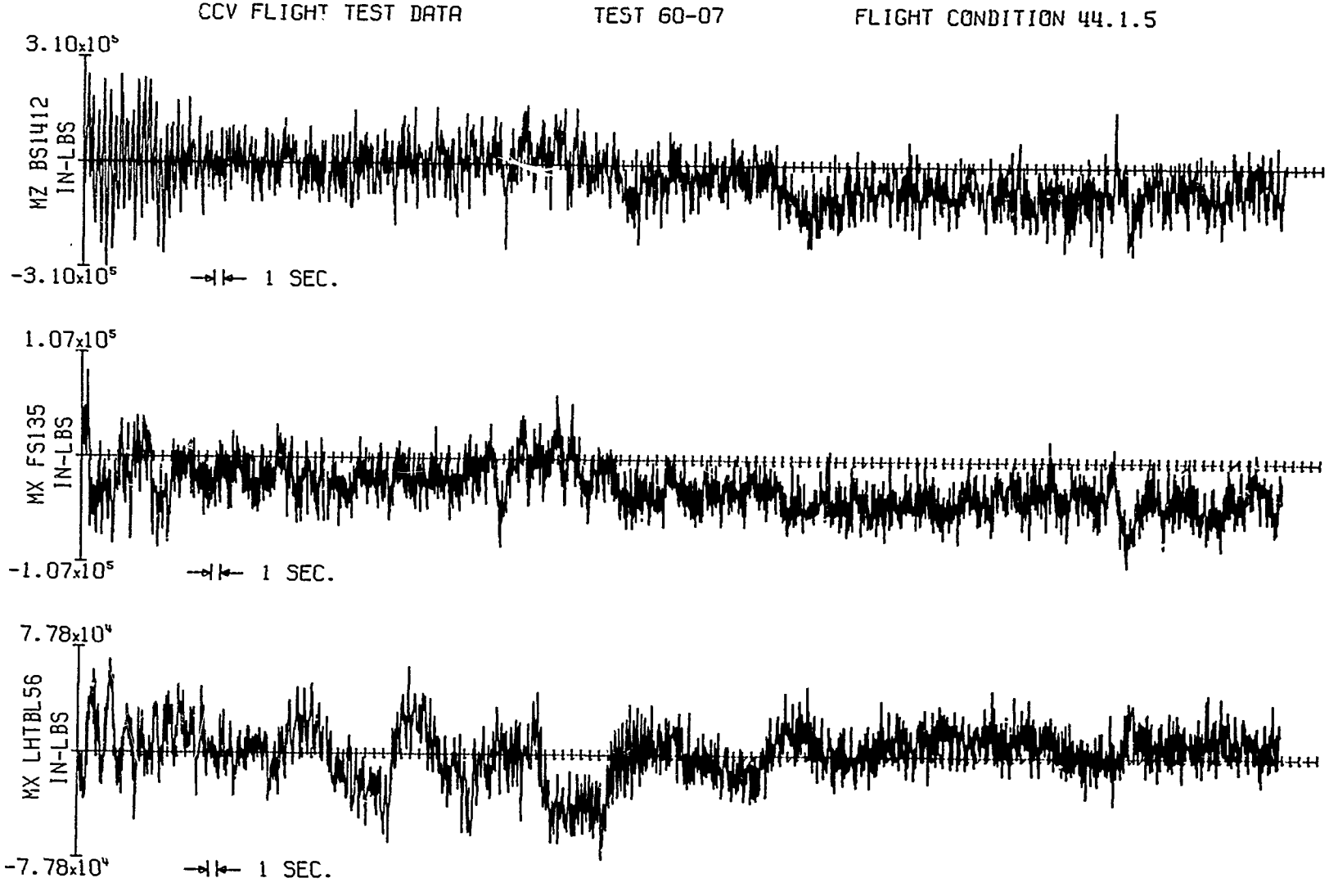


Figure 10. Flight Test Response Data for Flight Condition 44.1.5 (Continued)

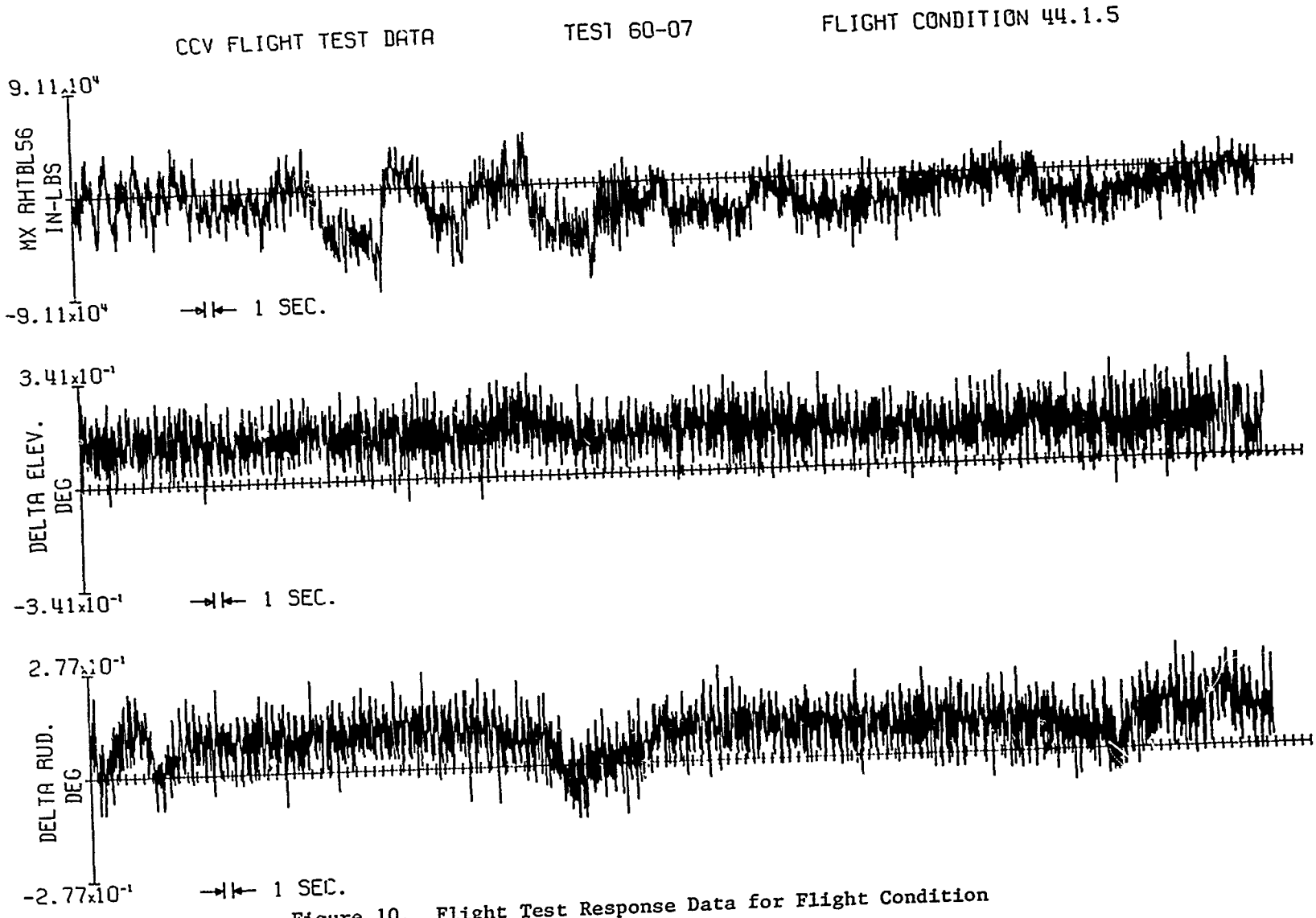


Figure 10. Flight Test Response Data for Flight Condition 44.1.5 (Continued)

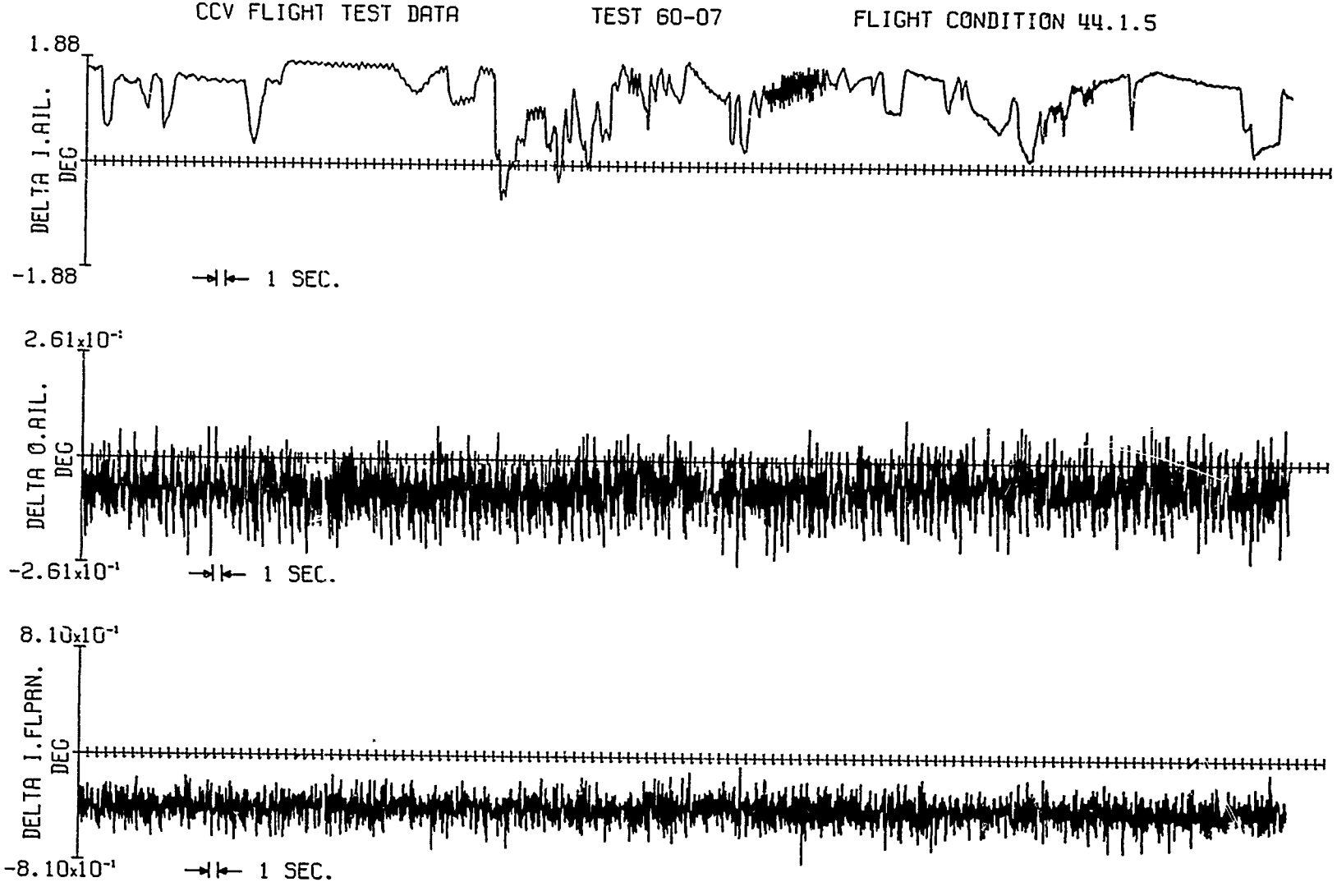


Figure 10. Flight Test Response Data for Flight Condition 44.1.5 (Continued)

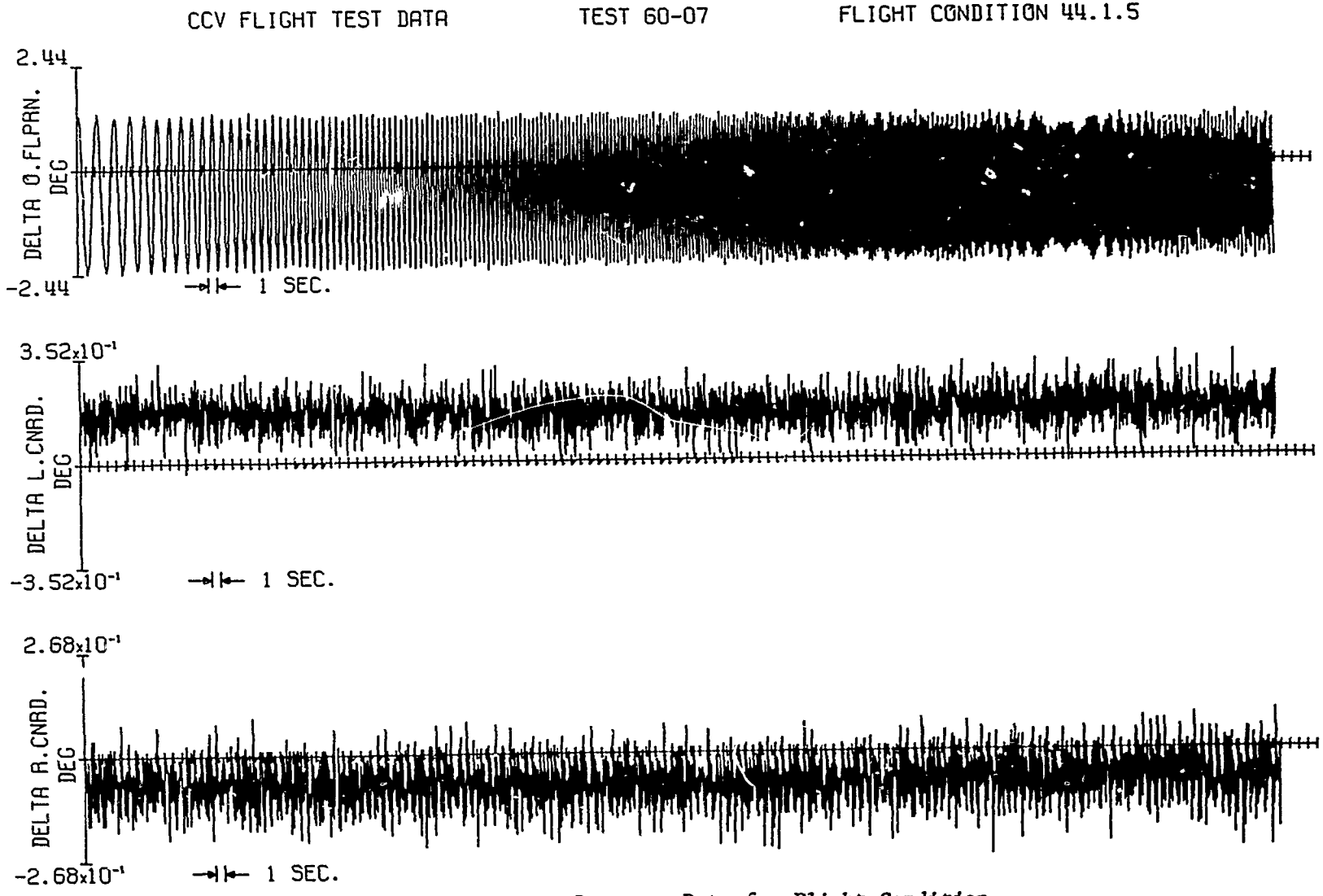


Figure 10. Flight Test Response Data for Flight Condition 44.1.5 (Continued)

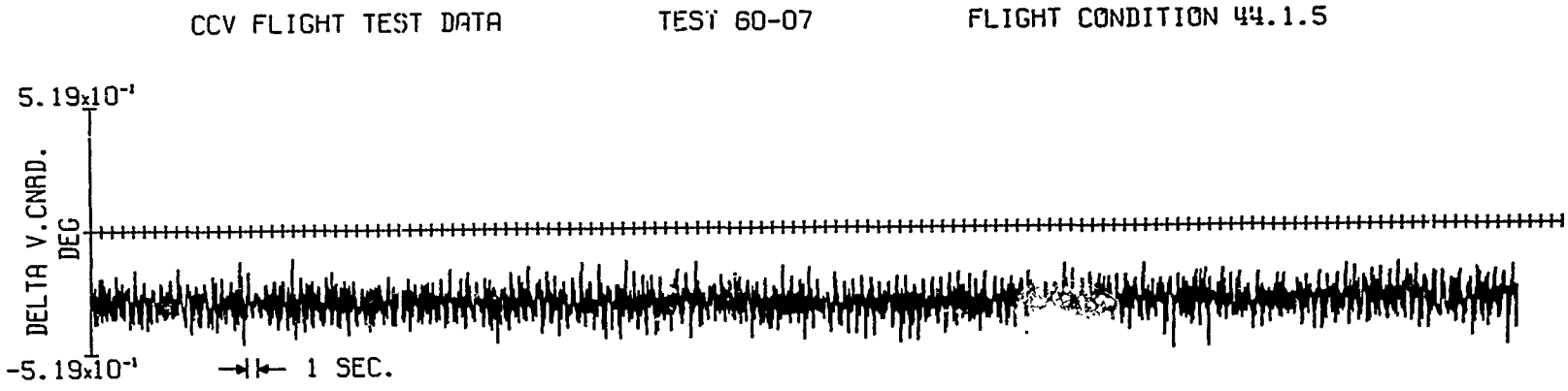


Figure 10. Flight Test Response Data for Flight Condition 44.1.5 (Concluded)

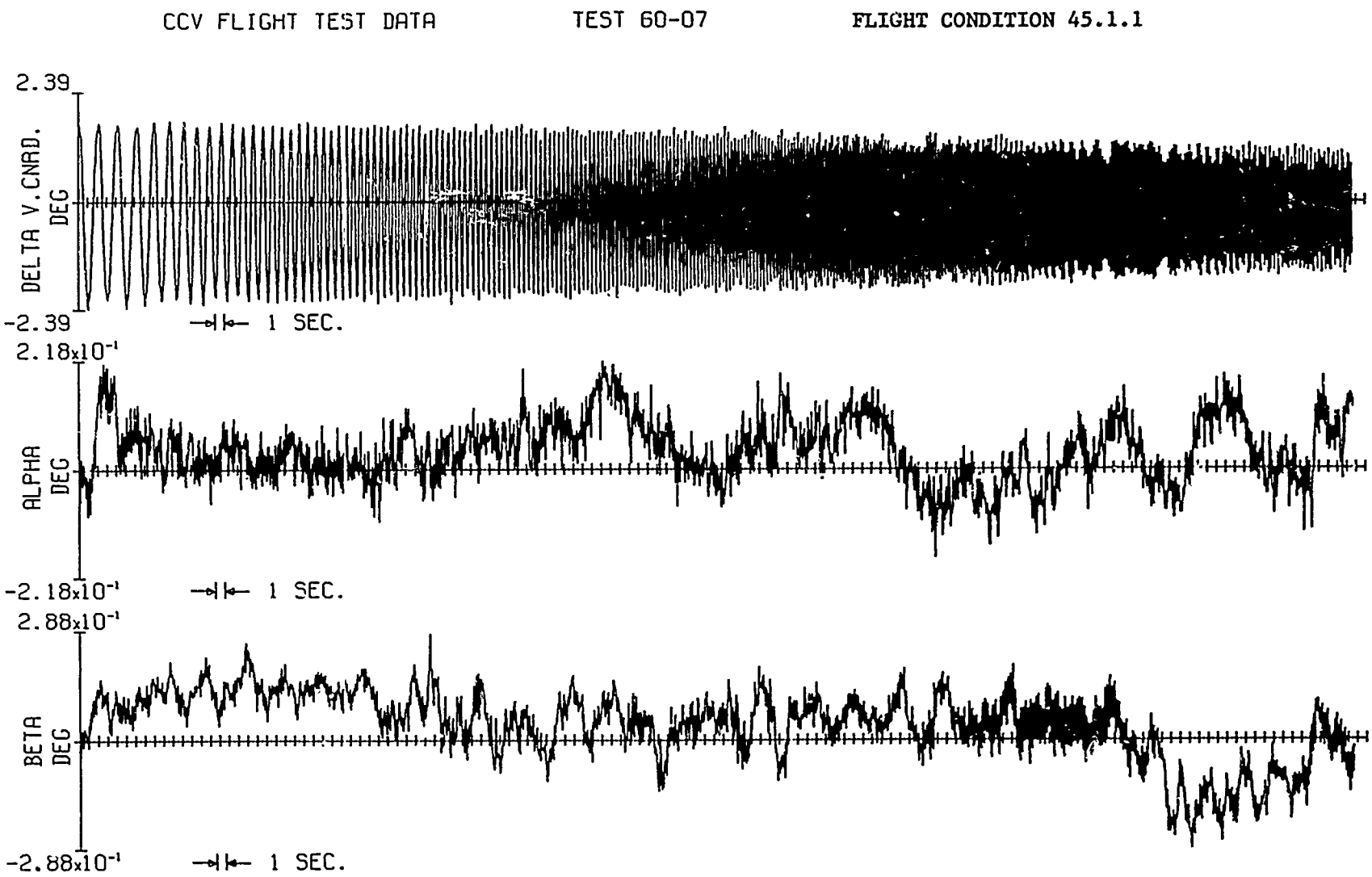


Figure 11. Flight Test Response Data for Flight Condition 45.1.1

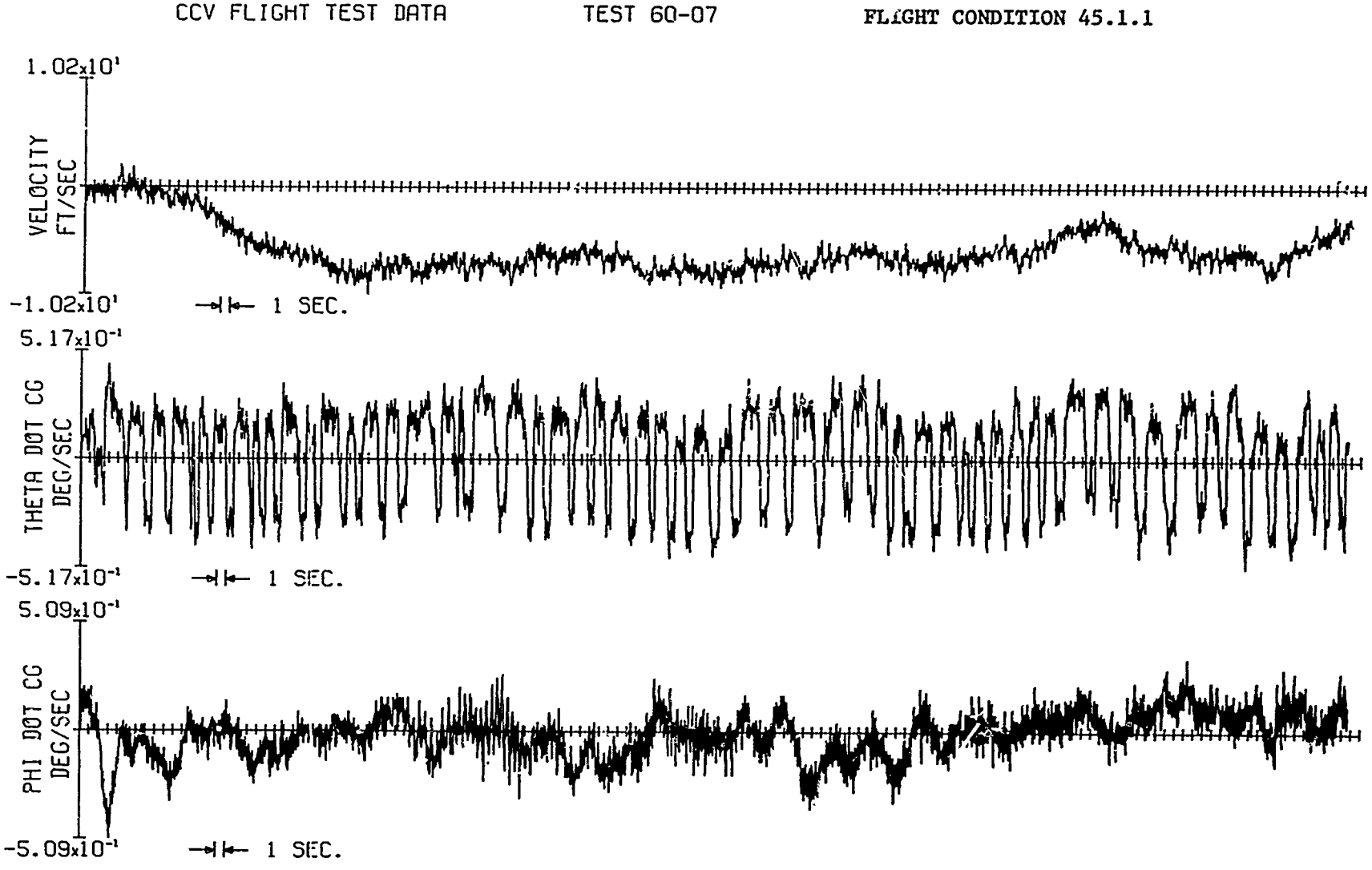


Figure 11. Flight Test Response Data for Flight Condition 45.1.1 (Continued)

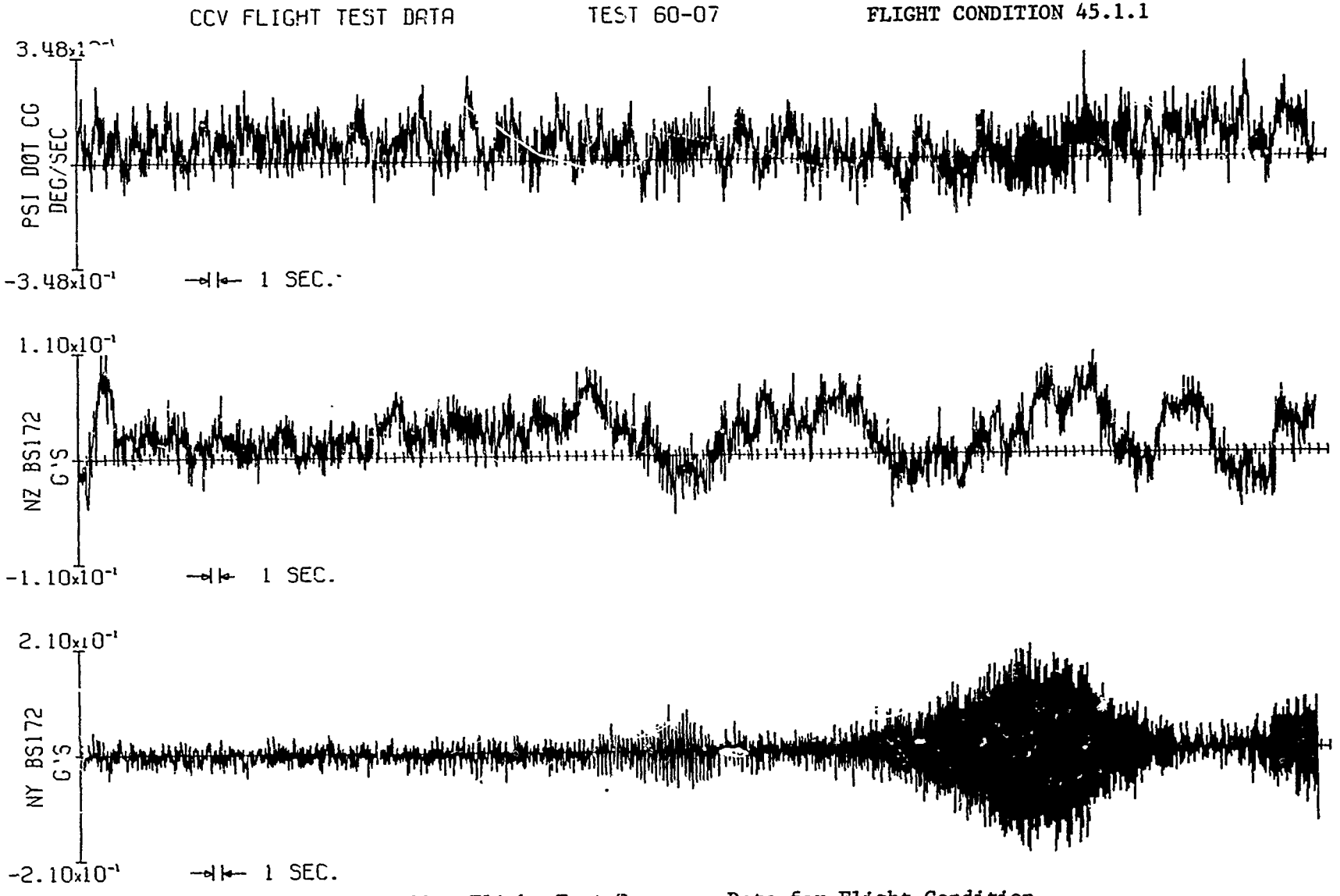


Figure 11. Flight Test Response Data for Flight Condition 45.1.1 (Continued)

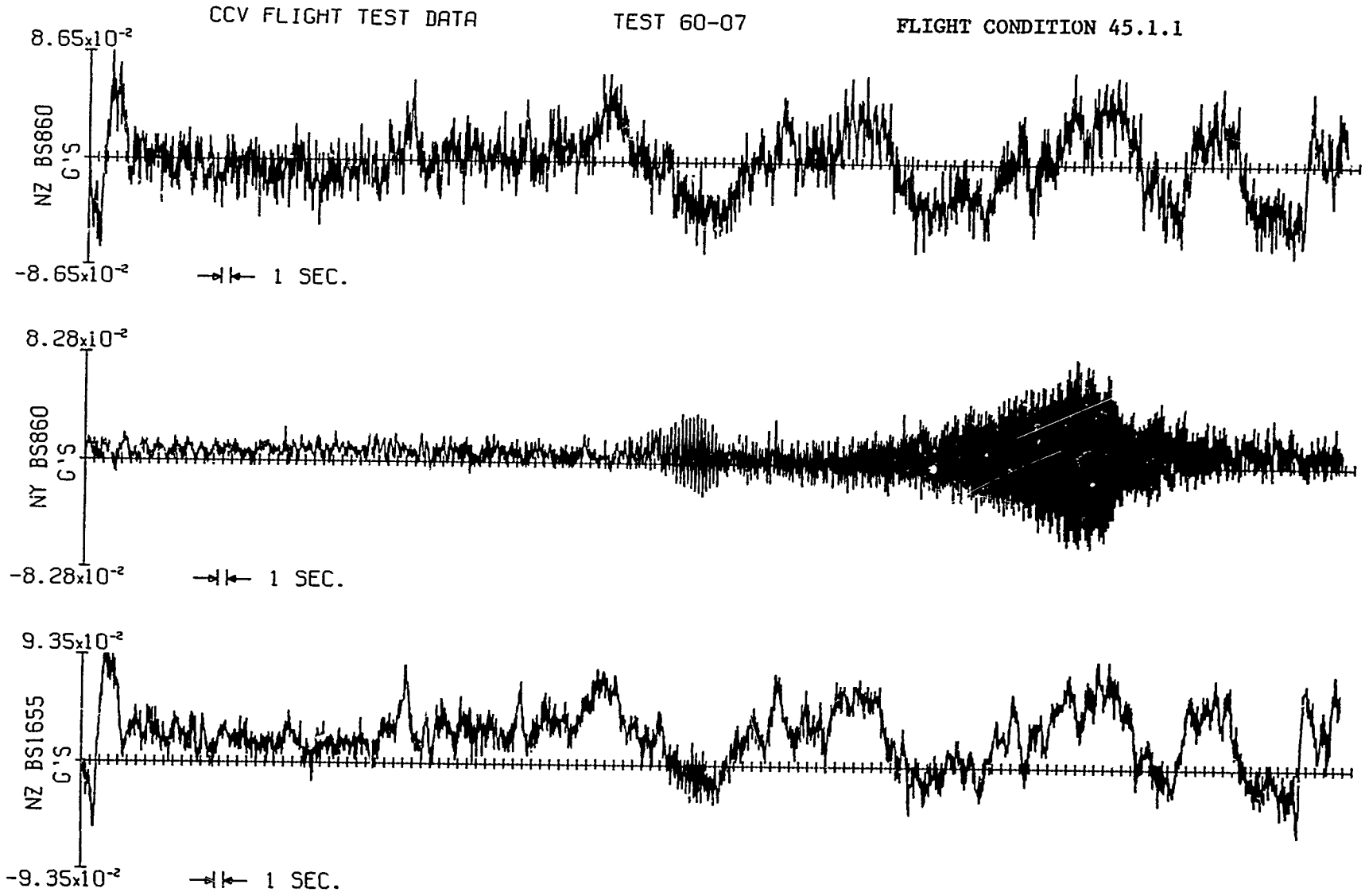


Figure 11. Flight Test Response Data for Flight Condition 45.1.1 (Continued)

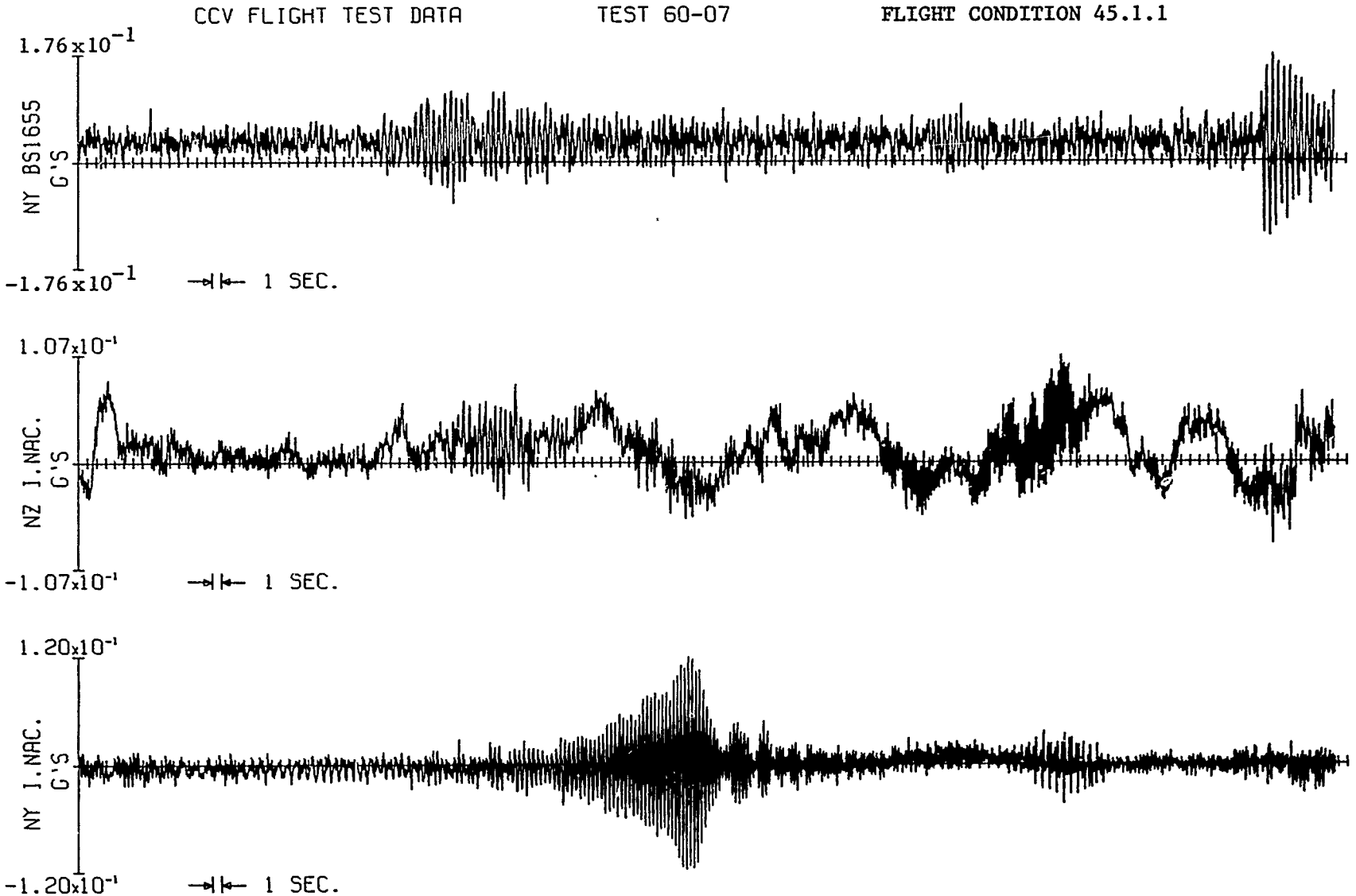


Figure 11. Flight Test Response Data for Flight Condition 45.1.1 (Continued)

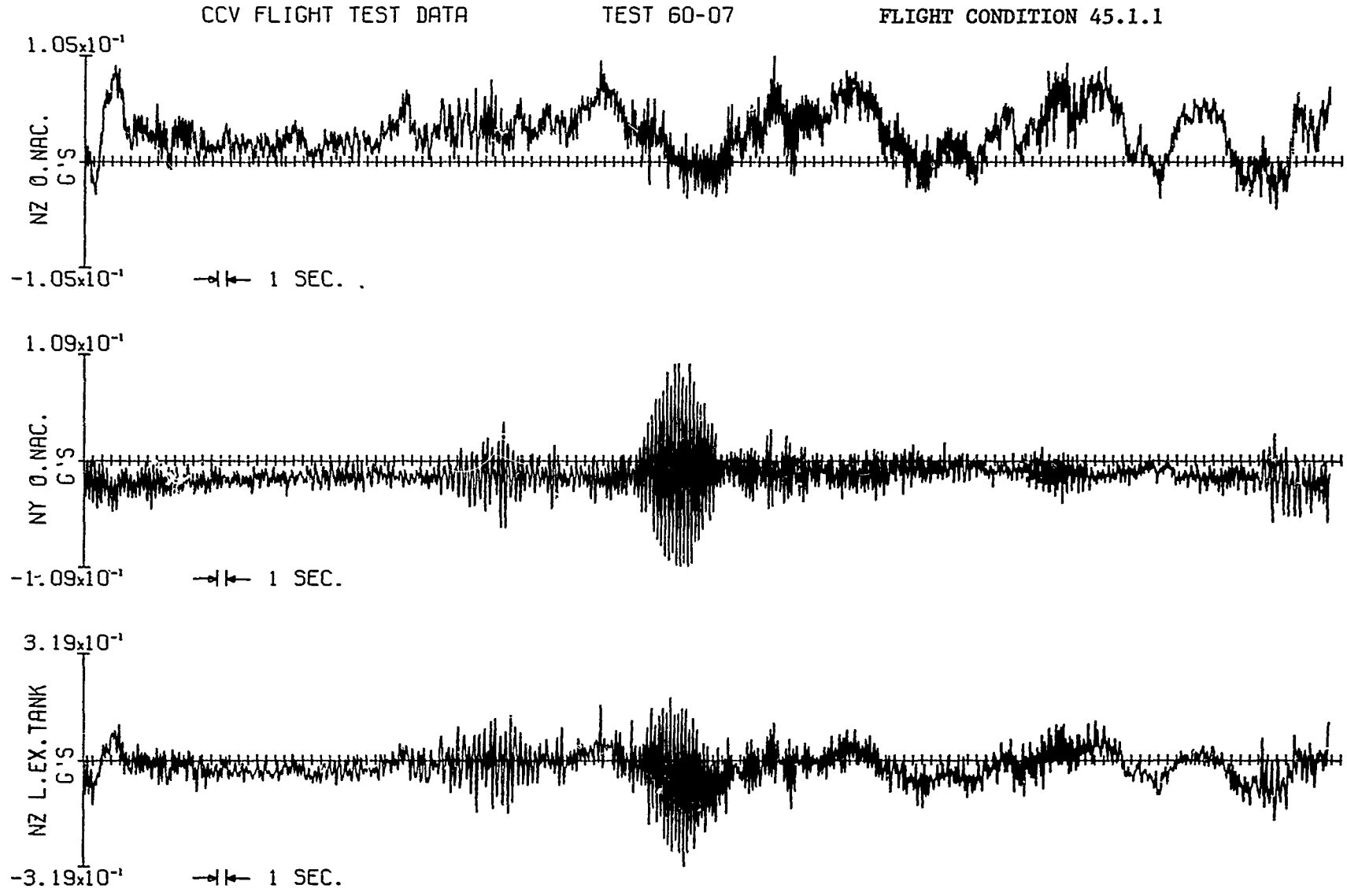


Figure 11. Flight Test Response Data for Flight Condition 45.1.1 (Continued)

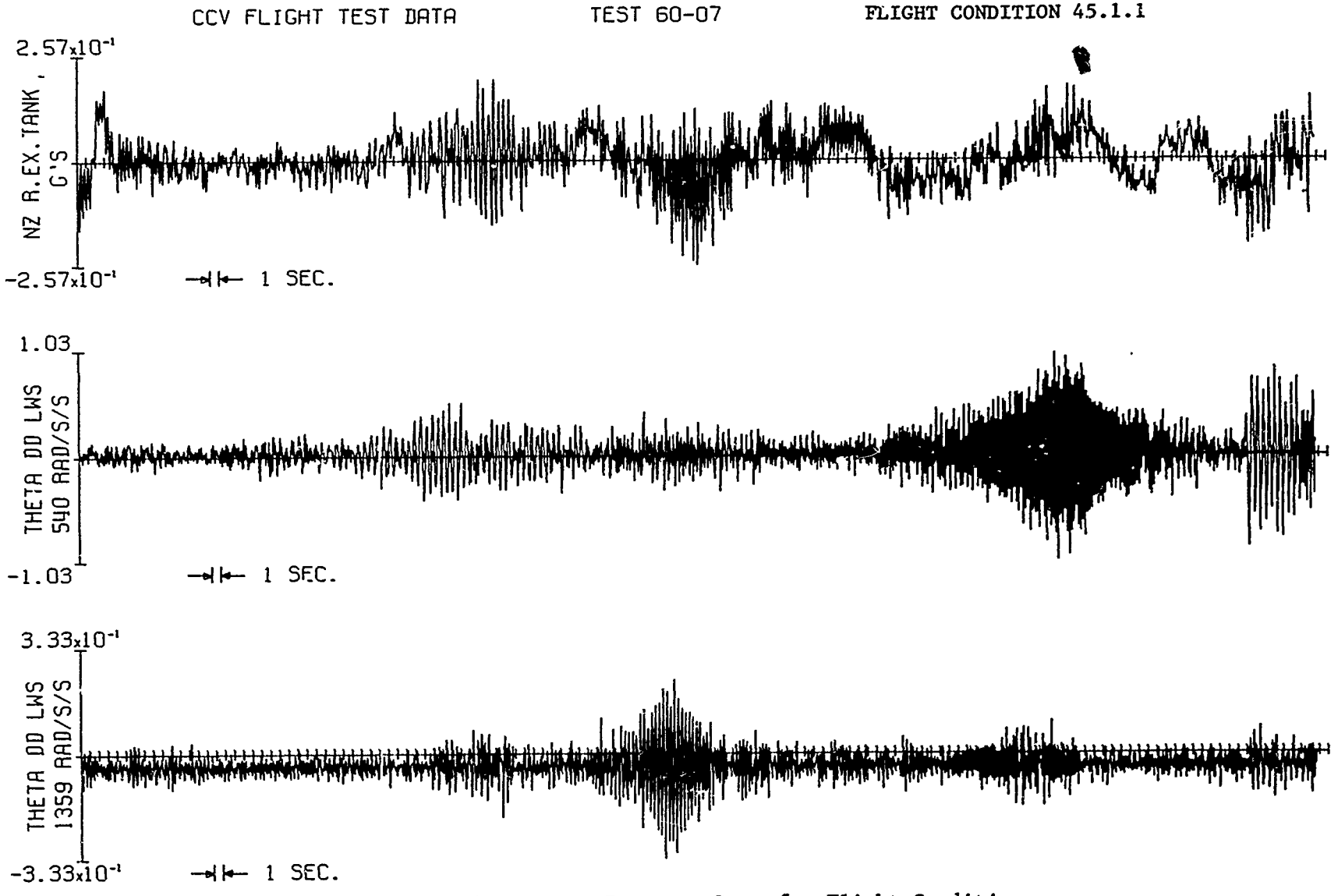


Figure 11. Flight Test Response Data for Flight Condition 45.1.1 (Continued)

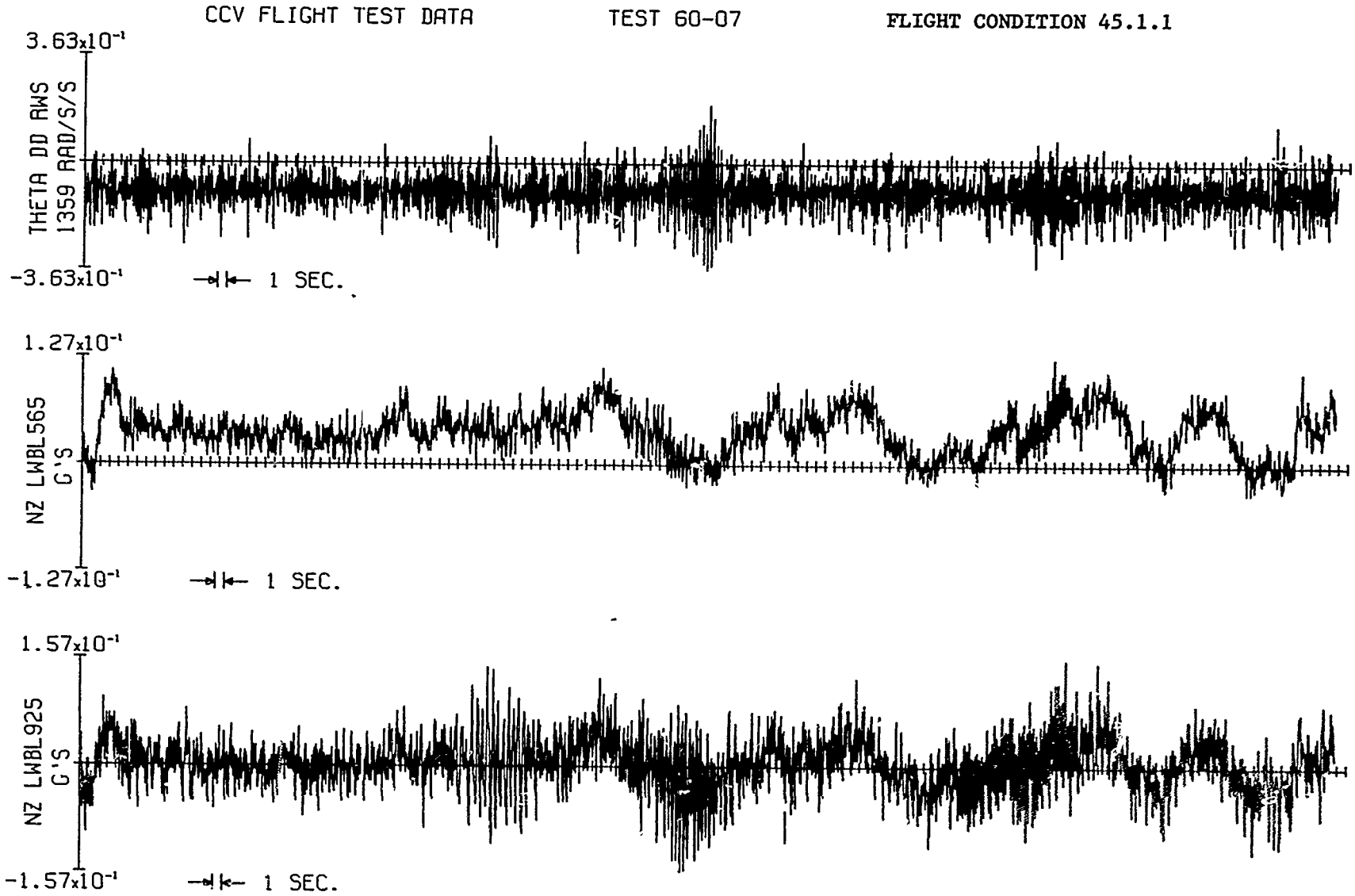


Figure 11. Flight Test Response Data for Flight Condition 45.1.1 (Continued)

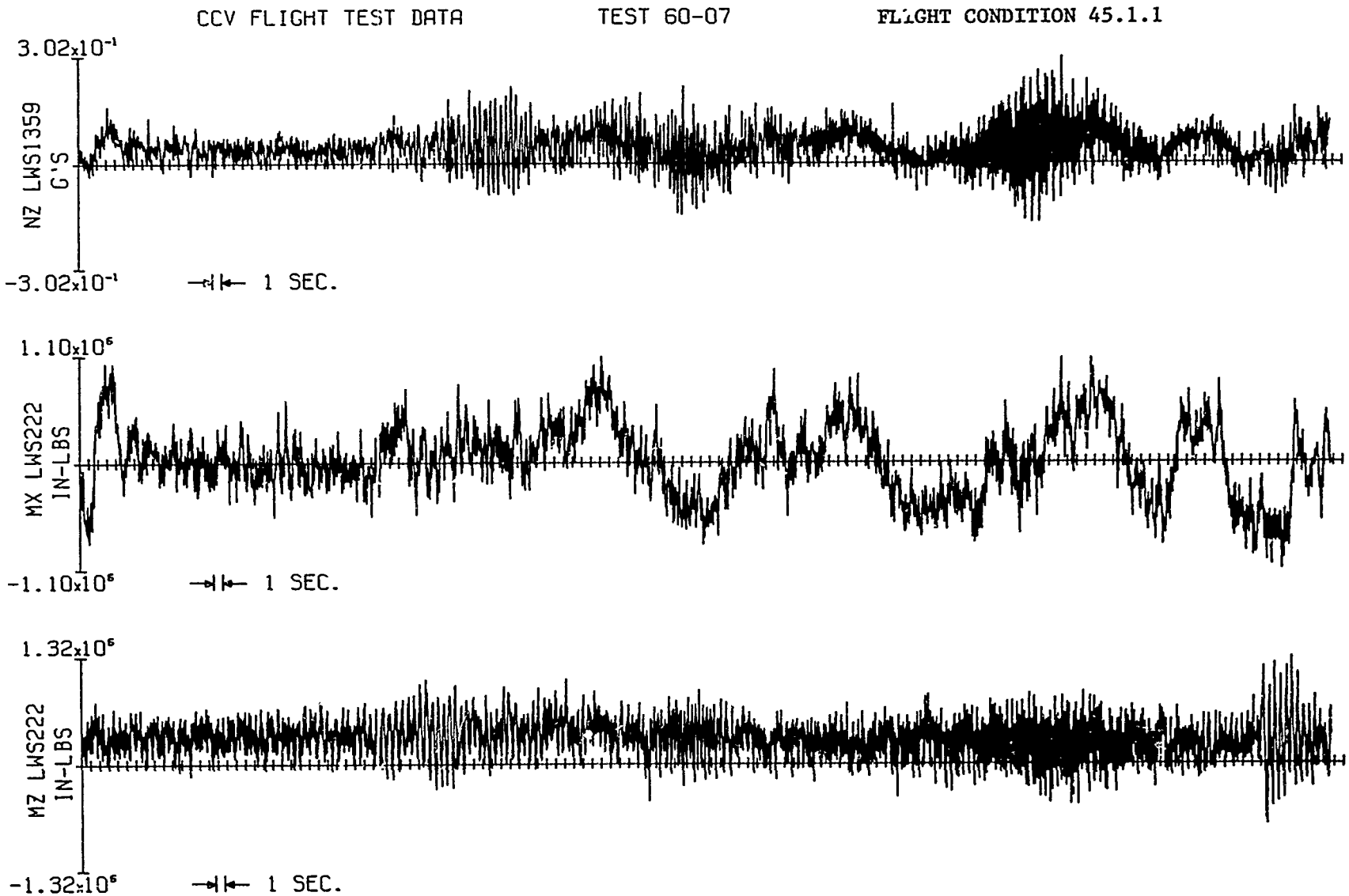


Figure 11. Flight Test Response Data for Flight Condition 45.1.1 (Continued)

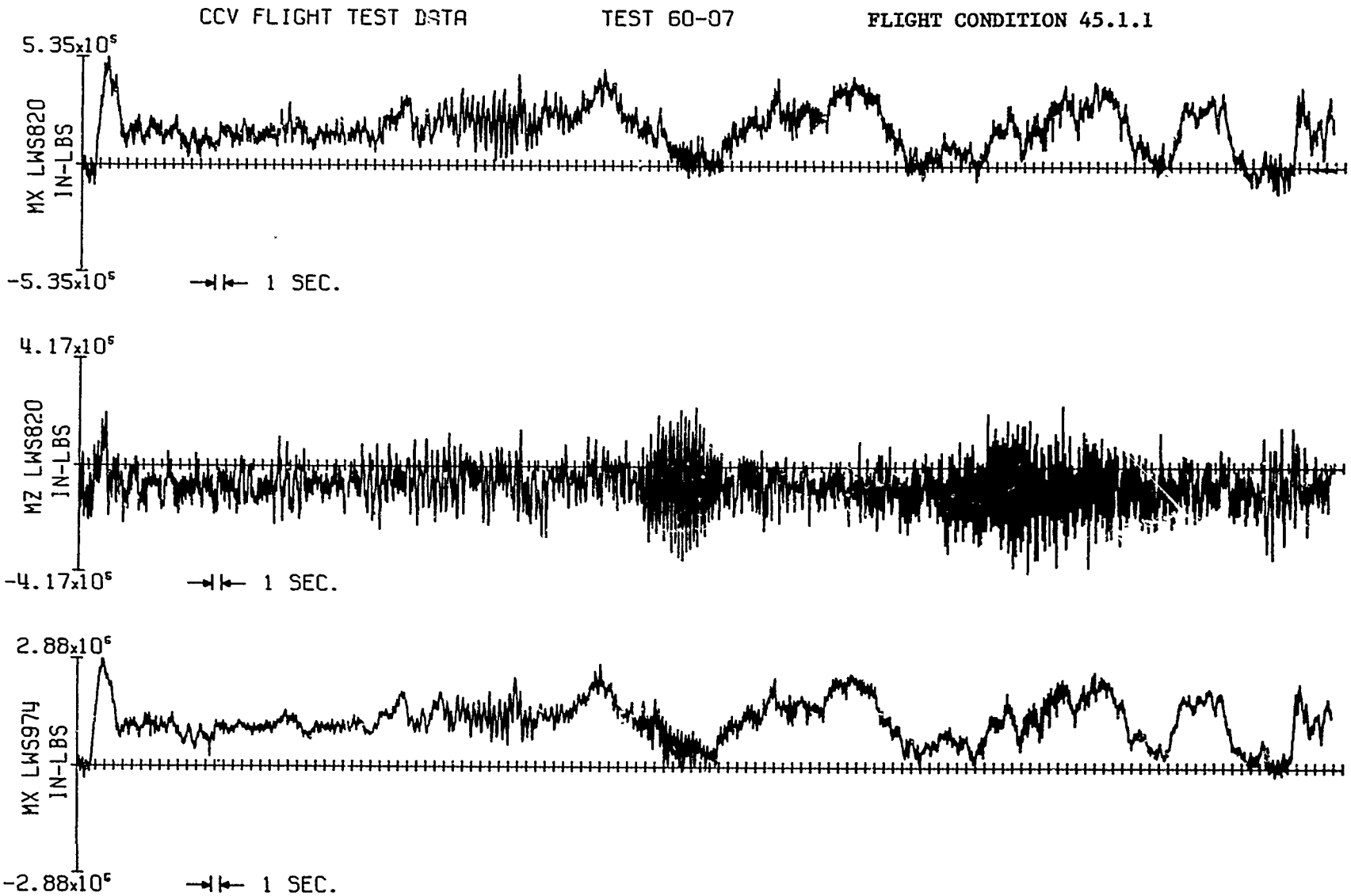


Figure 11. Flight Test Response Data for Flight Condition 45.1.1 (Continued)

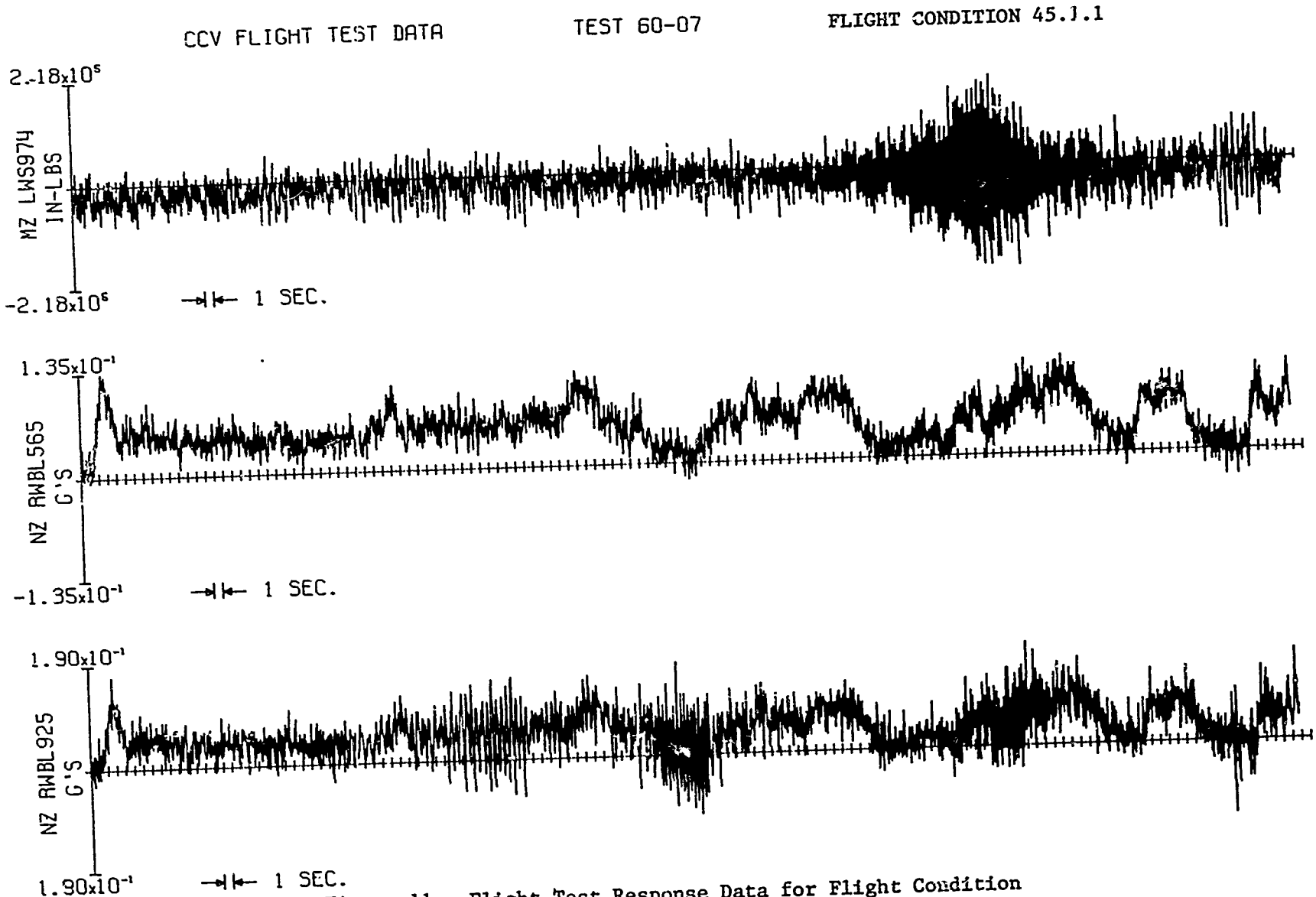


Figure 11. Flight Test Response Data for Flight Condition 45.1.1 (Continued)

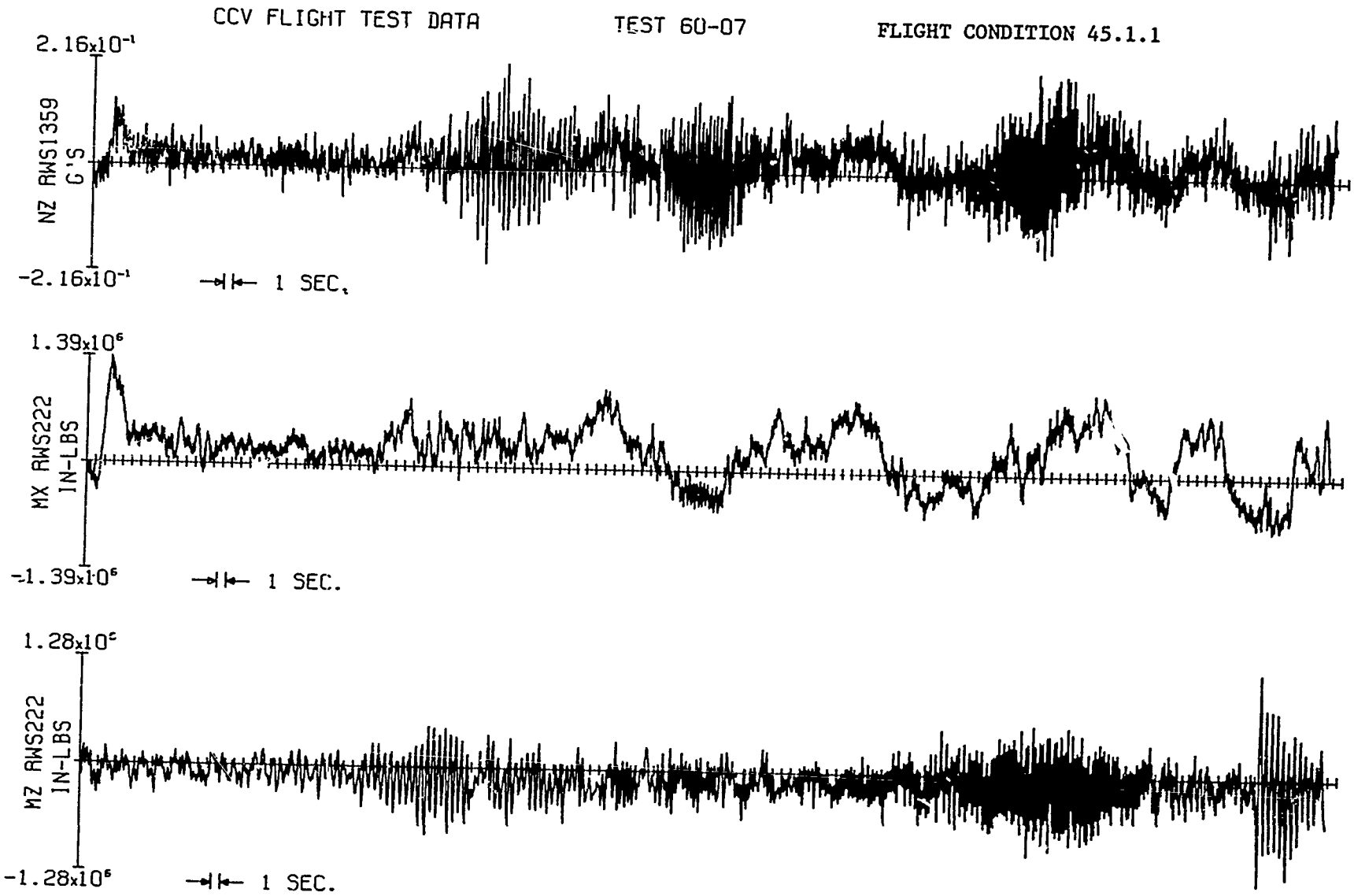


Figure 11. Flight Test Response Data for Flight Condition 45.1.1 (Continued)

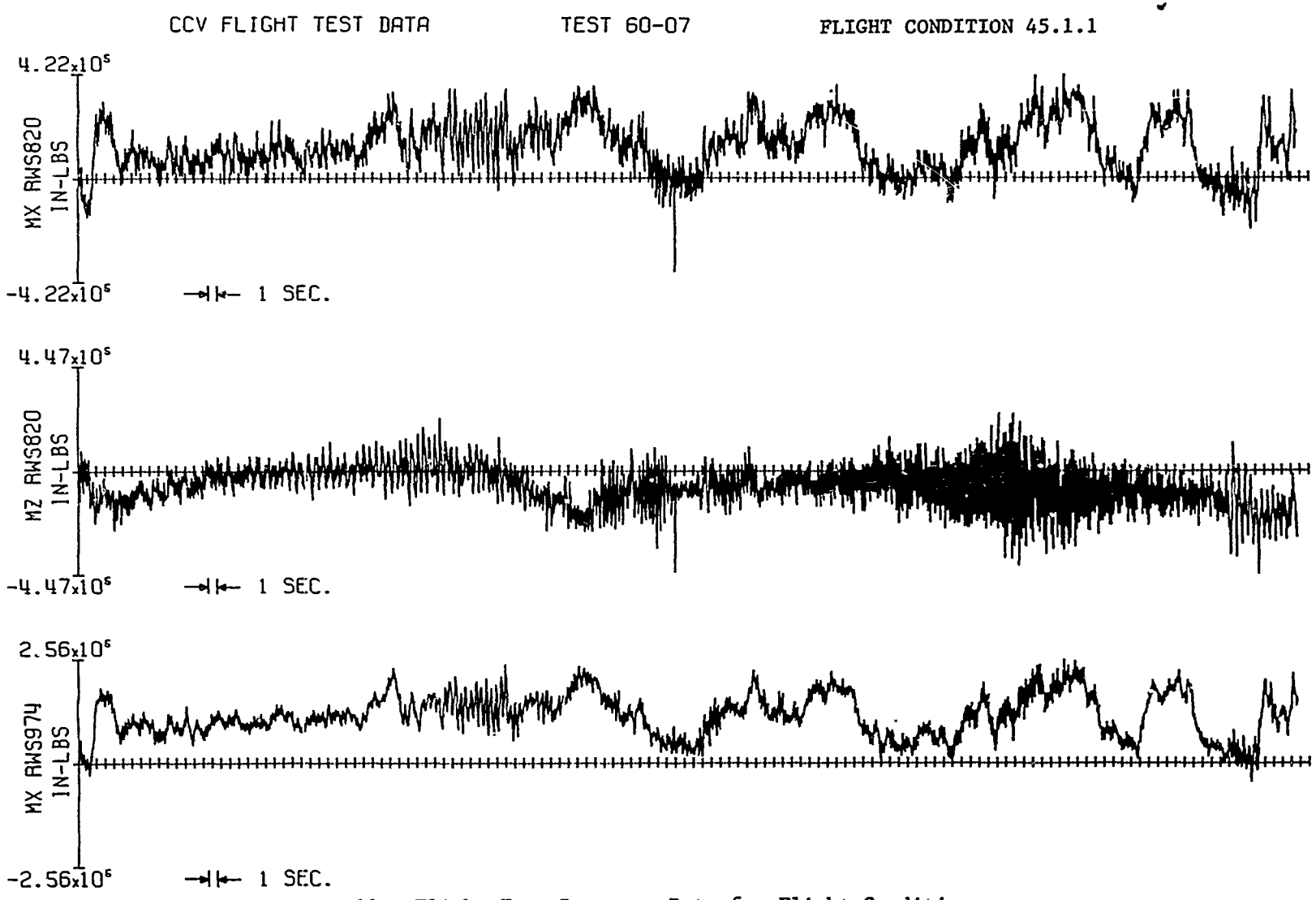


Figure 11. Flight Test Response Data for Flight Condition 45.1.1 (Continued)

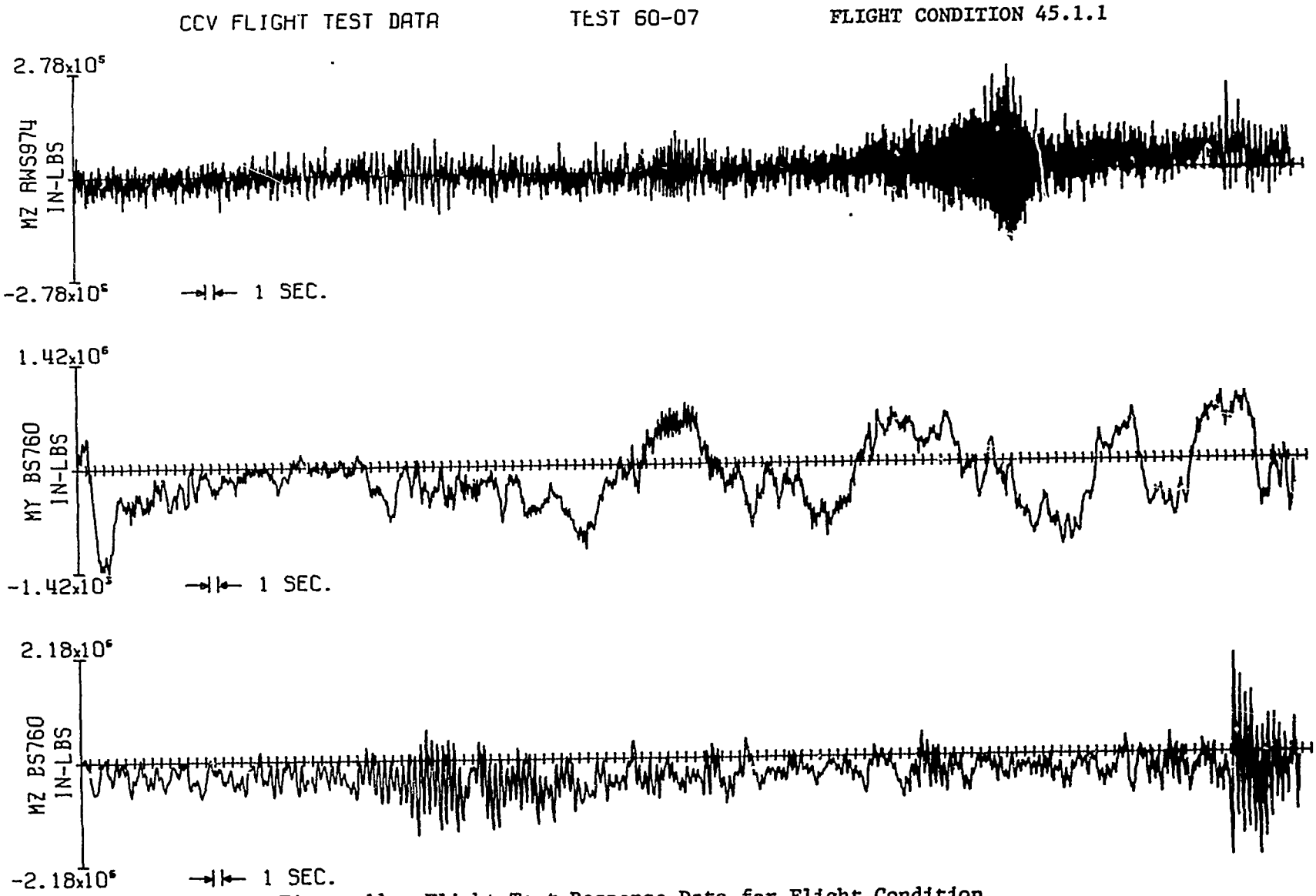


Figure 11. Flight Test Response Data for Flight Condition 45.1.1 (Continued)

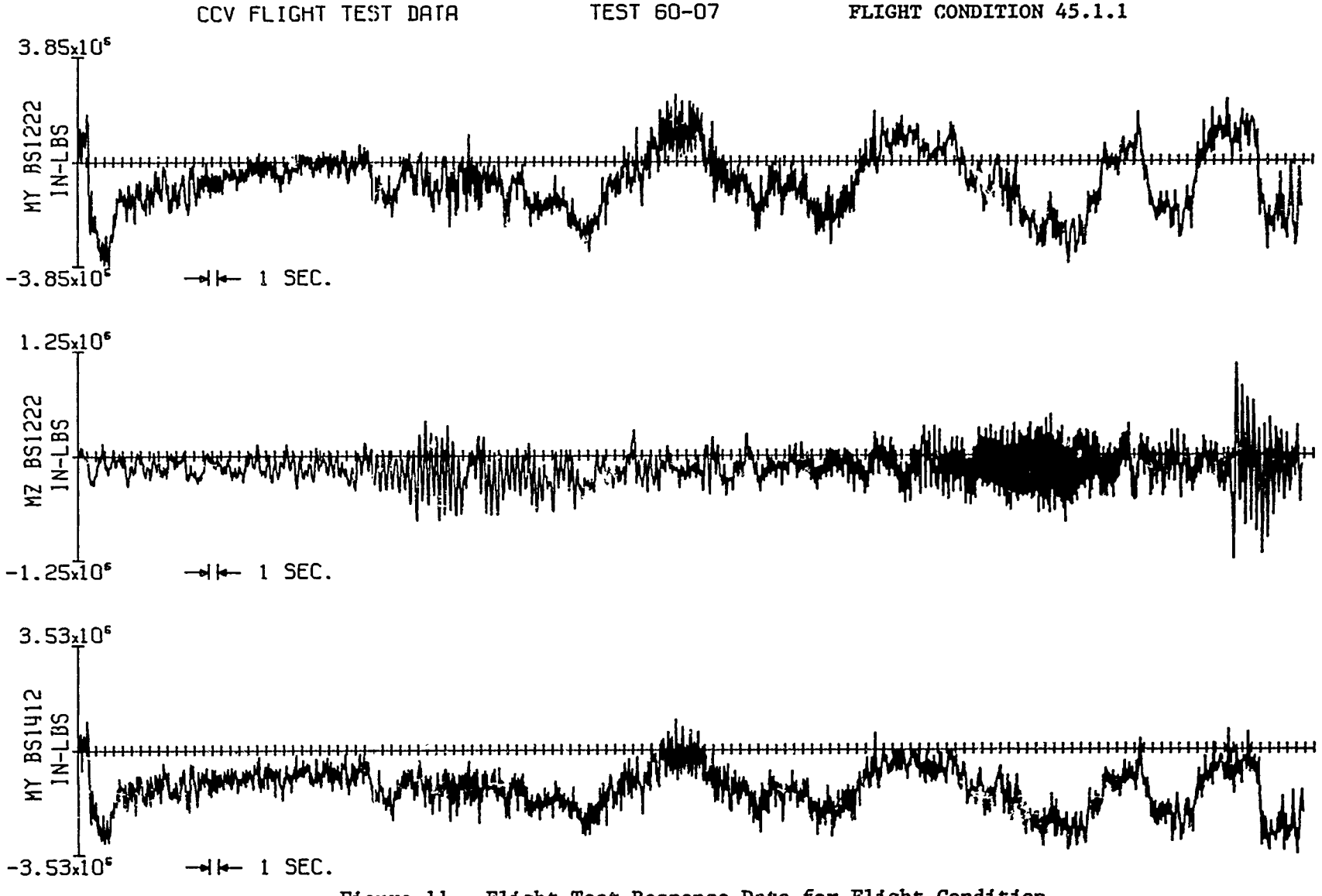


Figure 11. Flight Test Response Data for Flight Condition 45.1.1 (Continued)

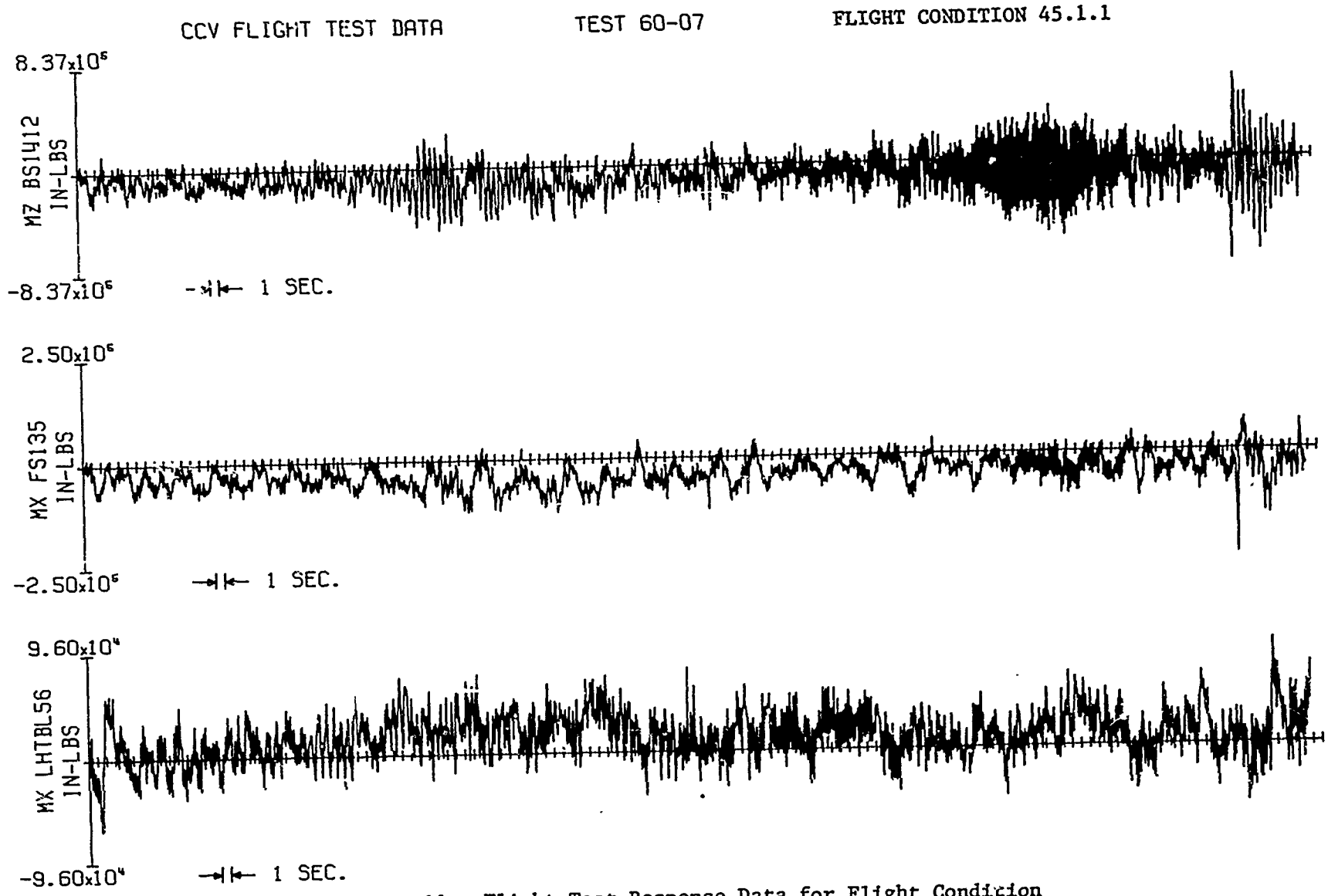


Figure 11. Flight Test Response Data for Flight Condition 45.1.1 (Continued)

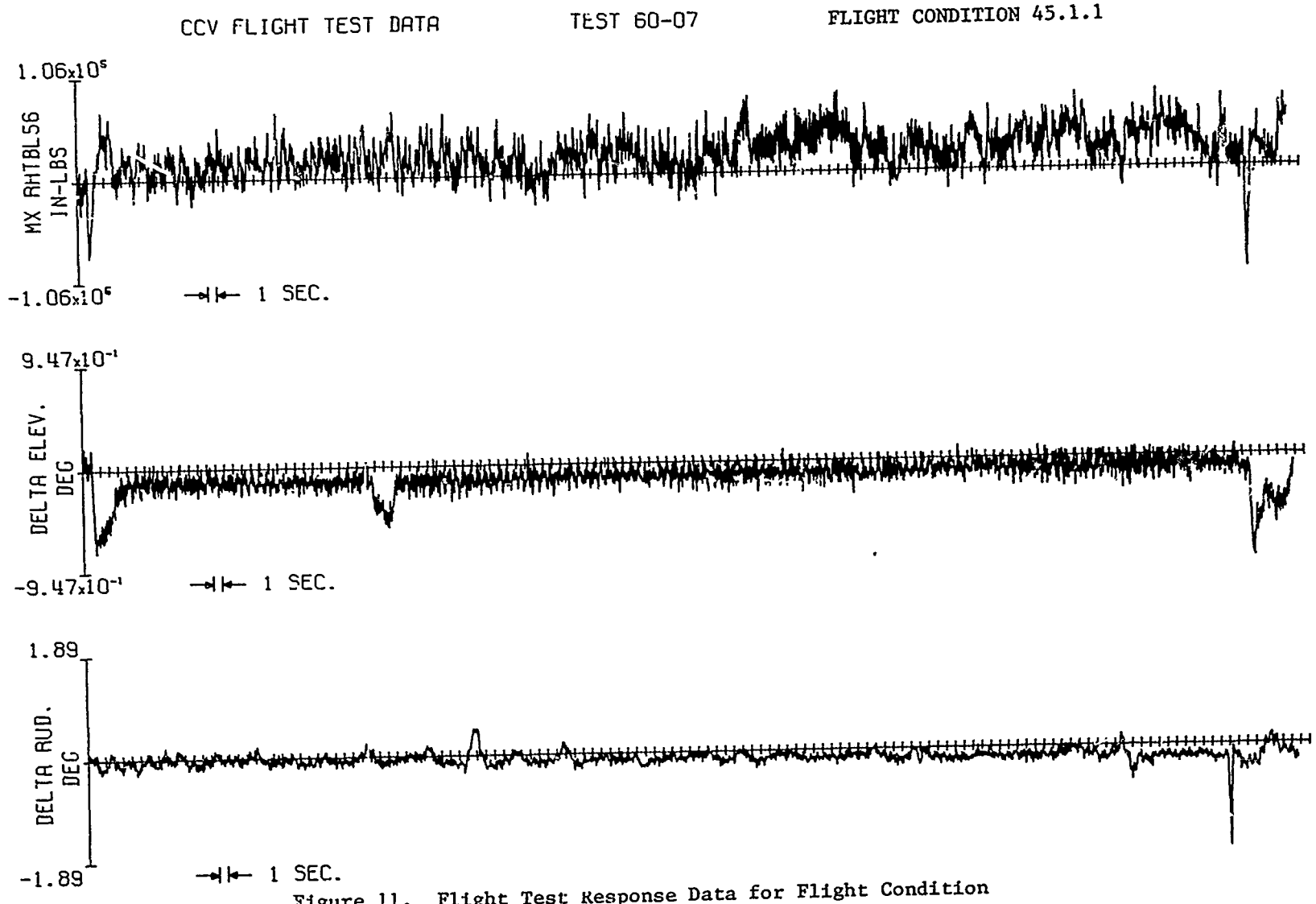


Figure 11. Flight Test Response Data for Flight Condition 45.1.1 (Continued)

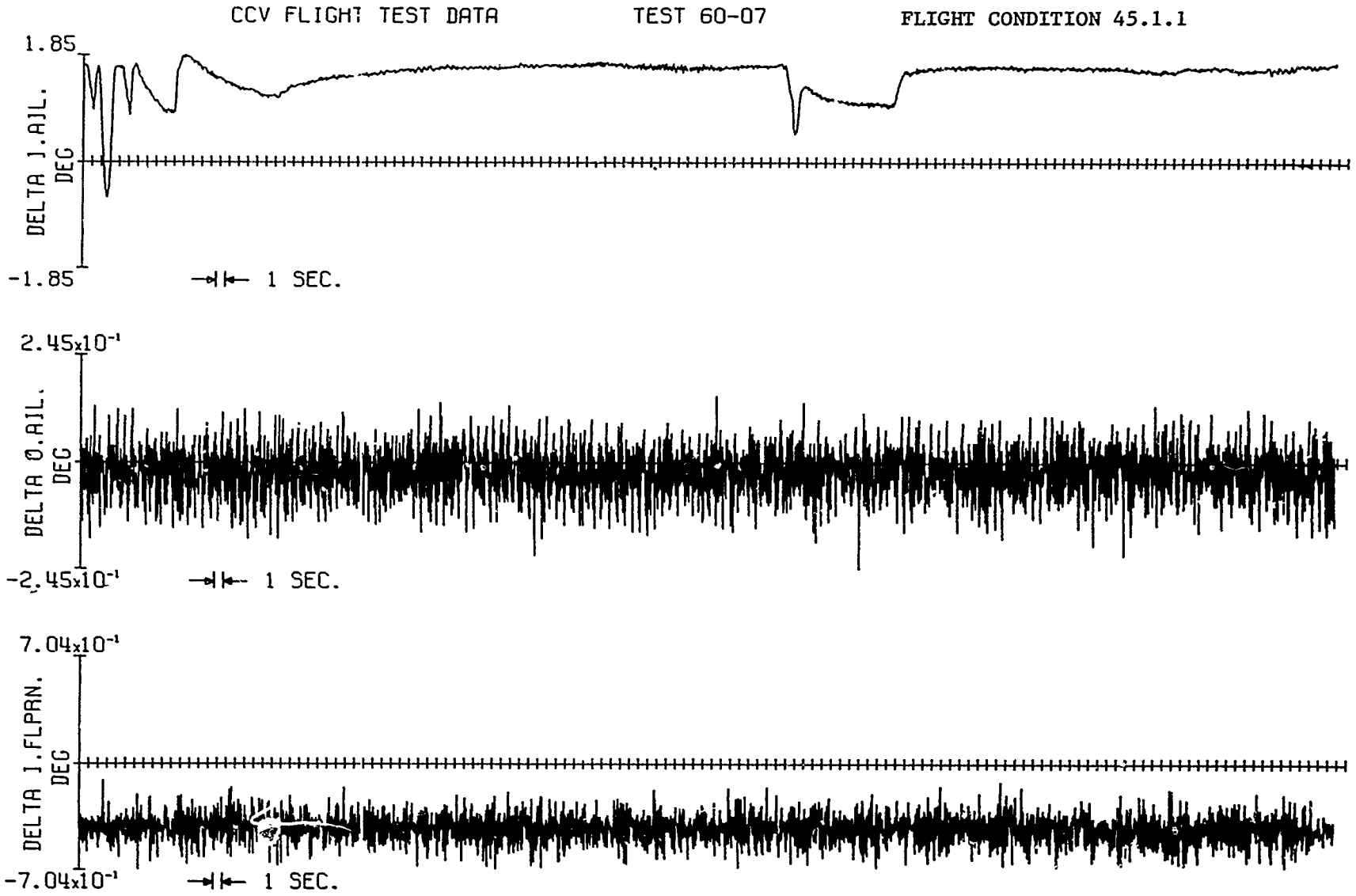


Figure 11. Flight Test Response Data for Flight Condition 45.1.1 (Continued)

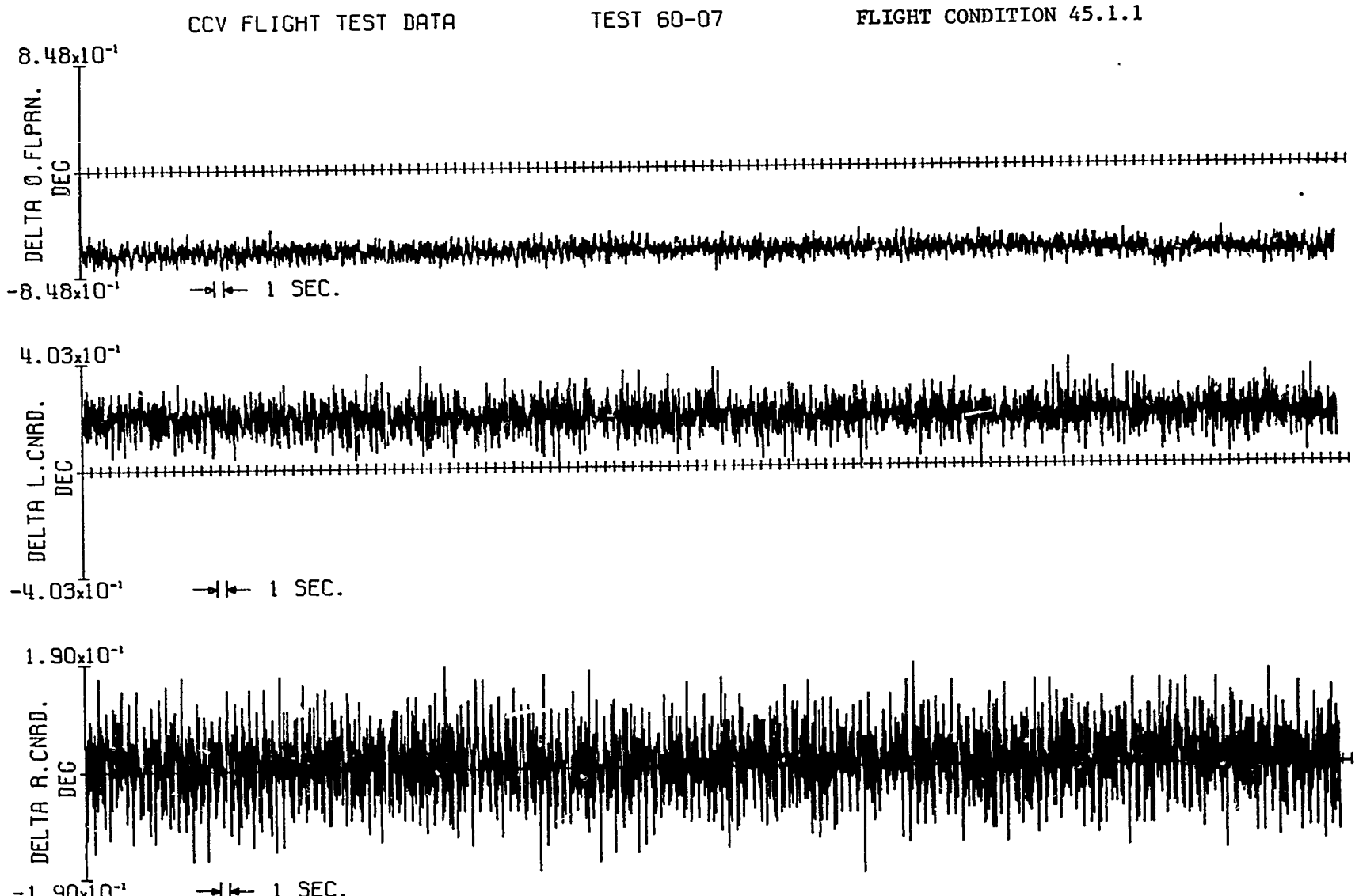


Figure 11. Flight Test Response Data for Flight Condition 45.1.1 (Continued)

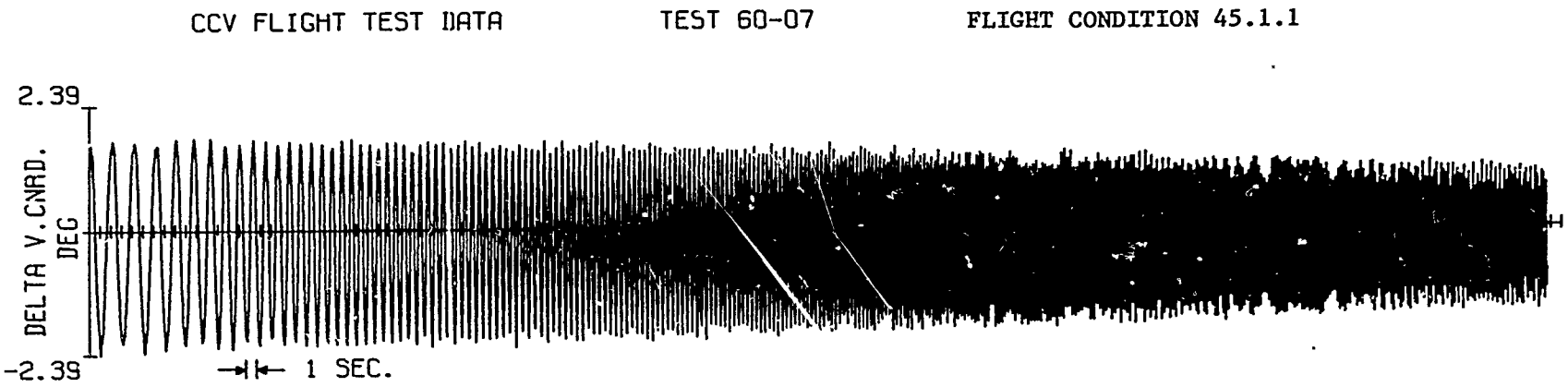


Figure 11. Flight Test Response Data for Flight Condition 45.1.1 (Concluded)

TABLE 3. REFERENCE VALUES OF AMPLITUDE AND PHASE ANGLE FROM EACH FREQUENCY RESPONSE PLOT - VALUES ARE FOR A FREQUENCY OF 1.0 HERTZ

RESPONSE	UNITS	CONDITION 44.1.1		CONDITION 44.1.5		CONDITION 45.1.1	
		AMPLITUDE	PHASE ~ DEG	AMPLITUDE	PHASE ~ DEG	AMPLITUDE	PHASE ~ DEG
ALPHA	DEG	2.78E-04	-37.1	5.90E-04	125.8	--	--
BETA	DEG	--	--	--	--	5.48E-05	179.3
PHI DOT CG	DEG/SEC	--	--	--	--	9.76E-05	-118.9
THETA DOT CG	DEG/SEC	1.08E-03	27.0	2.24E-03	-128.7	--	--
PSI DOT CG	DEG/SEC	--	--	--	--	2.45E-04	-88.6
NZ BS172	G's	1.74E-02	-138.9	2.81E-02	-3.2	--	--
NY BS172	G's	--	--	--	--	2.00E-03	3.3
NZ BS860	G's	1.73E-02	-105.7	1.29E-02	74.3	--	--
NY BS860	G's	--	--	--	--	1.58E-03	-2.4
NZ BS1655	G's	5.39E-02	76.2	3.07E-03	-95.7	--	--
NY BS1655	G's	--	--	--	--	8.89E-04	-178.0
NZ I.NAC.	G's	3.31E-03	23.6	1.49E-02	1.6	3.69E-04	-91.9
NY I.NAC.	G's	9.39E-03	-117.5	4.31E-03	113.5	3.16E-03	0.3
NZ O.NAC.	G's	7.61E-02	57.6	2.79E-02	-64.1	2.13E-03	-167.0
NY O.NAC.	G's	2.03E-02	-120.7	8.98E-03	113.5	1.83E-03	-0.9
NZ L.EXT.TANK	G's	1.24E-01	60.5	4.95E-02	-69.3	3.80E-03	-173.4
THETA DD LWS540	RAD/SEC/SEC	1.24E-02	64.6	2.22E-02	-28.5	2.42E-04	-92.0
THETA DD LWS1359	RAD/SEC/SEC	7.78E-02	44.9	4.39E-02	-45.9	9.00E-04	-150.9
NZ LWBL565	G's	3.76E-02	60.0	9.41E-03	-79.9	1.58E-03	-168.6
NZ LWBL925	G's	1.35E-01	63.8	4.98E-02	-87.5	4.85E-03	179.7
NZ LWBL1359	G's	1.80E-01	63.2	6.95E-02	-87.4	4.06E-03	176.6
MX LWS222	IN-LBS	1.13E+06	-115.1	4.78E+05	85.4	4.68E+04	-2.3
MX LWS222	IN-LBS	3.72E+04	-16.9	2.66E+04	4.7	8.90E+04	0.7
MX LWS820	IN-LBS	1.95E+05	-106.0	1.09E+05	105.3	8.58E+03	-16.2
MZ LWS820	IN-LBS	3.34E+04	-90.6	1.61E+04	61.6	2.00E+04	0.4
MX LWS974	IN-LBS	8.32E+04	-121.4	4.66E+04	108.0	3.17E+03	-26.5
MZ LWS974	IN-LBS	1.72E+04	-44.0	3.50E+03	65.0	6.39E+03	0.4
MY BS760	IN-LBS	9.13E+05	67.3	6.52E+05	-151.1	--	--
MZ BS760	IN-LBS	--	--	--	--	3.74E+04	-173.5

TABLE 3. REFERENCE VALUES OF AMPLITUDE AND PHASE ANGLE FROM EACH FREQUENCY RESPONSE PLOT - VALUES ARE FOR A FREQUENCY OF 1.0 HERTZ (Concluded)

RESPONSE	UNITS	CONDITION 44.1.1		CONDITION 44.1.5		CONDITION 45.1.1	
		AMPLITUDE	PHASE ~ DEG	AMPLITUDE	PHASE ~ DEG	AMPLITUDE	PHASE ~ DEG
MY BS1222	IN-LBS	3.50E+05	63.9	3.32E+05	-172.3	--	--
MZ BS1222	IN-LBS	--	--	--	--	2.57E+04	-174.1
MY BS1412	IN-LBS	2.06E+05	64.5	2.23E+05	-178.1	--	--
MZ BS1412	IN-LBS	--	--	--	--	1.67E+04	-174.3
MX FS135	IN-LBS	--	--	--	--	6.93E+03	-177.5
MX LHTBL56	IN-LBS	1.12E+04	-22.4	8.77E+04	148.4	1.34E+02	159.5
DELTA O.AILERON	DEG	1.60E+00	0.0	--	--	--	--
DELTA O.FLAPERON	DEG	--	--	2.00E+00	0.0	--	--
DELTA V.CANARD	DEG	--	--	--	--	2.20E+00	0.0
DELTA RUDDER	DEG	--	--	--	--	2.49E-02	-173.4

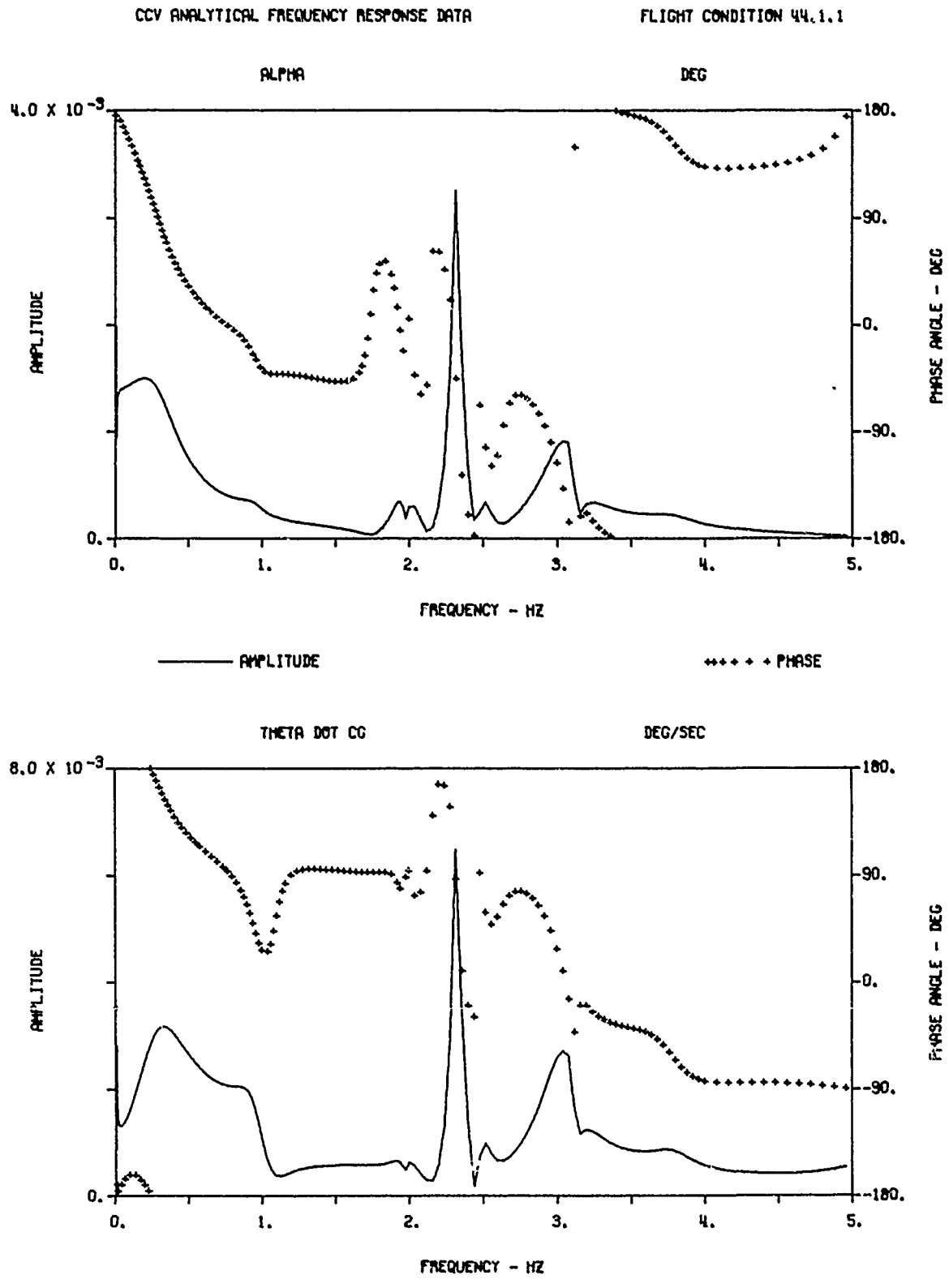


Figure 12. Frequency Responses - Outboard Aileron Frequency Sweep, .005 to 5.0 Hz, 1.6 Degree Amplitude Sine Wave Input

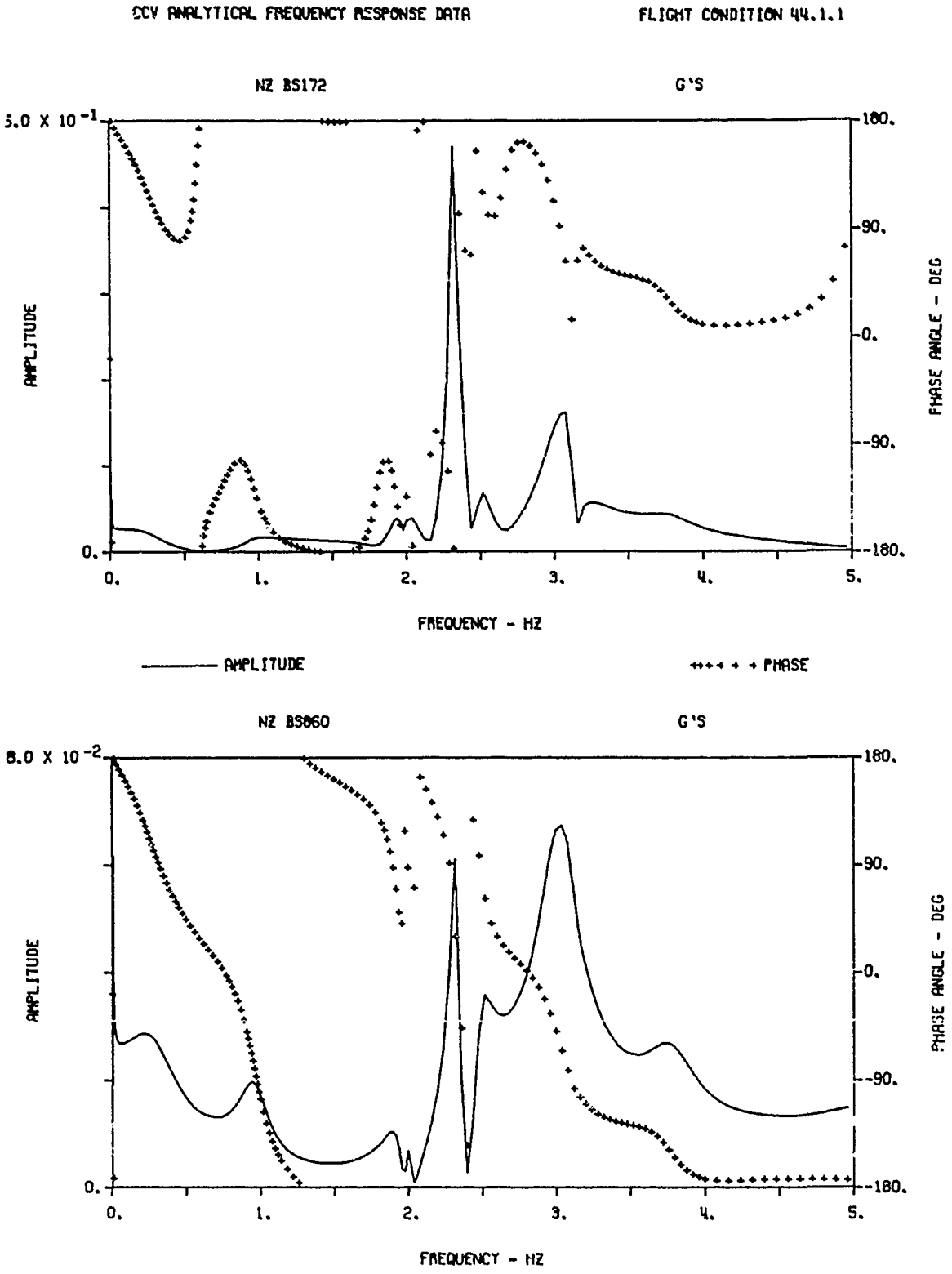


Figure 12. Frequency Responses - Outboard Aileron Frequency Sweep, .005 to 5.0 Hz, 1.6 Degree Amplitude Sine Wave Input (Continued)

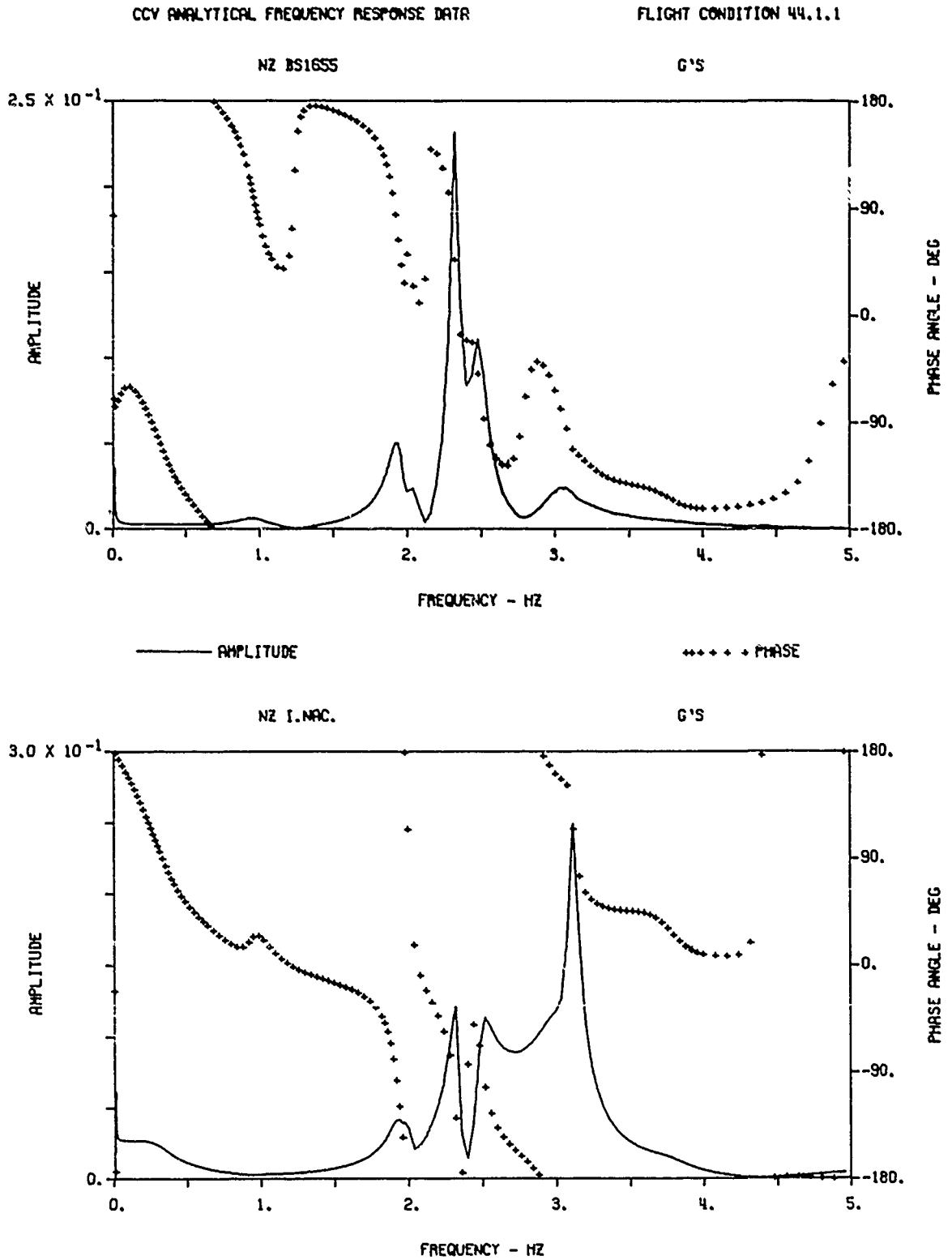


Figure 12. Frequency Responses - Outboard Aileron Frequency Sweep, .005 to 5.0 Hz, 1.6 Degree Amplitude Sine Wave Input (Continued)

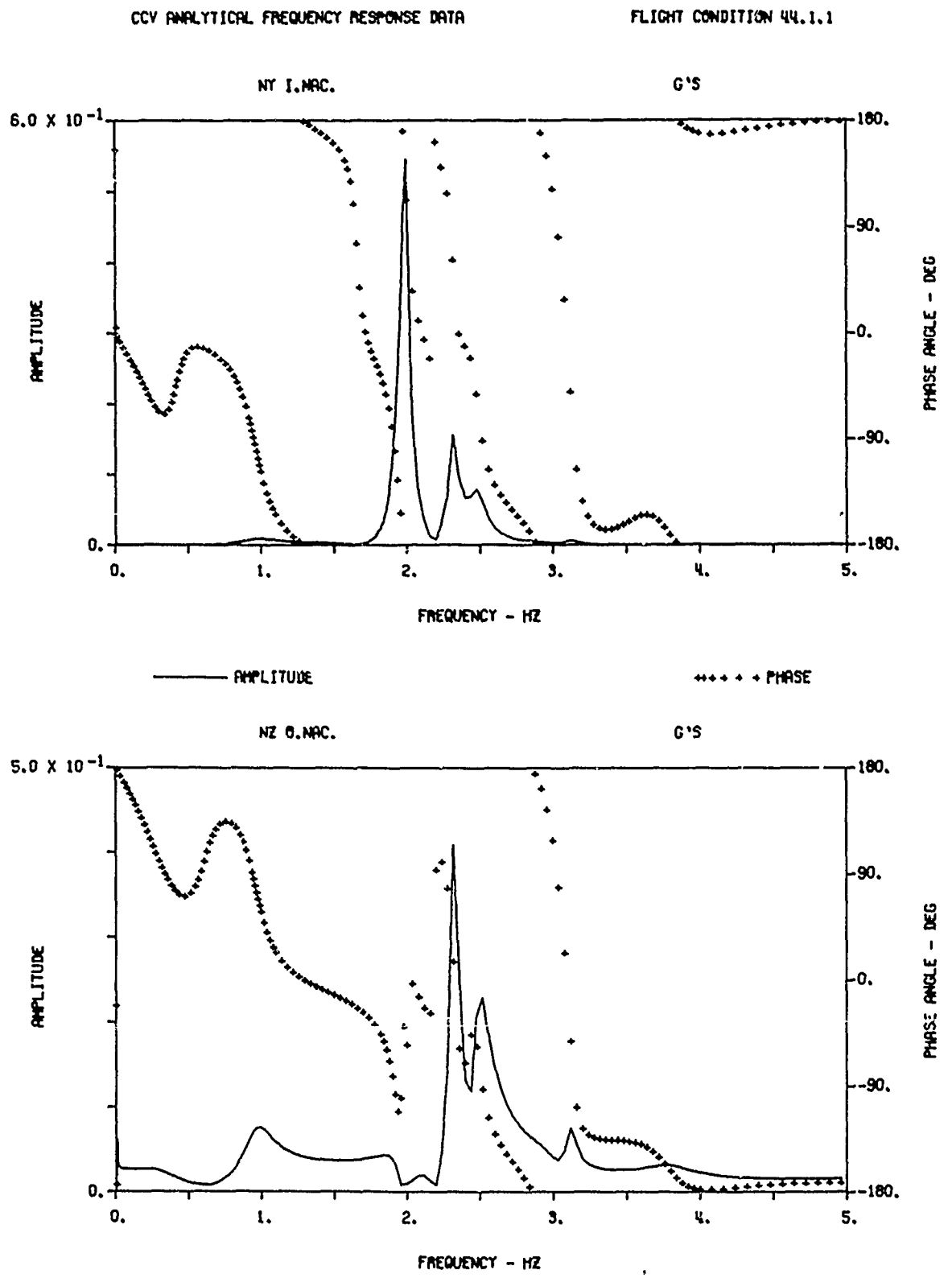


Figure 12. Frequency Responses - Outboard Aileron Frequency Sweep, .005 to 5.0 Hz, 1.6 Degree Amplitude Sine Wave Input (Continued)

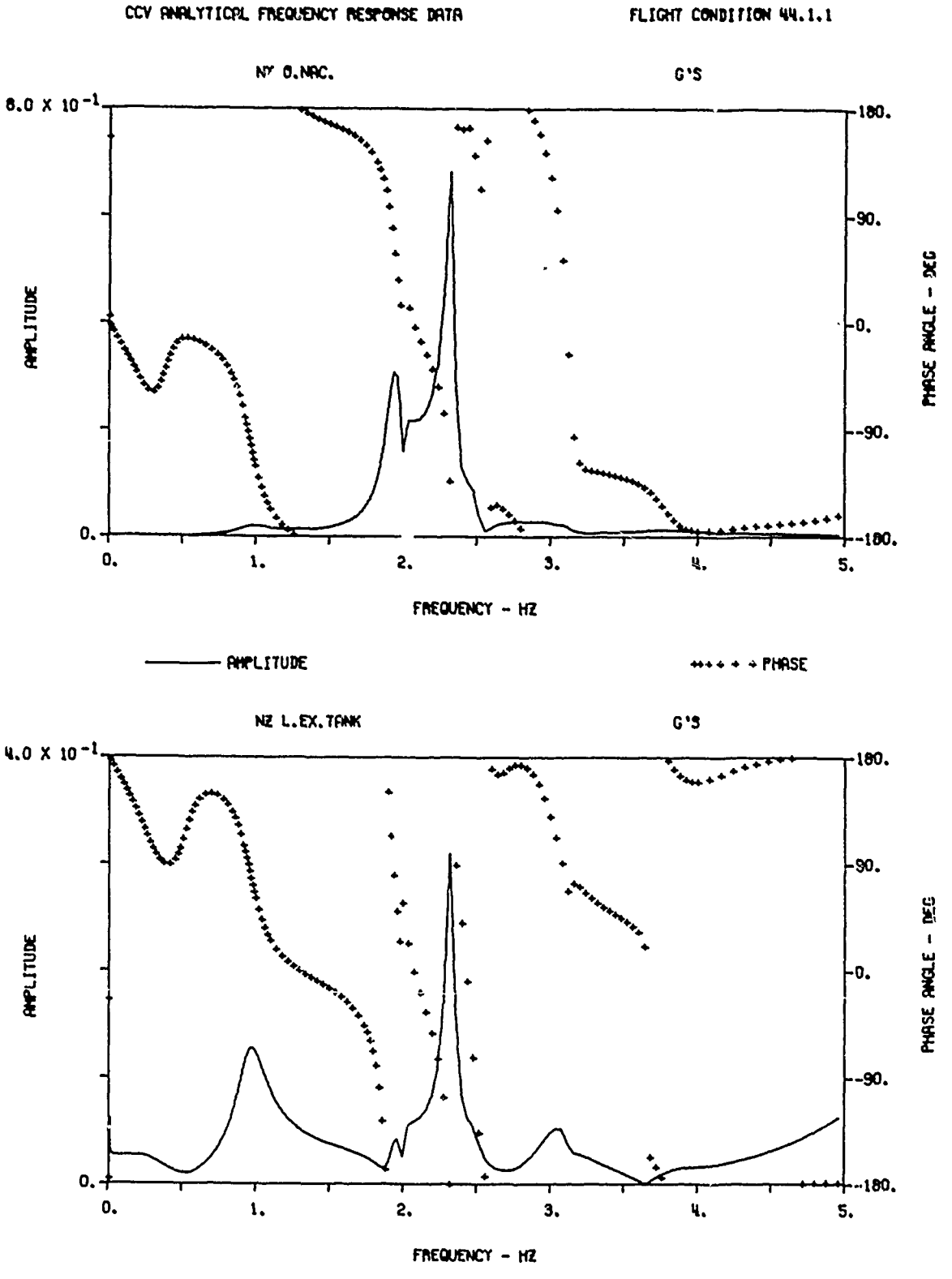


Figure 12. Frequency Responses - Outboard Aileron Frequency Sweep, .005 to 5.0 Hz, 1.6 Degree Amplitude Sine Wave Input (Continued)

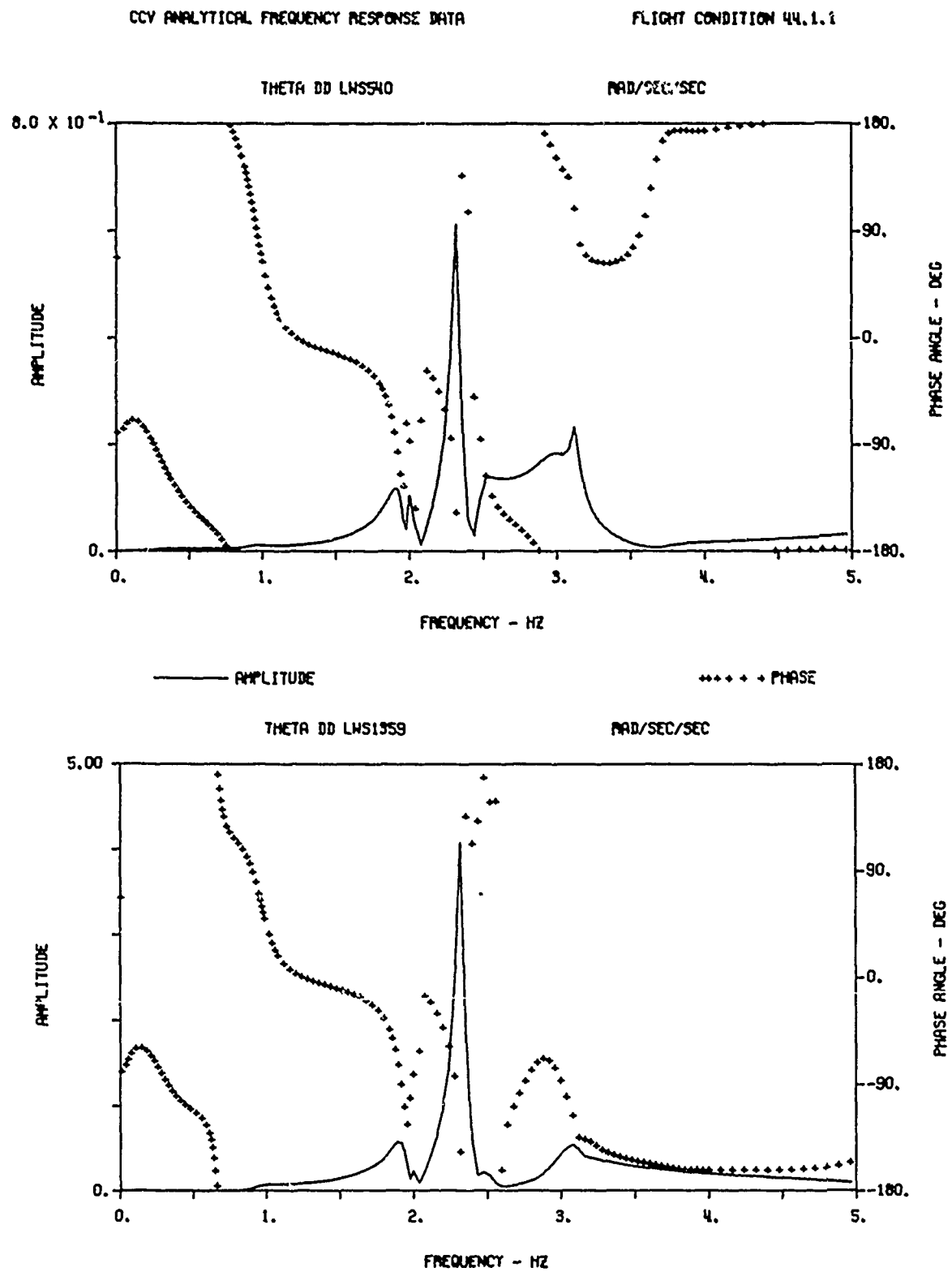


Figure 12. Frequency Responses - Outboard Aileron Frequency Sweep, .005 to 5.0 Hz, 1.6 Degree Amplitude Sine Wave Input (Continued)

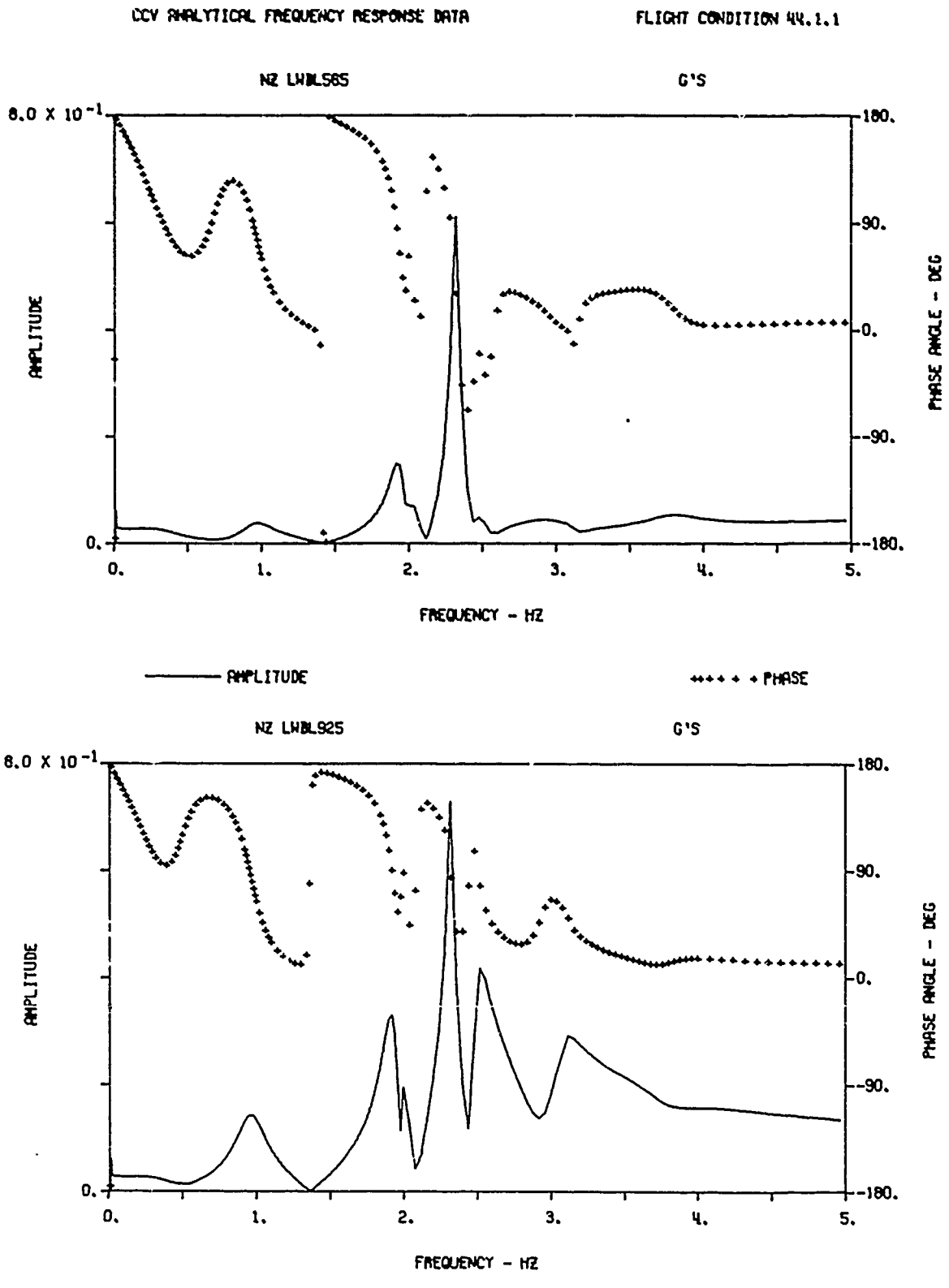


Figure 12. Frequency Responses - Outboard Aileron Frequency Sweep, .005 to 5.0 Hz, 1.6 Degree Amplitude Sine Wave Input (Continued)

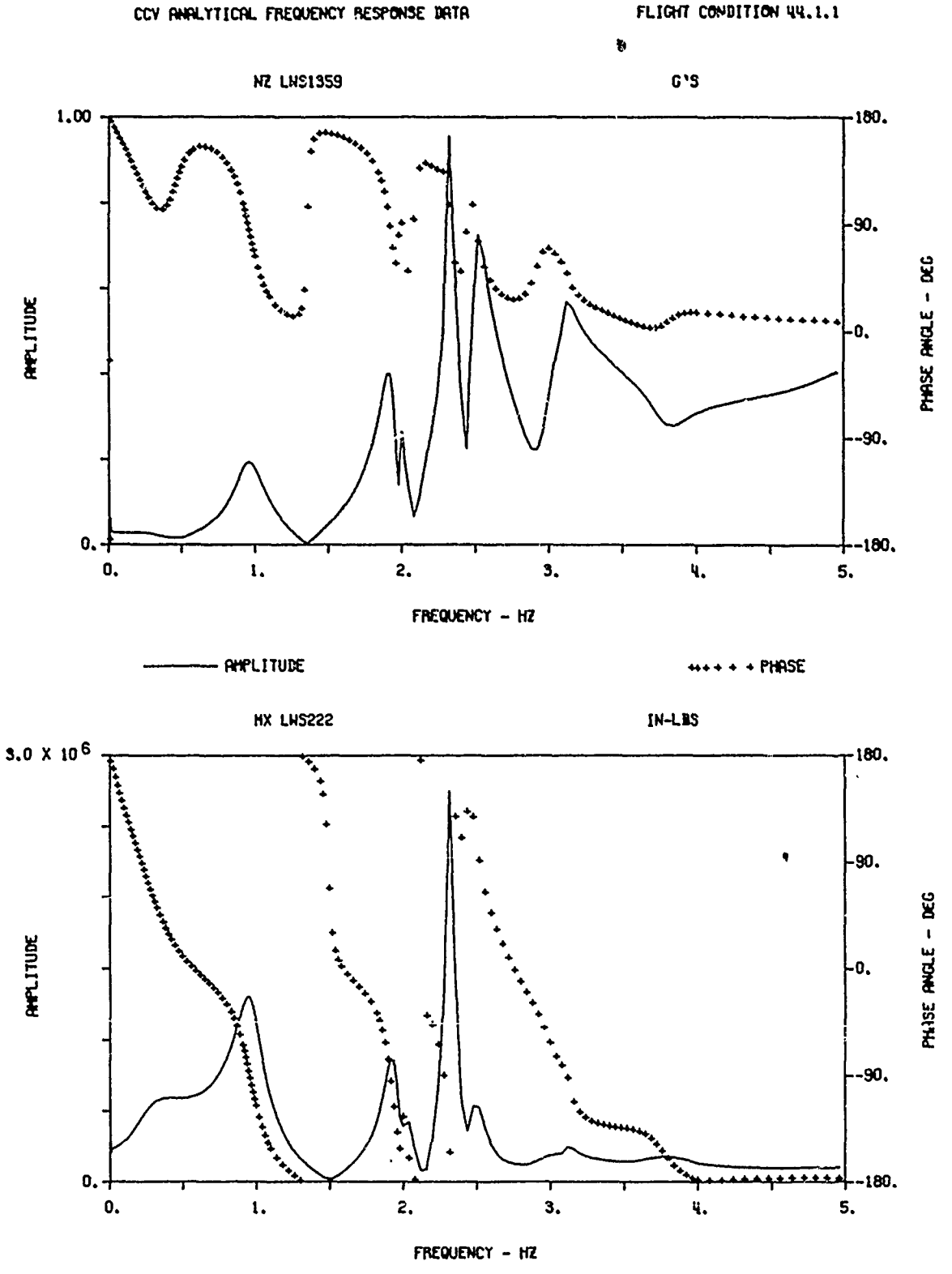


Figure 12. Frequency Responses - Outboard Aileron Frequency Sweep, .005 to 5.0 Hz, 1.6 Degree Amplitude Sine Wave Input (Continued)

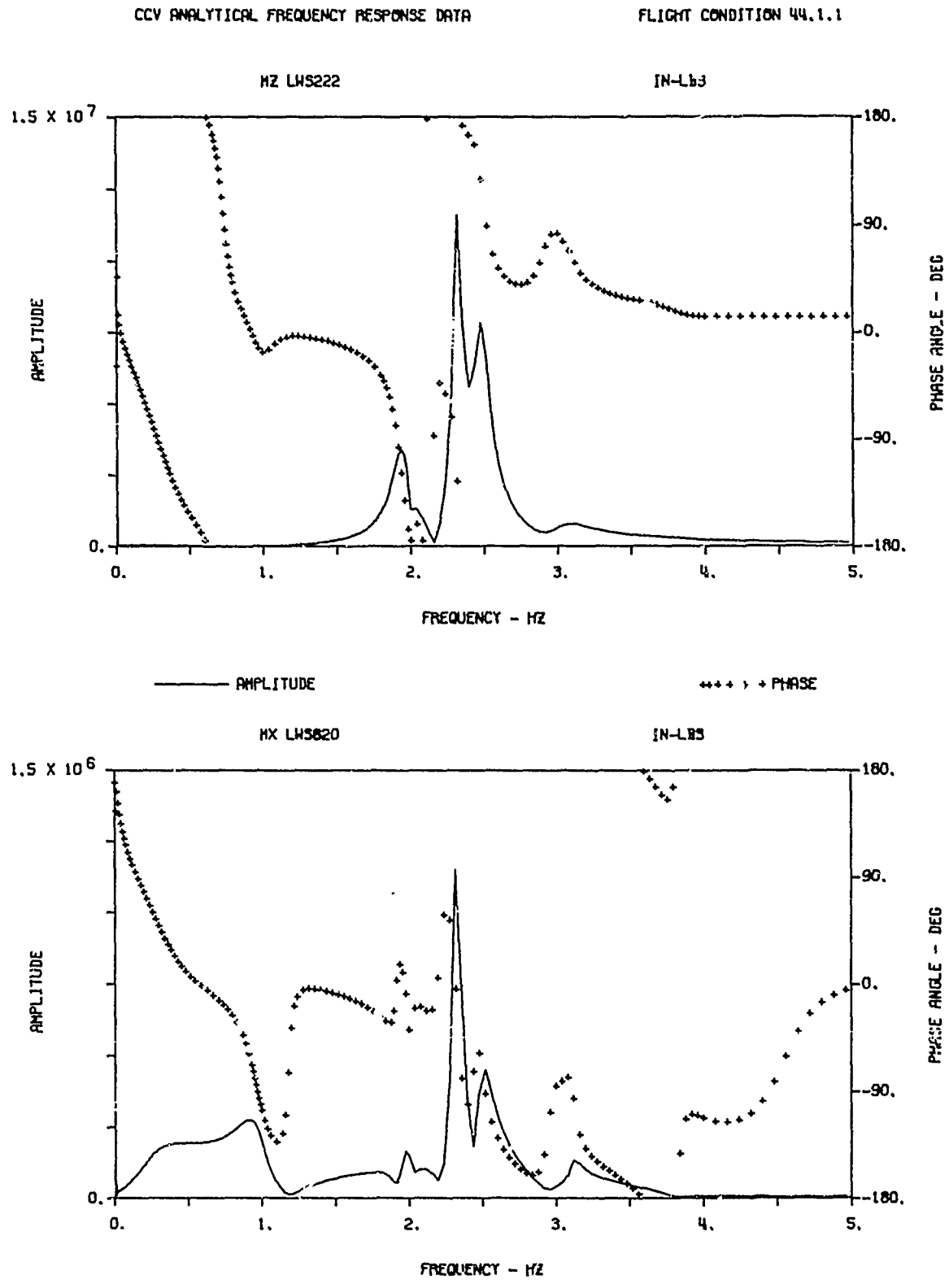


Figure 12. Frequency Responses - Outboard Aileron Frequency Sweep, .005 to 5.0 Hz, 1.6 Degree Amplitude Sine Wave Input (Continued)

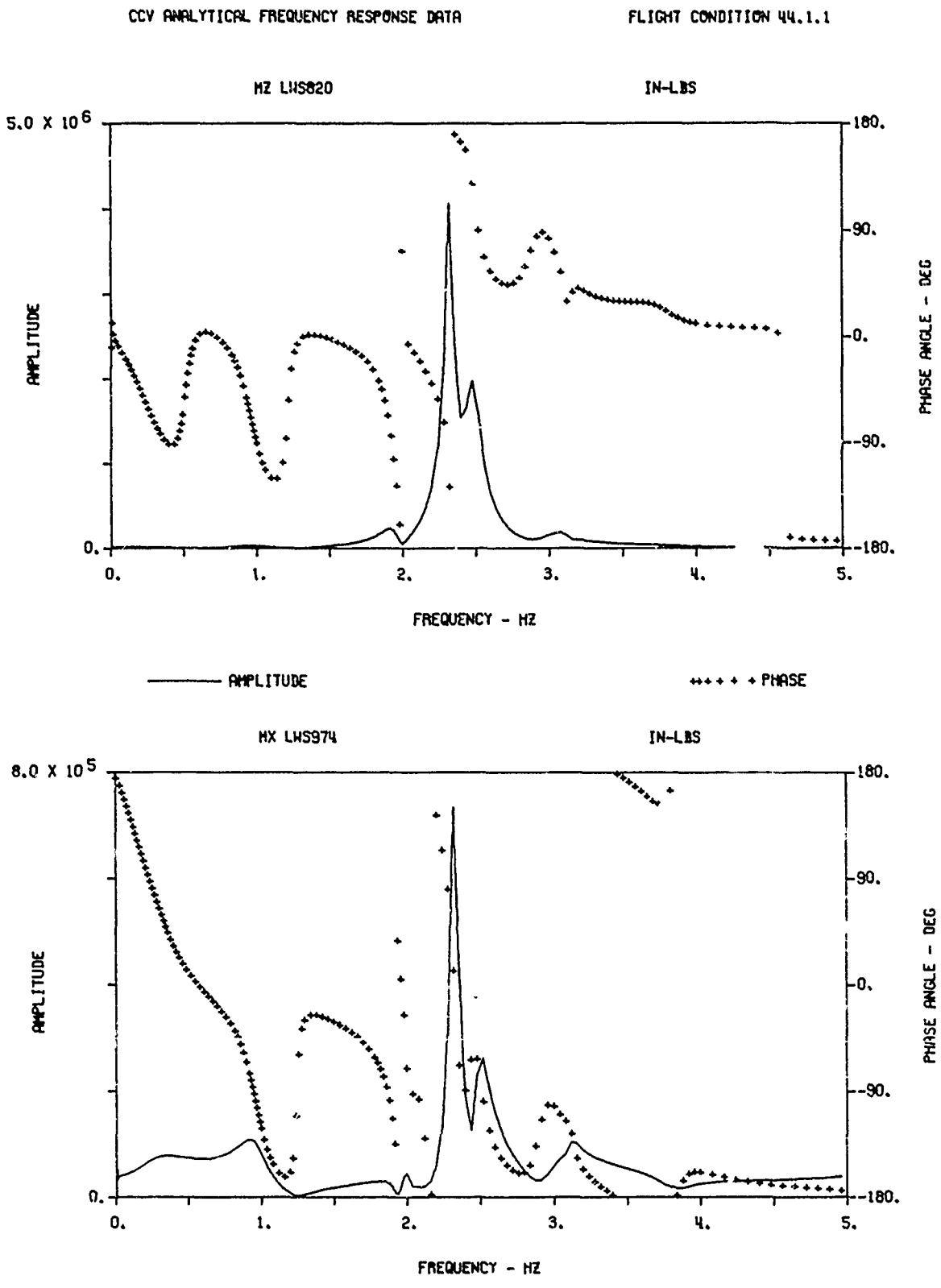


Figure 12. Frequency Responses - Outboard Aileron Frequency Sweep, .005 to 5.0 Hz, 1.6 Degree Amplitude Sine Wave Input (Continued)

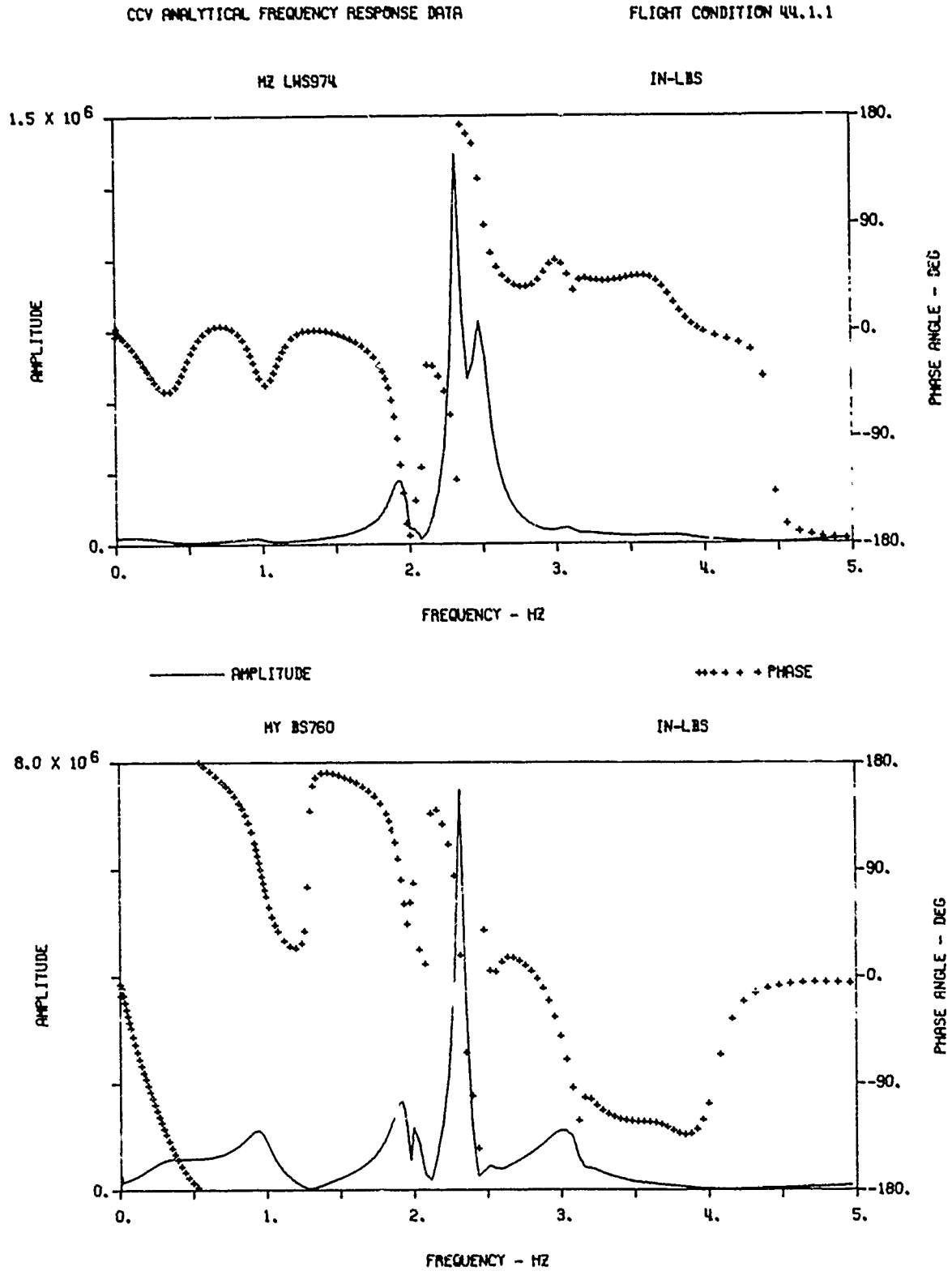


Figure 12. Frequency Responses - Outboard Aileron Frequency Sweep, .005 to 5.0 Hz, 1.6 Degree Amplitude Sine Wave Input (Continued)

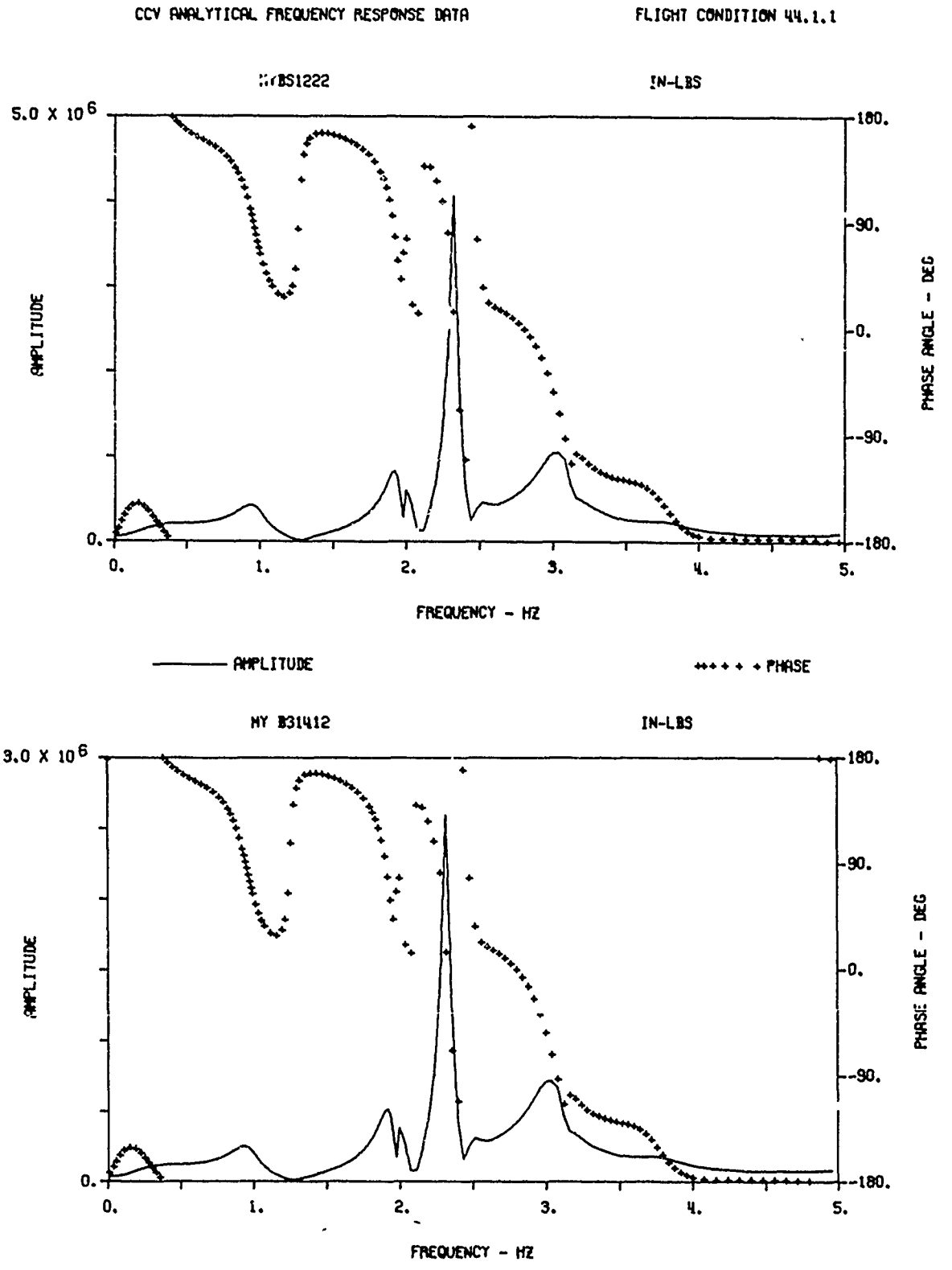


Figure 12. Frequency Responses - Outboard Aileron Frequency Sweep, .005 to 5.0 Hz, 1.6 Degree Amplitude Sine Wave Input (Continued)

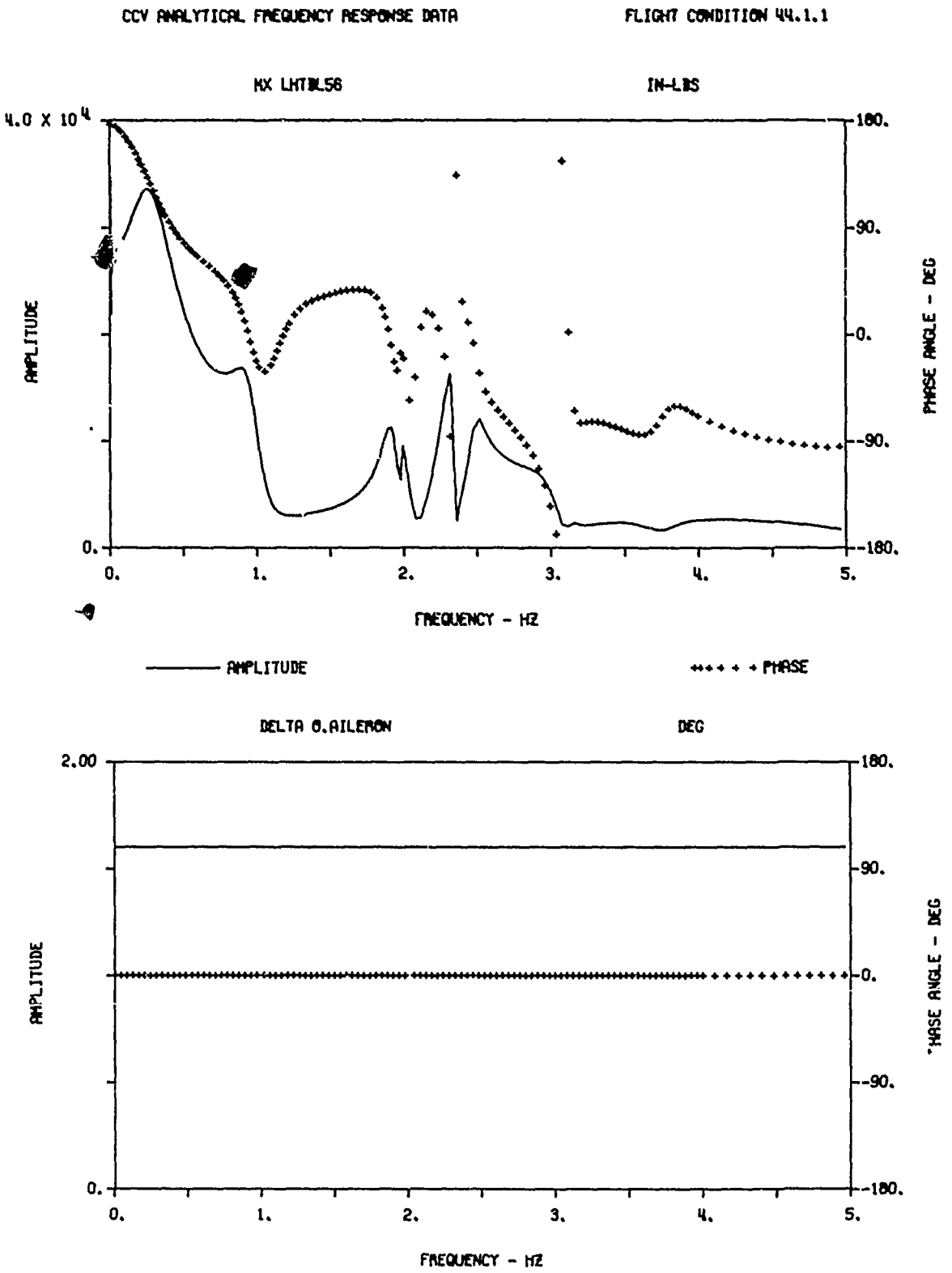


Figure 12. Frequency Responses - Outboard Aileron Frequency Sweep, .005 to 5.0 Hz, 1.6 Degree Amplitude Sine Wave Input (Concluded)

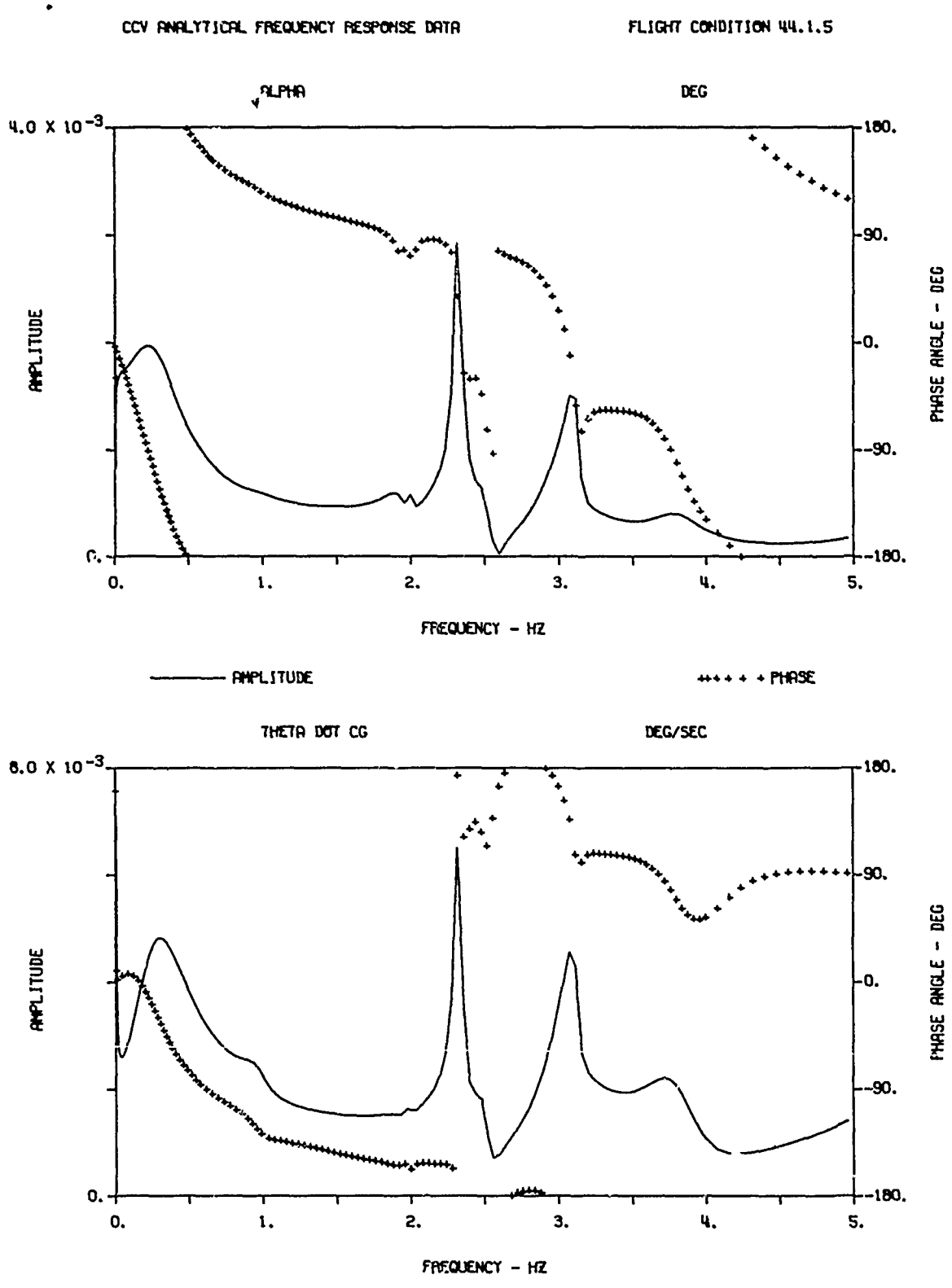


Figure 13. Frequency Responses - Outboard Flaperon Frequency Sweep, .005 to 5.0 Hz, 2.0 Degree Amplitude Sine Wave Input

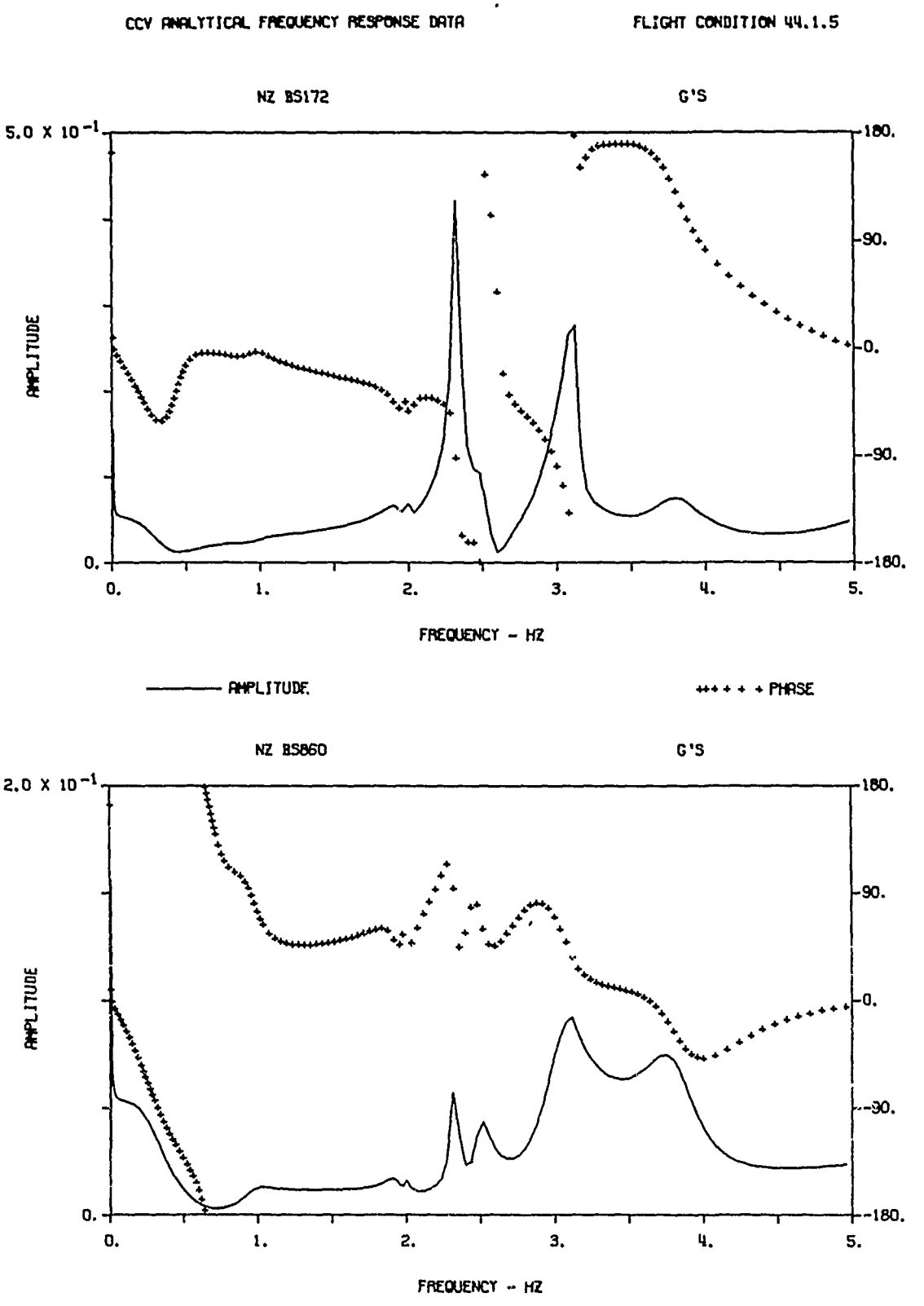


Figure 13. Frequency Responses - Outboard Flaperon Frequency Sweep, .005 to 5.0 Hz, 2.0 Degree Amplitude Sine Wave Input (Continued

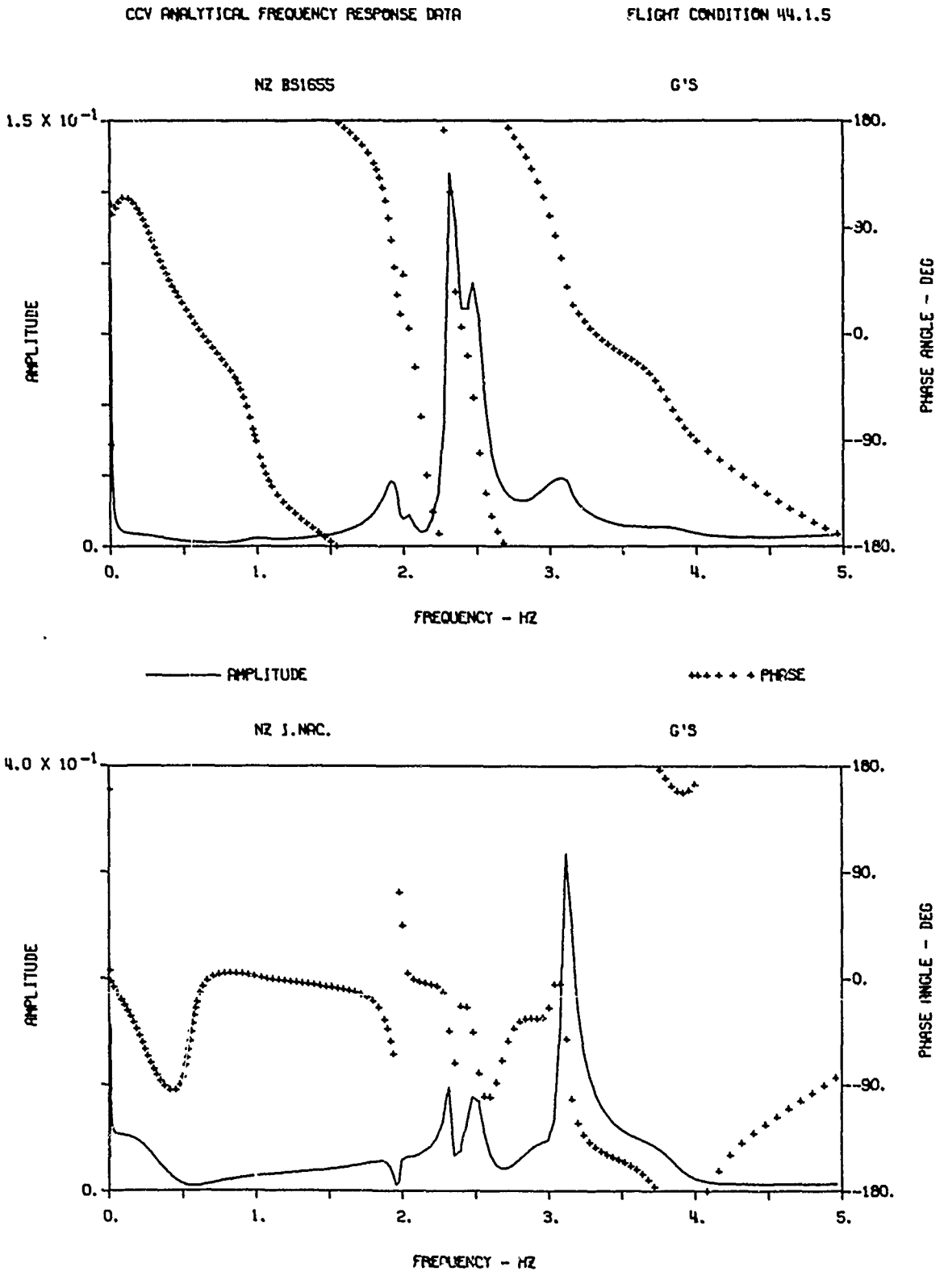


Figure 13. Frequency Responses - Outboard Flaperon Frequency Sweep, .005 to 5.0 Hz, 2.0 Degree Amplitude Sine Wave Input (Continued)

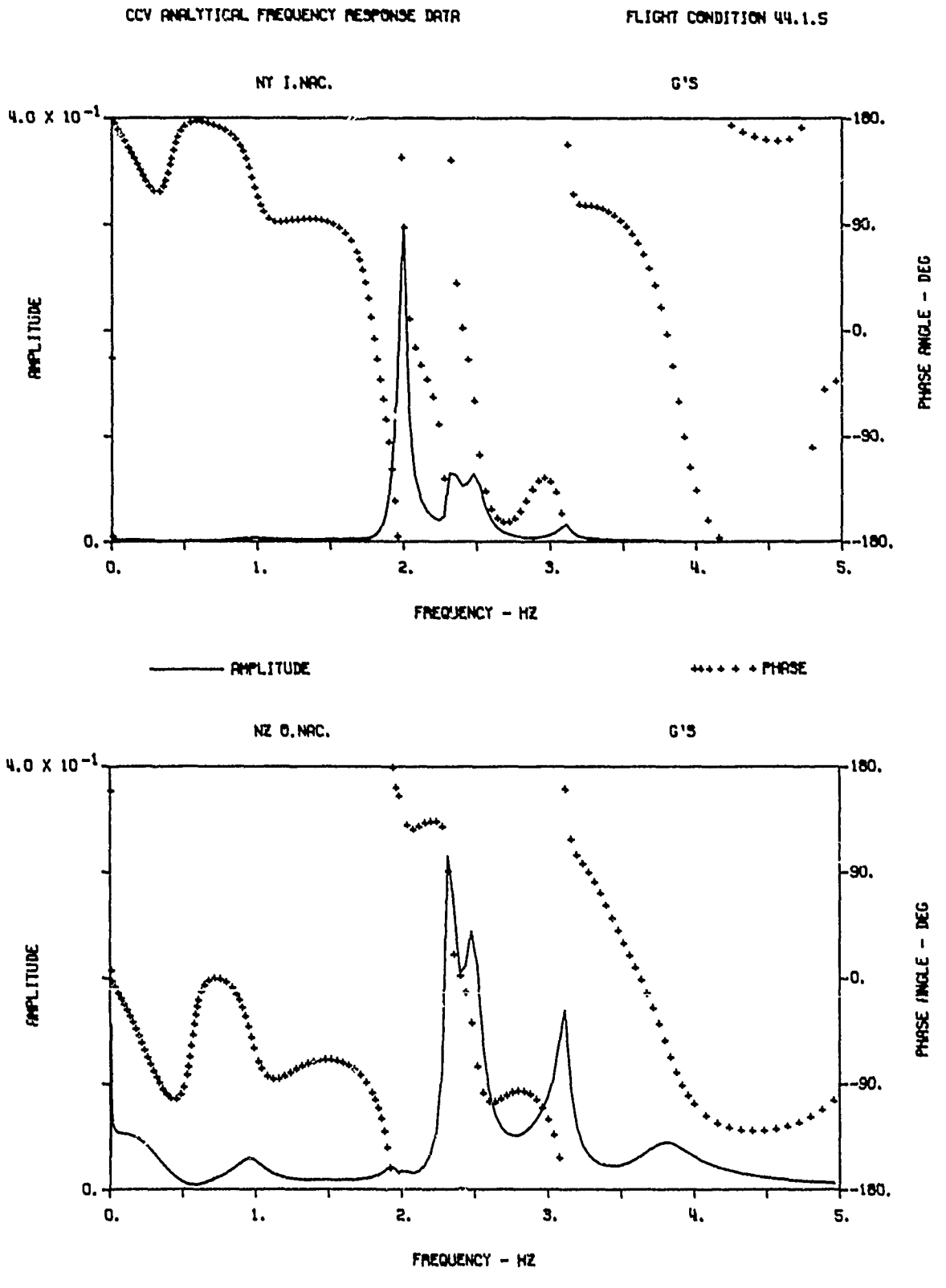


Figure 13. Frequency Responses - Outboard Flaperon Frequency Sweep, .005 to 5.0 Hz, 2.0 Degree Amplitude Sine Wave Input (Continued)

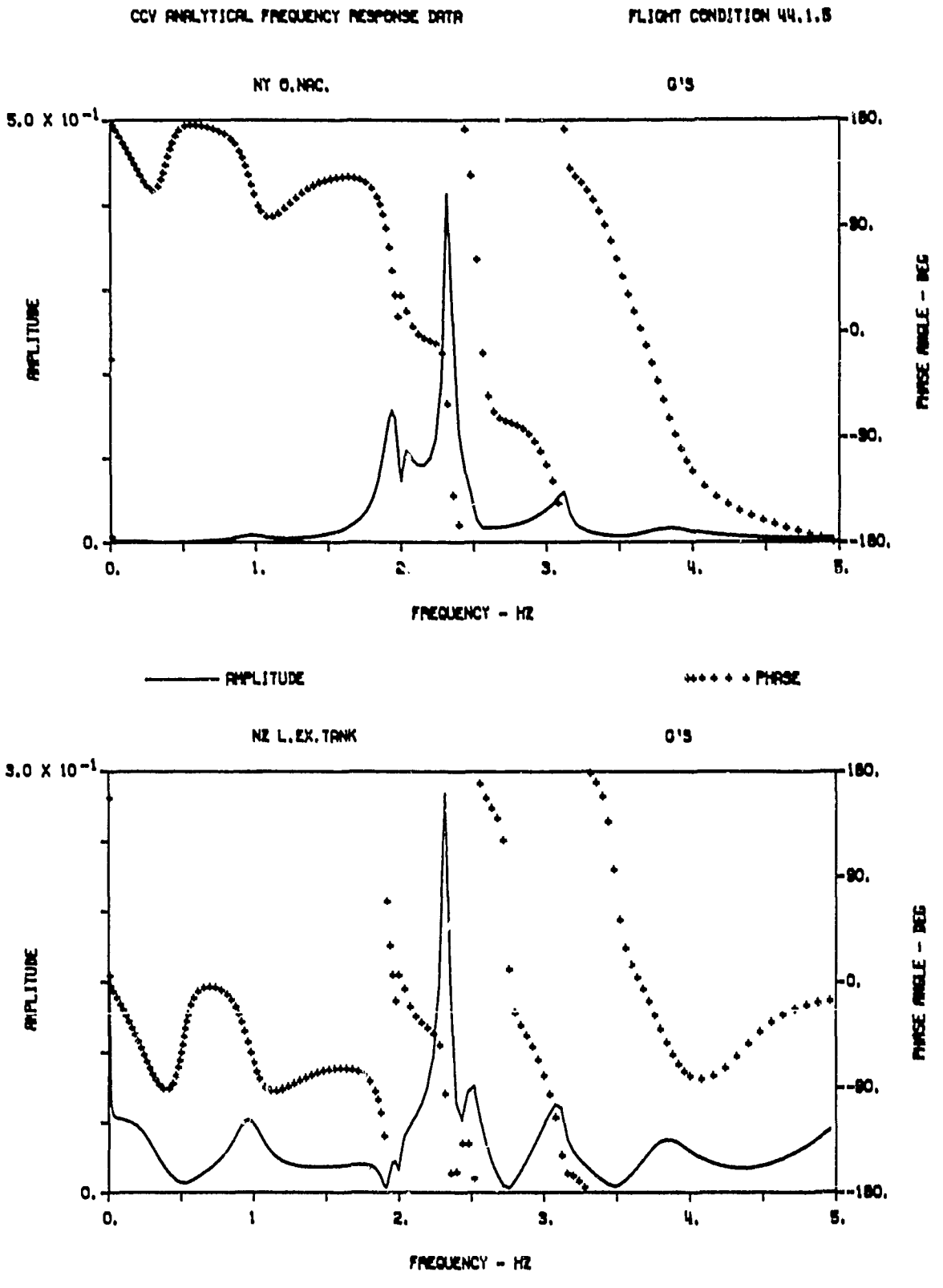


Figure 13. Frequency Responses - Outboard Flaperon Frequency Sweep, .005 to 5.0 Hz, 2.0 Degree Amplitude Sine Wave Input (Continued)

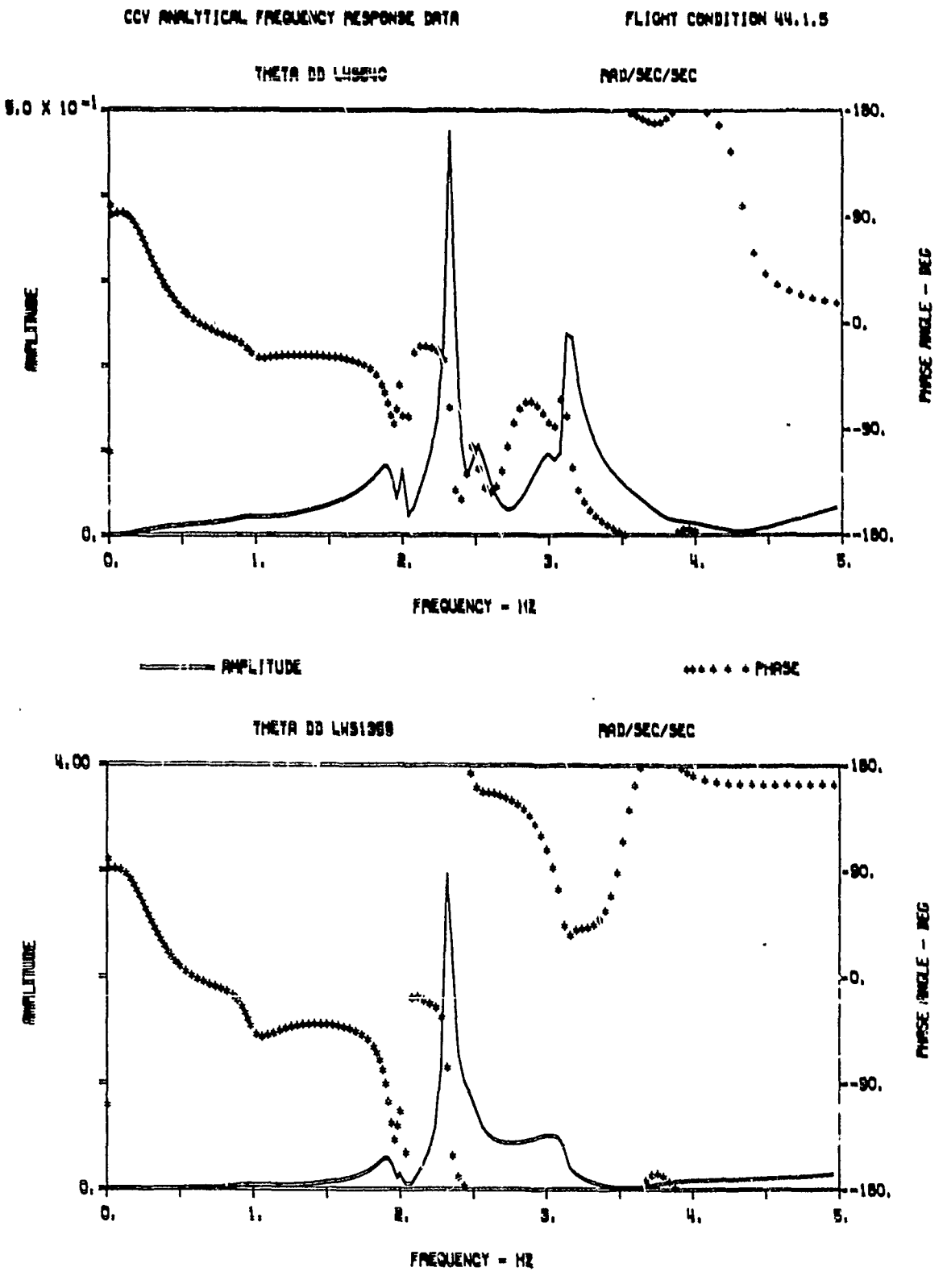


Figure 13. Frequency Responses - Outboard Flaperon Frequency Sweep, .005 to 5.0 Hz, 2.0 Degree Amplitude Sine Wave Input (Continued)

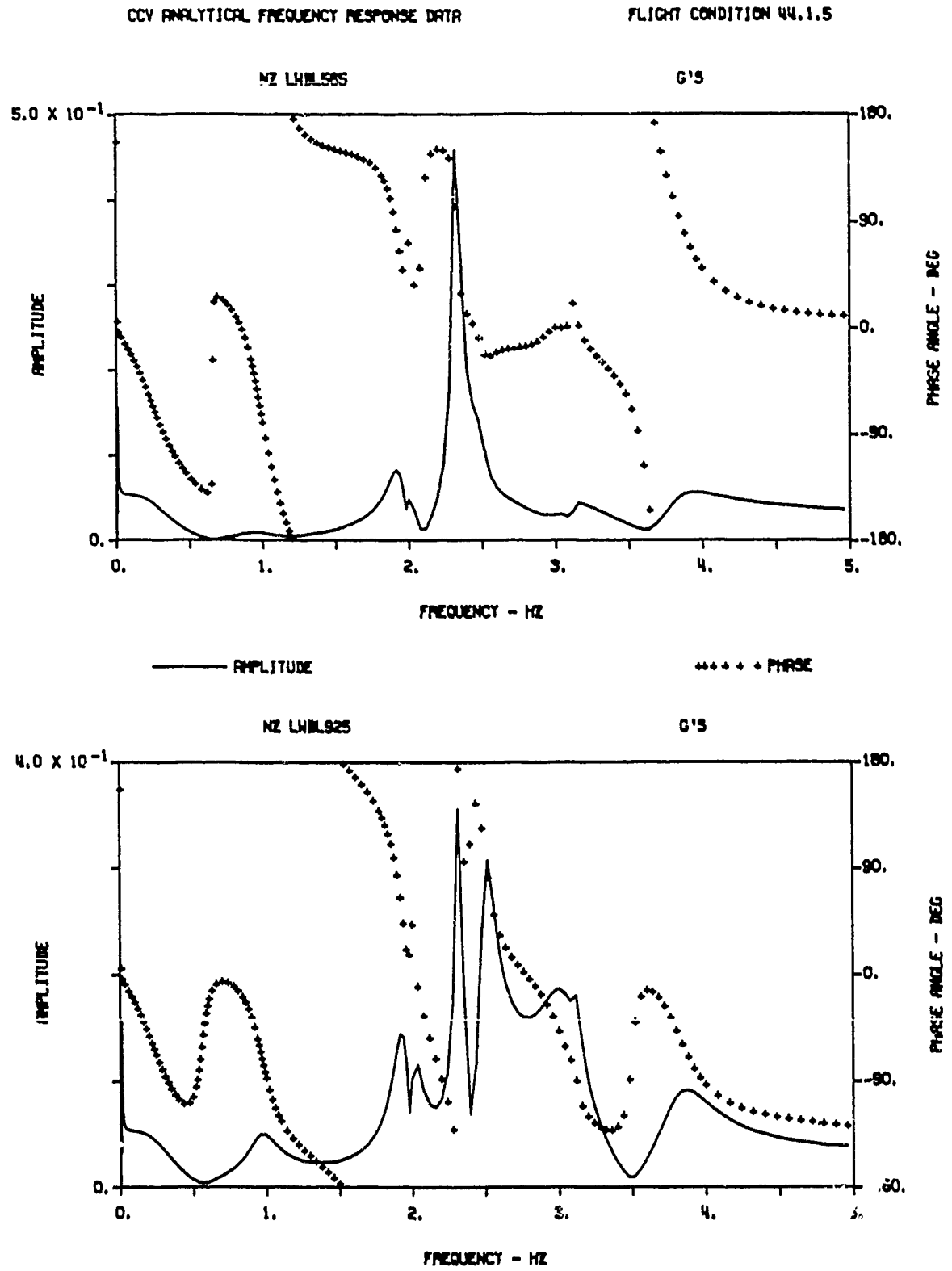


Figure 13. Frequency Responses - Outboard Flaperon Frequency Sweep, .005 to 5.0 Hz, 2.0 Degree Amplitude Sine Wave Input (Continued)

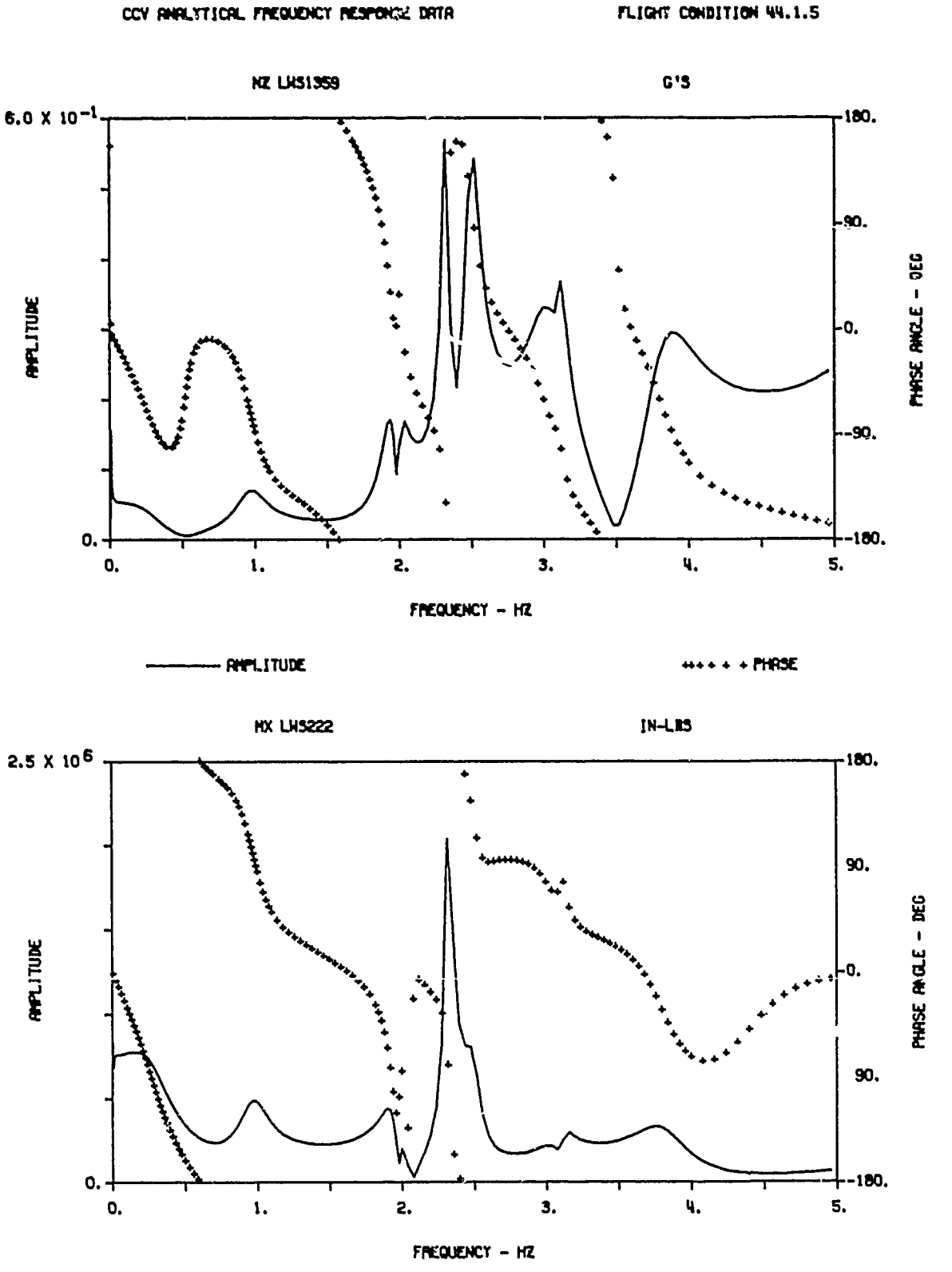


Figure 13. Frequency Responses - Outboard Flaperon Frequency Sweep, .005 to 5.0 Hz, 2.0 Degree Amplitude Sine Wave Input (Continued)

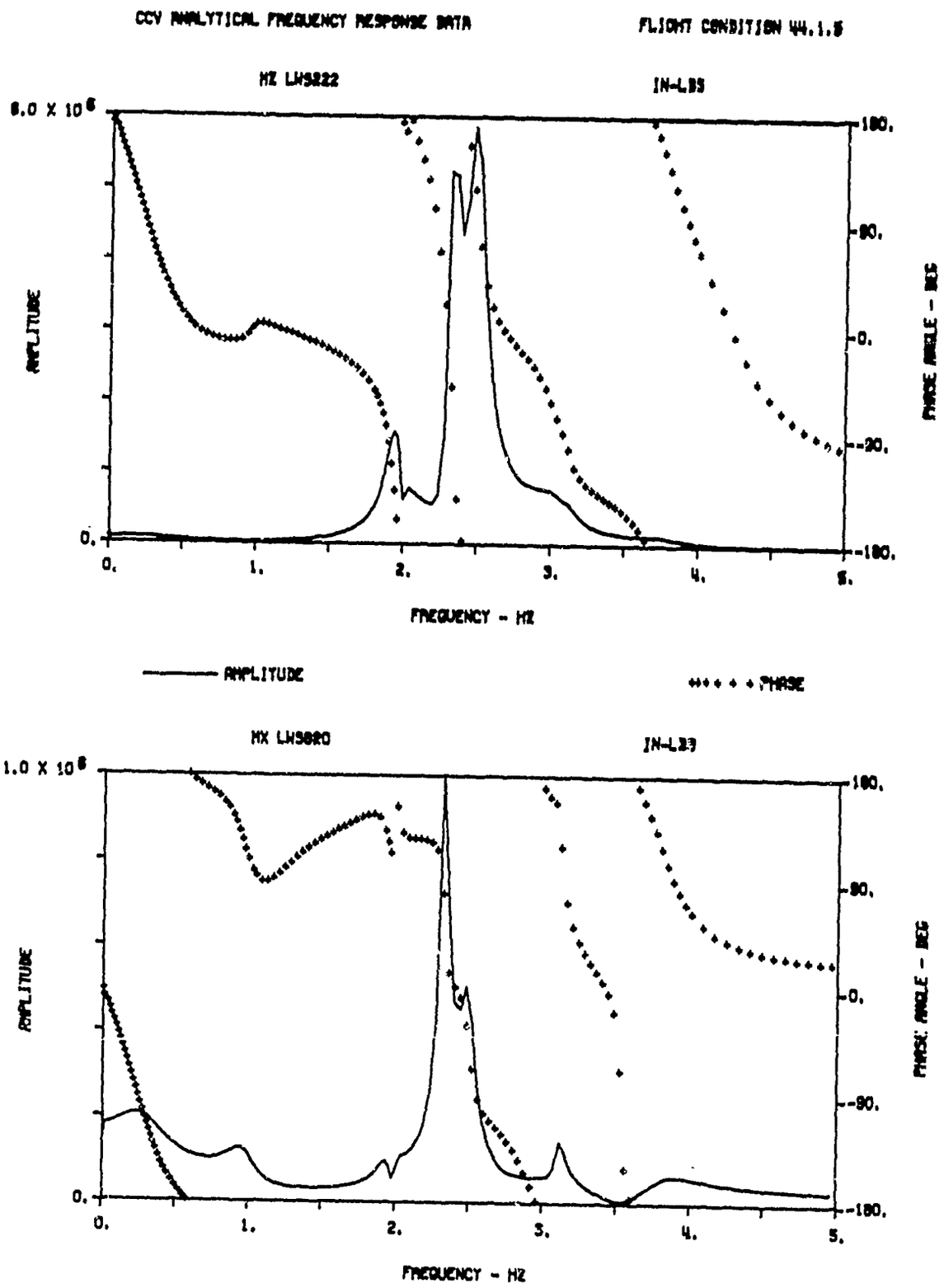


Figure 13. Frequency Responses - Outboard Flaperon Frequency Sweep, .005 to 5.0 Hz, 2.0 Degree Amplitude Sine Wave Input (Continued)

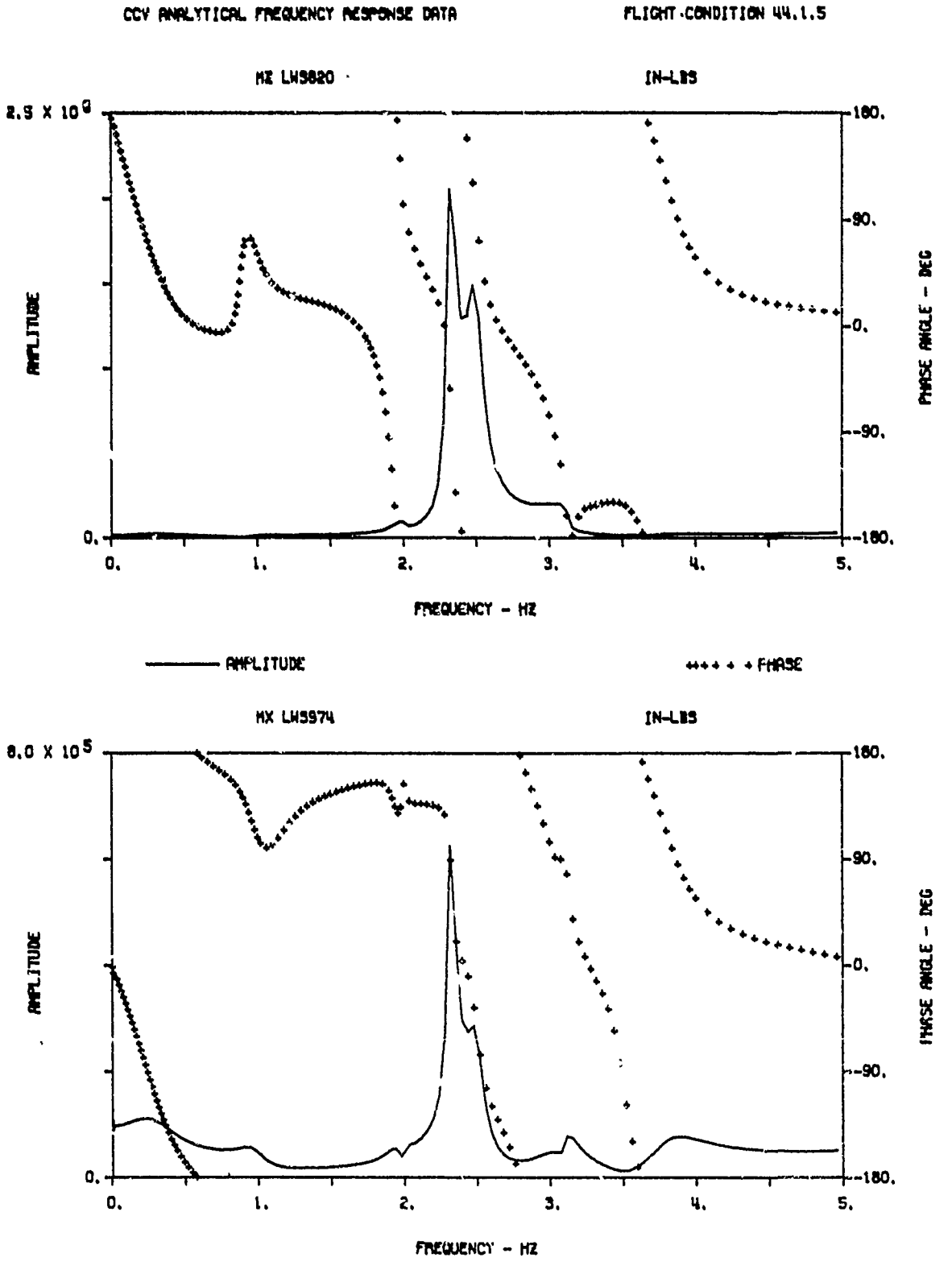


Figure 13. Frequency Responses - Outboard Flaperon Frequency Sweep, .005 to 5.0 Hz, 2.0 Degree Amplitude Sine Wave Input (Continued)

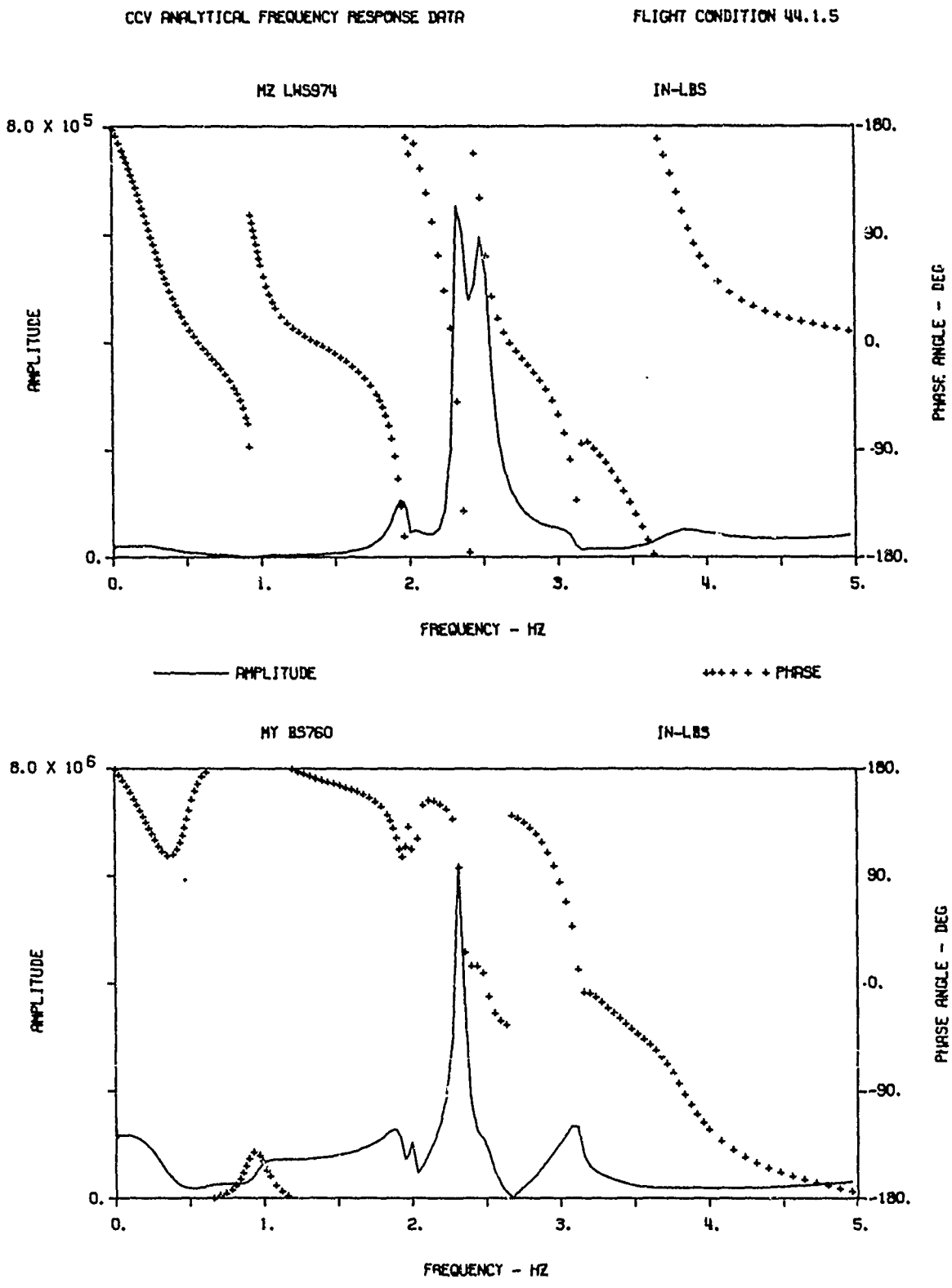


Figure 12. Frequency Responses - Outboard Flaperon Frequency Sweep, .005 to 5.0 Hz, 2.0 Degree Amplitude Sine Wave Input (Continued)

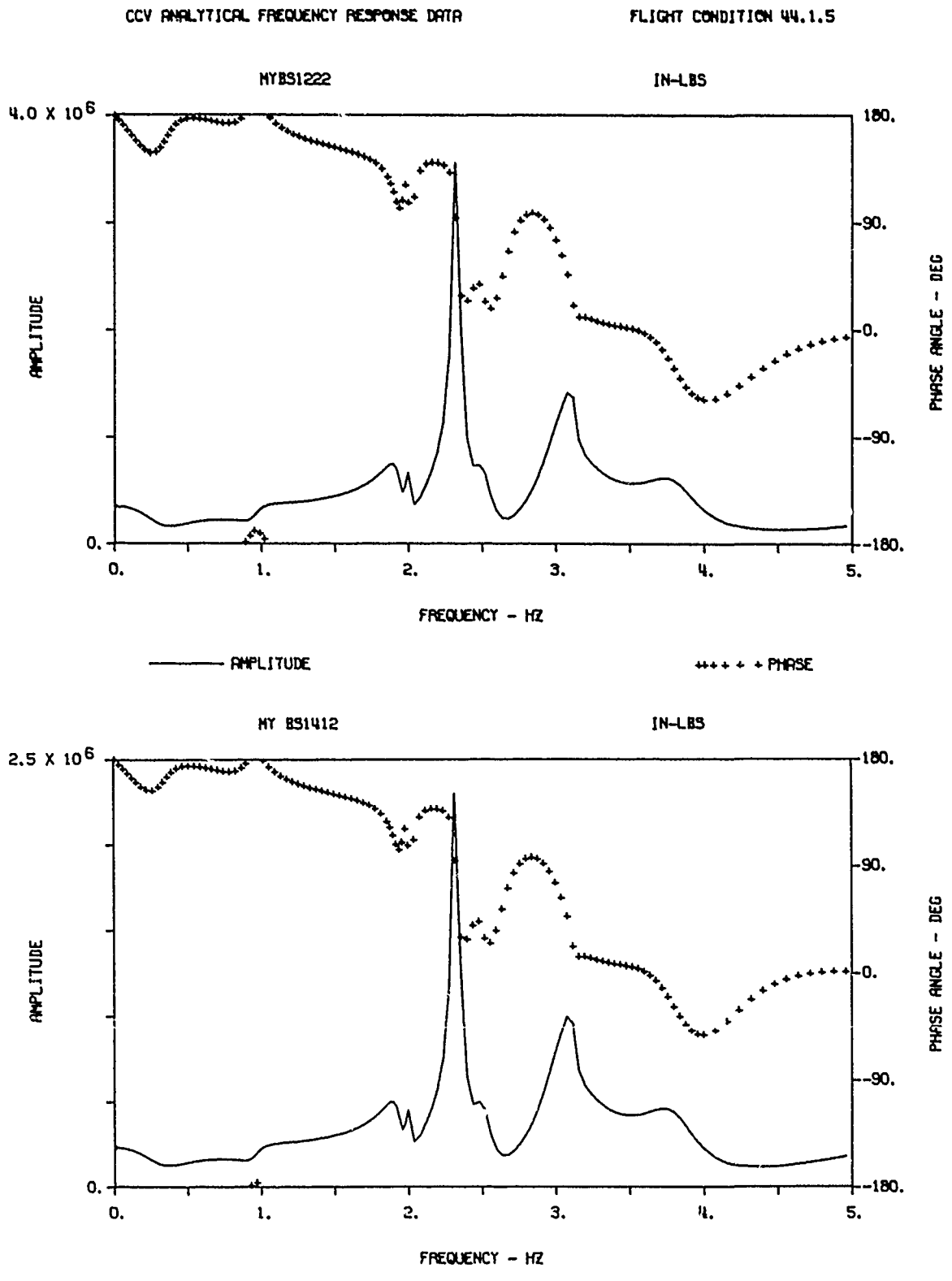


Figure 13. Frequency Responses - Outboard Flaperon Frequency Sweep, 005 to 5.0 Hz, 2.0 Degree Amplitude Sine Wave Input (Continued)

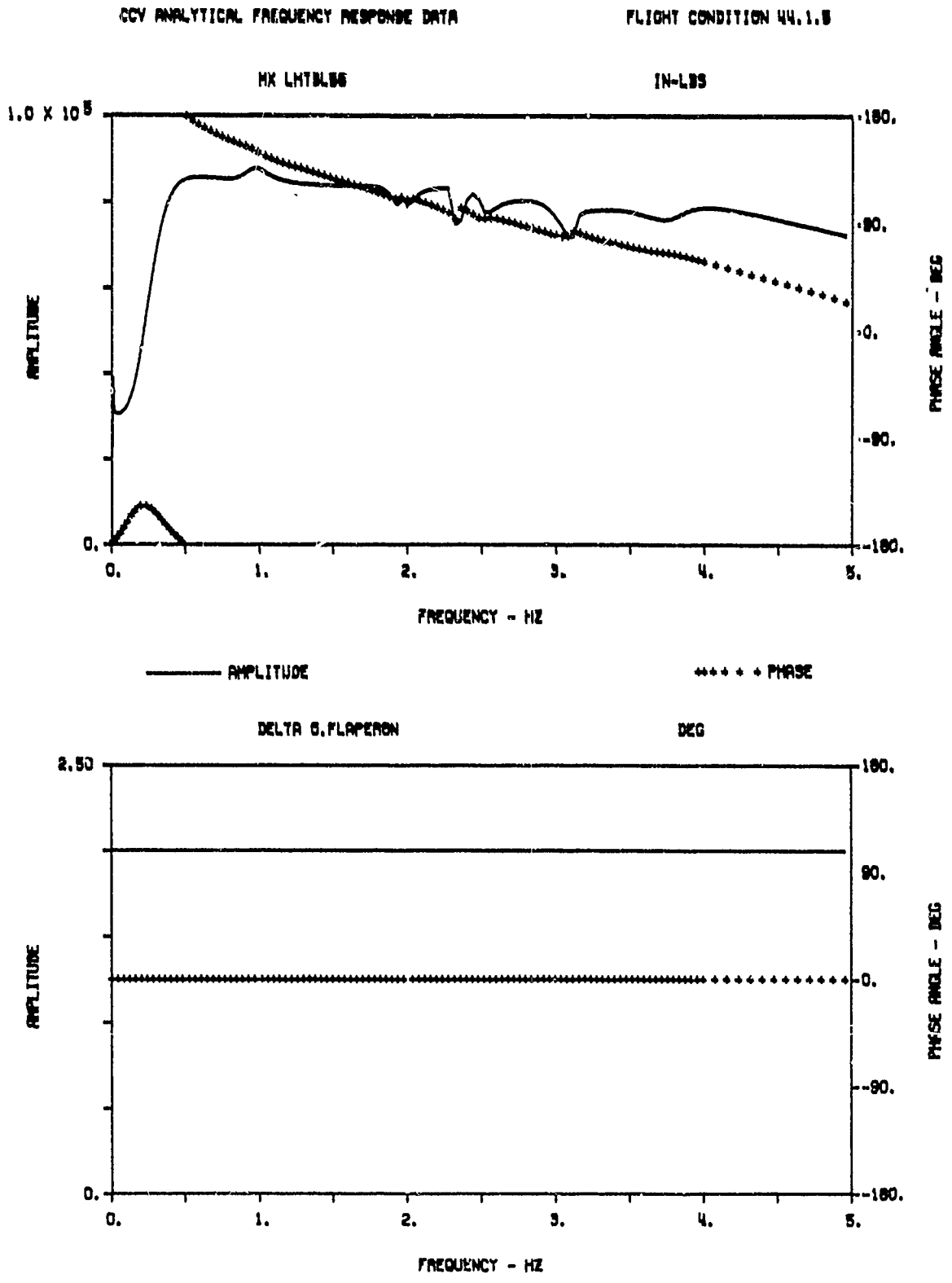


Figure 13. Frequency Responses - Outboard Flaperon Frequency Sweep, .005 to 5.0 Hz, 2.0 Degree Amplitude Sine Wave Input (Concluded)

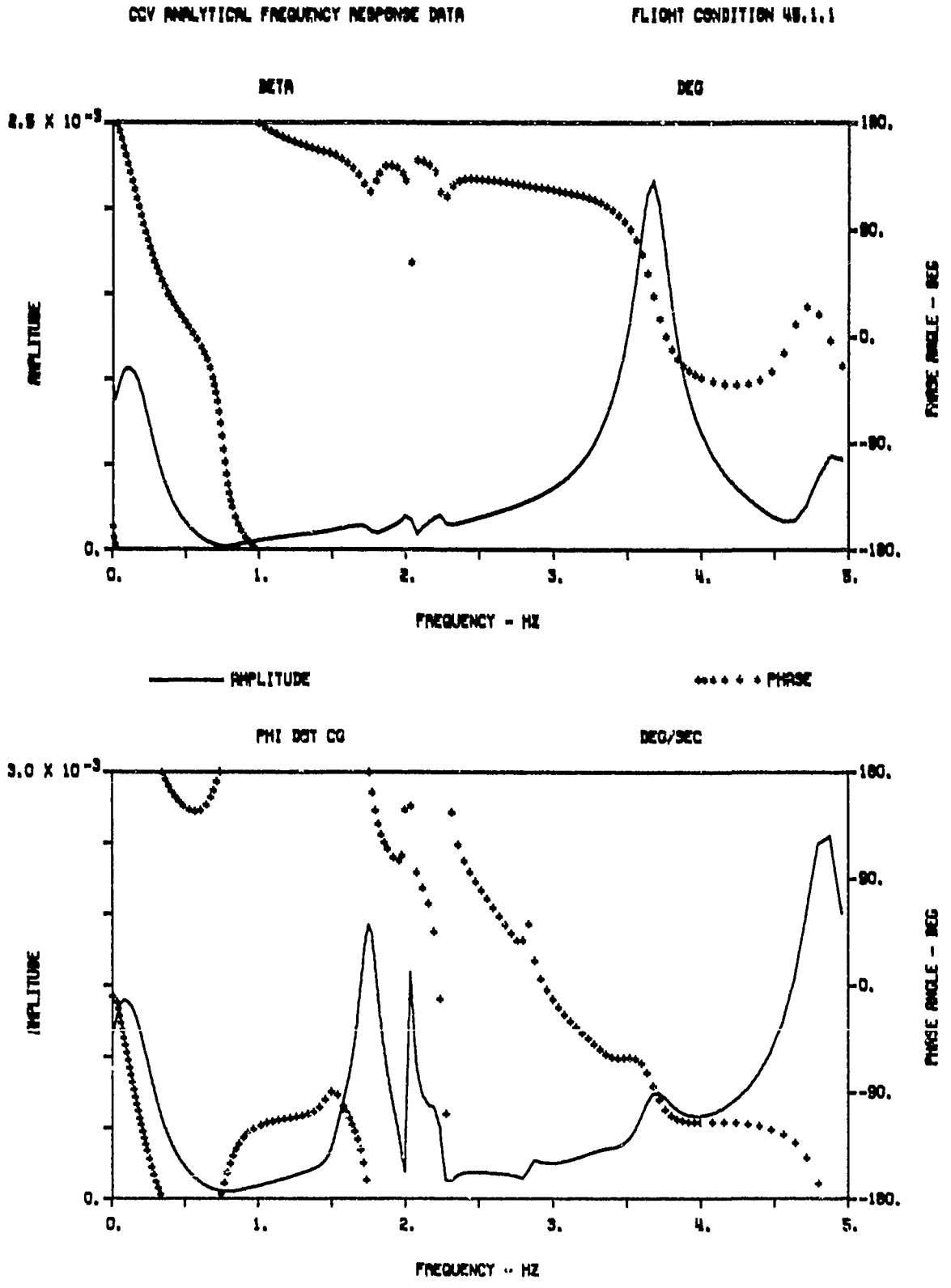


Figure 14. Frequency Responses - Vertical Canard Frequency Sweep, .005 to 5.0 Hz, 2.2 Degree Amplitude Sine Wave Input

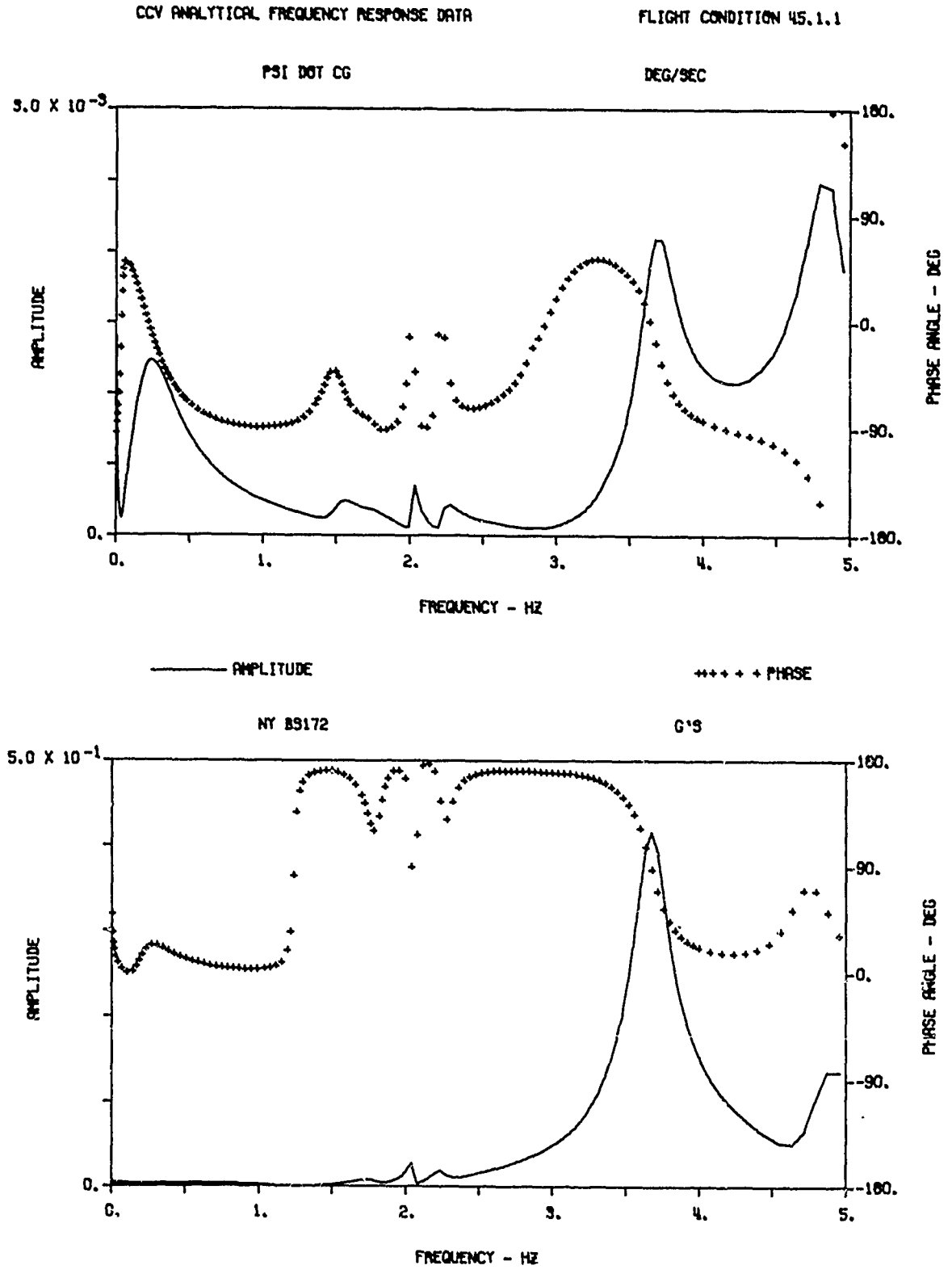


Figure 14. Frequency Responses - Vertical Canard Frequency Sweep, .005 to 5.0 Hz, 2.2 Degree Amplitude Sine Wave Input (Continued)

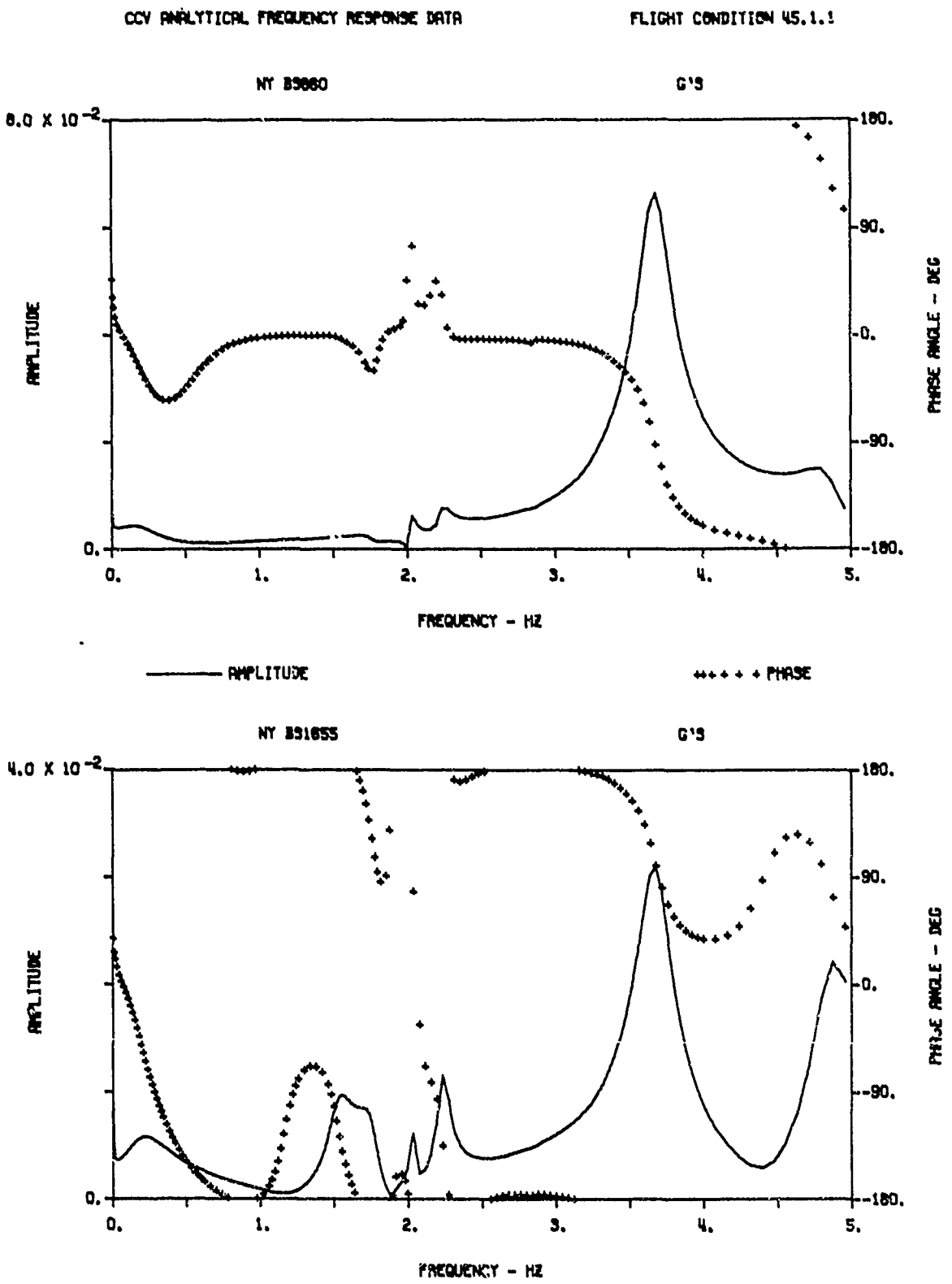


Figure 14. Frequency Responses - Vertical Canard Frequency Sweep, .005 to 5.0 Hz, 2.2 Degree Amplitude Sine Wave Input (Continued)

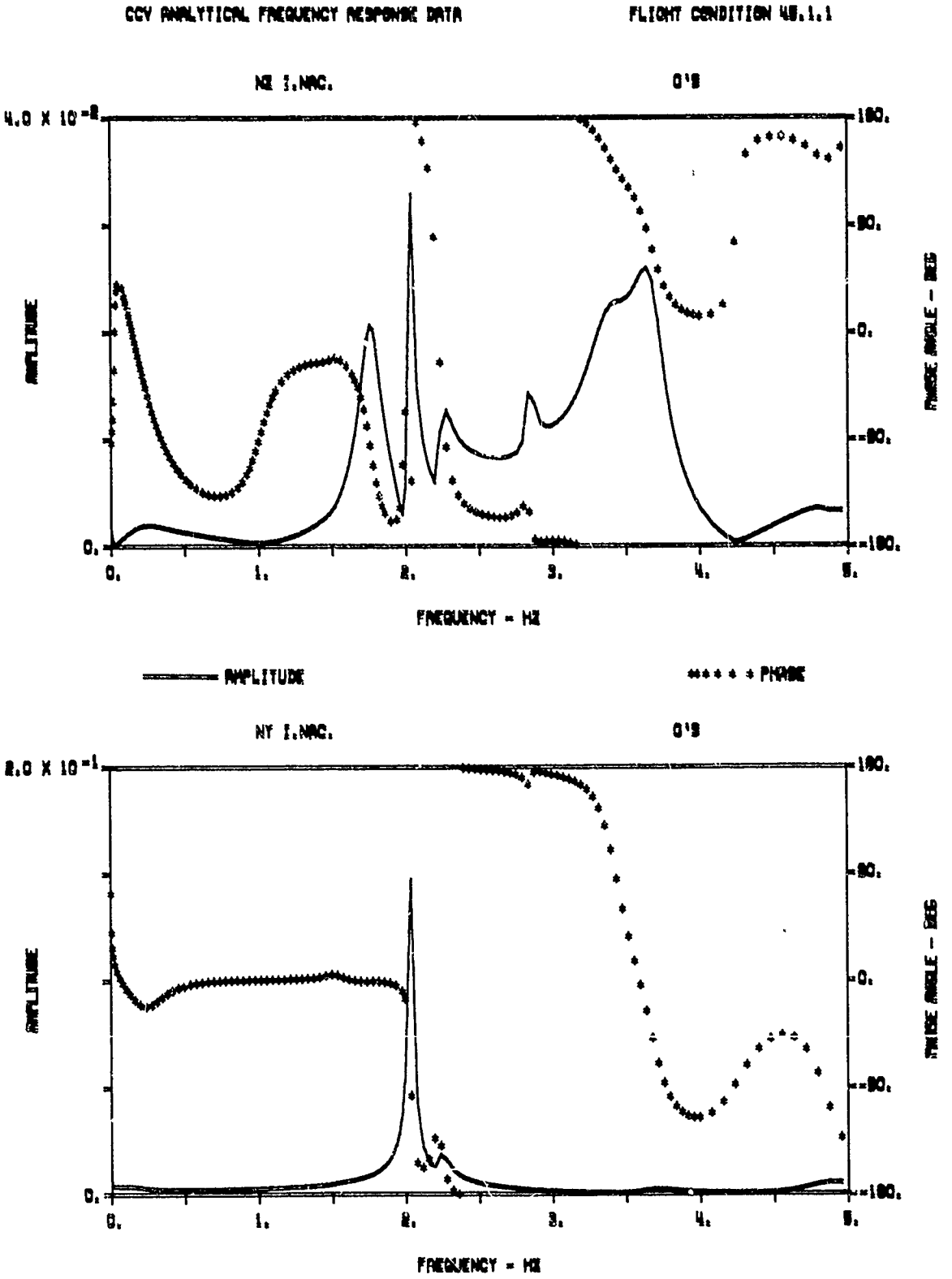


Figure 14. Frequency Responses - Vertical Canard Frequency Sweep, .005 to 5.0 Hz, 2.2 Degree Amplitude Sine Wave Input (Continued)

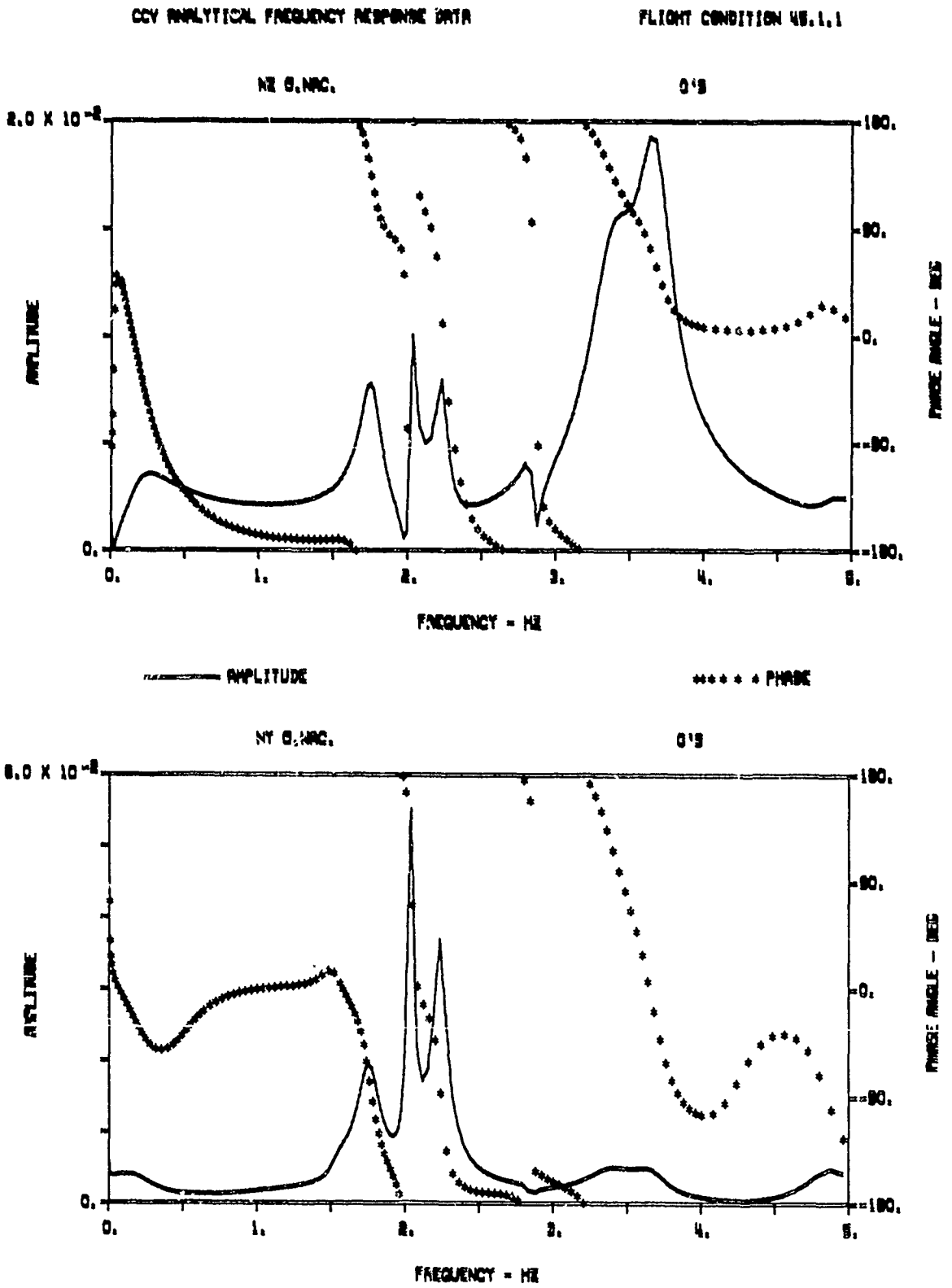


Figure 14. Frequency Responses - Vertical Canard Frequency Sweep, .005 to 5.0 Hz, 2.2 Degree Amplitude Sine Wave Input (Continued)

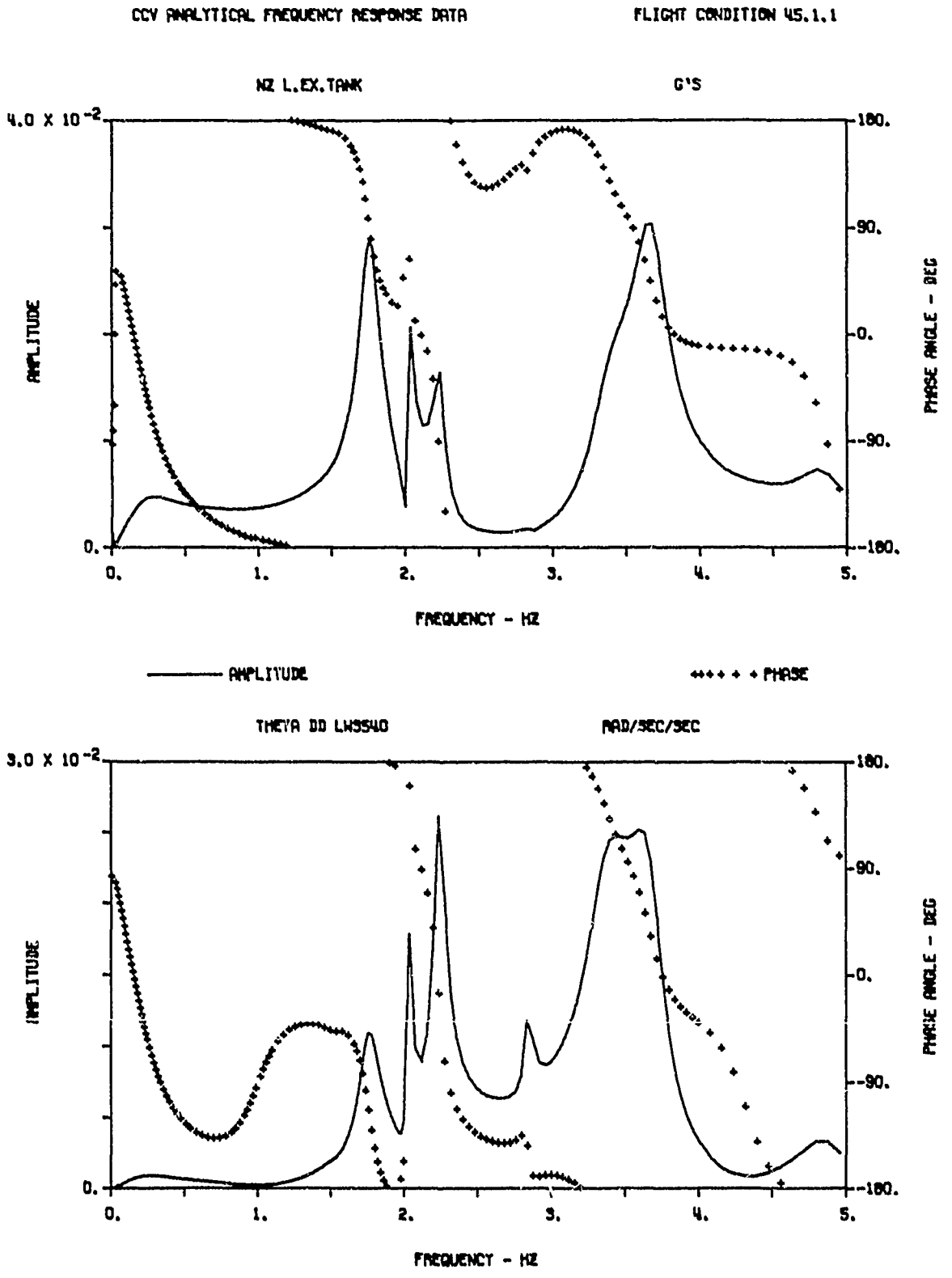


Figure 14. Frequency Responses - Vertical Canard Frequency Sweep, .005 to 5.0 Hz, 2.2 Degree Amplitude Sine Wave Input (Continued)

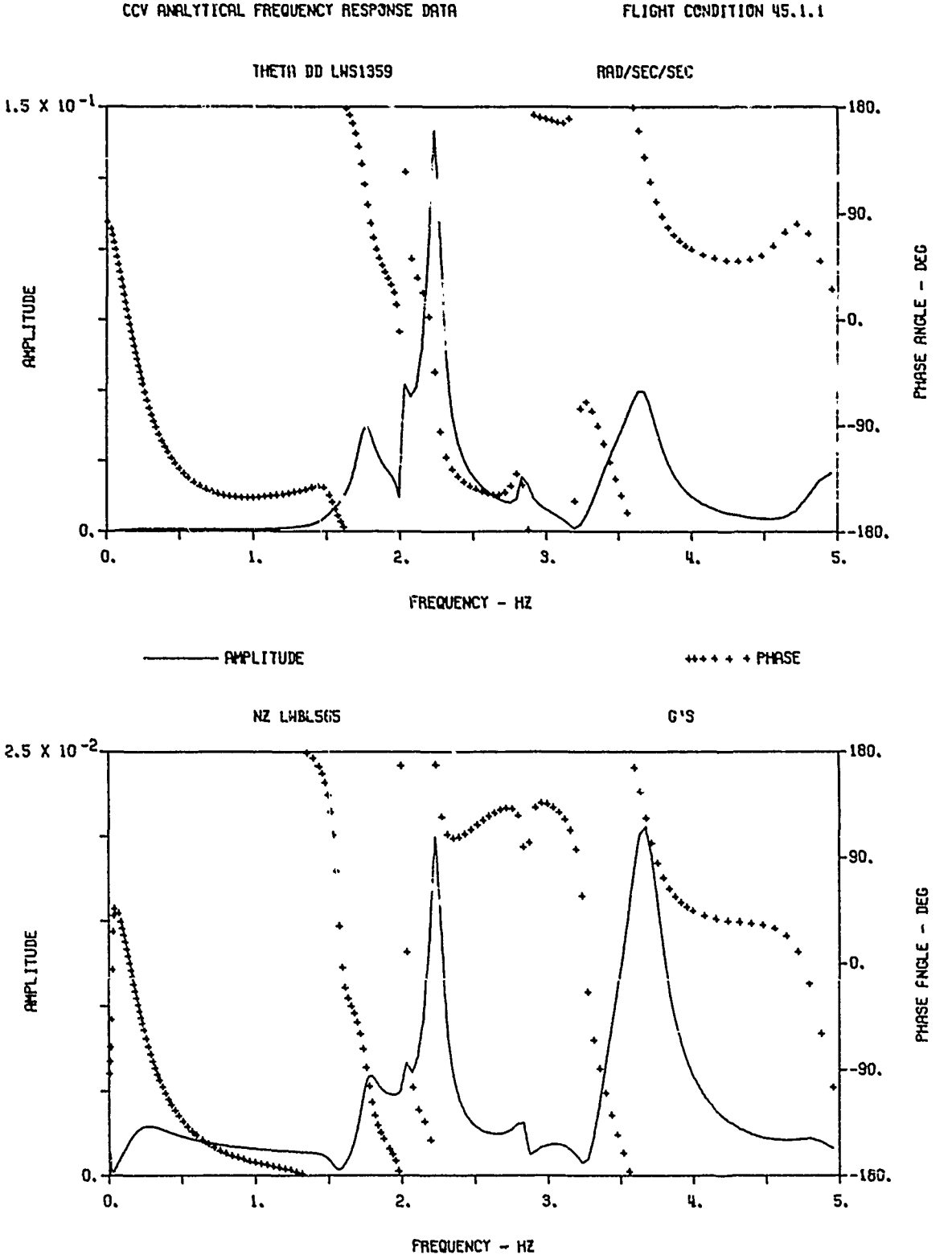


Figure 14. Frequency Responses - Vertical Canard Frequency Sweep, .005 to 5.0 Hz, 2.2 Degree Amplitude Sine Wave Input (Continued)

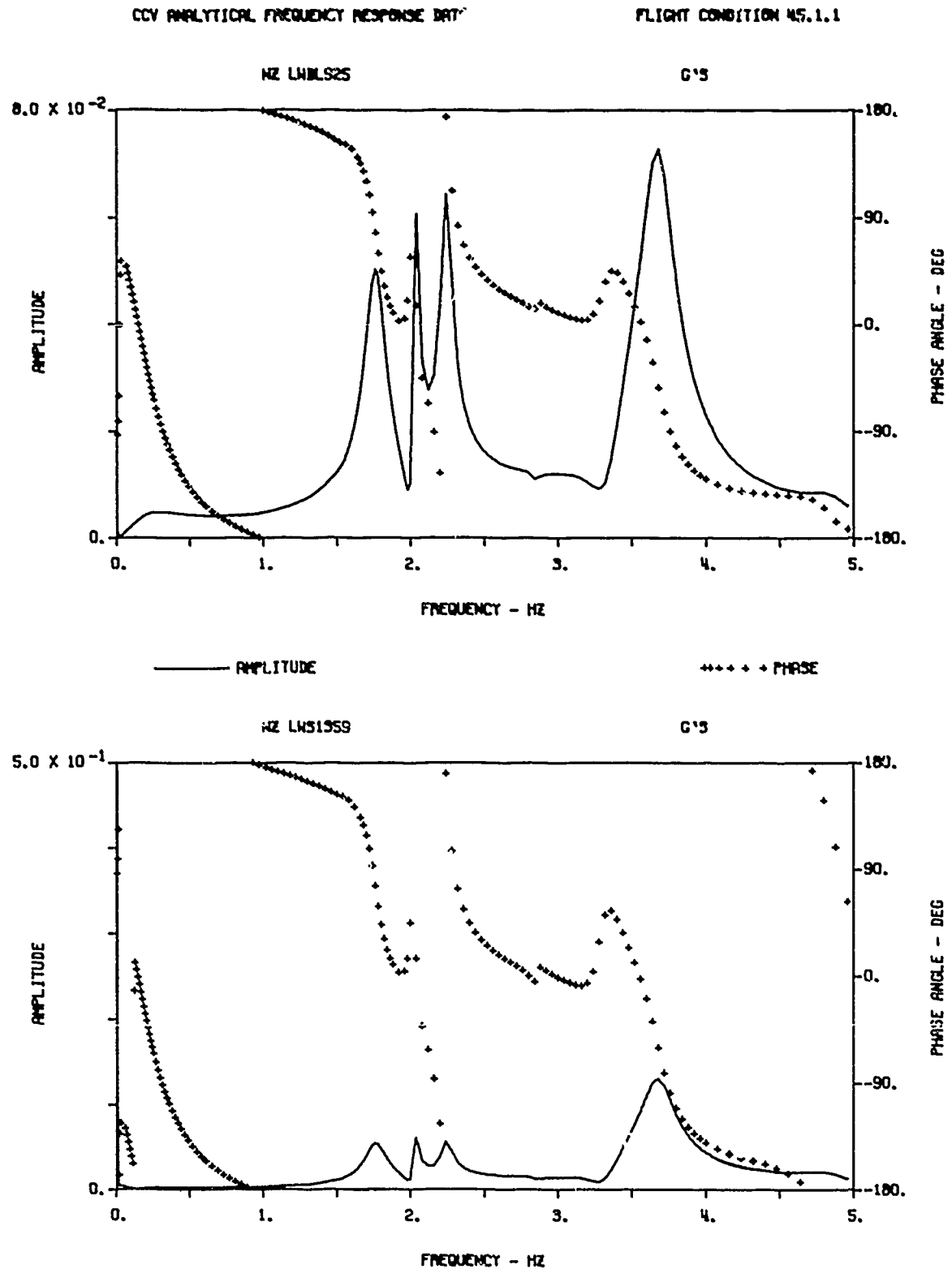


Figure 14. Frequency Responses - Vertical Canard Frequency Sweep, .005 to 5.0 Hz, 2.2 Degree Amplitude Sine Wave Input (Continued)

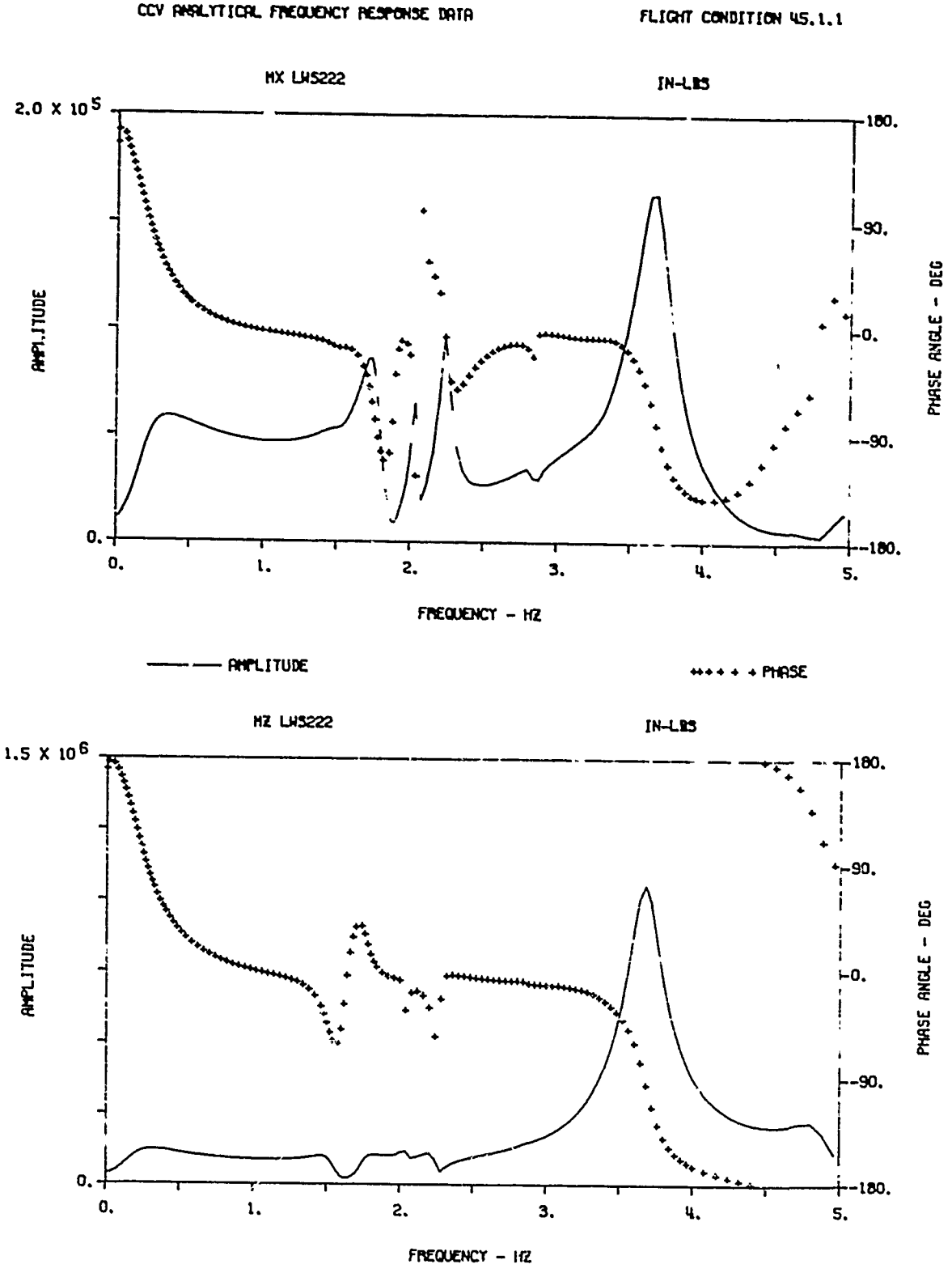


Figure 14. Frequency Responses - Vertical Canard Frequency Sweep, .005 to 5.0 Hz, 2.2 Degree Amplitude Sine Wave Input (Continued)

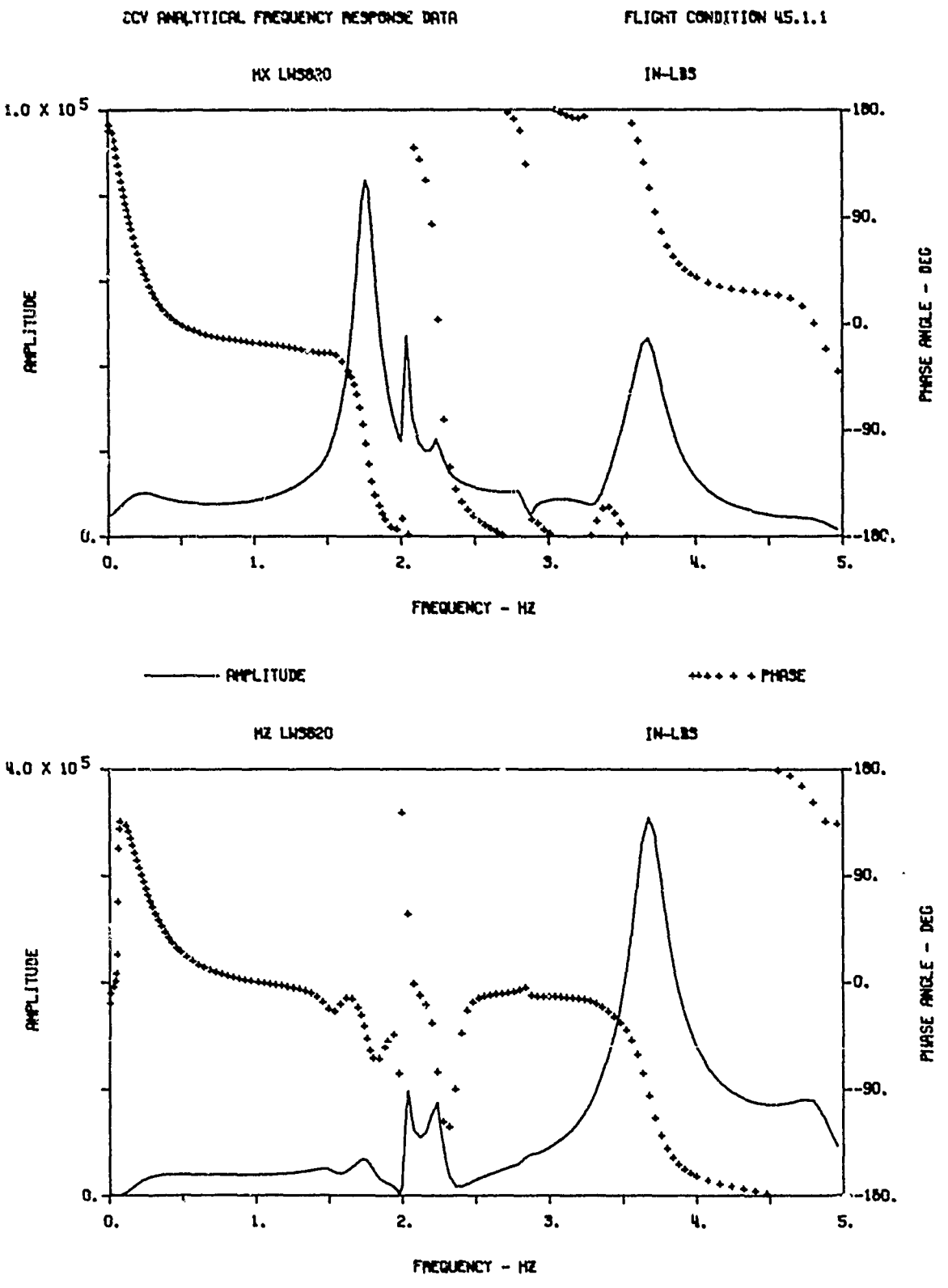


Figure 14. Frequency Responses - Vertical Canard Frequency Sweep, .005 to 5.0 Hz, 2.2 Degree Amplitude Sine Wave Input (Continued)

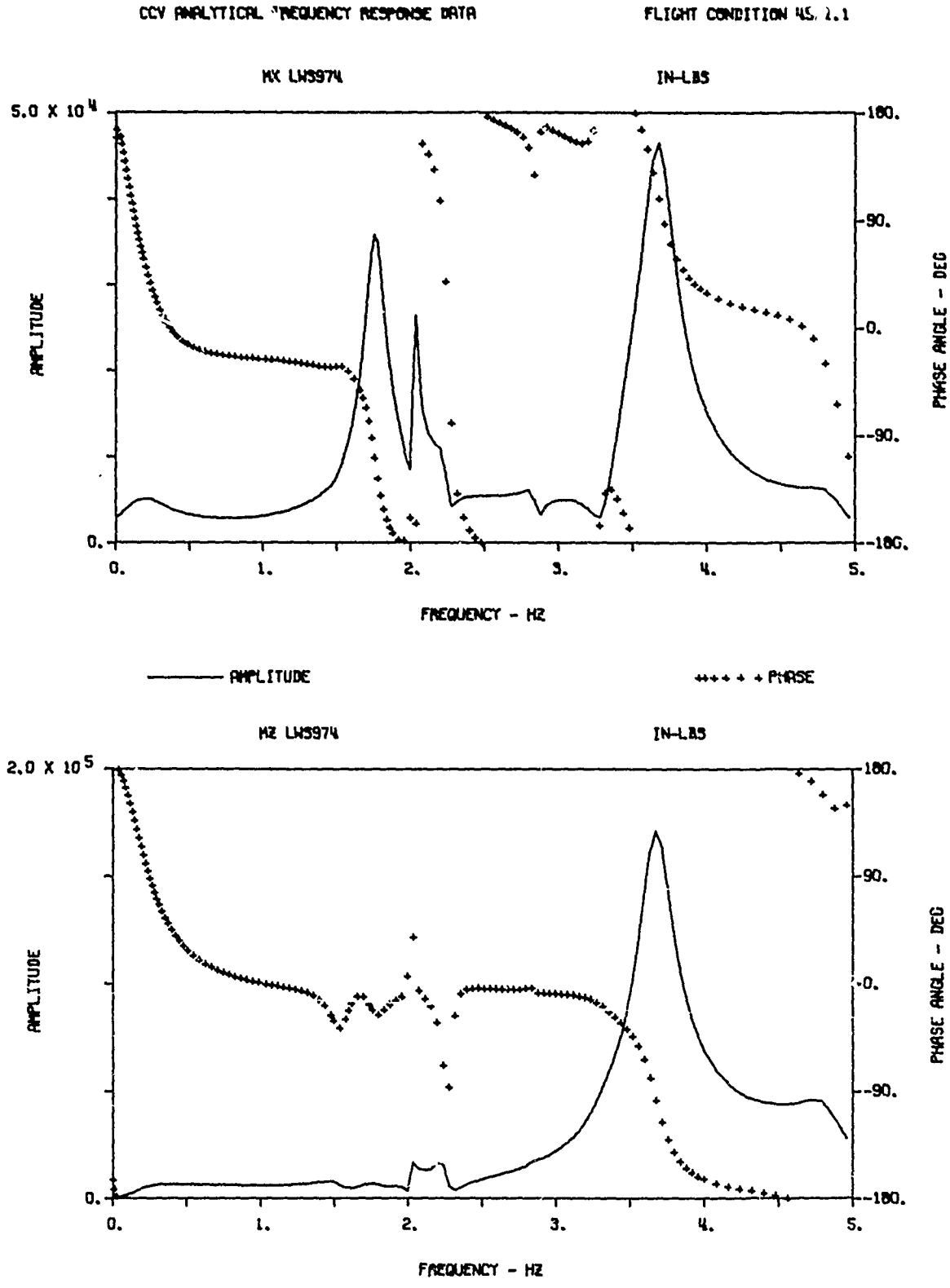


Figure 14. Frequency Responses - Vertical Canard Frequency Sweep, .005 to 5.0 Hz, 2.2 Degree Amplitude Sine Wave Input (Continued)

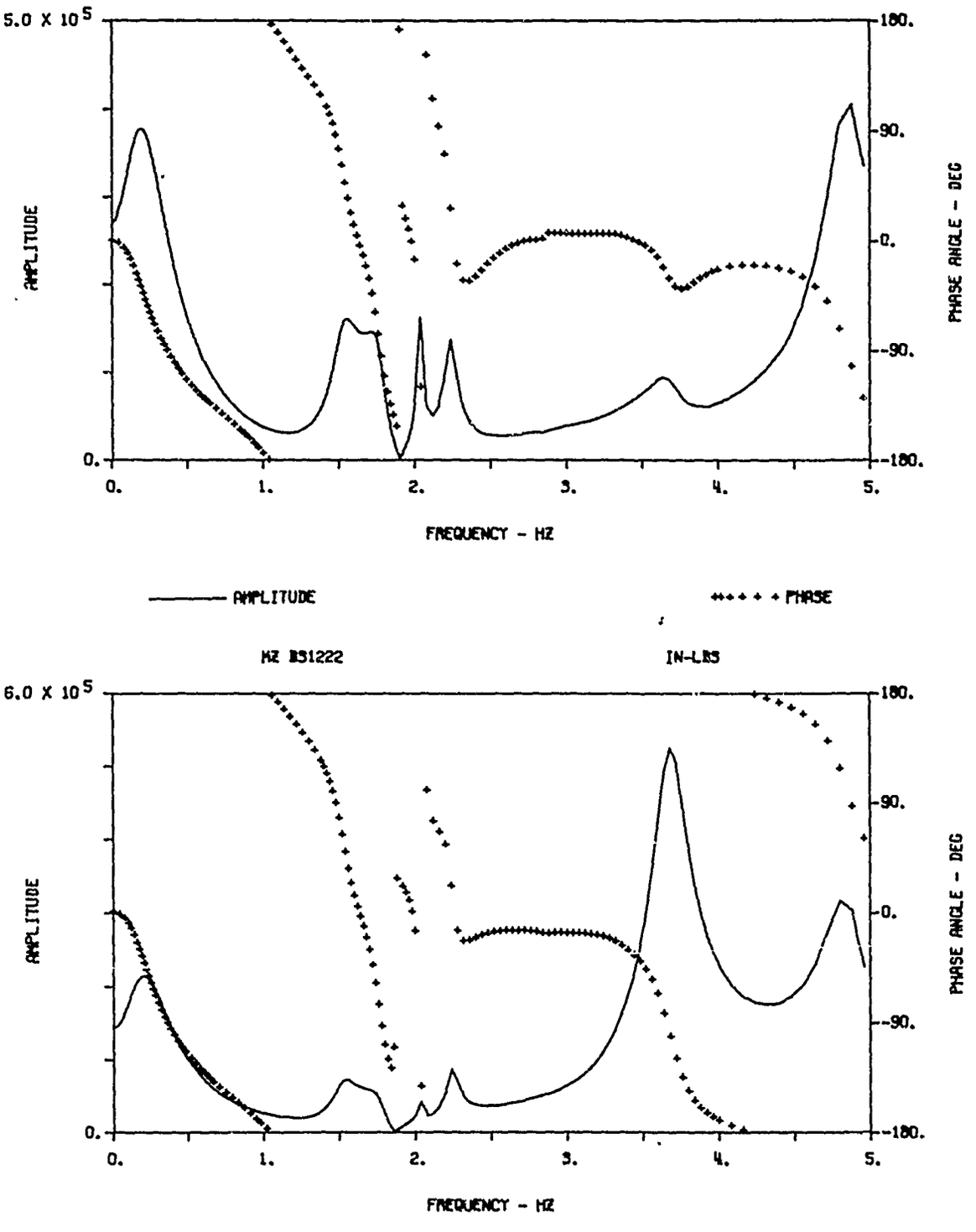


Figure 14. Frequency Responses - Vertical Canard Frequency Sweep, .005 to 5.0 Hz, 2.2 Degree Amplitude Sine Wave Input (Continued)

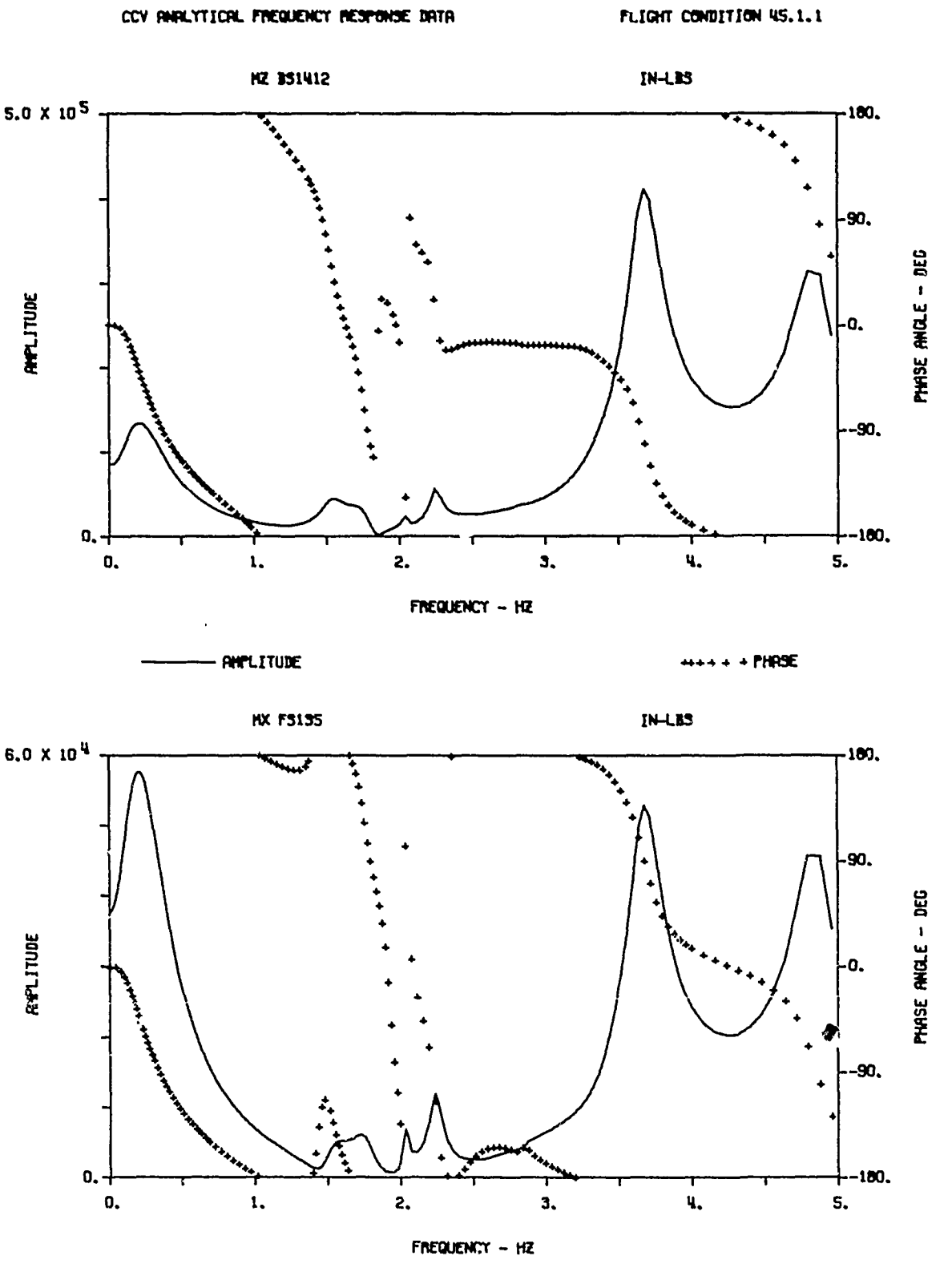


Figure 14. Frequency Responses - Vertical Canard Frequency Sweep, .005 to 5.0 Hz, 2.2 Degree Amplitude Sine Wave Input (Continued)

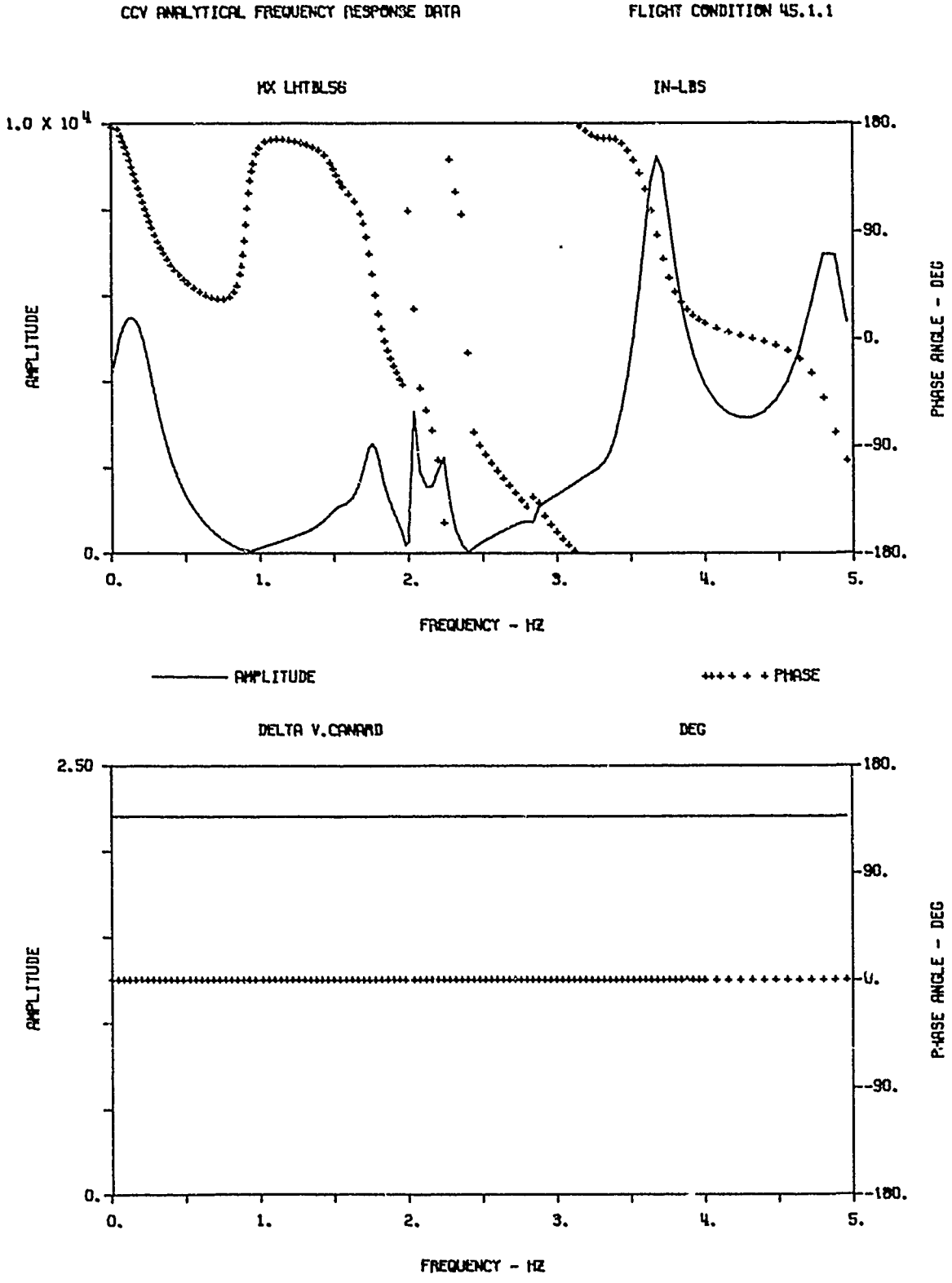


Figure 14. Frequency Responses - Vertical Canard Frequency Sweep, .005 to 5.0 Hz, 2.2 Degree Amplitude Sine Wave Input (Continued)

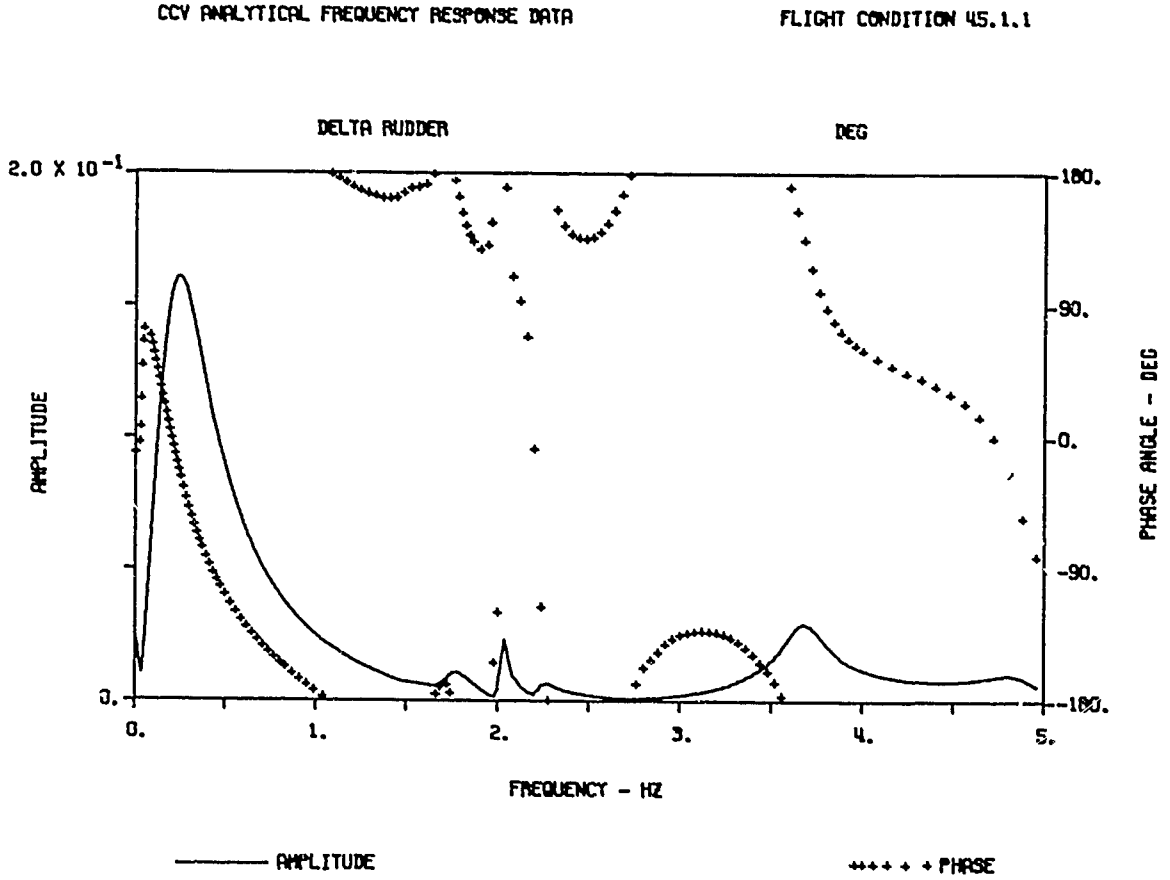


Figure 14. Frequency Responses - Vertical Canard Frequency Sweep, .005 to 5.0 Hz, 2.2 Degree Amplitude Sine Wave Input (Concluded)

SECTION VI

PARAMETER ESTIMATION BY CORRELATIONS AND LEAST SQUARES

Parameter estimation (PE) methods are categorized, in Reference [7], as (1) Equation Error Methods, (2) Output Error Methods, and (3) Advanced Methods. In general, the first category is quick-look methods, unable to account for measurement or input (process) noise. The second can account for measurement noise, and the third can account for both measurement and some types of input noise.

The PE method used in this project is not readily categorized in this manner. It is basically a least-squares method, which would be the first category. However, the least squares process is not applied to the airplane motions -- it is applied to the cross-correlation functions of the airplane state variables. In this way it is possible to eliminate the effects of measurement noise and input noise of any spectral shape. As with any cross-correlation process, the ability to resolve narrow band spectral peaks is increased with a long maximum correlation lag. If the signal/noise ratio is poor, many statistical degrees of freedom (ratio of total test time to maximum correlation lag) will be needed. If, in fact, there is no noise or unknown input in the data, the PE method becomes equivalent to a weighted least-squares method.

A critical element of this estimation is the recognition that the aerodynamic displacement and rate derivatives will vary with frequency. To permit the observation of this variation, the state vector, normally $[sq, q]$ was augmented with a quasi-integral to become $[sq, q, sq/(s+\beta)]$. This combination of freedoms has been found to adequately represent theoretical unsteady aerodynamics over the frequency range of interest (0-3 Hz) for the B-52.

The computational effort is increased with this addition. An eight degree-of-freedom (flight modes plus elastic modes) airplane would, for example, have 24 state variables. In order to reduce computing costs, the PE method has been programmed to perform the correlations and estimation for an equivalent third order set of difference equations. Conversion to differential equations is then accomplished via eigensystem analysis.

6.1 Development of Parameter Estimation Method

The following paragraphs show how the generalized displacements (elastic mode displacements) were obtained from measured responses, the development of the difference equation coefficients and the conversion to differential equation coefficients.

6.1.1 Generalized Displacements from Test Data, A Truncated Mode Approximation

In a theoretical dynamic analysis, the structural motions are assumed to be a superposition of center-of-gravity motions plus a limited number of elastic mode deformations. The linear and angular motions of points on the structure can be written

$$\{d(t)\} = [P] \{q(t)\} \qquad (1)$$

PRECEDING PAGE BLANK-NOT FI

where $\{q(t)\}$ are the instantaneous mode amplitudes and the columns of $[P]$ are deflections per unit modal displacement. With sensors chosen as accelerometers, the sensor outputs would be related to the elastic and center-of-gravity motions by

$$\{\ddot{d}(t)\} = [P]\{\ddot{q}(t)\} \tag{2}$$

where $\{\ddot{q}(t)\}$ are the instantaneous modal accelerations.

If strain gages provide the measured response, the loads are related to the elastic deformations by

$$\{\ell(t)\} = [L]\{q(t)\} \tag{3}$$

where the columns of $[L]$ are mode displacement load coefficients. The columns of $[P]$ and $[L]$ are determined from a theoretical vibration analysis. When using either $[P]$ or $[L]$ it is assumed that the matrix will contain more rows than columns. Using strain gage data, the modal displacements can be defined by the generalized inverse as follows:

$$\{q(t)\} = \left([L]^T[L]\right)^{-1}[L]^T\{\ell(t)\} \tag{4}$$

For symmetric tests, the state variables could be angle-of-attack, pitch rate, and modal displacements for six elastic modes. Then the state vector is

$$\{x(t)\} = \begin{Bmatrix} \alpha(t) \\ \dot{\theta}(t) \\ q_1(t) \\ \vdots \\ q_6(t) \end{Bmatrix} \tag{5}$$

For the antisymmetric test, the variables could be side slip angle, roll rate, yaw rate and modal displacements for five elastic modes.

6.1.2 Estimation of Difference Equation Coefficients

Coefficients are sought for the third order difference equation,

$$\{x_{i+1}\} = [C_1]\{x_i\} + [C_2]\{x_{i-1}\} + [C_3]\{x_{i-2}\} + [D_1]\{f_i\} + [D_2]\{f_{i-1}\} + [D_3]\{f_{i-2}\} + \{\epsilon_i\} \tag{6}$$

Where the state vector $\{x\}$ has been calculated from measured data and the inputs $\{f\}$ have been measured. All measurements are assumed to be noisy. The vector $\{\epsilon\}$ contains the unmeasured inputs (process noise).

When the above equation is rewritten in the following form,

$$\{x_{i+1}\} = [C_1 \mid C_2 \mid C_3 \mid D_1 \mid D_2 \mid D_3] \begin{Bmatrix} x_i \\ x_{i-1} \\ x_{i-2} \\ f_i \\ f_{i-1} \\ f_{i-2} \end{Bmatrix} + \{\epsilon_i\} \tag{7}$$

the following identity is readily established:

$$[U_{k+3}] = [C_1 \mid C_2 \mid C_3 \mid D_1 \mid D_2 \mid D_3] \begin{bmatrix} U_{k+2} \\ U_{k+1} \\ U_k \\ V_{k+2} \\ V_{k+1} \\ V_k \end{bmatrix} + [E_k] \tag{8}$$

Where $[U]$, $[V]$, and $[E]$ are cross-correlation matrices defined as

$$[U_k] = \sum_{i=k+1}^{n} \{x_i\} \{f_{i-k}\}^T; \; k = 1,2,\cdots, m \tag{9}$$

$$[V_k] = \sum_{i=k+1}^{n} \{f_i\} \{f_{i-k}\}^T; \; k = 1,2,\cdots, m \tag{10}$$

$$[E_k] = \sum_{i=k+1}^{n} \{\epsilon_i\} \{f_{i-k}\}^T; \; k = 1,2\cdots, m \tag{11}$$

The measurement noise vanishes in the correlation calculation if $n \to \infty$. The matrix $[E]$ will vanish relative to $[U]$ and $[V]$ if the $\{\epsilon\}$ are uncorrelated with the $\{f\}$ and $n/m \to \infty$. m must be at least large enough to provide the desired s-plane resolution, as defined by the Nyquist criteria. The number of statistical degrees of freedom, n/m, required will depend upon the amount of noise and undesired inputs present.

The difference equation coefficients are then found by least squares, namely:

$$[C_1 \mid C_2 \mid C_3 \mid D_1 \mid D_2 \mid D_3] = \left(\sum_{k=1}^{m-3} [U_{k+3}] \begin{bmatrix} U_{k+2} \\ U_{k+1} \\ U_k \\ V_{k+2} \\ V_{k+1} \\ V_k \end{bmatrix}^T \right) \left(\sum_{k=1}^{m-3} \begin{bmatrix} U_{k+2} \\ U_{k+1} \\ U_k \\ V_{k+2} \\ V_{k+1} \\ V_k \end{bmatrix} \begin{bmatrix} U_{k+2} \\ U_{k+1} \\ U_k \\ V_{k+2} \\ V_{k+1} \\ V_k \end{bmatrix}^T \right)^{-1} \tag{12}$$

The preferred test for this method of analysis would be independent random inputs to each of the control surfaces, spectrally shaped to provide uniform signal/noise over the test bandpass.

6.1.3 Conversion to Differential Equation Coefficients

After the coefficient matrices $[C]$ and $[D]$ of the difference equations have been determined, the coefficient matrices $[A]$ and $[B]$ of the equivalent differential equations may be calculated.

The required derivations follow from a comparison of the following first order forms:

$$\begin{Bmatrix} x_{i+1} \\ \hline x_i \\ \hline x_{i-1} \end{Bmatrix} = \left[\begin{array}{c|c|c} C_1 & C_2 & C_3 \\ \hline I & 0 & 0 \\ \hline 0 & I & 0 \end{array}\right] \begin{Bmatrix} x_i \\ \hline x_{i-1} \\ \hline x_{i-2} \end{Bmatrix} + \left[\begin{array}{c|c|c} D_1 & D_2 & D_3 \\ \hline 0 & 0 & 0 \\ \hline 0 & 0 & 0 \end{array}\right] \begin{Bmatrix} f_i \\ \hline f_{i-1} \\ \hline f_{i-2} \end{Bmatrix} \quad ; \text{ difference equations} \tag{13}$$

$$\begin{Bmatrix} \ddot{x} \\ \hline \dot{x} \\ \hline \dot{r} \end{Bmatrix} = \left[\begin{array}{c|c|c} A_1 & A_2 & A_3 \\ \hline I & 0 & 0 \\ \hline I & 0 & -\beta I \end{array}\right] \begin{Bmatrix} \dot{x} \\ \hline x \\ \hline r \end{Bmatrix} + \left[\begin{array}{c|c|c} B_1 & B_2 & B_3 \\ \hline 0 & 0 & 0 \\ \hline 0 & 0 & 0 \end{array}\right] \begin{Bmatrix} \dot{f} \\ \hline f \\ \hline g \end{Bmatrix} \quad ; \text{ differential equations} \tag{14}$$

$$\text{where } q \rightarrow \boxed{\frac{s}{s+\beta}} \rightarrow r \quad \text{and} \quad f \rightarrow \boxed{\frac{s}{s+\beta}} \rightarrow g$$

Taking the LaPlace transform of each shows the equivalence of the two eigensystems:

$$\left(e^{s\Delta t}\,[I] - \left[\begin{array}{c|c|c} C_1 & C_2 & C_3 \\ \hline I & 0 & 0 \\ \hline 0 & I & 0 \end{array}\right] \right) \begin{Bmatrix} \bar{x} \\ \hline e^{-s\Delta t}\bar{x} \\ \hline e^{-2s\Delta t}\bar{x} \end{Bmatrix} = \left[\begin{array}{c|c|c} D_1 & D_2 & D_3 \\ \hline 0 & 0 & 0 \\ \hline 0 & 0 & 0 \end{array}\right] \begin{Bmatrix} \bar{f} \\ \hline e^{-s\Delta t}\bar{f} \\ \hline e^{-2s\Delta t}\bar{f} \end{Bmatrix} \tag{15}$$

$$\left(s\,[I] - \left[\begin{array}{c|c|c} A_1 & A_2 & A_3 \\ \hline I & 0 & 0 \\ \hline I & 0 & -\beta I \end{array}\right] \right) \begin{Bmatrix} s\bar{x} \\ \hline \bar{x} \\ \hline \frac{s}{s+\beta}\bar{x} \end{Bmatrix} = \left[\begin{array}{c|c|c} B_1 & B_2 & B_3 \\ \hline 0 & 0 & 0 \\ \hline 0 & 0 & 0 \end{array}\right] \begin{Bmatrix} s\bar{f} \\ \hline \bar{f} \\ \hline \frac{s}{s+\beta}\bar{f} \end{Bmatrix} \tag{16}$$

Thus $\lambda_A = \frac{1}{\Delta t} \text{LOG}_e\,(\lambda_c)$ (17)

and $[A_1 | A_2 | A_3] = [I | 0 | 0]\,[T]\,[\text{diag}\,(\lambda_A)]\,[T]^{-1}$, Where $[T] = \left[\ldots \left| \begin{array}{c} \lambda_{A_i}\bar{x}_{\lambda_i} \\ \hline \bar{x}_{\lambda_i} \\ \hline \frac{\lambda_{A_i}}{\lambda_{A_i}+\beta}\bar{x}_{\lambda_i} \end{array} \right| \ldots \right]$

and where $\{\bar{x}_{\lambda_i}\}$ is a partition of the corresponding vector of the C-matrix.

Although $[A_1]$, $[A_2]$, and $[A_3]$ are completely determined by $[C_1]$, $[C_2]$, $[C_3]$ and the specification of β, the determination of $[B_1]$, $[B_2]$, and $[B_3]$ requires an assumption about the form of the forcing function. For example, if

$$\begin{Bmatrix} f_{i+1} \\ \dot{f}_i \\ f_{i-1} \end{Bmatrix} = \begin{bmatrix} \frac{\Delta t^2}{2}\underline{r} & \Delta t I & I \\ 0 & 0 & I \\ \frac{\Delta t^2}{2} I & -\Delta t I & I \end{bmatrix} \begin{Bmatrix} \ddot{f}_i \\ \dot{f}_i \\ f_i \end{Bmatrix} \tag{18}$$

and, using $\bar{g} = \frac{s}{s+\beta}\bar{f} \approx \left(\frac{s}{\beta} - \frac{s^2}{\beta}\right)\bar{f}$ (19)

$$\begin{Bmatrix} \ddot{f} \\ \dot{f} \\ f \end{Bmatrix} = \begin{bmatrix} \beta I & 0 & -\beta^2 I \\ I & 0 & 0 \\ 0 & I & 0 \end{bmatrix} \begin{Bmatrix} \dot{f} \\ f \\ g \end{Bmatrix} \tag{20}$$

we can write

$$[B_1 | F_2 | B_3] = \frac{1}{\Delta t}[D_1 | D_2 | D_3] \begin{bmatrix} \frac{\Delta t^2}{2} I & \Delta t I & I \\ 0 & 0 & I \\ \frac{\Delta t^2}{2} I & -\Delta t I & I \end{bmatrix} \begin{bmatrix} \beta I & 0 & -\beta^2 I \\ I & 0 & 0 \\ 0 & I & 0 \end{bmatrix} \tag{21}$$

so that

$$[B_1] = ([D_1] - [D_3]) + \frac{\Delta t}{2}\beta([D_1] + [D_3]) \tag{22}$$

$$[B_2] = \frac{1}{\Delta t}([D_1] + [D_2] + [D_3]) \tag{23}$$

$$[B_3] = -\frac{\beta^2 \Delta t}{2}([D_1] + [D_3]) \tag{24}$$

6.2 Parameter Estimation Data

The parameter estimation method described in the previous paragraphs was applied to the three-frequency sweep and the five transient flight test conditions described in Section IV. The eigenvalues obtained from the frequency sweep test data compare much more favorably with the theoretical eigenvalues than the ones obtained from the transient test data. The differences are due in part to the amount of data available. The frequency sweep test were 135 to 140 seconds in duration, while the transient test lasted from 5 to 16 seconds. A discussion of the results of the parameter estimation is given in the following paragraphs.

6.2.1 Estimated Data from Outboard Aileron Sweep

Application of parameter estimation to the test involving the outboard ailerons produces the most satisfactory results. This should not be entirely unexpected since the outboard ailerons excite the lower frequency structural modes to a greater extent than either the outboard flaperons or the vertical canard. A plot of theoretical and estimated system eigenvalues is shown in Figure 15. Since the control input frequency sweep started at about 3 radians/sec, the short period mode (1.62 radians/sec) was not well defined. The candidate modes included in the parameter estimation included the first six elastic modes (6 to 16 radians/sec). Therefore, eigenvalues above 16 radians/sec were not well defined. The estimated eigenvalues shown in Figure 15 were derived from bending moment measurements, angle-of-attack, and center-of-gravity pitch rate. There were no bending moment measurements for the nacelle struts and, as expected, the nacelle modes at about 12 radians/sec were not well defined.

Flight Condition 44.2.48.2 was transient input to the outboard aileron. The input to the transient condition was applied to the system coefficients derived from the frequency sweep data, resulting in an approximation of the measured data for the transient condition. Figure 16 shows the generalized freedoms calculated using the derived coefficients along with the input used. The computed elastic mode displacements were used to generate the bending moment time histories shown in Figure 17. Considering the differences between the theoretical eigenvalues and the estimated eigenvalues, the reconstructed bending moments do not appear to be unreasonable.

An attempt was made to resolve the nacelle modes using the acceleration data, since both vertical and lateral accelerations were measured for the inboard and outboard nacelles. The estimated system eigenvalues shown in Figure 18 do not compare very favorably with the theoretical eigenvalues nor with the eigenvalues estimated from the bending moment measurements. This may indicate that the acceleration measurements are not as useful in resolving elastic mode deformations as are bending moments.

6.2.2 Estimated Data from Outboard Flaperon Frequency Sweep

The eigenvalues estimated from the outboard flaperon frequency sweep test data are shown in Figure 19. The eigenvalues were estimated using

bending moment, angle of attack and pitch rate. The estimated eigenvalues show rather poor comparison with the theoretical eigenvalues. However, the flaperons do not excite the lower frequency modes very well and the comments about the short period and higher frequency modes and lack of nacelle strut data still apply. Since there is no transient flaperon input tests included in the data package, no responses were computed using the derived system coefficients.

6.2.3 Estimated Data from Vertical Canard Frequency Sweep

The eigenvalues estimated from the vertical canard frequency sweep test data are shown in Figure 20. For this antisymmetric condition the data used for the estimation was sideslip angle, roll and yaw rates, and bending moment measurements. The bending moment data was used to compute elastic mode deflections for the first five elastic modes (11 to 14.1 radians/sec). The elastic mode deflections were then used with the sideslip and roll and yaw rates for the parameter estimation routine. As with the flaperon data, the estimated eigenvalues do not compare very well with the theoretical eigenvalues. This is in part due to the lack of nacelle data, lack of input below the roll convergence mode frequency and the fact that the vertical canard does not excite the lower frequency elastic modes sufficiently to provide good resolution of the modes.

6.2.4 Estimated Data from the Transient Input Test Conditions

Eigenvalues were estimated from the recorded data from each of the transient input flight tests (elevator sine wave, elevator rectangle, elevator triangle, outboard aileron and rudder sine wave). The estimated eigenvalues are shown, along with the theoretical eigenvalues, in Figures 21 through 25. The plots of estimated and theoretical eigenvalues show very poor comparison between the two. There are two reasons for the poor comparison. One reason is that there is insufficient data available from the short duration transient tests to eliminate the effects of noise (either processing or external). The second reason for the poor comparison is that the transient control inputs do not excite all of the rigid body and elastic modes being considered in the parameter estimation model.

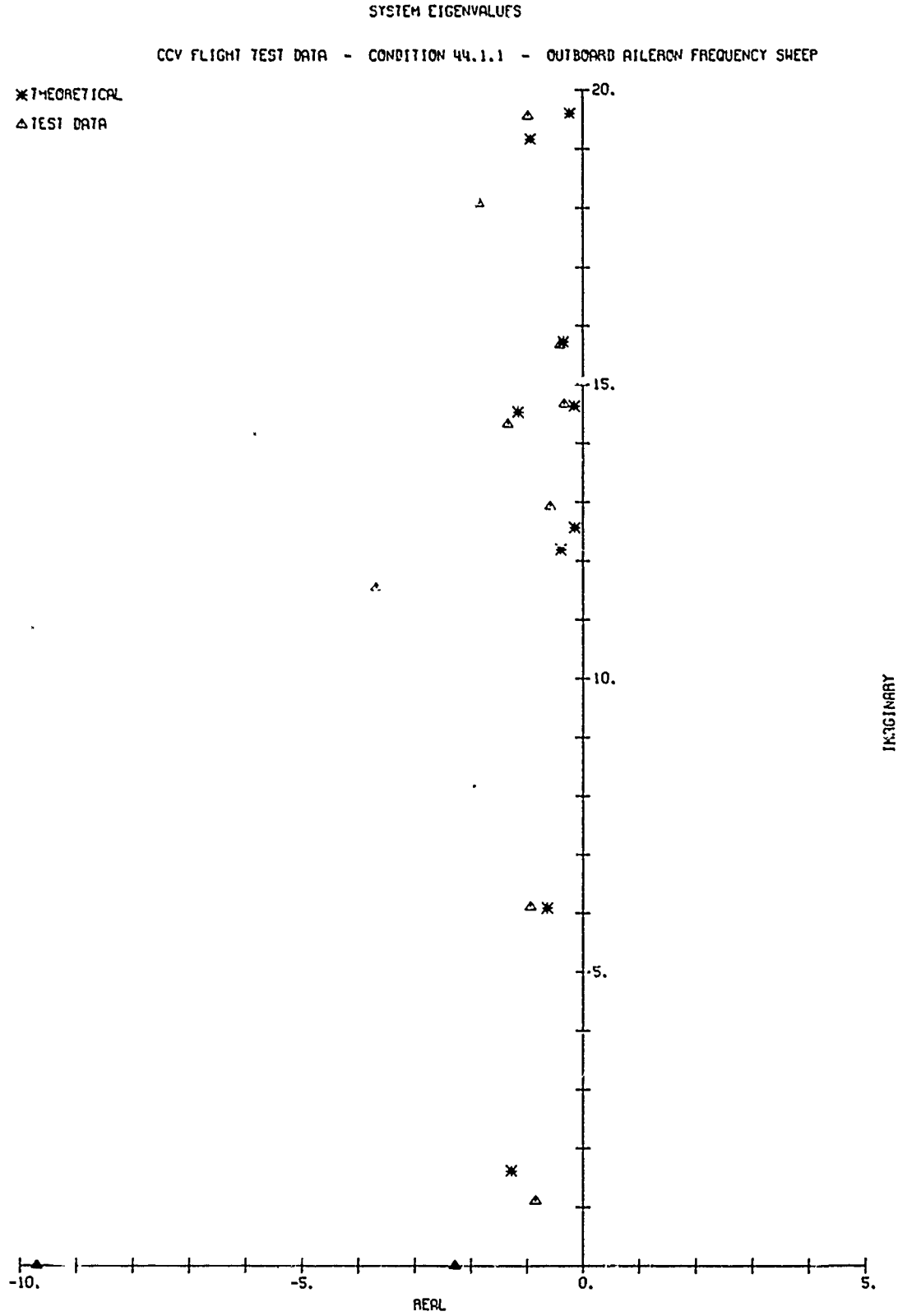


Figure 15. Estimated Eigenvalues, From Outboard Aileron Frequency Sweep Test - Bending Moment Data

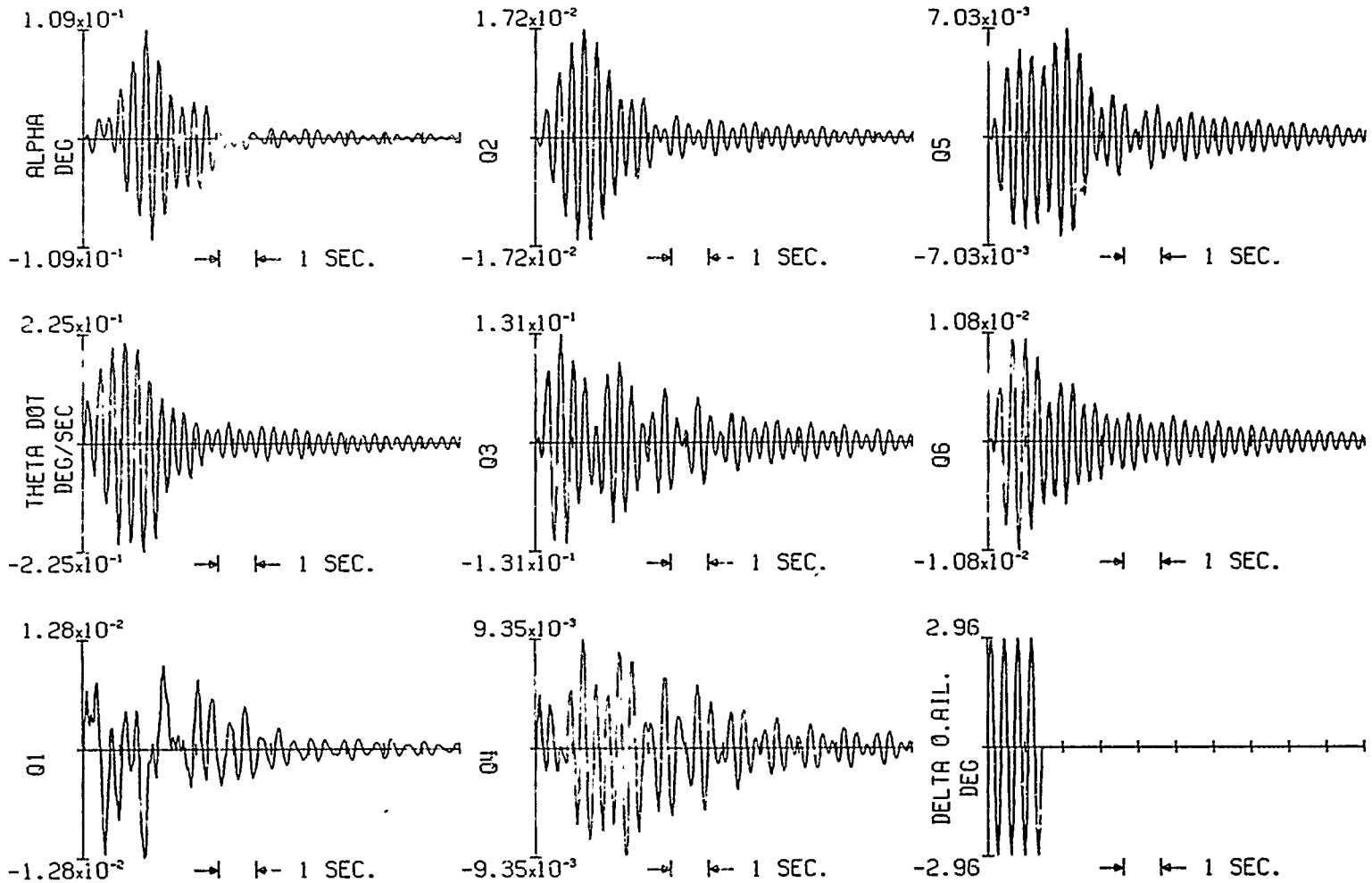


Figure 16. Generalized Responses for Outboard Aileron Transient, Derived from System Coefficients Estimated from the Outboard Aileron Frequency Sweep Condition - Bending Moment Data

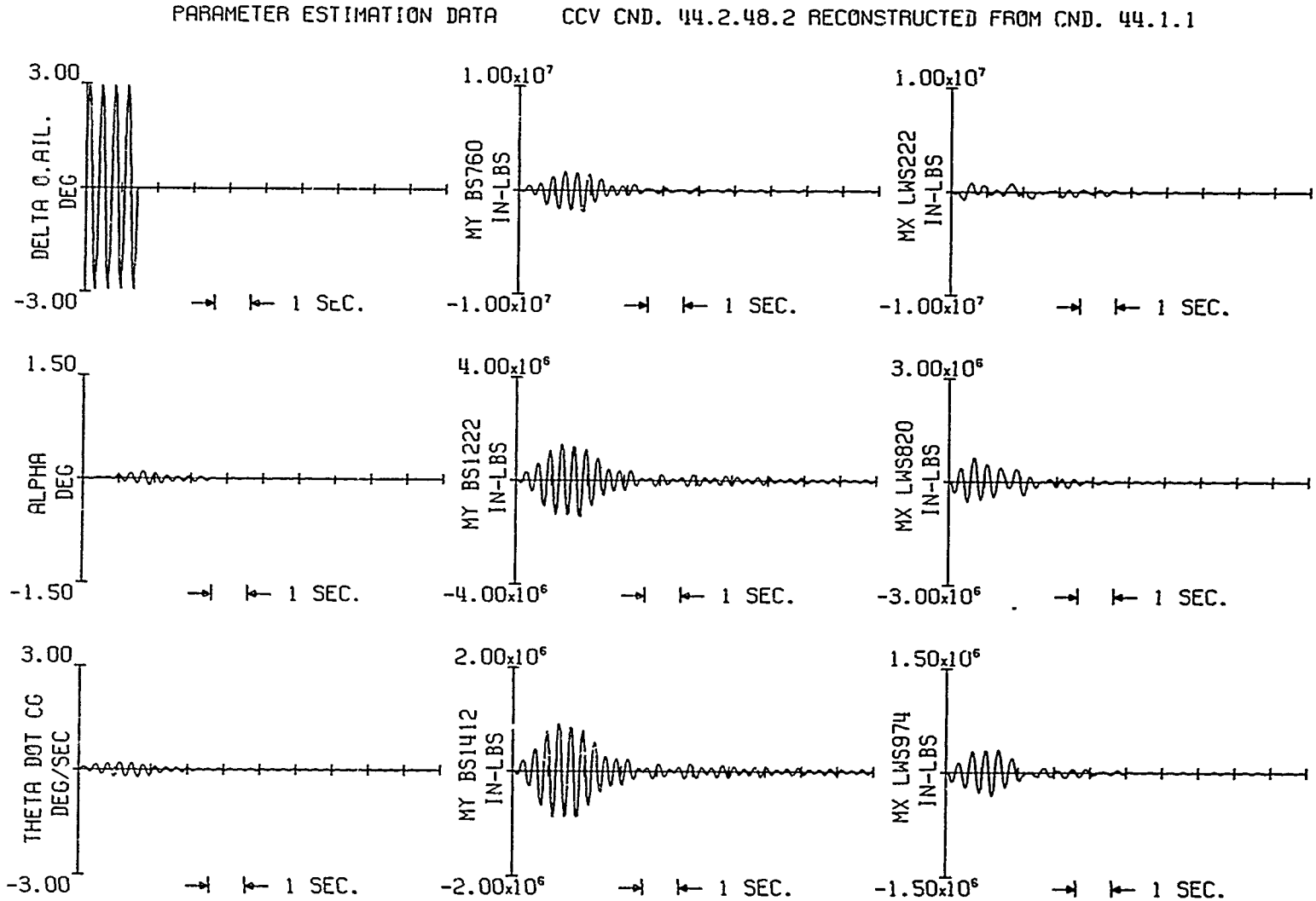


Figure 17. Bending Moments for Outboard Aileron Transient, Derived from System Coefficients Estimated from the Outboard Aileron Frequency Sweep Condition - Bending Moment Data

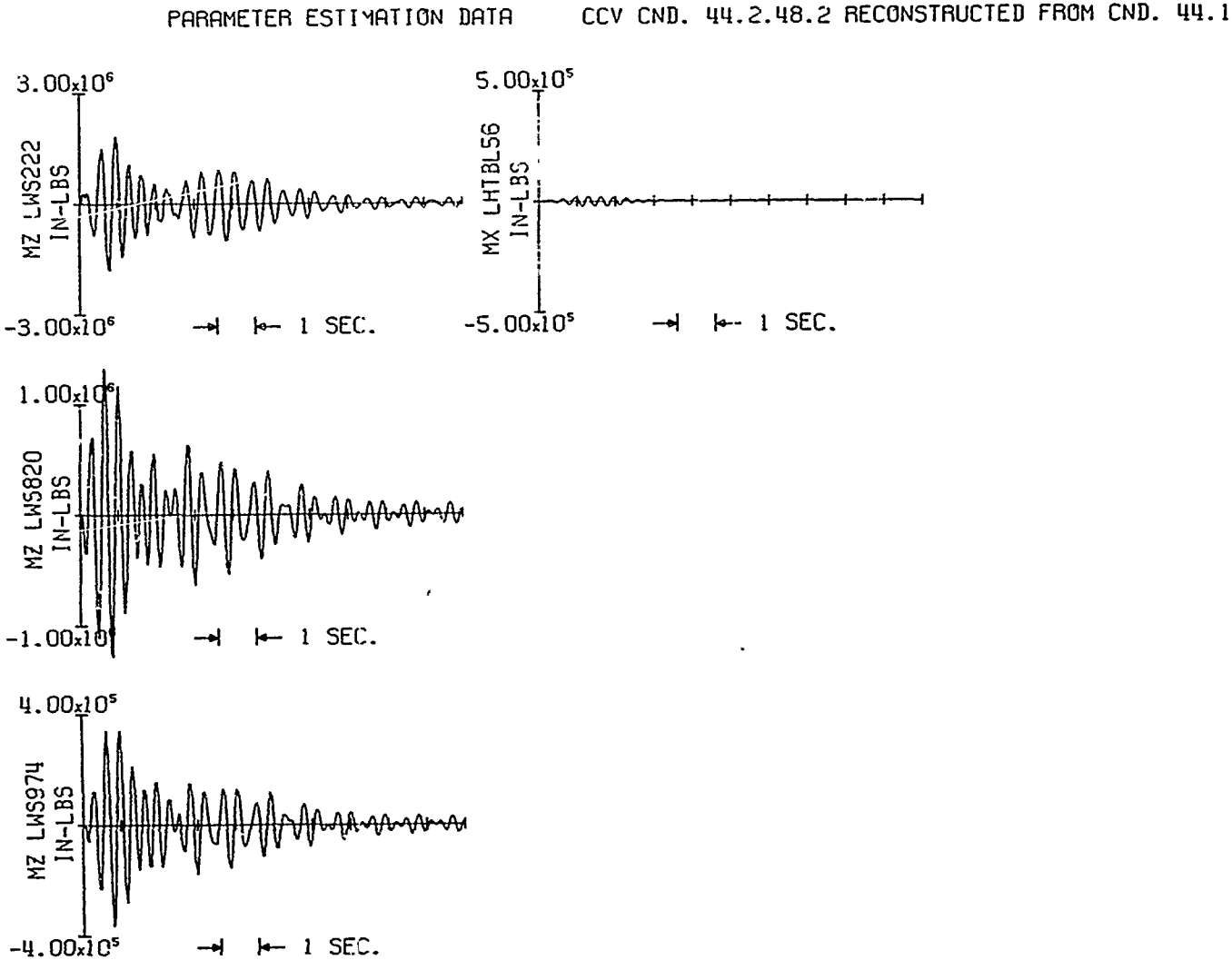


Figure 17. Bending Moments for Outboard Aileron Transient, Derived from System Coefficients Estimated from the Outboard Aileron Frequency Sweep Condition - Bending Moment Data (Concluded)

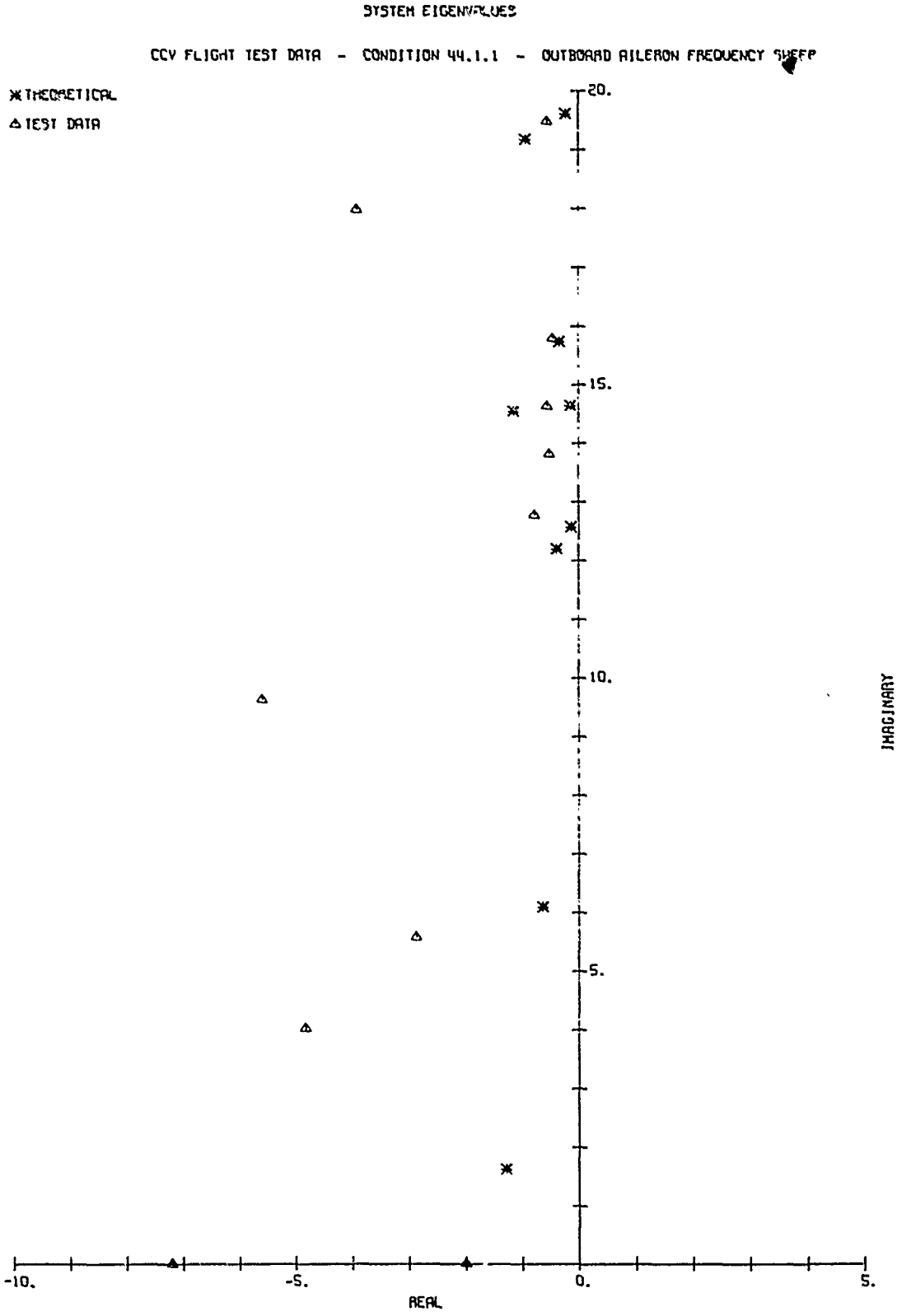


Figure 18. Estimated Eigenvalues, from Outboard Aileron Frequency Sweep Test - Acceleration Data

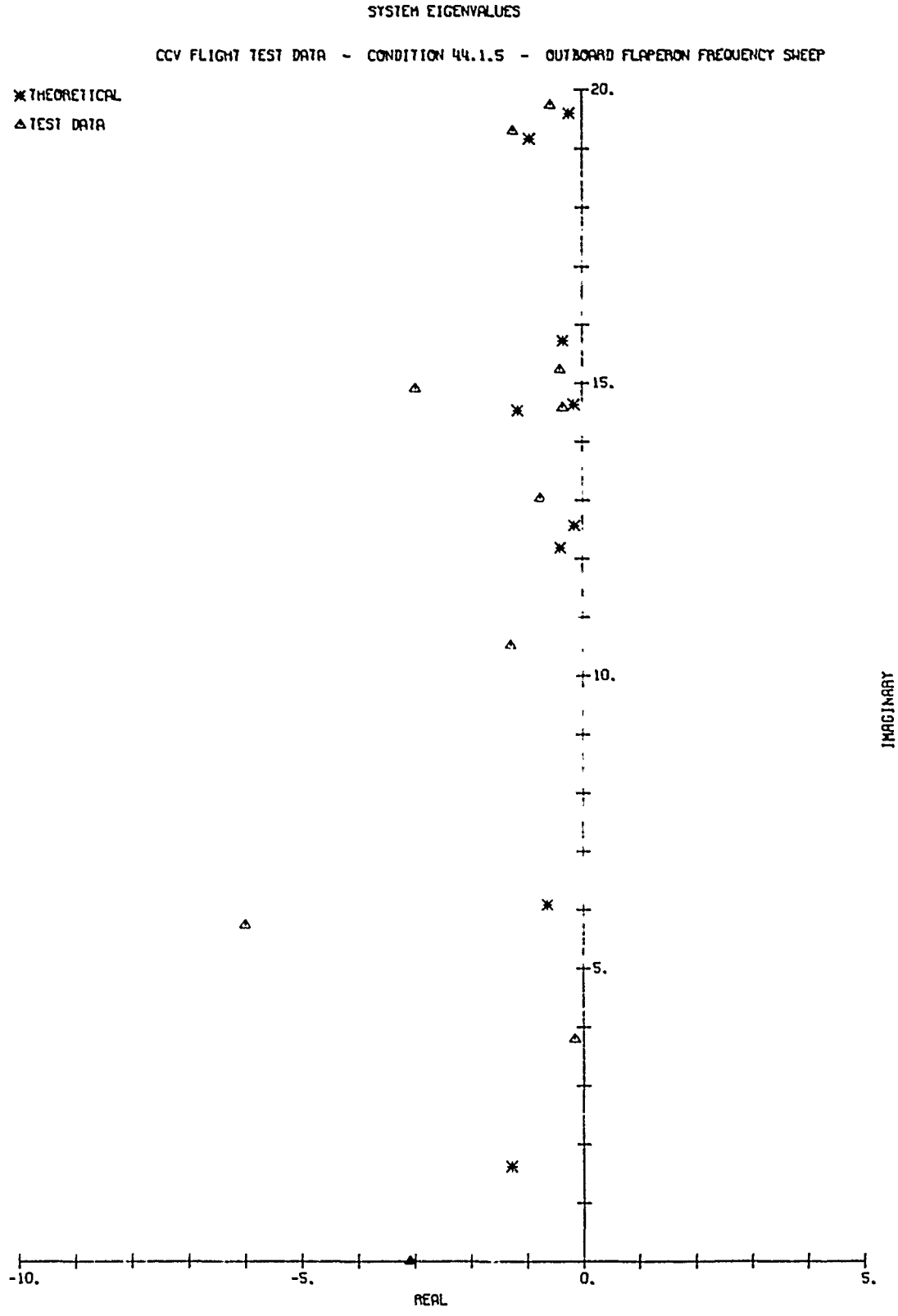


Figure 19. Estimated Eigenvalues, from Outboard Flaperon Frequency Sweep Test - Bending Moment Data

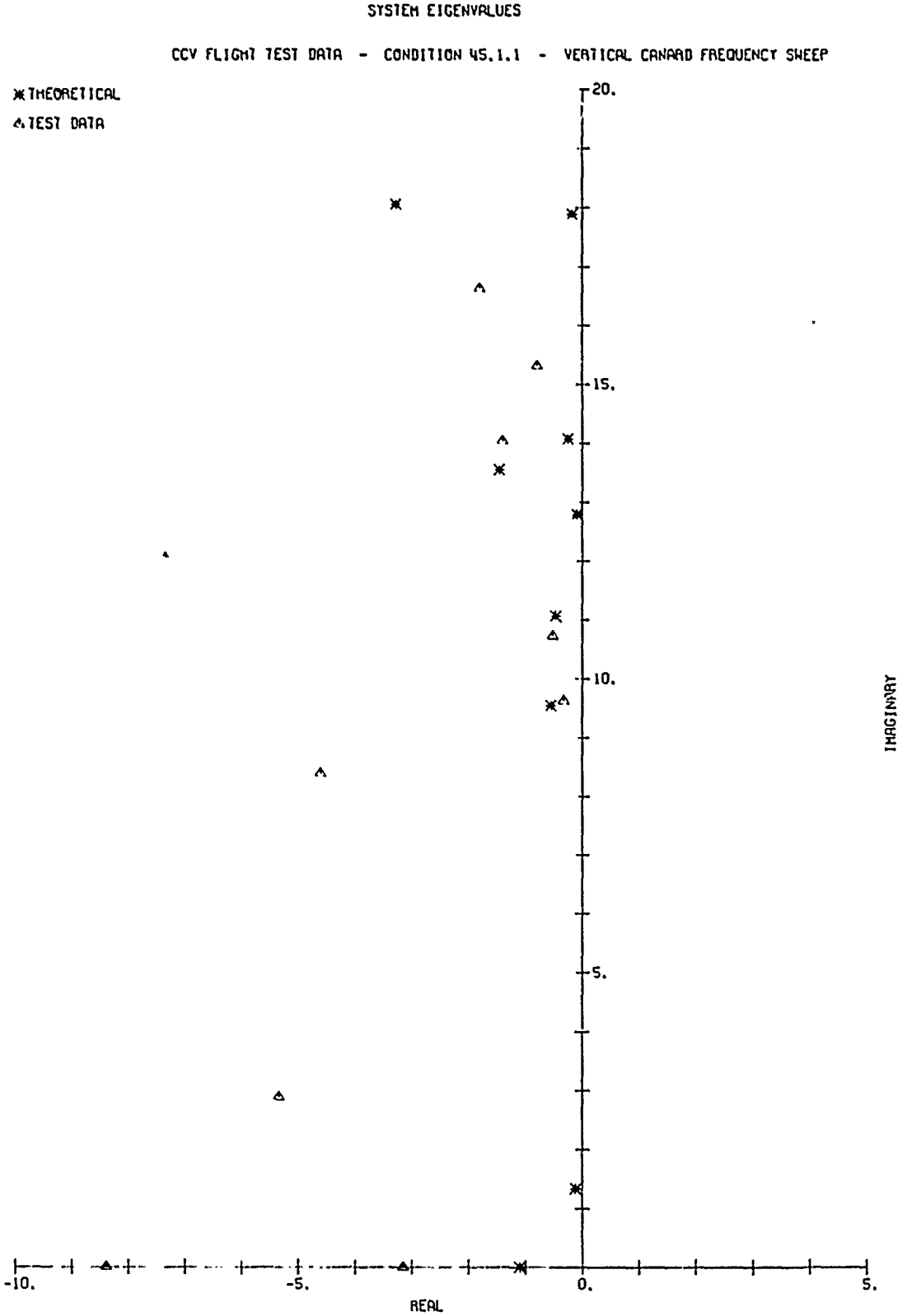


Figure 20. Estimated Eigenvalues, from Vertical Canard Frequency Sweep Test - Bending Moment Data

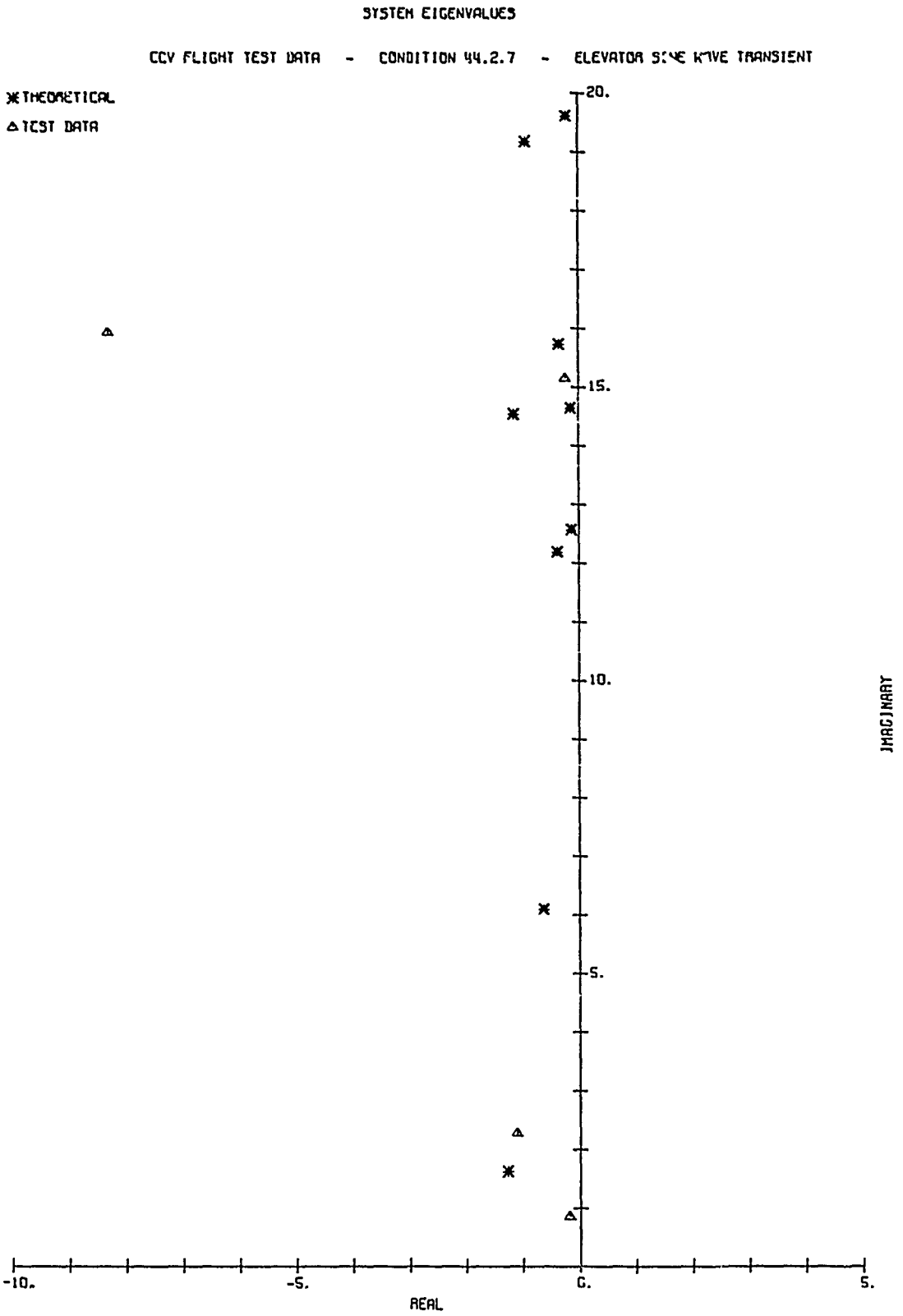


Figure 21. Estimated Eigenvalues from Elevator Sine Wave Input Transient Test - Bending Moment Data

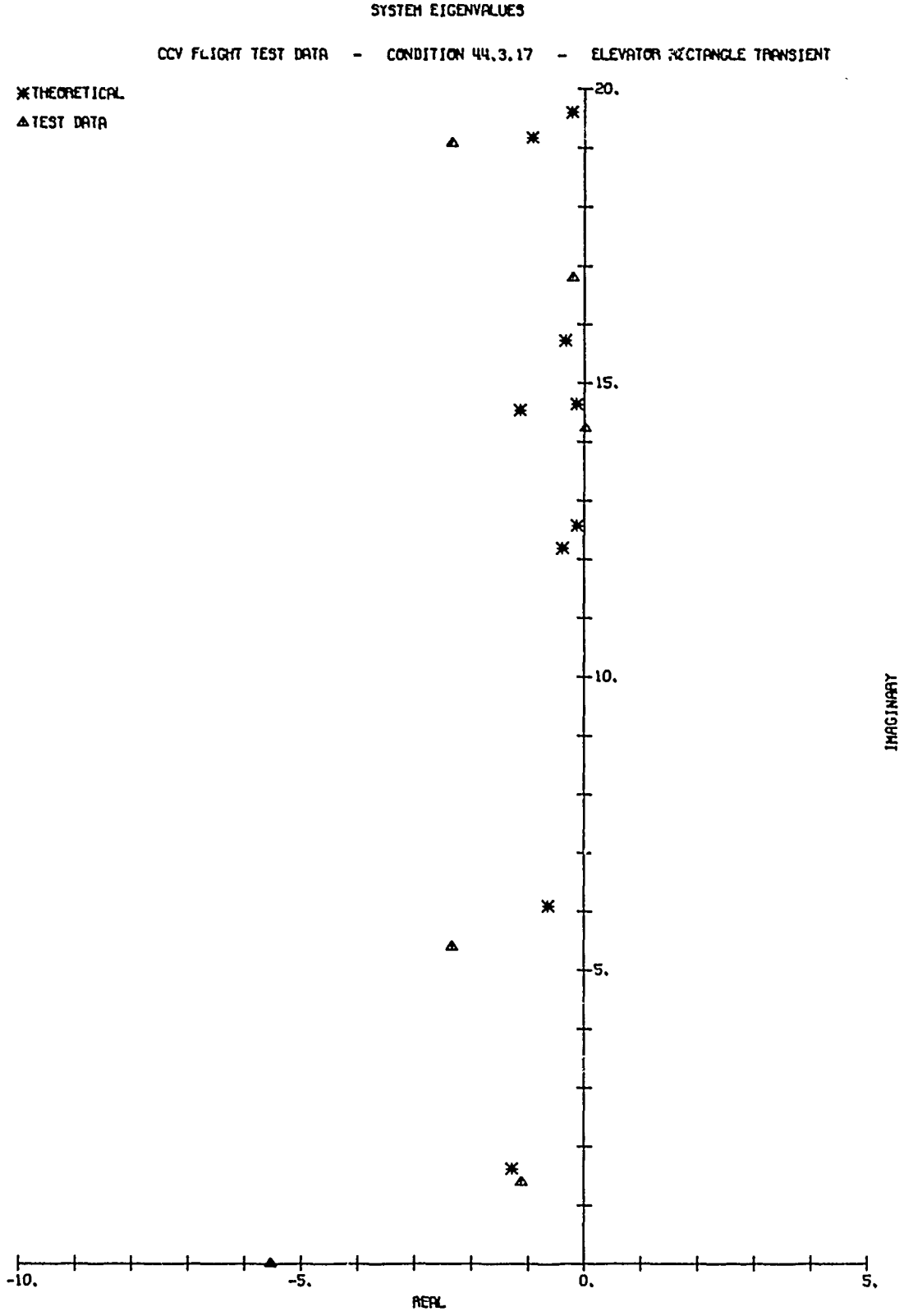


Figure 22. Estimated Eigenvalues from Elevator Rectangle Input Transient Test - Bending Moment Data

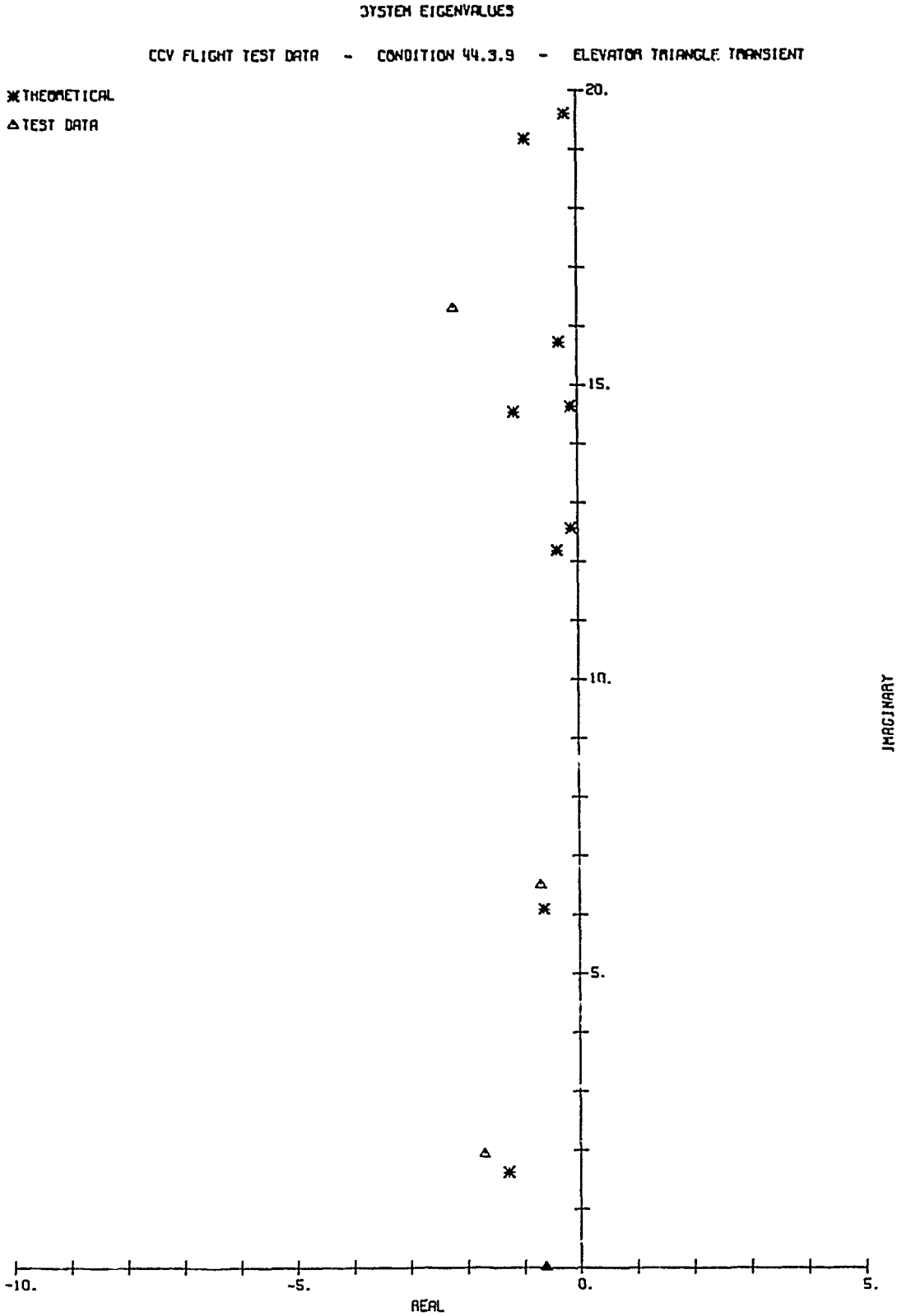


Figure 23. Estimated Eigenvalues from Elevator Triangle Input Transient Test - Bending Moment Data

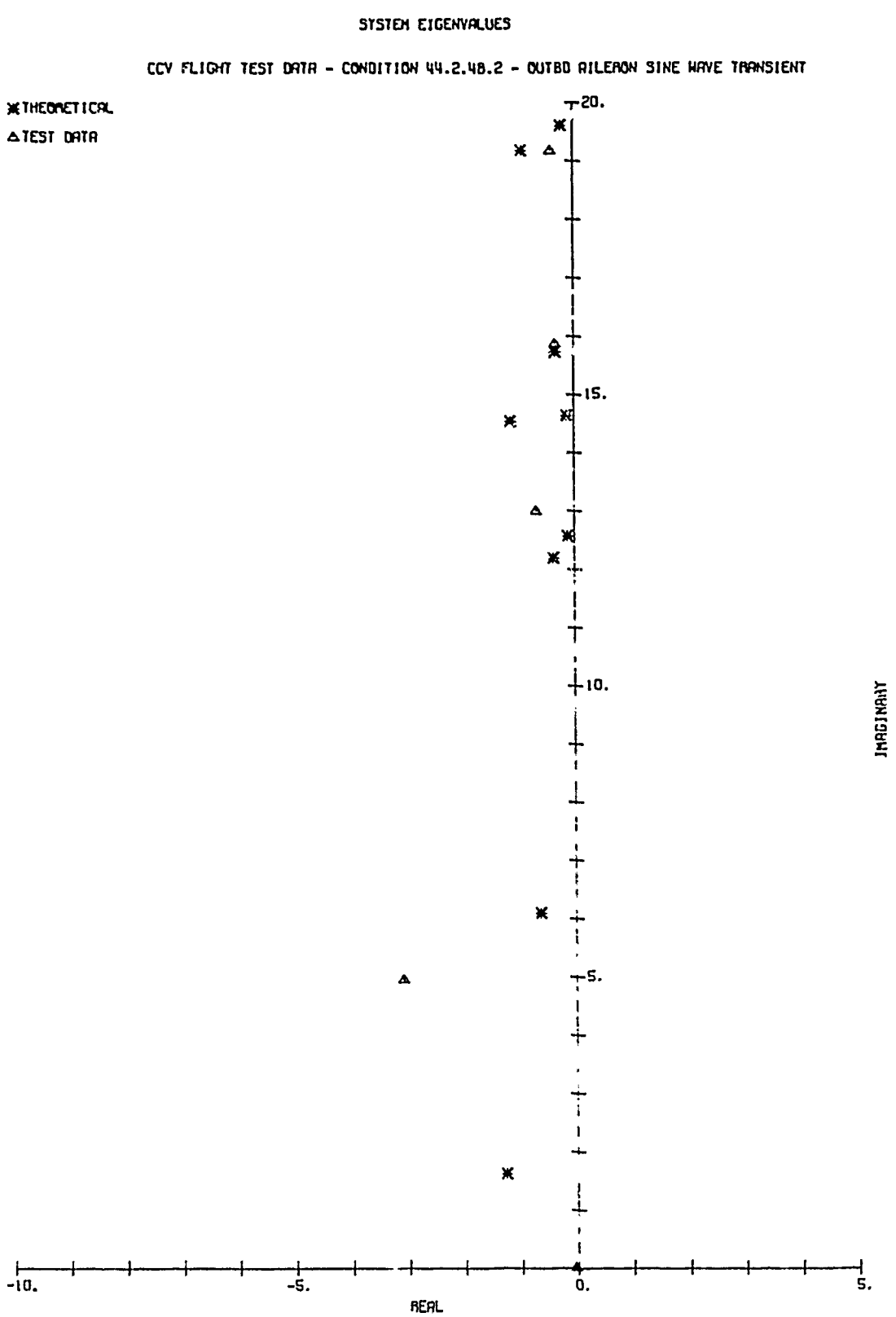


Figure 24. Estimated Eigenvalues from Outboard Aileron Sine Wave Input Transient Test - Bending Moment Data

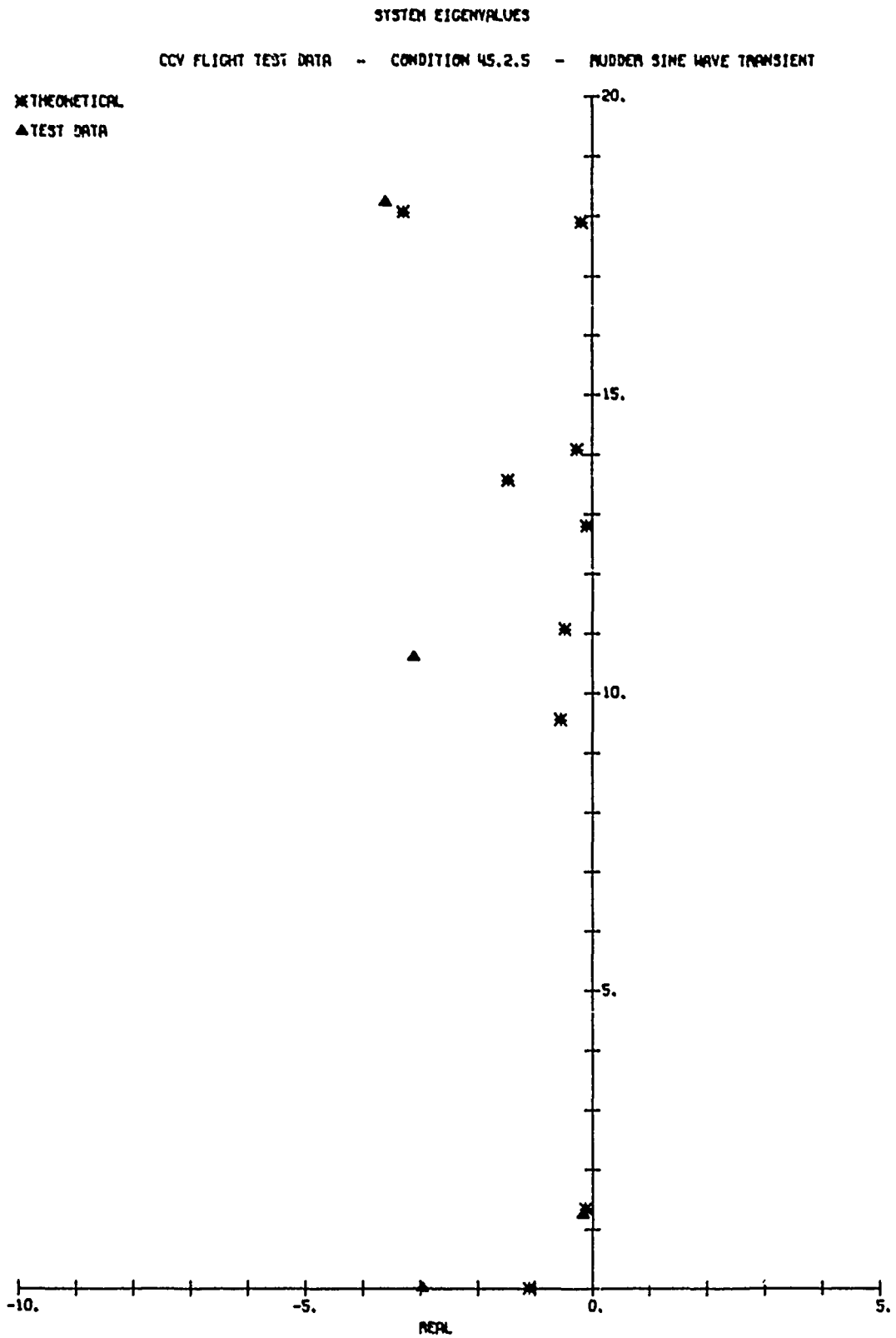


Figure 25. Estimated Eigenvalues from Rudder Sine Wave Input Transient Test - Bending Moment Data

SECTION VII

CONCLUSIONS

The flight test and analytical data documented in this report are adequate for parameter estimation applications and transient response analyses. It was concluded from the comparisons in Section V that the flight test data reduction process was satisfactory. The order of magnitude and algebraic sign of each response agrees with analytical predictions. It was also concluded that the structural and geometric description given in the appendices is satisfactory for the verification of programs that predict aerodynamic influence and form equations of motion and response equations.

It can be seen from the plots of estimated system eigenvalues that the flight test data does indeed contain information relative to several structural elastic modes. However, it is concluded that the test inputs were not particularly well suited for parameter estimation, since the individual control input did not, in general, excite all of the rigid body and structural modes being considered.

PRECEDING PAGE BLANK-NOT FILM

SECTION VIII

RECOMMENDATIONS

The techniques used for selecting and measuring state vectors, for permitting frequency variations in aerodynamic derivatives, for parameter estimation and the use of finite difference equations followed by conversion to differential equation coefficients are recommended to future investigators of parameter estimation applied to flexible aircraft.

The individual control input conditions from the CCV Flight Tests did not tend to excite all of the rigid body and elastic modes under consideration. It is recommended that tests being conducted with consideration of parameter estimation application be conducted, at least in part, with random uncorrelated multiple inputs. This procedure also is helpful when the measured data are noisy or there are external random inputs (i.e., atmospheric turbulence). The input could be spectrally shaped to yield uniform input to expected noise ratios over the bandpass of interest.

For parameter estimation applications to flexible aircraft test data, it is recommended that structural deformation instrumentation (i.e., strain gages) be a significant part of the instrumentation package, and that deformation data be collected from all flexible components of the aircraft, including nacelles.

The parameter estimation data presented in this document is not sufficient to define a mathematical model but is used to illustrate that the parameter estimation method presented in Section VI is a viable method. For the method to be of general use it is necessary to include the conversion from finite difference equation coefficients to differential equation coefficients, as shown in Paragraph 6.1.3.

PRECEDING PAGE BLANK-NOT FILM

APPENDIX A

FLEXIBLE AIRPLANE ANALYSIS MODEL

1.0 Introduction

Appendix A contains a numerical description of the B-52 test airplane structural and aerodynamic configuration. These data were the basis of the CCV program theoretical analysis and system design. The data are presented in a form which will be readily adaptable to most flutter and aeroelastic analysis programs.

Total airplane inertia data, results of the structural vibration analysis and inflight eigenvalues are presented in Section 2.0. These data will provide a convenient check for those who independently model the airplane. Both symmetric and antisymmetric results are shown for the analysis gross weight.

Section 3.0 contains the beam element description which represents the elastic structure. Nodal mass data are given for the empty airplane and separately for the fuel loading.

Section 4.0 contains the aerodynamic patch description used for the doublet lattice aerodynamic analysis. Since the origin of the coordinate system used for the aerodynamic patches differs from that of the structural analysis, the aerodynamic coordinates of the structural reference points used to transfer motions and forces are also given.

PRECEDING PAGE BLANK-NOT FIL

2.0 Total Mass, Component and Total Vibration Data

TABLE 4. TOTAL AIRPLANE MASS AND VIBRATION DATA

WEIGHT = 260,731 LBS.
BS C.G. = 863.74 In
BWL C.G. = 189.86 In
$I_{xx} = 4.20 \times 10^{10}$ LB-In^2
$I_{yy} = 2.87 \times 10^{10}$ LB-In^2
$I_{zz} = 6.99 \times 10^{10}$ LB-In^2
$I_{xz} = -7.46 \times 10^{8}$ LB-In^2

FREQUENCY ~ Hz

MODE	SYM.	A/S
1	.88	1.36
2	1.74	1.64
3	2.01	1.89
4	2.15	2.06
5	2.41	2.29
6	2.50	2.73
7	2.97	2.92
8	3.14	3.30
9	3.77	3.69
10	5.78	4.89
11	5.99	5.38
12	6.07	5.88
13	7.06	5.92
14	7.59	6.01
15	7.88	6.52
16	10.07	7.66
17	10.81	9.30
18	12.63	10.63
19	13.48	11.74
20	14.22	12.05
21	16.05	12.88
22	16.74	13.95
23	17.03	15.95
24	20.07	16.16
25	21.34	16.80
26	21.95	17.87
27	24.18	18.20

TABLE 5. COMPONENT VIBRATION DATA

FORE BODY	FREQUENCY ~ Hz	
MODE	SYM.	A/S
1	4.63	3.81
2	21.02	12.39
3	46.66	-

AFT BODY*	FREQUENCY ~ Hz	
MODE	SYM.	A/S
1	1.35	1.22
2	5.94	2.92
3	11.39	5.02
4	15.25	8.38
5	27.56	14.46
6	37.28	16.37
7	43.67	21.20
8	59.81	

VERTICAL TAIL	FREQUENCY ~ Hz	
MODE	SYM.	A/S
1	-	5.16
2	-	14.41
3	-	17.93
4	-	27.39

WING**	FREQUENCY ~ Hz	
MODE	SYM.	A/S
1	.75	.78
2	1.78	1.79
3	2.20	2.21
4	2.50	2.55
5	3.57	3.57
6	4.30	4.42
7	6.53	6.57
8	6.85	6.85
9	9.84	9.95
10	12.36	-
11	14.59	-
12	16.80	-
13	30.49	-
14	21.23	-
15	24.67	-

*Aft body component modes include mass of rigid H. Tail and V. Tail.
**Wing component modes include mass of rigid inboard and outboard nacelle and tank.

TABLE 5. COMPONENT VIBRATION DATA (Concluded)

HORIZONTAL TAIL	FREQUENCY ~ Hz	
MODE	SYM.	A/S
1	7.22	7.22
2	16.44	16.44
3	21.01	21.01
4	32.27	-

INBOARD NACELLE	FREQUENCY ~ Hz	
MODE	SYM.	A/S
1	2.04	2.04
2	4.07	4.07
3	6.01	6.01

OUTBOARD NACELLE	FREQUENCY ~ Hz	
MODE	SYM.	A/S
1	2.10	2.10
2	4.02	4.02
3	5.94	5.94

TABLE 6. THEORETICAL SYSTEM EIGENVALUES - LIGHT GROSS WEIGHT, 21,000 FT., 305 KCAS, SYMMETRIC

Root	Real Part	Imaginary Part	Frequency Hertz	Percent of Critical Damping
Short Period Mode	-1.272	1.618	.258	61.81
Elastic Mode 1	-0.633	6.090	.969	10.33
Elastic Mode 2	-0.384	12.190	1.940	3.15
Elastic Mode 3	-0.133	12.556	1.998	1.06
Elastic Mode 4	-1.140	14.531	2.313	7.82
Elastic Mode 5	-0.136	14.634	2.329	0.93
Elastic Mode 6	-0.340	15.723	2.502	2.16
Elastic Mode 7	-0.926	19.168	3.051	4.82
Elastic Mode 8	-0.216	19.600	3.119	1.10
Elastic Mode 9	-1.146	23.954	3.812	4.78
Elastic Mode 10	-0.510	36.387	5.791	1.40
Elastic Mode 11	-0.213	37.630	5.989	0.57
Elastic Mode 12	-0.949	38.008	6.049	2.49
Elastic Mode 13	-1.018	44.379	7.063	2.29
Elastic Mode 14	-5.793	49.340	7.853	11.66
Elastic Mode 15	-0.703	49.346	7.854	1.42
Elastic Mode 16	-1.862	62.803	9.996	2.96
Elastic Mode 17	-1.342	67.468	10.738	1.99
Elastic Mode 18	-1.209	78.619	12.513	1.54
Elastic Mode 19	-0.861	84.463	13.443	1.02
Elastic Mode 20	-2.300	89.082	14.178	2.58
Elastic Mode 21	-1.883	98.862	15.734	1.90
Elastic Mode 22	-1.672	104.321	16.603	1.60
Elastic Mode 23	-1.519	106.223	16.906	1.43
Elastic Mode 24	-1.974	125.700	20.006	1.57
Elastic Mode 25	-0.991	130.777	20.814	0.76
Elastic Mode 26	-2.025	135.579	21.578	1.49
Elastic Mode 27	-1.476	151.173	24.060	0.98

Roots resulting from lift-growth terms not shown.

TABLE 7. THEORETICAL SYSTEM EIGENVALUES - LIGHT GROSS WEIGHT 21,000 FT., 305 KCAS, ANTISYMMETRIC

Root	Real Part	Imaginary Part	Frequency Hertz	Percent of Critical Damping
Roll Convergence Mode	-1.100	0.0	0.0	100.0
Dutch Roll Mode	-0.113	1.342	0.214	8.36
Elastic Mode 1	-0.551	9.542	1.519	5.77
Elastic Mode 2	-0.464	11.064	1.761	4.19
Elastic Mode 3	-0.090	12.794	2.036	0.70
Elastic Mode 4	-1.454	13.548	2.156	10.67
Elastic Mode 5	-0.247	14.074	2.240	1.75
Elastic Mode 6	-0.182	17.887	2.847	1.02
Elastic Mode 7	-3.276	18.052	2.873	17.85
Elastic Mode 8	-0.998	21.192	3.372	4.71
Elastic Mode 9	-0.759	23.012	3.662	3.30
Elastic Mode 10	-0.925	30.502	4.855	3.03
Elastic Mode 11	-1.095	33.741	5.370	3.24
Elastic Mode 12	-0.230	37.003	5.889	0.62
Elastic Mode 13	-0.252	37.473	5.964	0.67
Elastic Mode 14	-5.736	40.637	6.468	13.98
Elastic Mode 15	-0.389	40.919	6.513	0.95
Elastic Mode 16	-2.195	48.096	7.655	4.56
Elastic Mode 17	-1.263	58.145	9.254	2.17
Elastic Mode 18	-2.049	66.201	10.536	3.09
Elastic Mode 19	-1.338	73.351	11.674	1.82
Elastic Mode 20	-1.707	75.182	11.966	2.27
Elastic Mode 21	-1.259	80.289	12.778	1.57
Elastic Mode 22	-2.278	87.165	13.873	2.61
Elastic Mode 23	-2.008	98.325	15.649	2.04
Elastic Mode 24	-2.440	100.424	15.983	2.43
Elastic Mode 25	-1.681	102.928	16.382	1.63
Elastic Mode 26	-1.013	106.940	17.020	0.95
Elastic Mode 27	-1.212	111.648	17.769	1.09

Roots resulting from lift-growth terms are not shown.

3.0 Structural Segment Model, Mass and Stiffness Data

The CCV airplane structure was modeled with bar elements connected at nodes. The weights were panelled so that each panel's weight could be attached to the structure at a node. This section contains a description of the nodes, the stiffness of the bar elements, and the nodal mass properties.

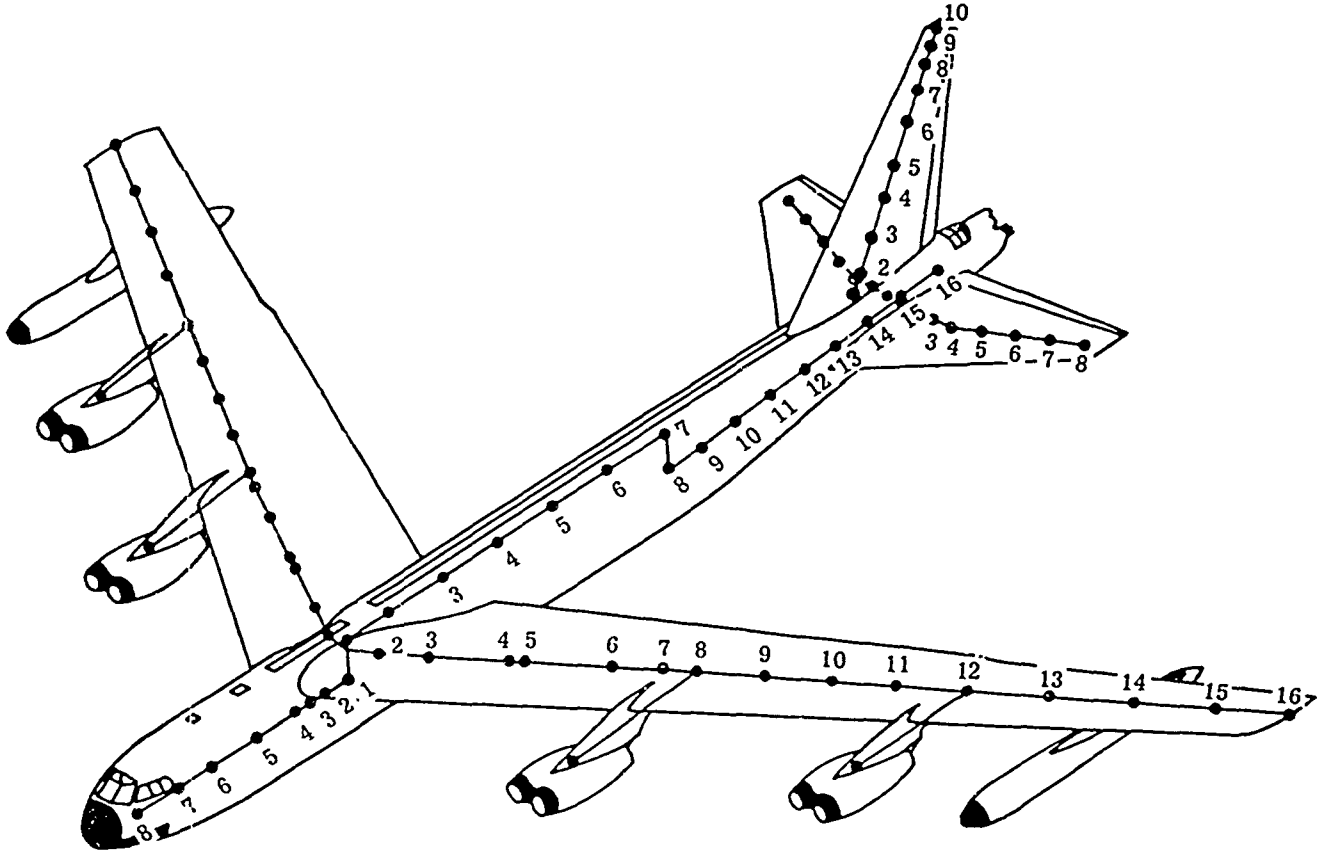


FIGURE 26. BAR ELEMENT MODEL OF AIRPLANE STRUCTURE

TABLE 8. DEFINITION OF MASS DATA ORIENTATION SYSTEMS

ROTATION FROM GLOBAL (BODY) TO LOCAL SYSTEM:

ORIENTATION	FIRST ROTATION AXIS	FIRST ROTATION ANGLE	SECOND ROTATION AXIS	SECOND ROTATION ANGLE	THIRD ROTATION AXIS	THIRD ROTATION ANGLE
1	-	-	-	-	-	-
2	Y	3.15724°	-	-	-	-
3	Y	-6.°	X	-2.5°	Z	-31.75414°
4	Y	-6.°	X	-2.5°	Z	-34.32027°
5	Z	-29.26662°	-	-	-	-
6	Y	-24.85419°	-	-	-	-
7	Y	-6.°	X	-2.5°	Y	2.5°
8	Y	-6.°	X	-2.5°	Y	3.82°

CONVENTIONS: RIGHT HAND VECTOR ROTATIONS

+X LOCAL AFT

+Y LOCAL LEFT

+Z LOCAL DOWN

TABLE 9. FORWARD BODY WEIGHT AND STIFFNESS DATA (NO USABLE FUEL)

Sta.	B.S.	B.B.L.	B.W.L.	$EI_V \times 10^{-9}$	$EI_L \times 10^{-9}$	$GJ \times 10^{-9}$	W	$W_x \times 10^{-3}$	$W_y \times 10^{-3}$	$W_z \times 10^{-3}$	$I_{xx} \times 10^{-6}$	$I_{yy} \times 10^{-6}$	$I_{zz} \times 10^{-6}$	$I_{xy} \times 10^{-6}$	$I_{xz} \times 10^{-6}$	$I_{yz} \times 10^{-6}$	Orientation
1	616.22		179														-
				1995	1179	249											
2	566		179				2675	29.0		48.4	9.52	7.50	4.45		.52		1
				1062	658	239											
3	538		179				5532			226.8	12.80	20.18	10.66				1
				724	471	236											
4	510		179				2628	6.1		41.5	8.70	6.24	3.51		.10		1
				670	460	236											
5	426		179				5274	.7		79.5	15.61	15.84	10.75		.01		1
				260	182	235											
6	331		179				4488	11.7		13.4	12.55	9.84	6.35		.03		1
				260	183	238											
7	260		179				3670	11.6		30.5	10.02	7.46	4.79		.10		1
				260	186	238											
8	172		179				7337	-1.7		-51.7	14.62	23.21	18.12		.01		1

TABLE 10. AFT BODY WEIGHT AND STIFFNESS DATA (NO USABLE FUEL)

Sta.	B.S.	B.B.L.	B.W.L.	$EI_V \times 10^{-9}$	$EI_L \times 10^{-9}$	$GJ \times 10^{-9}$	W	$W_x \times 10^{-3}$	$W_y \times 10^{-3}$	$W_z \times 10^{-3}$	$I_{xx} \times 10^{-6}$	$I_{yy} \times 10^{-6}$	$I_{zz} \times 10^{-6}$	$I_{xy} \times 10^{-6}$	$I_{xz} \times 10^{-6}$	$I_{yz} \times 10^{-6}$	Orientation
1	616.22		238				2261	88 0		174.4	20 66	22.64	7.37		6.78		1
				2595	1951	255											
2	695		238				3026	75 6		190.5	21.68	20.75	6 31		4.76		1
				2413	1851	255											
3	805		238				4236	10 02		239 74	15 61	15.01	9.35		.15		1
				1975	1648	239											
4	917		238				8117	-27 34		405 85	52.47	50.28	18 24		-1.64		1
				1555	1483	250											
5	1028		238				4183	-27.28		248 39	27.76	26.19	8.69		-1.25		1
				1293	1236	350											
6	1135		238				9996	-7.9		849.2	93 66	90.05	11.25		.53		1
				1206	968	205											
7	1237		238				2283	-5.1		158 4	18.46	16.80	3.93		- 35		1
				∞	∞	∞											
8	1237		180														
				1137	942	292											
9	1307		183.36				1743	-6.6		28 2	6.01	4.84	2 56		-.27		2
				971	805.7	292											
10	1377		187.72				1324	1.9		16.8	2 78	2.39	1.39		-.04		2
				796	651	266											
11	1447		191.58				1444	-.8		22.2	2.98	2.66	1.50		-.08		2
				626	505	206											
12	1517		195.45				1418	-3.6		27.1	3.11	2.76	1.44		-.13		2
				481	378.2	206											
13	1581		198.38				1040	.2		-3.7	1.71	1.59	.96		-.04		2
				344	171.8	163											
14	1655		203.06				2535	-14.3		-32.9	4.12	3.54	1.68		.07		2
				185	92.7	163											
15	1719		206.59				1285	15.99		-4.0	1.51	1.62	94		-.09		2
				50	78.8	163											
16	1799		211				3865	179.1		46.6	3.59	15.78	13.24		2.16		2

TABLE 11. LEFT HORIZONTAL TAIL WEIGHT AND STIFFNESS DATA

Sta.	B.S.	B.B.L.	B.W.L.	$EI_V \times 10^{-9}$	$EI_L \times 10^{-9}$	$GJ \times 10^{-9}$	W	$W_x \times 10^{-3}$	$W_y \times 10^{-3}$	$W_z \times 10^{-3}$	$I_{xx} \times 10^{-6}$	$I_{yy} \times 10^{-6}$	$I_{zz} \times 10^{-6}$	$I_{xy} \times 10^{-6}$	$I_{xz} \times 10^{-6}$	$I_{yz} \times 10^{-6}$	Orientation
1	1684.80		203.5														
				43.45		13.9											
2	1684.80	28.22	203.5				433	8 87	-1.74		.082	.755	.794	-.036			1
				33.(J		25.4											
3	1684.80	59.55	203.5				734	-3.67	-.84		.165	3.767	3.885	.004			1
				23.85		22.1											
4	1684.80	94.91	203.5														-
				15.60		12.4											
5	1703.96	129.11	203.5				837	18.95	7.35		1.040	2.811	3.827	1.188			5
				6.35		5.4											
6	1733.30	181.45	203.5				126	1.55	1.87		.120	.290	.405	.169			5
				2.03		2.6											
7	1763.61	235.54	203.5				154	1.76	-.04		.106	.230	.336	.112			5
				.68		1.0											
8	1791.96	286.13	203.5				121	1.17	.18		.058	.096	.153	.043			5

TABLE 12. VERTICAL TAIL WEIGHT AND STIFFNESS DATA

Sta.	B.S.	B.B.L.	B.W.L.	$EI_L \times 10^{-9}$	$EI_V \times 10^{-9}$	$GJ \times 10^{-9}$	W	$W_x \times 10^{-3}$	$W_y \times 10^{-3}$	$W_z \times 10^{-3}$	$I_{xx} \times 10^{-6}$	$I_{yy} \times 10^{-6}$	$I_{zz} \times 10^{-6}$	$I_{xy} \times 10^{-6}$	$I_{xz} \times 10^{-6}$	$I_{yz} \times 10^{-6}$	Orientation
1	1656.77		261.60														6
				49.20	∞	25.80											
2	1668.35		286.60				1114	-12.56		16.75	1.322	5.305	3.911		-1.781		6
				23.70	∞	22.65											
3	1692.35		338.40				537	-4.13		3.27	.567	2.678	2.033		- .883		6
				17.10	∞	13.75											
4	1715.05		387.40				462	2.84		-.40	.280	1.343	1.026		-.432		6
				8.75	∞	8.10											
5	1736.96		434.70				316	-2.78		2.09	.194	.783	.599		-.251		6
				3.82	∞	4.30											
6	1760.17		484.82				269	.41		-.04	.122	.505	.357		-.138		6
				1.50	∞	2.27											
7	1780.35		528.39				223	1.33		-.08	.056	.271	.181		-.069		6
				.64	∞	1.34											
8	1796.03		562.23				92	.09		.16	.020	.098	.066		-.027		6
				.28	∞	.75											
9	1808.92		590.05				45	.15		-.01	.006	.032	.018		- 007		6
				.13	∞	.33											
10	1820.52		615.10				38	.36		-.14	.006	.024	.020		.008		6

\BLE 13. LEFT WING WEIGHT AND STIFFNESS DATA (NO USABLE FUEL)

Sta.	B.S	B B L	S W L	$EI_V \times 10^{-9}$	$EI_L \times 10^{-9}$	$GJ \times 10^{-9}$	W	$W_x \times 10^{-3}$	$W_y \times 10^{-3}$	$W_z \times 10^{-3}$	$I_{xx} \times 10^{-6}$	$I_{yy} \times 10^{-6}$	$I_{zz} \times 10^{-6}$	$I_{xy} \times 10^{-6}$	$I_{xz} \times 10^{-6}$	$I_{yz} \times 10^{-6}$	Orientation
1	616.22		215.42														-
				516	∞	∞											
2	616.22	54.95	215.42				2046		-37.07		2.25	6.42	6.55				3
				488	2190	478											
3	645.78	102 58	214.40				3457	-42.0	-36.3		6.78	13.34	17.12	.41			3
				503	2760	376											
4	709.45	205.16	212.22				3513	36.2	.9		5.13	15.09	19.23	.01			3
				438	2810	314											
5	717 69	218.43	211 93														-
				358	2635	264											
6	773.11	307.73	210 03				3542	59.2	3.9		4.89	14.72	18.42	.07			3
				261	2425	201											
7	819 66	382 72	208.43														-
				211	2200	170											
8	838 05	409.61	207.67				3507	26	-55.0	16.4	7.32	19.18	24.34	4.37	-1.81	-1.24	4
				169	1860	144											
9	891.02	487 03	205.51				2191	42.5	4 7		1.83	7.98	9.36	01			4
				120	1345	111											
10	943.99	564 46	203.34				2044	51 3	6.3		1.68	7.27	8.60	16			4
				82	1115	83											
11	996.96	611 89	201.17				1791	38.1	2.2		1.44	5.25	6 42	05			4
				60	835	56											
12	1049 93	719.31	199 00				2243	-17 0	-37 3	12 9	4.15	9 99	13 03	3 42	-1 21	- 82	4
				38 1	565	31											
13	1119 99	821 71	196.13				2448	54 3	9.2		3 65	3 68	11 89	20			4
				24 6	405	21.7											
14	1190.05	924 12	193.27				918	7 6	6.0	78	99	1 69	05				4
				8 7	280	8 2											
15	1253.27	1016.53	190.68				437	3 2	-1 1		48	54	1.88	01			4
				3.4	155	2 6											
16	1316.49	1108.94	188.09				223	4.9	-4.7		20	39	.58	- 10			4

TABLE 14. LEFT INBOARD NACELLE WEIGHT AND STIFFNESS DATA

Sta.	B.S.	B.B.L.	B.W.L.	$EI_V \times 10^{-9}$	$EI_L \times 10^{-9}$	$GJ \times 10^{-9}$	W	$W_x \times 10^{-3}$	$W_y \times 10^{-3}$	$W_z \times 10^{-3}$	$I_{xx} \times 10^{-6}$	$I_{yy} \times 10^{-6}$	$I_{zz} \times 10^{-6}$	$I_{xy} \times 10^{-6}$	$I_{xz} \times 10^{-6}$	$I_{yz} \times 10^{-6}$	Orientation
1IN	838.05	409.61	207.67														-
				54.74	15.13	6.78											
2IN	631.64	412.65	159.26				9243				6.57	16.17	19.75				7

TABLE 15. LEFT OUTBOARD NACELLE WEIGHT AND STIFFNESS DATA

Sta.	B.S.	B.B.L.	B.W.L.	$EI_V \times 10^{-9}$	$EI_L \times 10^{-9}$	$GJ \times 10^{-9}$	W	$W_x \times 10^{-3}$	$W_y \times 10^{-3}$	$W_z \times 10^{-3}$	$I_{xx} \times 10^{-6}$	$I_{yy} \times 10^{-6}$	$I_{zz} \times 10^{-6}$	$I_{xy} \times 10^{-6}$	$I_{xz} \times 10^{-6}$	$I_{yz} \times 10^{-6}$	Orientation
1QB	1049.93	719.31	199.00														-
				38.48	11.55	5.80											
20B	863.93	721.93	158.39				9199				6.48	16.26	19.91				7

TABLE 16. LEFT EXTERNAL TANK WEIGHT AND STIFFNESS DATA

Sta.	B.S.	B.B.L.	B.W.L.	$EI_V \times 10^{-9}$	$EI_L \times 10^{-9}$	$GJ \times 10^{-9}$	W	$W_x \times 10^{-3}$	$W_y \times 10^{-3}$	$W_z \times 10^{-3}$	$I_{xx} \times 10^{-6}$	$I_{yy} \times 10^{-6}$	$I_{zz} \times 10^{-6}$	$I_{xy} \times 10^{-6}$	$I_{xz} \times 10^{-6}$	$I_{yz} \times 10^{-6}$	Orientation
1	1190.05	924.12	193.27														-
				∞	∞	∞											
2	1188.76	925.6	159.35														-
				∞	∞	∞											
3	1127.45	925.77	161.68				1306			-5.23	.63	19.82	19.74				8
				∞	∞	∞											
4	912.04	926.4	169.9				2000				.05	.05	.05				8

TABLE 17. AFT BODY FUEL WEIGHT DATA

Sta.	W	$W_x \times 10^{-3}$	$W_y \times 10^{-3}$	$W_z \times 10^{-3}$	$I_{xx} \times 10^{-6}$	$I_{yy} \times 10^{-6}$	$I_{zz} \times 10^{-6}$	$I_{xy} \times 10^{-6}$	$I_{xz} \times 10^{-6}$	$I_{yz} \times 10^{-6}$	Orientation
1											
2											
3	3588	101.08		130.96	8.48	8.74	7.30		3.65		1
4	6729	-5.52		245.25	15.83	16.49	13.84		-.18		1
5	3406	-96.12		126.41	8.21	8.41	6.92		-3.53		1
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											

TABLE 18. AFT BODY FUEL DELTA WEIGHT TO MATCH FLIGHT TEST CONDITIONS

Gross Weight ~Lbs.	Flight Condition	Δ Fuel Weight		
		EA Station 3	EA Station 4	EA Station 5
260,731	Nominal	-	-	-
250,000	44.2.7	-2806	-5262	-2663
258,900	44.3.17	-479	-898	-454
248,000	44.3.9	-3329	-6243	-3159
242,000	44.2.48.2	-4897	-9185	-4649
246,500	45.2.5	-3721	-6978	-3532
272,300	44.1.1	3024	5673	2872
262,400	44.1.5	437	818	414
254,000	45.1.1	-1760	-3300	-1671

TABLE 19. LEFT WING FUEL WEIGHT DATA

Sta.	W	$W_x \times 10^{-3}$	$W_y \times 10^{-3}$	$W_z \times 10^{-3}$	$I_{xx} \times 10^{-6}$	$I_{yy} \times 10^{-6}$	$I_{zz} \times 10^{-6}$	$I_{xy} \times 10^{-6}$	$I_{xz} \times 10^{-6}$	$I_{yz} \times 10^{-6}$	Orientation
1											
2											
3	2450	17.3	105.0		4.85	2.84	7.70	.764			3
4	7750	61.0	-9.4		9.6	10.01	1.92	.086			3
5											
6	5980	65.2	-20.0		7.5	8.48	15.8	.008			3
7											
8	3870	62.3	-3.8		4.08	5.65	9.70	-.615			4
9	2985	39.75	14.7		2.47	3.70	6.06	-.250			4
10	3360	31.50	-8.3		2.47	3.28	5.55	-.760			4
11	2000	28.0	-11.85		1.47	1.92	3.40	-.092			4
12	560	14.5	-10.50		.52	.64	1.15	-.172			4
13	20	.78	-1.00		.05	.02	.10	-.060			4
14											
15											
16											

4.0 Aerodynamic Patch Model and Data

Aerodynamic lifting surface theory was incorporated using a doublet lattice finite element model to stabilize the collocation. The aerodynamic elements (patches) are shown on pages 233 through 236.

Each patch was assigned to a structural reference point from which it obtained its motion and to which it transferred its airloads. Each patch was also assigned to a gust reference point from which it obtained its gust boundary condition (with a time delay). The location and orientation of the structural reference points and the location of the gust reference points are shown on pages 237 and 238.

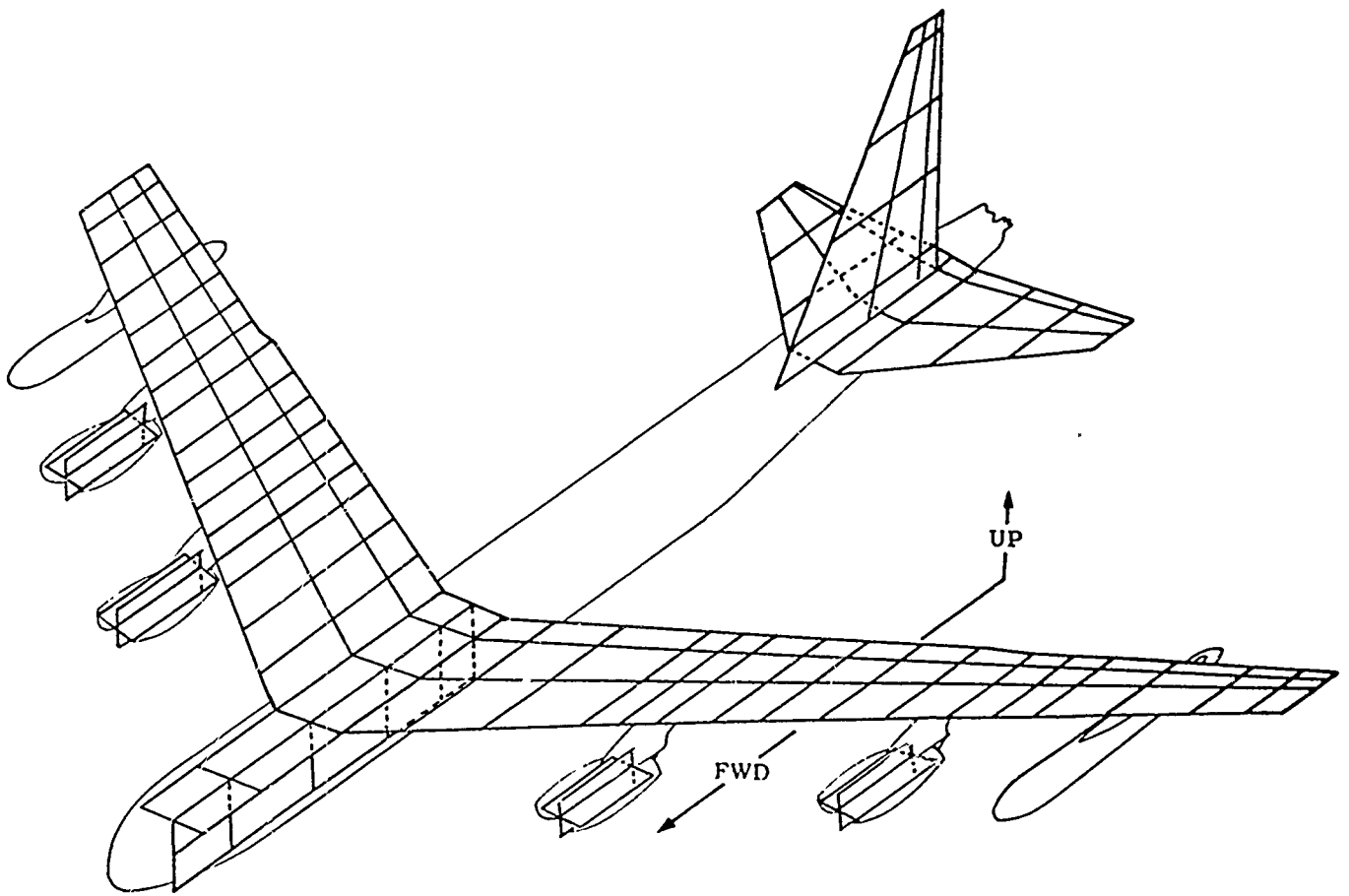


FIGURE 27. AERODYNAMIC PATCHES FOR THE CCV AIRPLANE

TABLE 20. AERODYNAMIC PATCH NUMERICAL DESCRIPTION

AERO PATCH NO.	X-LEAD BS	X-TRAIL BS	Y-INBD. BBL	Y-OUTBD. BBL	Z-TOP BWL	Z-BOTTOM BWL	SWEEP (DEG)	STR. REF. FB PT.	GUST REF. PT.
1	170.000	270.000	0.0	0.0	0.0	80.000	0.0	1	1
2	170.000	270.000	0.0	0.0	80.000	160.000	0.0	1	1
3	270.000	470.000	0.0	0.0	0.0	80.000	0.0	2	1
4	270.000	470.000	0.0	0.0	80.000	160.000	0.0	2	1
5	470.000	650.000	0.0	59.000	0.0	0.0	0.0	3	1
6	470.000	650.000	0.0	0.0	0.0	80.000	0.0	3	1
7	470.000	650.000	0.0	0.0	80.000	160.000	0.0	3	1
8	650.000	820.000	0.0	59.000	0.0	0.0	0.0	4	1
9	650.000	820.000	0.0	0.0	0.0	80.000	0.0	4	1
10	650.000	820.000	0.0	0.0	80.000	160.000	0.0	4	1
11	820.000	860.000	0.0	59.000	0.0	0.0	0.0	5	1
12	820.000	860.000	0.0	0.0	0.0	80.000	0.0	5	1
13	820.000	860.000	0.0	0.0	80.000	160.000	0.0	5	1
14	1545.000	1690.000	0.0	59.000	0.0	0.0	0.0	9	7
15	1690.000	1795.000	0.0	59.000	0.0	0.0	14.00	10	7
16	1795.000	1830.000	0.0	59.000	0.0	0.0	6.00	28	7
17	500.000	670.000	59.000	130.000	0.0	0.0	34.00	16	1
18	670.000	840.000	59.000	130.000	0.0	0.0	32.00	16	1
19	840.000	885.000	59.000	130.000	0.0	0.0	30.00	16	1
20	1580.000	1705.000	59.000	130.000	0.0	0.0	30.00	11	7
21	1705.000	1810.000	59.000	130.000	0.0	0.0	14.00	11	7
22	1810.000	1835.000	59.000	130.000	0.0	0.0	6.00	28	7
23	555.000	725.000	130.000	220.000	0.0	0.0	34.00	17	2
24	725.000	880.000	130.000	220.000	0.0	0.0	32.00	17	2
25	880.000	930.000	130.000	220.000	0.0	0.0	30.00	30	2
26	1650.000	1745.000	130.000	220.000	0.0	0.0	30.00	12	8
27	1745.000	1821.000	130.000	220.000	0.0	0.0	14.00	12	8
28	1821.000	1840.000	130.000	220.000	0.0	0.0	6.00	29	8
29	625.000	780.000	220.000	312.000	0.0	0.0	34.00	18	2
30	780.000	930.000	220.000	312.000	0.0	0.0	32.00	18	2
31	930.000	975.000	220.000	312.000	0.0	0.0	30.00	30	2
32	1730.000	1790.000	220.000	312.000	0.0	0.0	30.00	13	8
33	1790.000	1838.000	220.000	312.000	0.0	0.0	14.00	13	8
34	1838.000	1850.000	220.000	312.000	0.0	0.0	6.00	29	8
35	675.000	825.000	312.000	365.000	0.0	0.0	34.00	18	3

TABLE 20. AERODYNAMIC PATCH NUMERICAL DESCRIPTION (Continued)

AERO PATCH NO.	X-LEAD BS	X-TRAIL BS	Y-INBD. BBL	Y-OUTBD. BBL	Z-TOP BWL	Z-BOTTOM BWL	SWEEP (DEG)	STR. REF. PT. FB	GUST REF. PT.
36	825.000	970.000	312.000	365.000	0.0	0.0	32.00	18	3
37	970.000	1015.000	312.000	365.000	0.0	0.0	30.00	18	3
38	715.000	860.000	365.000	410.000	0.0	0.0	34.00	19	3
39	860.000	970.000	365.000	410.000	0.0	0.0	32.00	19	3
40	970.000	1030.000	365.000	410.000	0.0	0.0	30.00	19	3
41	535.000	715.000	365.000	410.000	48.000	48.000	0.0	14	3
42	535.000	715.000	410.000	410.000	78.000	48.000	0.0	14	3
43	535.000	715.000	410.000	410.000	48.000	18.000	0.0	14	3
44	535.000	715.000	410.000	455.000	48.000	48.000	0.0	14	3
45	745.000	885.000	410.000	455.000	0.0	0.0	34.00	20	3
46	885.000	980.000	410.000	455.000	0.0	0.0	32.00	20	3
47	980.000	1040.000	410.000	455.000	0.0	0.0	30.00	31	3
48	785.000	915.000	455.000	500.000	0.0	0.0	34.00	21	3
49	915.000	1010.000	455.000	500.000	0.0	0.0	32.00	21	3
50	1010.000	1070.000	455.000	500.000	0.0	0.0	30.00	31	3
51	835.000	965.000	500.000	590.000	0.0	0.0	34.00	22	4
52	965.000	1045.000	500.000	590.000	0.0	0.0	32.00	22	4
53	1045.000	1105.000	500.000	590.000	0.0	0.0	30.00	22	4
54	900.000	1020.000	590.000	675.000	0.0	0.0	34.00	23	4
55	1020.000	1100.000	590.000	675.000	0.0	0.0	32.00	23	4
56	1100.000	1155.000	590.000	675.000	0.0	0.0	30.00	23	4
57	950.000	1065.000	675.000	720.000	0.0	0.0	34.00	33	5
58	1065.000	1135.000	675.000	720.000	0.0	0.0	32.00	33	5
59	1135.000	1190.000	675.000	720.000	0.0	0.0	30.00	33	5
60	769.000	949.000	675.000	720.000	41.000	41.000	0.0	15	5
61	769.000	949.000	720.000	720.000	71.000	41.000	0.0	15	5
62	769.000	949.000	720.000	720.000	41.000	11.000	0.0	15	5
63	769.000	949.000	720.000	765.000	41.000	41.000	0.0	15	5
64	980.000	1090.000	720.000	765.000	0.0	0.0	34.00	24	5
65	1090.000	1160.000	720.000	765.000	0.0	0.0	32.00	24	5
66	1160.000	1200.000	720.000	765.000	0.0	0.0	30.00	24	5
67	1015.000	1120.000	765.000	820.000	0.0	0.0	34.00	25	5
68	1120.000	1190.000	765.000	820.000	0.0	0.0	32.00	25	5
69	1190.000	1230.000	765.000	820.000	0.0	0.0	30.00	32	5
70	1070.000	1070.000	820.000	901.000	0.0	0.0	34.00	25	5

TABLE 20. AERODYNAMIC PATCH NUMERICAL DESCRIPTION (Concluded)

AERO PATCH NO.	X-LEAD BS	X-TRAIL BS	Y-INBD. BBL	Y-OUTBD. BBL	Z-TOP BWL	Z-BOTTOM BWL	SWEEP (DEG)	STR. REF. FB PT.	GUST REF. PT.
71	1170.000	1230.000	820.000	901.000	0.0	0.0	32.00	25	5
72	1230.000	1270.000	820.000	901.000	0.0	0.0	30.00	25	5
73	1130.000	1220.000	901.000	980.000	0.0	0.0	34.00	26	6
74	1220.000	1280.000	901.000	980.000	0.0	0.0	32.00	26	6
75	1280.000	1310.000	901.000	980.000	0.0	0.0	30.00	26	6
76	1185.000	1270.000	980.000	1050.000	0.0	0.0	34.00	27	6
77	1270.000	1330.000	980.000	1050.000	0.0	0.0	32.00	27	6
78	1330.000	1350.000	980.000	1050.000	0.0	0.0	30.00	27	6
79	1230.000	1310.000	1050.000	1110.000	0.0	0.0	34.00	27	6
80	1310.000	1365.000	1050.000	1110.000	0.0	0.0	32.00	27	6
81	1365.000	1385.000	1050.000	1110.000	0.0	0.0	30.00	27	6
82	1467.000	1612.400	0.0	0.0	0.0	-58.100	0.0	34	9
83	1612.400	1756.900	0.0	0.0	0.0	-58.100	0.0	34	9
84	1756.900	1789.100	0.0	0.0	0.0	-58.100	0.0	34	9
85	1542.000	1661.000	0.0	0.0	-58.100	-171.200	38.00	35	9
86	1661.000	1780.100	0.0	0.0	-58.100	-171.200	26.00	35	9
87	1780.100	1806.600	0.0	0.0	-58.100	-171.200	14.00	38	9
88	1639.900	1725.300	0.0	0.0	-171.200	-284.400	38.00	36	9
89	1725.300	1810.700	0.0	0.0	-171.200	-284.400	26.00	36	9
90	1810.700	1829.700	0.0	0.0	-171.200	-284.400	14.00	39	9
91	1737.800	1789.600	0.0	0.0	-284.400	-397.500	38.00	37	9
92	1789.600	1841.300	0.0	0.0	-284.400	-397.500	26.00	37	9
93	1841.300	1852.800	0.0	0.0	-284.400	-397.500	14.00	40	9
94	1798.200	1829.200	0.0	0.0	-397.500	-424.100	38.00	37	9
95	1829.200	1860.200	0.0	0.0	-397.500	-424.100	26.00	37	9
96	1860.200	1867.100	0.0	0.0	-397.500	-424.100	14.00	37	9

TABLE 21. AUXILIARY DATA FOR AERODYNAMIC PATCH DESCRIPTION

STRUCTURAL REF. STA.	X	Y	Z	ORIENTATION
1	172.000	0.0	80.000	1
2	331.000	0.0	80.000	1
3	510.000	0.0	80.000	1
4	695.000	0.0	0.0	1
5	805.000	0.0	0.0	1
6	917.000	0.0	0.0	1
7	1135.000	0.0	0.0	1
8	1376.000	0.0	0.0	2
9	1581.000	0.0	0.0	2
10	1719.000	0.0	0.0	2
11	1684.800	94.910	0.0	1
12	1733.300	181.450	0.0	6
13	1763.600	235.540	0.0	6
14	632.000	410.000	48.000	7
15	864.000	720.000	41.000	7
16	645.800	102.700	0.0	4
17	709.400	205.400	0.0	4
18	773.100	308.000	0.0	4
19	819.700	383.100	0.0	4
20	838.100	410.000	0.0	5
21	891.000	487.500	0.0	5
22	944.000	565.000	0.0	5
23	997.000	642.500	0.0	5
24	1049.900	720.000	0.0	5
25	1120.000	822.500	0.0	5
26	1190.000	925.000	0.0	5
27	1253.300	1017.500	0.0	5
28	1804.800	94.910	0.0	1
29	1825.000	205.000	0.0	6
30	910.000	230.000	0.0	4
31	980.000	430.000	0.0	5
32	1185.000	780.000	0.0	5
33	1080.000	700.000	0.0	5
34	1656.800	0.0	-58.100	8
35	1692.350	0.0	-134.900	8
36	1736.960	0.0	-231.200	8
37	1796.030	0.0	-358.730	8
38	1780.100	0.0	-114.670	8
39	1810.700	0.0	-227.800	8
40	1841.300	0.0	-340.930	8

TABLE 22. STRUCTURAL REFERENCE POINT ORIENTATION SYSTEMS
(1, 2, 3) = (X, Y, Z). ANGLES IN DEGREES

SYSTEM	AXIS-1	AXIS-2	AXIS-3	AXIS-4	THETA-1	THETA-2	THETA-3	THETA-4
1	0	0	0	0	0.0	0.0	0.0	0.0
2	2	0	0	0	3.15724	0.0	0.0	0.0
3	2	0	0	0	-6.0	0.0	0.0	0.0
4	2	1	3	0	-6.0	-2.5	-31.75414	0.0
5	2	1	3	0	-6.0	-2.5	-34.32027	0.0
6	3	0	0	0	-29.26662	0.0	0.0	0.0
7	2	1	2	0	-6.0	-2.5	2.5	0.0
8	2	0	0	0	-24.85190	0.0	0.0	0.0

TABLE 23. GUST REFERENCE STATION LOCATIONS

GUST REF. STA.	X	Y	Z
1	450.0	0.0	0.0
2	600.0	221.0	0.0
3	730.0	406.0	0.0
4	870.0	588.0	0.0
5	1020.0	788.0	0.0
6	1180.0	1005.0	0.0
7	1500.0	0.0	0.0
8	1690.0	221.0	0.0
9	1650.0	0.0	-150.0
10	-108.3	0.0	0.0

APPENDIX B

TEST VEHICLE THEORETICAL EQUATIONS OF MOTION

1.0 Introduction

Appendix B contains a description of the CCV airplane mathematical model and listings of the coefficient matrices for the light-gross-weight configuration. Included in the mathematical model description is a block diagram for the Electronic Yaw Damper (EYD) which is required for system stability in the antisymmetric analyses.

2.0 Equations of Motion

The structural equations of motion (EOM) were furnished in the following standardized form.

$$\left(s^2\ [\text{Mass}] + s\ [\text{Damping}] + [\text{Stiffness}]\right)\{q(s)\}$$

$$+\left(s^2\,\rho[C_1] + s\rho U_o\ [C_2] + \rho U_o{}^2\ [C_3] + \rho U_o{}^2 \sum_{i=1}^{2}\ [D_i]\ \frac{s}{s+U_o d_i}\right)\{q(s)\}$$

$$+\left(\rho U_o\ [R_o] + \rho U_o \sum_{i=1}^{4}\ [R_i]\ \frac{s}{s+U_o\,\beta_i}\right)\begin{Bmatrix}W_g(s)\\ \overline{V_g(s)}\end{Bmatrix} = 0$$

Nondimensionalizing the equations in terms of ρ and U_o allows a given tape to be used over a moderate range of airspeeds and altitudes. The terms in $s/(s+U_o d_i)$ represent unsteady aerodynamic effects. Similar effects are modeled for gust influences. Ordinarily, there are 30 independent coordinates in the $\{q(s)\}$ plus surface positions. Gust inputs are usually modeled for nine lift panels. The independent coordinates are essentially arbitrary in definition except for the first three, which are the rigid body coordinates, lateral or longitudinal. The others are dominant structural modes.

Any physical motion or structural load is a weighted summation of the q's. Therefore, included with the listings of EOM coefficient matrices is a "modal influence matrix" (symbol ϕ). Each row of the modal influence matrix represents the contributions of the q's to the motion of or the load at a particular point on the airframe

A block diagram of the Electronic Yaw Damper (EYD) is shown on page 241. The EYD is required in the antisymmetric analyses in order to have a stable dutch roll mode.

The coefficient matrices listed on the following pages are for both the

symmetric and antisymmetric mathematical models. Each of the mathematical models contain three rigid body degrees of freedom and 27 elastic mode degrees of freedom. The remaining degrees of freedom are for the control surfaces. In the symmetric model the control freedoms, in order, are elevator, outboard aileron and outboard flaperon. For the antisymmetric model the control freedoms are rudder and vertical canard. Summary lists of the matrices printed on the following pages are shown on pages 244 and 353. The arrangement of the response and load coefficients in the matrix (PHI) is shown on page 242.

The matrices PHFF through PHON are arranged so that each column represents a generalized freedom; starting with the rigid body freedoms (X, Z and θ for the symmetric case and Y, ϕ and ψ for the antisymmetric case) followed by 27 elastic modes. The rows of each matrix represent modal displacements and rotations. The rows are arranged so that all of the X displacements are grouped together followed by all of the Y displacements and so on through the Z displacements and the ϕ, θ and ψ rotations. For the three degree-of-freedom components (forward fuselage, aft fuselage and vertical tail) the null displacements and rotations have been deleted (Y, ϕ and ψ for the symmetric case and X, Z and θ for the antisymmetric case).

Rigid body stability derivatives have been extracted from the equation of motion matrices. The derivatives, along with the matrix elements from which they were derived, are shown on pages 245 and 354 for the symmetric and antisymmetric models, respectively.

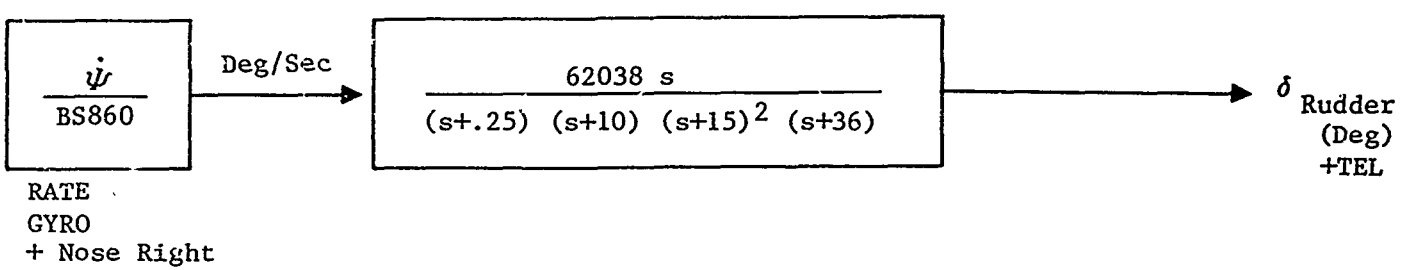


FIGURE 28. ELECTRONIC YAW DAMPER FUNCTIONAL BLOCK DIAGRAM

TABLE 24. RECORDED FLIGHT TEST MEASUREMENTS

NO.	ITEM	LOCATION	UNITS
1	Vertical Bending Moment	BS760	In.-LBS
2	Vertical Bending Moment	BS1222	
3	Vertical Bending Moment	BS1412	
4	Lateral Bending Moment	BS760	
5	Lateral Bending Moment	BS1222	
6	Lateral Bending Moment	BS1412	
7	Vertical Bending Moment	LWS222	
8	Vertical Bending Moment	LWS820	
9	Vertical Bending Moment	LWS974	
10	Chordwise Bending Moment	LWS222	
11	Chordwise Bending Moment	LWS820	
12	Chordwise Bending Moment	LWS974	
13	Vertical Bending Moment	RWS222	
14	Vertical Bending Moment	RWS820	
15	Vertical Bending Moment	RWS974	
16	Chordwise Bending Moment	RWS222	
17	Chordwise Bending Moment	RWS820	
18	Chordwise Bending Moment	RWS974	
19	Vertical Bending Moment	LHTBL56	
20	Vertical Bending Moment	RHTBL56	
21	Lateral Bending Moment	FS135	In.-LBS
22	Pitch Rate	BS860	Deg/Sec
23	Roll Rate	BS860	Deg/Sec
24	Yaw Rate	BS860	Deg/Sec
25	Vertical Acceleration	BS172	g's
26	Vertical Acceleration	BS860	
27	Vertical Acceleration	BS1655	
28	Lateral Acceleration	BS172	
29	Lateral Acceleration	BS860	
30	Lateral Acceleration	BS1655	
31	Vertical Acceleration	LWBL565	
32	Vertical Acceleration	LWBL925	
33	Vertical Acceleration	LWS1359	
34	Vertical Acceleration	Left Ext. Tank, Nose	
35	Vertical Acceleration	RWBL565	
36	Vertical Acceleration	RWBL925	
37	Vertical Acceleration	RWS1359	
38	Vertical Acceleration	Right Ext. Tank, Nose	
39	Vertical Acceleration	Left Inboard Nacelle	
40	Lateral Acceleration	Left Inboard Nacelle	
41	Vertical Acceleration	Left Outboard Nacelle	
42	Lateral Acceleration	Left Outboard Nacelle	g's
43	Angular Acceleration, Y-Axis	LWS540	Rad/Sec^2
44	Angular Acceleration, Y-Axis	LWS1359	Rad/Sec^2
45	Angular Acceleration, Y-Axis	RWS1359	Rad/Sec^2
46	Delta Inboard Aileron	-	Deg
47	Delta Rudder	-	Deg

TABLE 24. RECORDED FLIGHT TEST MEASUREMENTS (Concluded)

NO.	ITEM	LOCATION	UNITS
48	Delta Elevator	-	Deg
49	Delta Vertical Canard	-	
50	Delta Left Horizontal Canard	-	
51	Delta Right Horizontal Canard	-	
52	Delta Outboard Aileron	-	
53	Delta Outboard Flaperon	-	
54	Delta Inboard Flaperon	-	
55	Angle of Attack	Gust Boom	
56	Angle of Side Slip	Gust Boom	Deg
57	Forward Velocity	Gust Boom	FT/Sec

MEASUREMENT SIGN CONVENTION

Vertical Bending Moments	Fuselage, + Tail Up Wing, + Tip Up Horizontal Tail, + Tip Up
Lateral Bending Moment	Fuselage, + Tail Right Fin, + Tip Right
Chordwise Bending Moment	Wing, + Tip Aft
Pitch Rate	+ Nose Up
Roll Rate	+ Left Wing Up
Yaw Rate	+ Nose Right
Vertical Acceleration	+ Up
Lateral Acceleration	+ Right*
Angular Acceleration, Y-Axis	+ Leading Edge Up
Control Surface Deflection	+ Trailing Edge Down or Left
Angle of Attack	+ Nose Up
Angle of Side Slip	+ Nose Left

*Lateral acceleration at BS 1655 is + left.

TABLE 25. EQUATION OF MOTION AND MODAL COEFFICIENT MATRICES FOR SYMMETRIC ANALYSES

Matrix Name	No. of Rows	No. of Columns	Description
MASS	33	33	Generalized Mass - Nominal Gr. Wt., 260,731 Lbs.
MASS	33	33	Generalized Mass - Condition 44.2.7, 250,000 Lbs.
MASS	33	33	Generalized Mass - Condition 44.3.17, 258,900 Lbs.
MASS	33	33	Generalized Mass - Condition 44.3.9, 248,000 Lbs.
MASS	33	33	Generalized Mass - Condition 44.2.48.2, 242,000 Lbs.
MASS	33	33	Generalized Mass - Condition 44.1.1, 272,300 Lbs.
MASS	33	33	Generalized Mass - Condition 44.1.5, 262,400 Lbs.
C1	33	33	Aerodynamic Influence Coefficients (acceleration)
DAMP	33	33	Generalized Damping
C2	33	33	Aerodynamic Influence Coefficients (velocity)
STIF	33	33	Generalized Stiffness
C3	33	33	Aerodynamic Influence Coefficients (displacement)
D1	33	33	First Aerodynamic Lag Coefficients
B1	1	33	First Aerodynamic Lag Constants
D2	33	33	Second Aerodynamic Lag Coefficients
B2	1	33	Second Aerodynamic Lag Constants
R0	33	20*	Gust Influence Coefficients
R1	33	20*	First Gust Lag Coefficients
BG1	1	20*	First Gust Lag Constant
R2	33	20*	Second Gust Lag Coefficients
BG2	1	20*	Second Gust Lag Constants
R3	33	20*	Third Gust Lag Coefficients
BG3	1	20*	Third Gust Lag Constants
R4	33	20*	Fourth Gust Lag Coefficients
BG4	1	20*	Fourth Gust Lag Constants
XGST	1	10	X Locations of the Gust Reference Stations
YGST	1	10	Y Locations of the Gust Reference Stations
ZGST	1	10	Z Locations of the Gust Reference Stations
PHI	57	30	Modal Coefficients for Flight Test Sensor Stations
PHFF	24	30	Forward Fuselage Modal Displacements and Slopes
PHAF	48	30	Aft Fuselage Modal Displacements and Slopes
PHWG	96	30	Wing Modal Displacements and Slopes
PHHT	48	30	Horizontal Tail Modal Displacements and Slopes
PHIN	12	30	Inboard Nacelle Modal Displacements and Slopes
PHON	12	30	Outboard Nacelle Modal Displacements and Slopes

*This matrix is partitioned by columns, the first ten columns are vertical gust terms and the last ten columns are lateral gust terms.

TABLE 26. RIGID AIRPLANE STABILITY DERIVATIVES - SYMMETRIC MODEL, MACH = .687, ALTITUDE = 21,000 FT., CG = .33 MAC

Derivative		Equation of Motion Coefficients
C_{D_α}	.001175/Deg	$\frac{2}{57.3S}\left[C_3\right]_{1,3}$
C_{L_α}	.08736/Deg	$-\frac{2}{57.3S}\left[C_3\right]_{2,3}$
C_{m_α}	-.02198/Deg	$-\frac{2}{57.3SC}\left[C_3\right]_{3,3}$
$C_{L_{\hat{q}}}$	6.4565/Rad	$-\frac{4}{SC}\left[C_2 + \frac{1}{B_1} D_1 + \frac{1}{B_2} D_2\right]_{2,3}$
$C_{m_{\hat{q}}}$	-22.2672/Rad	$-\frac{4}{SC^2}\left[C_2 + \frac{1}{B_1} D_1 + \frac{1}{B_2} D_2\right]_{3,3}$
$C_{L_{\delta e}}$	.003913/Deg	$\frac{2}{57.3S}\left[C_3\right]_{2,31}$
$C_{m_{\delta e}}$	-.01194/Deg	$\frac{2}{57.3SC}\left[C_3\right]_{3,31}$
$C_{L_{\delta OA}}$	.001374/Deg	$\frac{2}{57.3S}\left[C_3\right]_{2,32}$
$C_{m_{\delta OA}}$	-.001361/Deg	$\frac{2}{57.3SC}\left[C_3\right]_{3,32}$
$C_{L_{\delta OF}}$	.001602/Deg	$\frac{2}{57.3S}\left[C_3\right]_{2,33}$
$C_{m_{\delta OF}}$	.001246/Deg	$\frac{2}{57.3SC}\left[C_3\right]_{3,33}$

S = 576,000 IN.^{2} = wing area

C = 275.5 IN. = mean aerodynamic chord

MATRIX *MASS* 33 BY 33 SYMMETRIC MATH MODEL NOMINAL GROSS WEIGHT, 260,731 LBS.

ROW 1
6.7547E 02 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 -5.0183E-01

ROW 2
0.0 6.7547E 02 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 4.7751E 00

ROW 3
0.0 0.0 7.4257E 07 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
-1.3143E 02 -5.3948E 01 -3.7325E 02

ROW 4
0.0 0.0 0.0 4.5164E 05 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
-3.9990E 00 -2.4570E 00 -2.8968E 01

ROW 5
0.0 0.0 0.0 0.0 7.8419E 05 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
-6.4820E 00 2.7769E 01 9.9191E 01

ROW 6
0.0 0.0 0.0 0.0 0.0 1.7529E 05 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
1.0379E 00 -1.2331E 00 -9.3634E 00

ROW 7
0.0 0.0 0.0 0.0 0.0 0.0 7.9005E 05 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
7.9174E-01 1.3742E 01 6.0423E 00

ROW 8
0.0 0.0 0.0 0.0 0.0 0.0 0.0 8.2290E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
2.0562E 01 -1.7299E 01 -1.5843E 02

ROW 9
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 5.7746E 05 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
-1.5894E 00 3.7093E-01 -2.3430E 00

MATRIX *MASS* 33 BY 33 SYMMETRIC MATH MODEL NOMINAL GROSS WEIGHT, 260,731 LBS.

ROW 10

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.7401E 05
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.5904E 01	4.5675E 00	-1.6249E 02							

ROW 11

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.4034E 06	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.0794E 01	3.2930E 00	1.2157E 02							

ROW 12

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	6.1515E 05	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
-3.1730E 01	-1.2988E 01	-3.4207E 01							

ROW 13

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	1.0969E 05	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
-1.2483E 01	3.9402E 00	-3.8412E 01							

ROW 14

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	7.5570E 04	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
-8.9849E 00	8.6546E-01	-8.7207E 00							

ROW 15

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	2.4200E 05	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4.2560E 01	-6.0344E 00	8.4763E 01							

ROW 16

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	2.1328E 05	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
-4.0112E 01	-9.5058E 00	7.5615E 01							

ROW 17

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	2.0988E 04	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.5727E 01	-1.3994E-01	1.3682E 00							

ROW 18

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2609E 05	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.2182E 00	-6.2092E 00	4.3306E 01							

MATRIX *MASS* 33 BY 33 SYMMETRIC MATH MODEL NOMINAL GROSS WEIGHT, 260,731 LBS.

ROW 19

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7375E 05	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
-5.5509E 01	-2.3686E 00	-7.3899E 01							

ROW 20

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7781E 05
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.6779E 01	-2.3147E 01	-2.2837E 02							

ROW 21

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.1040E 05	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9.4126E 00	-1.6154E 01	-2.0803E 02							

ROW 22

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	5.2130E 04	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
-1.2455E-01	-1.6842E 00	2.1114E 01							

ROW 23

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	2.5314E 05	0.0	0.0	0.0	0.0	0.0	0.0	0.0
-2.2758E 01	1.0082E 01	-3.6445E 01							

ROW 24

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.6403E 04	0.0	0.0	0.0	0.0	0.0	0.0
-6.9912E 01	-1.8231E 00	3.9448E 01							

ROW 25

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	2.6961E 04	0.0	0.0	0.0	0.0	0.0
-7.1027E 01	-3.1681E 00	-4.6190E 01							

ROW 26

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	3.4005E 04	0.0	0.0	0.0	0.0
2.4044E 01	-2.0454E 01	9.5210E 01							

ROW 27

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	2.1422E 04	0.0	0.0	0.0
-5.7568E-02	1.6880E 00	-5.5870E 01							

MATRIX *MASS* 33 BY 33 SYMMETRIC MATH MODEL NOMINAL GROSS WEIGHT, 260,731 LBS.

ROW 28

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.5992E 03	0.0	0.0
-2.2937E 01	-7.6909E-01	-6.8428E 00							

ROW 29

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0177E 03	0.0
-2.8269E 01	9.0357E-01	8.5400E 00							

ROW 30

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.1358E 03
5.7686E 00	8.1840E 00	7.7365E 00							

ROW 31

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 32

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 33

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

MATRIX *MASS* 33 BY 33 SYMMETRIC MATH MODEL FLIGHT CONDITION 44.2.7, 250,000 LBS.

ROW 1

6.4767E 02	0.0	1.3383E 03	-4.5916E 01	-1.9230E 02	-2.0436E 01	5.5125E 01	-1.2460E 02	3.9951E 02	1.5126E 02
3.1364E 01	-4.6700E 01	-1.8885E 01	-4.0149E 01	1.5909E 01	-4.5717E 01	2.4081E 00	-2.2566E 02	2.8286E 01	2.8668E 01
-3.4955E 01	6.0507E 01	-2.3943E 01	-2.2249E 01	4.2358E 01	-3.9085E 00	7.9544E-02	-1.1471E 01	5.9631E 00	-1.1112E 01
0.0	0.0	-5.0188E-01							

ROW 2

0.0	6.4767E 02	1.4323E 03	4.3168E 02	-1.4791E 02	1.0404E 01	-1.2173E 02	1.7569E 02	-8.5915E 01	6.4149E 02
1.9274E 02	-8.1540E 02	-9.3905E 01	-5.3140E 01	1.6842E 02	1.5223E 02	-1.9234E 01	2.2536E 01	4.6157E 02	-2.6841E 02
-5.4710E 01	4.6991E 01	2.3921E 02	2.1919E 01	-8.2411E 01	3.7042E 01	-1.3264E 01	-3.2142E 01	1.0023E 01	-2.9982E 01
0.0	0.0	4.7751E 00							

ROW 3

1.3383E 03	1.4323E 03	7.3942E 07	-2.2197E 04	1.5181E 04	4.4919E 02	2.3099E 03	-7.3928E 03	-1.5477E 04	-4.5511E 04
-2.0089E 04	5.2001E 04	9.4683E 03	7.4300E 03	-2.2040E 04	3.0405E 03	2.0403E 03	1.5491E 04	-3.2390E 04	1.2264E 04
8.7981E 03	-5.6957E 03	-3.6669E 03	-1.7962E 03	2.2131E 03	-3.1654E 03	-4.3270E 03	-6.8566E 02	1.5716E 03	3.5662E 02
-1.3143E 02	-5.3948E 01	-3.7325E 02							

ROW 4

-4.5916E 01	4.3168E 02	-2.2197E 04	4.4484E 05	1.9579E 03	-1.9522E 02	1.9653E 03	-2.9858E 03	1.9857E 03	-9.7735E 03
-3.0461E 03	1.2678E 04	1.4729E 03	7.9285E 02	-2.7444E 03	-2.3319E 03	3.1691E 02	-6.5139E 02	-7.2060E 03	4.2126E 03
8.4465E 02	-6.3400E 02	-3.6573E 03	-3.9861E 02	1.3489E 03	-5.9912E 02	1.4387E 02	4.4385E 02	-1.1629E 02	4.2534E 02
-3.9990E 00	-2.4570E 00	-2.8968E 01							

ROW 5

-1.9230E 02	-1.4791E 02	1.5181E 04	1.9579E 03	7.8206E 05	-8.5870E 01	-2.7866E 02	3.3760E 01	2.3000E 03	4.4122E 03
1.1618E 03	-4.5888E 03	-5.9426E 02	-5.3377E 02	8.8388E 02	5.7829E 02	-7.4599E 01	-1.3853E 03	2.5887E 03	-1.2321E 03
-4.9154E 02	6.6541E 02	1.1874E 03	-5.4247E 01	-1.4694E 02	1.5668E 02	-1.1939E 02	-2.7952E 02	1.1796E 02	-2.5420E 02
-6.4820E 00	2.7769E 01	9.9191E 01							

ROW 6

-2.0436E 01	1.0404E 01	4.4919E 02	-1.9522E 02	-8.5870E 01	1.7527E 05	8.6036E 01	-1.5778E 02	3.2581E 02	-1.2932E 02
-4.9469E 01	2.7112E 02	2.1200E 01	-9.6671E 00	-5.1069E 01	-9.0819E 01	8.9840E 00	-1.7437E 02	-1.5313E 02	1.2162E 02
-5.2476E 00	2.6835E 01	-1.0860E 02	-2.4502E 01	6.2249E 01	-1.6822E 01	5.2672E 00	3.8485E 00	5.2262E-01	3.2828E 00
1.0379E 00	-1.2331E 00	-9.3634E 00							

ROW 7

5.5125E 01	-1.2173E 02	2.3099E 03	1.9653E 03	-2.7866E 02	8.6036E 01	7.8940E 05	9.8298E 02	-1.1734E 03	2.4693E 03
7.1638E 02	-3.4194E 03	-3.4619E 02	-1.3262E 02	6.1273E 02	8.2128E 02	-8.0281E 01	5.8913E 02	1.9081E 03	-1.2333E 03
-1.3031E 02	8.2941E 01	1.1472E 03	1.2729E 02	-4.4414E 02	1.5897E 02	-9.4930E 01	-1.3893E 02	4.9488E 01	-1.2132E 02
7.9174E-01	1.3742E 01	6.0423E 00							

ROW 8

-1.2460E 02	1.7569E 02	-7.3928E 03	-2.9858E 03	3.3759E 01	-1.5778E 02	9.8298E 02	8.2111E 05	2.3165E 03	-3.5145E 03
-1.3010E 03	5.1427E 03	5.9985E 02	2.2348E 02	-1.2999E 03	-9.5683E 02	1.6162E 02	-1.0113E 03	-2.9965E 03	1.8224E 03
2.9515E 02	-3.6052E 01	-1.4657E 03	-2.8015E 02	7.1685E 02	-2.8941E 02	-3.4658E 01	8.5483E 01	1.9903E 01	1.0204E 02
2.0562E 01	-1.7299E 01	-1.5843E 02							

ROW 9

3.9951E 02	-8.5915E 01	-1.5477E 04	1.9857E 03	2.3000E 03	3.2581E 02	-1.1734E 03	2.3165E 03	5.7145E 05	-2.1142E 02
1.1149E 02	-1.8189E 03	-4.6593E 00	4.2324E 02	2.4396E 02	1.1604E 03	-8.9579E 01	3.3346E 03	9.9114E 02	-1.2421E 03
3.4964E 02	-7.2573E 02	1.1106E 03	3.8087E 02	-8.6310E 02	1.6504E 02	-6.1045E 01	5.4685E 01	-4.5739E 01	6.0666E 01
-1.5894E 00	3.7093E-01	-2.3430E 00							

MATRIX *MASS* 33 BY 33 SYMMETRIC MATH MODEL FLIGHT CONDITION 44.2.7, 250,000 LBS.

ROW 10

1.5126E 02	6.4149E 02	-4.5511E 04	-9.7735E 03	4.4122E 03	-1.2932E 02	2.4693E 03	-3.5145E 03	-2.1142E 02	5.5822E 05
-4.8836E 03	1.9305E 04	2.3785E 03	1.5254E 03	-4.3398E 03	-3.0124E 03	4.6557E 02	8.7800E 02	-1.1046E 04	6.0343E 03
1.5792E 03	-1.4255E 03	-5.2007E 03	-4.3492E 02	1.6775E 03	-8.7820E 02	1.6295E 02	7.2411E 02	-1.9590E 02	7.0649E 02
2.5904E 01	4.5675E 00	-1.6249E 02							

ROW 11

3.1364E 01	1.9274E 02	-2.0089E 04	-3.0461E 03	1.1618E 03	-4.9469E 01	7.1638E 02	-1.3010E 03	1.1149E 02	-4.8830E 03
2.4016E 06	6.0941E 03	8.5448E 02	5.4886E 02	-1.8009E 03	-5.8112E 02	1.8842E 02	3.8261E 02	-3.6151E 03	1.8216E 03
6.2997E 02	-4.1316E 02	-1.2937E 03	-2.1133E 02	5.2978E 02	-3.2552E 02	-1.4960E 02	9.8613E 01	3.8475E 01	1.4049E 02
2.0794E 01	3.2930E 00	1.2157E 02							

ROW 12

-4.6700E 01	-8.1540E 02	5.2001E 04	1.2678E 04	-4.5888E 03	2.7112E 02	-3.4194E 03	5.1427E 03	-1.8189E 03	1.9305E 04
6.0941E 03	5.9081E 05	-2.9492E 03	-1.7471E 03	5.5177E 03	4.0092E 03	-6.1178E 02	2.7409E 01	1.3926E 04	-7.8179E 03
-1.8525E 03	1.4968E 03	6.6701E 03	6.8124E 02	-2.3509E 03	1.1451E 03	-1.7273E 02	-8.3862E 02	2.0110E 02	-8.2598E 02
-3.1730E 01	-1.2988E 01	-3.4207E 01							

ROW 13

-1.8885E 01	-9.3908E 01	9.4683E 03	1.4729E 03	-5.9426E 02	2.1200E 01	-3.4619E 02	5.9985E 02	-4.6593E 00	2.3785E 03
8.5448E 02	-2.9492E 03	1.0928E 05	-2.6511E 02	8.4613E 02	2.9945E 02	-8.7923E 01	-1.9950E 02	1.7298E 03	-8.8316E 02
-2.9933E 02	2.0740E 02	6.3121E 02	9.5707E 01	-2.4936E 02	1.5287E 02	6.1320E 01	-5.4901E 01	-1.2403E 01	-7.2115E 01
-1.2483E 01	3.9402E 00	-3.8412E 01							

ROW 14

-4.0149E 01	-5.3140E 01	7.4300E 03	7.9285E 02	-5.3377E 02	-9.6672E 00	-1.3262E 02	2.2348E 02	4.2324E 02	1.5254E 03
5.4886E 02	-1.7471E 03	-2.6511E 02	7.5368E 04	5.4244E 02	8.8753E 01	-5.1527E 01	-3.7353E 02	1.0357E 03	-4.6868E 02
-2.2238E 02	1.8283E 02	3.0388E 02	3.7035E 01	-9.6225E 01	8.7724E 01	5.3383E 01	-3.2468E 01	-9.5223E 00	-4.6177E 01
-8.9849E 00	8.6546E-01	-8.7207E 00							

ROW 15

1.5909E 01	1.6842E 02	-2.2040E 04	-2.7444E 03	8.8388E 02	-5.1069E 01	6.1273E 02	-1.2999E 03	2.4396E 02	-4.3398E 03
-1.8009E 03	5.5177E 03	8.4613E 02	5.4244E 02	2.4007E 05	-2.7366E 02	1.9831E 02	4.0675E 02	-3.3216E 03	1.5957E 03
6.5875E 02	-3.4474E 02	-8.8804E 02	-2.4469E 02	4.7344E 02	-3.2481E 02	-2.7935E 02	-7.4273E 00	1.0644E 02	6.3119E 01
4.2560E 01	-6.0344E 00	8.4763E 01							

ROW 16

-4.5717E 01	1.5223E 02	3.0405E 03	-2.3319E 03	5.7829E 02	-9.0819E 01	8.2128E 02	-9.5683E 02	1.1604E 03	-3.0124E 03
-5.8112E 02	4.0092E 03	2.9945E 02	8.8753E 01	-2.7366E 02	2.1195E 05	5.2035E 01	-7.7994E 02	-2.1336E 03	1.5267E 03
3.0318E 01	-1.4045E 02	-1.7307E 03	-7.0592E 01	5.2279E 02	-1.3880E 02	3.2124E 02	3.0165E 02	-1.6290E 02	2.3259E 02
-4.0112E 01	-9.5058E 00	7.5615E 01							

ROW 17

2.4081E 00	-1.9234E 01	2.0403E 03	3.1691E 02	-7.4599E 01	8.9840E 00	-8.0281E 01	1.6162E 02	-8.9579E 01	4.6557E 02
1.8842E 02	-6.1178E 02	-8.7923E 01	-5.1527E 01	1.9831E 02	5.2035E 01	2.0967E 04	-3.1618E 00	3.6632E 02	-1.8708E 02
-6.3266E 01	2.9738E 01	1.1959E 02	2.8544E 01	-6.1048E 01	3.5645E 01	2.3703E 01	-2.3656E 00	-9.1910E 00	-8.6360E 00
2.5727E 01	-1.3994E-01	1.3682E 00							

ROW 18

-2.2566E 02	2.2536E 01	1.5491E 04	-6.5139E 02	-1.3853E 03	-1.7437E 02	5.8913E 02	-1.0113E 03	3.3346E 03	8.7800E 02
3.8261E 02	2.7409E 01	-1.9950E 02	-3.7353E 02	4.0675E 02	-7.7994E 02	-3.1618E 00	3.2405E 05	9.3507E 01	4.5635E 02
-3.8063E 02	4.6494E 02	-6.3518E 02	-1.4123E 02	4.1046E 02	-1.4262E 01	1.7601E 02	2.8107E 01	-3.7812E 01	-9.2244E 00
5.2182E 00	-6.2092E 00	4.3306E 01							

MATRIX *MASS* 33 BY 33 SYMMETRIC MATH MODEL FLIGHT CONDITION 44.2.7, 250,000 LBS.

ROW 19

2.8286E 01	4.6157E 02	-3.2390E 04	-7.2060E 03	2.5887E 03	-1.5313E 02	1.9081E 03	-2.9965E 03	9.9114E 02	-1.1046E 04
-3.6151E 03	1.3926E 04	1.7298E 03	1.0357E 03	-3.3216E 03	-2.1336E 03	3.6632E 02	9.3507E 01	1.6569E 05	4.4254E 03
1.1213E 03	-8.6020E 02	-3.7208E 03	-4.1043E 02	1.3412E 03	-6.7622E 02	2.5905E 01	4.3948E 02	-7.9966E 01	4.5078E 02
-5.5509E 01	-2.3686E 00	-7.3899E 01							

ROW 20

2.8668E 01	-2.6841E 02	1.2264E 04	4.2126E 03	-1.2321E 03	1.2162E 02	-1.2333E 03	1.8224E 03	-1.2421E 03	6.0343E 03
1.8216E 03	-7.8179E 03	-8.8316E 02	-4.6868E 02	1.5957E 03	1.5267E 03	-1.8708E 02	4.5635E 02	4.4254E 03	4.7519E 05
-4.8771E 02	3.9119E 02	2.3486E 03	2.3256E 02	-8.4058E 02	3.6060E 02	-1.3432E 02	-3.0257E 02	9.3524E 01	-2.8081E 02
1.6779E 01	-2.3147E 01	-2.2837E 02							

ROW 21

-3.4955E 01	-5.4710E 01	8.7981E 03	8.4465E 02	-4.9154E 02	-5.2476E 00	-1.3831E 02	2.9515E 02	3.4964E 02	1.5792E 03
6.2997E 02	-1.8525E 03	-2.9933E 02	-2.2238E 02	6.5875E 02	3.0318E 01	-6.3266E 01	-3.8063E 02	1.1213E 03	-4.8771E 02
1.1014E 05	1.7741E 02	2.5813E 02	5.7548E 01	-1.0919E 02	1.0328E 02	9.6067E 01	-7.1648E 00	-3.0690E 01	-3.1025E 01
9.4126E 00	-1.6154E 01	-2.0803E 02							

ROW 22

6.0507E 01	4.6991E 01	-5.6957E 03	-6.3400E 02	6.6541E 02	2.6835E 01	8.2941E 01	-3.6052E 01	-7.2573E 02	-1.4255E 03
-4.1316E 02	1.4968E 03	2.0740E 02	1.8283E 02	-3.4474E 02	-1.4045E 02	2.9738E 01	4.6494E 02	-8.6020E 02	3.9119E 02
1.7741E 02	5.1918E 04	-3.4084E 02	7.9186E 00	4.7895E 01	-5.7356E 01	1.2536E 01	7.3998E 01	-2.5295E 01	7.1941E 01
-1.2455E-01	-1.6842E 00	2.1114E 01							

ROW 23

-2.3943E 01	2.3921E 02	-3.6670E 03	-3.6573E 03	1.1874E 03	-1.0860E 02	1.1472E 03	-1.4657E 03	1.1106E 03	-5.2007E 03
-1.2937E 03	6.6701E 03	6.3121E 02	3.0388E 02	-8.8804E 02	-1.7307E 03	1.1959E 02	-6.3518E 02	-3.7208E 03	2.3486E 03
2.5813E 02	-3.4084E 02	2.5065E 05	-1.3099E 02	7.6329E 02	-2.6702E 02	3.4101E 02	4.0510E 02	-1.8829E 02	3.3619E 02
-2.2758E 01	1.0082E 01	-3.6445E 01							

ROW 24

-2.2249E 01	2.1919E 01	-1.7962E 03	-3.9861E 02	-5.4247E 01	-2.4502E 01	1.2729E 02	-2.8015E 02	3.8087E 02	-4.3492E 02
-2.1133E 02	6.8124E 02	9.5707E 01	3.7035E 01	-2.4469E 02	-7.0592E 01	2.8544E 01	-1.4123E 02	-4.1043E 02	2.3256E 02
5.7548E 01	7.9186E 00	-1.3099E 02	1.6351E 04	9.8417E 01	-4.6407E 01	-3.9276E 01	-1.2833E 01	2.0481E 01	-2.6736E 00
-6.9912E 01	-1.8231E 00	3.9443E 01							

ROW 25

4.2358E 01	-8.2411E 01	2.2131E 03	1.3489E 03	-1.4694E 02	6.2249E 01	-4.4414E 02	7.1685E 02	-9.6310E 02	1.6775E 03
5.2978E 02	-2.3509E 03	-2.4936E 02	-9.6225E 01	4.7344E 02	5.2279E 02	-6.1048E 01	4.1046E 02	1.3412E 03	-8.4058E 02
-1.0919E 02	4.7895E 01	7.6329E 02	9.8417E 01	2.6649E 04	1.1706E 02	-4.1839E 01	-8.0590E 01	2.1684E 01	-7.4633E 01
-7.1027E 01	-3.1681E 00	-4.6190E 01							

ROW 26

-3.9085E 00	3.7042E 01	-3.1654E 03	-5.9912E 02	1.5668E 02	-1.6822E 01	1.5897E 02	-2.8941E 02	1.6504E 02	-8.7820E 02
-3.2502E 02	1.1451E 03	1.5287E 02	8.7724E 01	-3.2481E 02	-1.3880E 02	3.5645E 01	-1.4262E 01	-6.7622E 02	3.6060E 02
1.0328E 02	-5.7356E 01	-2.6702E 02	-4.6407E 01	1.1706E 02	3.3943E 04	-2.2466E 01	1.8514E 01	6.5602E 00	2.5242E 01
2.4044E 01	-2.0454E 01	9.5210E 01							

ROW 27

7.9544E-02	-1.3264E 01	-4.3270E 03	1.4387E 02	-1.1939E 02	5.2672E 00	-9.4930E 01	-3.4658E 01	-6.1045E 01	1.6295E 02
-1.4960E 02	-1.7223E 02	6.1320E 01	5.3383E 01	-2.7935E 02	3.2124E 02	2.3703E 01	1.7601E 02	2.5905E 01	-1.3432E 02
9.6067E 01	1.2536E 01	3.4101E 02	-3.9276E 01	-4.1839E 01	-2.2466E 01	2.1272E 04	-9.9737E 01	7.3142E 01	-6.5315E 01
-5.7568E-02	1.6880E 00	-5.5870E 01							

MATRIX *MASS* 33 BY 33 SYMMETRIC MATH MODEL FLIGHT CONDITION 44.2.7, 250,000 LBS.

ROW 28
-1.1471E 01 -3.2142E 01 -6.8566E 02 4.4385E 02 -2.7952E 02 3.8485E 00 -1.3893E 02 8.5483E 01 5.4685E 01 7.2411E 02
9.8613E 01 -8.3865E 02 -5.4901E 01 -3.2468E 01 -7.4272E 00 3.0165E 02 -2.3656E 00 2.8107E 01 4.3948E 02 -3.0257E 02
-7.1648E 00 7.3998E 01 4.0510E 02 -1.2833E 01 -8.0590E 01 1.8514E 01 -9.9737E 01 8.5073E 03 5.4037E 01 -6.9871E 01
-2.2937E 01 -7.6909E-01 -6.8428E 00

ROW 29
5.9631E 00 1.0023E 01 1.5716E 03 -1.1629E 02 1.1796E 02 5.2262E-01 4.9488E 01 1.9903E 01 -4.5739E 01 -1.9590E 02
3.8475E 01 2.0110E 02 -1.2403E 01 -9.5223E 00 1.0644E 02 -1.6290E 02 -9.1910E 00 -3.7812E 01 -7.9966E 01 9.3524E 01
-3.0690E 01 -2.5295E 01 -1.8829E 02 2.0481E 01 2.1684E 01 6.5602E 00 7.3142E 01 5.4037E 01 4.9804E 03 3.7343E 01
-2.8269E 01 9.0357E-01 8.5400E 00

ROW 30
-1.1112E 01 -2.9982E 01 3.5662E 02 4.2534E 02 -2.5420E 02 3.2828E 00 -1.2152E 02 1.0204E 02 6.0666E 01 7.0649E 02
1.4049E 02 -8.2598E 02 -7.2115E 01 -4.6177E 01 6.3119E 01 2.3259E 02 -8.6360E 00 -9.2244E 00 4.5078E 02 -2.8081E 02
-3.1025E 01 7.1941E 01 3.3619E 02 -2.6737E 00 -7.4633E 01 2.5242E 01 -6.5315E 01 -6.9871E 01 3.7343E 01 8.0799E 03
5.7686E 00 8.1840E 00 7.7366E 00

ROW 31
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0

ROW 32
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0

ROW 33
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0

MATRIX *MASS* 33 BY 33 SYMMETRIC MATH MODEL FLIGHT CONDITION 44.3.17, 258,900 LBS.

ROW 1

6.7073E 02	0.0	2.2834E 02	-7.8345E 00	-3.2812E 01	-3.4869E 00	9.4059E 00	-2.1261E 01	6.8166E 01	2.5809E 01
5.3516E 00	-7.9682E 00	-3.2223E 00	-6.8505E 00	2.7144E 00	-7.8006E 00	4.1089E-01	-3.8504E 01	4.8264E 00	4.8915E 00
-5.9643E 00	1.0324E 01	-4.0853E 00	-3.7962E 00	7.2274E 00	-6.6609E-01	1.3572E-02	-1.9573E 00	1.0175E 00	-1.8961E 00
0.0	0.0	-5.0188E-01							

ROW 2

0.0	6.7073E 02	2.4421E 02	7.3655E 01	-2.5240E 01	1.7752E 00	-2.0772E 01	2.9974E 01	-1.4660E 01	1.0945E 02
3.2879E 01	-1.3912E 02	-1.6020E 01	-9.0644E 00	2.8724E 01	2.5983E 01	-3.2808E 00	3.8509E 00	7.8751E 01	-4.5798E 01
-9.3308E 00	8.0176E 00	4.0825E 01	3.7382E 00	-1.4062E 01	6.3191E 00	-2.2684E 00	-5.4874E 00	1.7127E 00	-5.2177E 00
0.0	0.0	4.7751E 00							

ROW 3

2.2834E 02	2.4421E 02	7.4203E 07	-3.7845E 03	2.5896E 03	7.6703E 01	3.9346E 02	-1.2601E 03	-2.6413E 03	-7.7612E 03
-3.4260E 03	[illegible]8672E 03	[illegible]6147E 03	1.2672E 03	-3.7586E 03	5.1898E 02	3.4792E 02	2.6428E 03	-5.5235E 03	2.0910E 03
1.5005E 03	-9.7153E 02	[illegible]E 02	-3.0619E 02	3.7718E 02	-5.3978E 02	-7.3791E 02	-1.1689E 02	2.6801E 02	6.0865E 01
-1.3143E 02	-5.3948E 01	[illegible] 02							

ROW 4

-7.8345E 00	7.3655E 01	-3.7845E 03	4.5048E 05	3.3409E 02	-3.3309E 01	3.3535E 02	-5.0939E 02	3.3882E 02	-1.6675E 03
-5.1960E 02	2.1631E 03	2.5125E 02	1.3523E 02	-4.6806E 02	-3.9801E 02	5.4054E 01	-1.1123E 02	-1.2294E 03	7.1877E 02
1.4405E 02	-1.0817E 02	-6.2417E 02	-6.7985E 01	2.3015E 02	-1.0220E 02	2.4630E 01	7.5780E 01	-1.9881E 01	7.2603E 01
-3.9990E 00	-2.4570E 00	-2.8968E 01							

ROW 5

-3.2812E 01	-2.5240E 01	2.5896E 03	3.3409E 02	7.8383E 05	-1.4651E 01	-4.7560E 01	5.7529E 00	3.9243E 02	7.5286E 02
1.9820E 02	-7.8299E 02	-1.0139E 02	-9.1065E 01	1.5076E 02	9.8723E 01	-1.2724E 01	-2.3633E 02	4.4170E 02	-2.1025E 02
-8.3853E 01	1.1354E 02	2.0266E 02	-9.2631E 00	-2.5079E 01	2.6730E 01	-2.0397E 01	-4.7710E 01	2.0140E 01	-4.3363E 01
-6.4820E 00	2.7769E 01	9.9191E 01							

ROW 6

-3.4869E 00	1.7752E 00	7.6702E 01	-3.3309E 01	-1.4651E 01	1.7528E 05	1.4681E 01	-2.6921E 01	5.5592E 01	-2.2064E 01
-8.4382E 00	4.6259E 01	3.6161E 00	-1.6504E 00	-8.7096E 00	-1.5499E 01	1.5325E 00	-2.9754E 01	-2.6126E 01	2.0752E 01
-8.9678E-01	4.5788E 00	-1.8534E 01	-4.1801E 00	1.0622E 01	-2.8699E 00	9.0023E-01	6.5777E-01	8.8319E-02	5.6084E-01
1.0379E 00	-1.2331E 00	-9.3634E 00							

ROW 7

9.4059E 00	-2.0772E 01	3.9346E 02	3.3535E 02	-4.7560E 01	1.4681E 01	7.8994E 05	1.6771E 02	-2.0022E 02	4.2134E 02
1.2221E 02	-5.8344E 02	-5.9057E 01	-2.2619E 01	1.0450E 02	1.4018E 02	-1.3694E 01	1.0055E 02	3.2558E 02	-2.1044E 02
-2.3584E 01	1.4153E 01	1.9579E 02	2.1712E 01	-7.5786E 01	2.7121E 01	-1.6220E 01	-2.3720E 01	8.4545E 00	-2.0743E 01
7.9174E-01	1.3742E 01	6.0423E 00							

ROW 8

-2.1261E 01	2.9974E 01	-1.2601E 03	-5.0939E 02	5.7528E 00	-2.6921E 01	1.6771E 02	8.2259E 05	3.9526E 02	-5.9955E 02
-2.2191E 02	8.7733E 02	1.0231E 02	3.8107E 01	-2.2169E 02	-1.6330E 02	2.7567E 01	-1.7258E 02	-5.1119E 02	3.1092E 02
5.0326E 01	-6.1436E 00	-2.5012E 02	-4.7787E 01	1.2231E 02	-4.9368E 01	-5.8808E 00	1.4603E 01	3.3810E 00	1.7420E 01
2.0562E 01	-1.7299E 01	-1.5843E 02							

ROW 9

6.8166E 01	-1.4660E 01	-2.6413E 03	3.3882E 02	3.9243E 02	5.5592E 01	-2.0022E 02	3.9526E 02	5.7644E 05	-3.6074E 01
1.9003E 01	-3.1036E 02	-7.8614E-01	7.2223E 01	4.1592E 01	1.9802E 02	-1.5282E 01	5.6899E 02	1.6911E 02	-2.1194E 02
5.9670E 01	-1.2383E 02	1.8954E 02	6.4982E 01	-1.4727E 02	2.8156E 01	-1.0421E 01	9.3209E 00	-7.7969E 00	1.0345E 01
-1.5894E 00	3.7093E-01	-2.3430E 00							

MATRIX *MASS* 33 BY 33 SYMMETRIC MATH MODEL FLIGHT CONDITION 44.3.17, 258,900 LBS.

ROW 10
2.5809E 01 1.0945E 02 -7.7612E 03 -1.6675E 03 7.5286E 02 -2.2064E 01 4.2134E 02 -5.9955E 02 -3.6074E 01 5.7132E 05
-8.3296E 02 3.2937E 03 4.0573E 02 2.6020E 02 -7.4016E 02 -5.1417E 02 7.9410E 01 1.4968E 02 -1.8845E 03 1.0296E 03
2.6935E 02 -2.4322E 02 -8.8756E 02 -7.4105E 01 2.8621E 02 -1.4981E 02 2.7924E 01 1.2362E 02 -3.3482E 01 1.2059E 02
2.5904E 01 4.5675E 00 -1.6249E 02

ROW 11
5.3516E 00 3.2879E 01 -3.4260E 03 -5.1960E 02 1.9820E 02 -8.4382E 00 1.2221E 02 -2.2191E 02 1.9003E 01 -8.3296E 02
2.4031E 06 1.0[illegible]E 03 1.4574E 02 9.3613E 01 -3.0712E 02 -9.9182E 01 3.2135E 01 6.5245E 01 -6.1666E 02 3.1074E 02
1.0744E 02 -7.0481E 01 -2.2075E 02 -3.6038E 01 9.0376E 01 -5.5523E 01 -2.5487E 01 1.6844E 01 6.5476E 00 2.3991E 01
2.0794E 01 3.2930E 00 1.2157E 02

ROW 12
-7.9682E 00 -1.3912E 02 8.86[illegible] 03 2.1631E 03 -7.8299E 02 4.6259E 01 -5.8344E 02 8.7733E 02 -3.1036E 02 3.2937E 03
1.0395E 03 6.1100E 05 -5.0308E 02 -2.9800E 02 9.4105E 02 6.8431E 02 -1.0435E 02 4.8431E 00 2.3758E 03 -1.3339E 03
-3.1594E 02 2.5538E 02 1.1383E 03 1.1618E 02 -4.0111E 02 1.9534E 02 -2.9541E 01 -1.4318E 02 3.4385E 01 -1.4099E 02
-3.1730E 01 -1.2988E 01 -3.4207E 01

ROW 13
-3.2223E 00 -1.6020E 01 1.6147E 03 2.5125E 02 -1.0139E 02 3.6161E 00 -5.9057E 01 1.0231E 02 -7.8613E-01 4.0573E 02
1.4574E 02 -5.0308[illegible] 02 1.0962E 05 -4.5217[illegible] 01 1.4430E 02 5.1111E 01 -1.4995E 01 -3.4019E 01 2.9507E 02 -1.5066E 02
-5.1049E 01 3.5380E 01 1.0771E 02 1.6320E 01 -4.2538E 01 2.6074E 01 1.0443E 01 -9.3769E 00 -2.1072E 00 -1.2310E 01
-1.2483E 01 3.9402E 00 -3.8412E 01

ROW 14
-6.8505E 00 -9.0644E 00 1.2672E 03 1.3523E 02 -9.1065E 01 -1.[illegible]504E 00 -2.2619E 01 3.8107E 01 7.2223E 01 2.6020E 02
9.3613E 01 -2.9800E 02 -4.5217E 01 7.5536E 04 9.2508E 01 1.5151E 01 -8.7873E 00 -6.3723E 01 1.7666E 02 -7.9945E 01
-3.7929E 01 3.1190E 01 5.1853E 01 6.3126E 00 -1.6412E 01 1.4962E 01 9.0968E 00 -5.5449E 00 -1.6195E 00 -7.8815E 00
-8.9849E 00 8.6546E-01 -8.7207E 00

ROW 15
2.7144E 00 2.8724E 01 -3.7586E 03 -4.6806E 02 1.5076E 02 -8.7096E 00 1.0450E 02 -2.2169E 02 4.1592E 01 -7.4016E 02
-3.0712E 02 9.4105E 02 1.4430E 02 9.2508E 01 2.4167E 05 -4.6702E 01 3.3920E 01 6.9365E 01 -5.6652E 02 2.7216E 02
1.1234E 02 -5.8799E 01 -1.5151E 02 -4.1725E 01 8.0751E 01 -5.5395E 01 -4.7624E 01 -1.2522E 00 1.8144E 01 1.0776E 01
4.2560E 01 -6.0344E 00 8.4763E 01

ROW 16
-7.8006E 00 2.5983E 01 5.1898E 02 -3.9801E 02 9.8723E 01 -1.5499E 01 1.4018E 02 -1.6330E 02 1.9802E 02 -5.1417E 02
-9.9182E 01 6.8431E 02 5.1111E 01 1.5151E 01 -4.6701E 01 2.1306E 05 8.8803E 00 -1.3311E 02 -3.6416E 02 2.6059E 02
5.1748E 00 -2.3977E 01 -2.9539E 02 -1.2046E 01 8.9227E 01 -2.3689E 01 5.4833E 01 5.1489E 01 -2.7807E 01 3.9701E 01
-4.0112E 01 -9.5058E 00 7.5615E 01

ROW 17
4.1089E-01 -3.2803E 00 3.4792E 02 5.4054E 01 -1.2724E 01 1.5325E 00 -1.3694E 01 2.7567E 01 -1.5282E 01 7.9410E 01
3.2135E 01 -1.0435E 02 -1.4995E 01 -8.7873E 00 3.3820E 01 8.8803E 00 2.0984E 04 -5.3543E-01 6.2483E 01 -3.1911E 01
-1.0789E 01 5.0720E 00 2.0406E 01 4.8679E 00 -1.0414E 01 6.0795E 00 4.0402E 00 -4.0535E-01 -1.5664E 00 -1.4743E 00
2.5727E 01 -1.3994E-01 1.3682E 00

ROW 18
-3.8504E 01 3.8509E 00 2.6428E 03 -1.1123E 02 -2.3633E 02 -2.9754E 01 1.0055E 02 -1.7258E 02 5.6899E 02 1.4968E 02
6.5245E 01 4.8431E 00 -3.4019E 01 -6.3723E 01 6.9365E 01 -1.3311E 02 -5.3543E-01 3.2574E 05 1.5867E 01 7.7920E 01
-6.4934E 01 7.9323E 01 -1.0842E 02 -2.4102E 01 7.0051E 01 -2.4408E 00 3.0032E 01 4.8002E 00 -6.4527E 00 -1.5696E 00
[illegible].2182E 00 -6.2092E 00 4.3306E 01

MATRIX *MASS* 33 BY 33 SYMMETRIC MATH MODEL FLIGHT CONDITION 44.3.17, 258,900 LBS.

ROW 19
4.8264E 00 7.8751E 01 -5.5235E 03 -1.2294E 03 4.4170E 02 -2.6126E 01 3.2558E 02 -5.1119E 02 1.6911E 02 -1.8845E 03
-6.1666E 02 2.3758E 03 2.9507E 02 1.7666E 02 -5.6652E 02 -3.6416E 02 6.2483E 01 1.5867E 01 1.7238E 05 7.5504E 02
1.9124E 02 -1.4676E 02 -6.3498E 02 -6.9997E 01 2.2884E 02 -1.1535E 02 4.5034E 00 7.5033E 01 -1.3683E 01 7.6943E 01
-5.5509E 01 -2.3686E 00 -7.3899E 01

ROW 20
4.8915E 00 -4.5798E 01 2.0910E 03 7.1877E 02 -2.1025E 02 2.0752E 01 -2.1044E 02 3.1092E 02 -2.1194E 02 1.0296E 03
3.1074E 02 -1.3339E 03 -1.5066E 02 -7.9945E 01 2.7216E 02 2.6059E 02 -3.1911E 01 7.7920E 01 7.5504E 02 4.7737E 05
-8.3177E 01 6.6746E 01 4.0082E 02 3.9664E 01 -1.4343E 02 6.1517E 01 -2.2968E 01 -5.1657E 01 1.5981E 01 -4.7932E 01
1.6779E 01 -2.3147E 01 -2.2837E 02

ROW 21
-5.9643E 00 -9.3308E 00 1.5005E 03 1.4405E 02 -8.3853E 01 -8.9678E-01 -2.3584E 01 5.0326E 01 5.9670E 01 2.6735E 02
1.0744E 02 -3.1594E 02 -5.1049E 01 -3.7929E 01 1.1234E 02 5.1748E 00 -1.0789E 01 -6.4934E 01 1.9124E 02 -8.3177E 01
1.1035E 05 3.0264E 01 4.4038E 01 9.8110E 00 -1.8620E 01 1.7614E 01 1.6379E 01 -1.2272E 00 -5.2309E 00 -5.2955E 00
9.4126E 00 -1.6154E 01 -2.0803E 02

ROW 22
1.0324E 01 8.0176E 00 -9.7153E 02 -1.0817E 02 1.1354E 02 4.5788E 00 1.4153E 01 -6.1437E 00 -1.2383E 02 -2.4322E 02
-7.0481E 01 2.5538E 02 3.5380E 01 3.1190E 01 -5.8799E 01 -2.3977E 01 5.0720E 00 7.9323E 01 -1.4676E 02 6.6746E 01
3.0264E 01 5.2094E 04 -5.8170E 01 1.3543E 00 8.1719E 00 -9.7840E 00 2.1475E 00 1.2631E 01 -4.3201E 00 1.2278E 01
-1.2455E-01 -1.6842E 00 2.1114E 01

ROW 23
-4.0853E 00 4.0825E 01 -6.2521E 02 -6.2417E 02 2.0266E 02 -1.8534E 01 1.9579E 02 -2.5012E 02 1.8954E 02 -8.8756E 02
-2.2075E 02 1.1383E 03 1.0771E 02 5.1853E 01 -1.5151E 02 -2.9539E 02 2.0406E 01 -1.0842E 02 -6.3498E 02 4.0082E 02
4.4038E 01 -5.8170E 01 2.5271E 05 -2.2348E 01 1.3026E 02 -4.5565E 01 5.8216E 01 6.9147E 01 -3.2143E 01 5.7382E 01
-2.2758E 01 1.0082E 01 -3.6445E 01

ROW 24
-3.7962E 00 3.7382E 00 -3.0619E 02 -6.7985E 01 -9.2631E 00 -4.1801E 00 2.1712E 01 -4.7787E 01 6.4982E 01 -7.4165E 01
-3.6038E 01 1.1618E 02 1.6320E 01 6.3126E 00 -4.1725E 01 -1.2046E 01 4.8679E 00 -2.4102E 01 -6.9997E 01 3.9664E 01
9.8110E 00 1.3543E 00 -2.2348E 01 1.6394E 04 1.6788E 01 -7.9146E 00 -6.6961E 00 -2.1877E 00 3.4923E 00 -4.5545E-01
-6.9712E 01 -1.8231E 00 3.9448E 01

ROW 25
7.2274E 00 -1.4062E 01 3.7718E 02 2.3015E 02 5079E 01 1.0622E 01 -7.5786E 01 1.2231E 02 -1.4727E 02 2.8621E 02
9.0376E 01 -4.0111E 02 -4.2538E 01 -1.6412E 01 .0751E 01 8.9226E 01 -1.0414E 01 7.2051E 01 2.2884E 02 -1.4343E 02
-1.8620E 01 8.1719E 00 1.3026E 02 1.6788E 01 2.6908E 04 1.9970E 01 -7.1525E 00 -1.3779E 01 3.7063E 00 -1.2740E 01
-7.1027E 01 -3.1681E 00 -4.6190E 01

ROW 26
-6.6689E-01 6.3191E 00 -5.3978E 02 -1.0220E 02 2.6730E 01 -2.8699E [illegible] 01 -4.9368E 01 2.8156E 01 -1.4981E 02
-5.5523E 01 1.9534E 02 2.6074E 01 1.4962E 01 -5.5395E 01 -2.3684E 01 6.0[illegible] 00 -2.4408E 00 -1.1535E 02 6.1517E 01
1.7614E 01 -9.7840E 00 -4.5565E 01 -7.9146E 00 1.9970E 01 3.3994E 04 -3.8261E 00 3.1624E 00 1.1161E 00 4.3088E 00
2.4044E 01 -2.0454E 01 9.5210E 01

ROW 27
1.3572E-02 -2.2684E 00 -7.3791E 02 2.4630E 01 -2.0397E 01 9.0353E-01 -1.6219E 01 -5.8808E 00 -1.0431E 01 2.7924E 01
-2.5487E 01 -2.9541E 01 1.0443E 01 9.0968E 00 -4.7624E 01 5.4833E 01 4.0402E 00 3.0032E 01 4.5034E 00 -2.2968E 01
1.6379E 01 2.1475E 00 5.8216E 01 -6.6961E 00 -7.1525E 00 -3.8261E 00 2.1396E 04 -1.7020E 01 1.2480E 01 -1.1148E 01
-5.7568E-02 1.6880E 00 -5.5870E 01

MATRIX *MASS* 33 BY 33 SYMMETRIC MATH MODEL FLIGHT CONDITION 44.3.17, 258,900 LBS.

ROW 28

-1.9573E 00	-5.4874E 00	-1.1689E 02	7.5780E 01	-4.7710E 01	6.5777E-01	-2.3720E 01	1.4603E 01	9.3209E 00	1.2362E 02
1.6844E 01	-1.4318E 02	-9.3769E 00	-5.5449E 00	-1.2522E 00	5.1489E 01	-4.0535E-01	4.8002E 00	7.5033E 01	-5.1657E 01
-1.2272E 00	1.2631E 01	6.9147E 01	-2.1877E 00	-1.3759E 01	3.1624E 00	-1.7020E 01	8.5835E 03	9.2218E 00	-1.1925E 01
-2.2937E 01	-7.6909E-01	-6.8428E 00							

ROW 29

1.0175E 00	1.7127E 00	2.6801E 02	-1.9881E 01	2.0140E 01	8.8319E-02	8.4545E 00	3.3810E 00	-7.7969E 00	-3.3482E 01
6.5476E 00	3.4385E 01	-2.1072E 00	-1.6195E 00	1.8144E 01	-2.7807E 01	-1.5664E 00	-6.4527E 00	-1.3683E 01	1.5981E 01
-5.2309E 00	-4.3201E 00	-3.2143E 01	3.4923E 00	3.7063E 00	1.1161E 00	1.2480E 01	9.2218E 00	5.0113E 03	6.3734E 00
-2.8269E 01	9.0357E-01	8.5400E 00							

ROW 30

-1.8961E 00	-5.1177E 00	6.0865E 01	7.2603E 01	-4.3385E 01	5.6084E-01	-2.0743E 01	1.7420E 01	1.0345E 01	1.2059E 02
2.3981E 01	-1.4099E 02	-1.2310E 01	-7.8815E 00	1.0776E 01	3.9701E 01	-1.4743E 00	-1.5696E 00	7.6943E 01	-4.7932E 01
-5.2955E 00	1.2278E 01	5.7382E 01	-4.5545E-01	-1.2740E 01	4.3088E 00	-1.1148E 01	-1.1925E 01	6.3734E 00	8.1263E 03
5.7686E 00	8.1840E 00	7.7366E 00							

ROW 31

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 32

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 33

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

MATRIX *MASS* 33 BY 33 SYMMETRIC MATH MODEL FLIGHT CONDITION 44.3.9, 248,000 LBS.

ROW 1
6.4249E 02 0.0 1.5877E 03 -5.4473E 01 -2.2814E 02 -2.4245E 01 6.5400E 01 -1.4783E 02 4.7396E 02 1.7945E 02
3.7210E 01 -5.5403E 01 -2.2405E 01 -4.7631E 01 1.8874E 01 -5.4238E 01 2.8570E 00 -2.6772E 02 3.3558E 01 3.4011E 01
-4.1470E 01 7.1784E 01 -2.8405E 01 -2.6395E 01 5.0252E 01 -4.6369E 00 9.4369E-02 -1.3609E 01 7.0745E 00 -1.3184E 01
0.0 0.0 -5.0188E-01

ROW 2
0.0 6.4249E 02 1.6991E 03 5.1214E 02 -1.7548E 02 1.2343E 01 -1.4442E 02 2.0843E 02 -1.0193E 02 7.6105E 02
2.2866E 02 -9.6736E 02 -1.1141E 02 -6.3042E 01 1.9980E 02 1.8060E 02 -2.2819E 01 2.6739E 01 5.4760E 02 -3.1843E 02
-6.4904E 01 5.5748E 01 2.8380E 02 2.6003E 01 -9.7771E 01 4.3945E 01 -1.5740E 01 -3.8135E 01 1.1893E 01 -3.5571E 01
0.0 0.0 4.7751E 00

ROW 4
1.5877E 03 1.6991E 03 7.3884E 07 -2.6332E 04 1.8010E 04 5.3294E 02 2.7401E 03 -8.7698E 03 -1.8362E 04 -5.3991E 04
-2.3832E 04 6.1689E 04 1.1232E 04 8.8144E 03 -2.6147E 04 3.6070E 03 2.4204E 03 1.8378E 04 -3.8425E 04 1.4549E 04
1.0437E 04 -6.7570E 03 -4.3505E 03 -2.1308E 03 2.6253E 03 -3.7551E 03 -5.1330E 03 -8.1327E 02 1.8644E 03 4.2317E 02
-1.3143E 02 -5.3948E 01 -3.7325E 02

ROW 4
-5.4473E 01 5.1214E 02 -2.6332E 04 4.4357E 05 2.3228E 03 -2.3160E 02 2.3316E 03 -3.5423E 03 2.3558E 03 -1.1595E 04
-3.6137E 03 1.5041E 04 1.7474E 03 9.4059E 02 -3.2558E 03 -2.7666E 03 3.7596E 02 -7.7285E 02 -8.5489E 03 4.9977E 03
1.0020E 03 -7.5216E 02 -4.3391E 03 -4.7289E 02 1.6003E 03 -7.1077E 02 1.7074E 02 5.2661E 02 -1.3799E 02 5.0463E 02
-3.9990E 00 -2.4570E 00 -2.8968E 01

ROW 5
-2.2814E 02 -1.7548E 02 1.8010E 04 2.3228E 03 7.8166E 05 -1.0187E 02 -3.3060E 02 4.0053E 01 2.7286E 03 5.2345E 03
1.3783E 03 -5.4441E 03 -7.0501E 02 -6.3324E 02 1.0486E 03 6.8609E 02 -8.8500E 01 -1.6434E 03 3.0712E 03 -1.4617E 03
-5.8314E 02 7.8943E 02 1.4087E 03 -6.4361E 01 -1.7433E 02 1.8588E 02 -1.4166E 02 -3.3162E 02 1.3995E 02 -3.0159E 02
-6.4820E 00 2.7769E 01 9.9191E 01

ROW 6
-2.4245E 01 1.2343E 01 5.3294E 02 -2.3160E 02 -1.0187E 02 1.7526E 05 1.0207E 02 -1.8719E 02 3.8653E 02 -1.5342E 02
-5.8688E 01 3.2165E 02 2.5151E 01 -1.1469E 01 -6.0585E 01 -1.0775E 02 1.0658E 01 -2.0686E 02 -1.8167E 02 1.4429E 02
-6.2264E 00 3.1836E 01 -1.2885E 02 -2.9068E 01 7.3851E 01 -1.9957E 01 6.2501E 00 4.5666E 00 6.1948E-01 3.8952E 00
1.0379E 00 -1.2331E 00 -9.3634E 00

ROW 7
6.5400E 01 -1.4442E 02 2.7400E 03 2.3316E 03 -3.3060E 02 1.0207E 02 7.8928E 05 1.1662E 03 -1.3921E 03 2.9296E 03
8.4989E 02 -4.0567E 03 -4.1070E 02 -1.5733E 02 7.2691E 02 9.7437E 02 -9.5241E 01 6.9894E 02 2.2638E 03 -1.4631E 03
-1.6408E 02 9.8400E 01 1.3611E 03 1.5100E 02 -5.2692E 02 1.8860E 02 -1.1263E 02 -1.6484E 02 5.8717E 01 -1.4417E 02
7.9174E-01 1.3742E 01 6.0423E 00

ROW 8
-1.4783E 02 2.0843E 02 -8.7698E 03 -3.5423E 03 4.0053E 01 -1.8719E 02 1.1662E 03 8.2078E 05 2.7483E 03 -4.1694E 03
-1.5434E 03 6.1011E 03 7.1162E 02 2.6511E 02 -1.5421E 03 -1.1352E 03 1.9174E 02 -1.1998E 03 -3.5549E 03 2.1620E 03
3.5014E 02 -4.2768E 01 -1.7389E 03 -3.3235E 02 8.5046E 02 -3.4334E 02 -4.1092E 01 1.0143E 02 2.3600E 01 1.2107E 02
2.0562E 01 -1.7299E 01 -1.5843E 02

ROW 9
4.7396E 02 -1.0193E 02 -1.8362E 04 2.3228E 03 2.7286E 03 3.8653E 02 -1.3921E 03 2.7483E 03 5.7033E 05 -2.5082E 02
1.3226E 02 -2.1579E 03 -5.5229E 00 5.0213E 02 2.8941E 02 1.3767E 03 -1.0627E 02 3.9561E 03 1.1759E 03 -1.4736E 03
4.1481E 02 -8.6099E 02 1.3176E 03 4.5185E 02 -1.0240E 03 1.9579E 02 -7.2431E 01 6.4871E 01 -5.4260E 01 7.1968E 01
-1.5894E 00 3.7093E-01 -2.3430E 00

MATRIX *MASS* 33 BY 33 SYMMETRIC MATH MODEL FLIGHT CONDITION 44.3.9, 248,000 LBS.

ROW 10
1.7945E 02 7.6105E 02 -5.3991E 04 -1.1595E 04 5.2345E 03 -1.5342E 02 2.9296E 03 -4.1694E 03 -2.5082E 02 5.5528E 05
-5.7930E 03 2.2903E 04 2.8217E 03 1.8097E 03 -5.1484E 03 -3.5739E 03 5.5233E 02 1.0416E 03 -1.3105E 04 7.1590E 03
1.8735E 03 -1.6912E 03 -6.1701E 03 -5.1596E 02 1.9901E 03 -1.0419E 03 1.9340E 02 8.5911E 02 -2.3245E 02 8.3820E 02
2.5904E 01 4.5675E 00 -1.6249E 02

ROW 11
3.7210E 01 2.2866E 02 -2.3832E 04 -3.6137E 03 1.3783E 03 -5.8688E 01 8.4989E 02 -1.5434E 03 1.3226E 02 -5.7930E 03
2.4013E 06 7.2297E 03 1.0137E 03 6.5113E 02 -2.1364E 03 -6.8946E 02 2.2352E 02 4.5388E 02 -4.2887E 03 2.1611E 03
7.4734E 02 -4.9015E 02 -1.5348E 03 -2.5070E 02 6.2851E 02 -3.8618E 02 -1.7745E 02 1.1701E 02 4.5631E 01 1.6669E 02
2.0794E 01 3.2930E 00 1.2157E 02

ROW 12
-5.5403E 01 -9.6736E 02 6.1689E 04 1.5041E 04 -5.4441E 03 3.2165E 02 -4.0567E 03 6.1011E 03 -2.1579E 03 2.2903E 04
7.2297E 03 5.8627E 05 -3.4988E 03 -2.0726E 03 6.5458E 03 4.7566E 03 -7.2577E 02 3.2623E 01 1.6521E 04 -9.2749E 03
-2.1976E 03 1.7758E 03 7.9134E 03 8.0817E 02 -2.7890E 03 1.3585E 03 -2.0443E 02 -9.9502E 02 2.3863E 02 -9.7996E 02
-3.1730E 01 -1.2988E 01 -3.4207E 01

ROW 13
-2.2405E 01 -1.1141E 02 1.1232E 04 1.7474E 03 -7.0501E 02 2.5151E 01 -4.1070E 02 7.1162E 02 -5.5229E 00 2.8217E 03
1.0137E 03 -3.4988E 03 1.0921E 05 -3.1451E 02 1.0038E 03 3.5528E 02 -1.0430E 02 -2.3666E 02 2.0521E 03 -1.0477E 03
-3.5510E 02 2.4605E 02 7.4887E 02 1.1354E 02 -2.9583E 02 1.8135E 02 7.2733E 01 -6.5141E 01 -1.4707E 01 -8.5560E 01
-1.2483E 01 3.9402E 00 -3.8412E 01

ROW 14
-4.7631E 01 -6.3042E 01 8.8144E 03 9.4059E 02 -6.3324E 02 -1.1469E 01 -1.5733E 02 2.6511E 02 5.0213E 02 1.8097E 03
6.5113E 02 -2.0726E 03 -3.1451E 02 7.5330E 04 6.4351E 02 1.0530E 02 -6.1127E 01 -4.4314E 02 1.2287E 03 -5.5602E 02
-2.6382E 02 2.1690E 02 3.6053E 02 4.3933E 01 -1.1416E 02 1.0407E 02 6.3323E 01 -3.8524E 01 -1.1292E 01 -5.4786E 01
-8.9849E 00 8.6546E-01 -8.7207E 00

ROW 15
1.8874E 01 1.9980E 02 -2.6147E 04 -3.2558E 03 1.0486E 03 -6.0585E 01 7.2691E 02 -1.5421E 03 2.8941E 02 -5.1484E 03
-2.1364E 03 6.5458E 03 1.0038E 03 6.4351E 02 2.3971E 05 -3.2469E 02 2.3526E 02 4.8253E 02 -3.9406E 03 1.8931E 03
7.8147E 02 -4.0898E 02 -1.0536E 03 -2.9027E 02 5.6166E 02 -3.8533E 02 -3.3137E 02 -8.7937E 00 1.2626E 02 7.4892E 01
4.2560E 01 -6.0344E 00 8.4763E 01

ROW 16
-5.4238E 01 1.8060E 02 3.6070E 03 -2.7666E 03 6.8609E 02 -1.0775E 02 9.7437E 02 -1.1352E 03 1.3767E 03 -3.5739E 03
-6.8946E 02 4.7566E 03 3.5528E 02 1.0530E 02 -3.2469E 02 2.1170E 05 6.1736E 01 -9.2531E 02 -2.5313E 03 1.8113E 03
3.5978E 01 -1.6663E 02 -2.0533E 03 -8.3753E 01 6.2024E 02 -1.6468E 02 3.8111E 02 3.5788E 02 -1.9327E 02 2.7595E 02
-4.0112E 01 -9.5058E 00 7.5615E 01

ROW 17
2.8570E 00 -2.2819E 01 2.4204E 03 3.7596E 02 -8.8500E 01 1.0658E 01 -9.5241E 01 1.9174E 02 -1.0627E 02 5.5233E 02
2.2352E 02 -7.2577E 02 -1.0430E 02 -6.1127E 01 2.3526E 02 6.1736E 01 2.0963E 04 -3.7474E 00 4.3459E 02 -2.2195E 02
-7.5052E 01 3.5279E 01 1.4188E 02 3.3862E 01 -7.2425E 01 4.2287E 01 2.8117E 01 -2.8084E 00 -1.0902E 01 -1.0247E 01
2.5727E 01 -1.3994E-01 1.3682E 00

ROW 18
-2.6772E 02 2.6739E 01 1.8378E 04 -7.7285E 02 -1.6434E 03 -2.0686E 02 6.9894E 02 -1.1998E 03 3.9561E 03 1.0416E 03
4.5388E 02 3.2623E 01 -2.3666E 02 -4.4314E 02 4.8253E 02 -9.2531E 02 -3.7474E 00 3.2367E 05 1.1087E 02 5.4144E 02
-4.5156E 02 5.5159E 02 -7.5358E 02 -1.6755E 02 4.8697E 02 -1.6926E 01 2.0881E 02 3.3345E 01 -4.4857E 01 -1.0943E 01
5.2182E 00 -6.2092E 00 4.3306E 01

MATRIX *MASS* 33 BY 33 SYMMETRIC MATH MODEL FLIGHT CONDITION 44.3.9, 248,000 LBS.

ROW 19
3.3558E 01 5.4760E 02 -3.8425E 04 -8.5489E 03 3.0712E 03 -1.8167E 02 2.2638E 03 -3.5549E 03 1.1759E 03 -1.3105E 04
-4.2887E 03 1.6521E 04 2.0521E 03 1.2287E 03 -3.9406E 03 -2.5313E 03 4.3459E 02 1.1087E 02 1.6419E 05 5.2502E 03
1.3302E 03 -1.0205E 03 -4.4144E 03 -4.8690E 02 1.5912E 03 -8.0224E 02 3.0794E 01 5.2142E 02 -9.4898E 01 5.3482E 02
-5.5509E 01 -2.3686E 00 -7.3899E 01

ROW 20
3.4011E 01 -3.1843E 02 1.4549E 04 4.9977E 03 -1.4617E 03 1.4429E 02 -1.4631E 03 2.1620E 03 -1.4736E 03 7.1590E 03
2.1611E 03 -9.2749E 03 -1.0477E 03 -5.5602E 02 1.8931E 03 1.8113E 03 -2.2195E 02 5.4144E 02 5.2501E 03 4.7470E 05
-5.7859E 02 4.6410E 02 2.7864E 03 2.7589E 02 -9.9725E 02 4.2781E 02 -1.5938E 02 -3.5899E 02 1.1097E 02 -3.3316E 02
1.6779E 01 -2.3147E 01 -2.2837E 02

ROW 21
-4.1470E 01 -6.4904E 01 1.0437E 04 1.0020E 03 -5.8314E 02 -6.2264E 00 -1.6408E 02 3.5014E 02 4.1481E 02 1.8735E 03
7.4734E 02 -2.1976E 03 -3.5510E 02 -2.6382E 02 7.8147E 02 3.5978E 01 -7.5052E 01 -4.5156E 02 1.3302E 03 -5.7859E 02
1.1009E 05 2.1047E 02 3.0624E 02 6.8268E 01 -1.2953E 02 1.2253E 02 1.1396E 02 -8.5060E 00 -3.6404E 01 -3.6811E 01
9.4126E 00 -1.6154E 01 -2.0803E 02

ROW 22
7.1784E 01 5.5748E 01 -6.7570E 03 -7.5216E 02 7.8943E 02 3.1836E 01 9.8400E 01 -4.2768E 01 -8.6099E 02 -1.6912E 03
-4.9015E 02 1.7758E 03 2.4605E 02 2.1690E 02 -4.0898E 02 -1.6663E 02 3.5279E 01 5.5159E 02 -1.0205E 03 4.6410E 02
2.1047E 02 5.1879E 04 -4.0438E 02 9.3964E 00 5.6822E 01 -6.8045E 01 1.4878E 01 8.7793E 01 -3.0013E 01 8.5351E 01
-1.2455E-01 -1.6842E 00 2.1114E 01

ROW 23
-2.8405E 01 2.8380E 02 -4.3505E 03 -4.3391E 03 1.4087E 03 -1.2885E 02 1.3611E 03 -1.7389E 03 1.3176E 03 -6.1701E 03
-1.5348E 03 7.9134E 03 7.4887E 02 3.6053E 02 -1.0536E 03 -2.0533E 03 1.4188E 02 -7.5358E 02 -4.4144E 03 2.7864E 03
3.0624E 02 -4.0438E 02 2.5018E 05 -1.5540E 02 9.0557E 02 -3.1679E 02 4.0458E 02 4.8062E 02 -2.2339E 02 3.9886E 02
-2.2758E 01 1.0082E 01 -3.6445E 01

ROW 24
-2.6395E 01 2.6003E 01 -2.1308E 03 -4.7289E 02 -6.4361E 01 -2.9068E 01 1.5100E 02 -3.3235E 02 4.5185E 02 -5.1596E 02
-2.5070E 02 8.0817E 02 1.1354E 02 4.3933E 01 -2.9027E 02 -8.3753E 01 3.3862E 01 -1.6755E 02 -4.8690E 02 2.7589E 02
6.8268E 01 9.3964E 00 -1.5540E 02 1.6341E 04 1.1676E 02 -5.5053E 01 -4.6591E 01 -1.5223E 01 2.4296E 01 -3.1707E 00
-6.9912E 01 -1.8231E 00 3.9448E 01

ROW 25
5.0252E 01 -9.7771E 01 2.6253E 03 1.6003E 03 -1.7433E 02 7.3851E 01 -5.2692E 02 8.5046E 02 -1.0240E 03 1.9901E 03
6.2851E 02 -2.7890E 03 -2.9583E 02 -1.1416E 02 5.6166E 02 6.2024E 02 -7.2425E 01 4.8697E 02 1.5912E 03 -9.9725E 02
-1.2953E 02 5.6822E 01 9.0557E 02 1.1676E 02 2.6591E 04 1.3887E 02 -4.9646E 01 -9.5616E 01 2.5729E 01 -8.8547E 01
-7.1027E 01 -3.1681E 00 -4.8190E 01

ROW 26
-4.6369E 00 4.3945E 01 -3.7551E 03 -7.1077E 02 1.8588E 02 -1.9957E 01 1.8860E 02 -3.4334E 02 1.9579E 02 -1.0419E 03
-3.8618E 02 1.3585E 03 1.8135E 02 1.0407E 02 -3.8533E 02 -1.6468E 02 4.2287E 01 -1.6926E 01 -8.0224E 02 4.2781E 02
1.2253E 02 -6.8045E 01 -3.1679E 02 -5.5053E 01 1.3887E 02 3.3931E 04 -2.6648E 01 2.1968E 01 7.7801E 00 2.9949E 01
2.4044E 01 -2.0454E 01 9.5210E 01

ROW 27
9.4369E-02 -1.5740E 01 -5.1330E 03 1.7074E 02 -1.4166E 02 6.2501E 00 -1.1263E 02 -4.1092E 01 -7.2431E 01 1.9340E 02
-1.7745E 02 -2.0443E 02 7.2733E 01 6.3323E 01 -3.3137E 02 3.8111E 02 2.8117E 01 2.0881E 02 3.0794E 01 -1.5938E 02
1.1396E 02 1.4878E 01 4.0458E 02 -4.6591E 01 -4.9646E 01 -2.6648E 01 2.1244E 04 -1.1832E 02 8.6772E 01 -7.7488E 01
-5.7568E-02 1.6880E 00 -5.5870E 01

MATRIX *MASS* 33 BY 33 SYMMETRIC MATH MODEL FLIGHT CONDITION 44.3.9, 248,000 LBS.

ROW 28

-1.3609E 01	-3.8135E 01	-8.1327E 02	5.2661E 02	-3.3162E 02	4.5666E 00	-1.6484E 02	1.0143E 02	6.4871E 01	8.5911E 02
1.1701E 02	-9.9502E 02	-6.5141E 01	-3.8524E 01	-8.7937E 00	3.5788E 02	-2.8084E 00	3.3345E 01	5.2142E 02	-3.5899E 02
-8.5060E 00	8.7793E 01	4.8062E 02	-1.5223E 01	-9.5616E 01	2.1960E 01	-1.1832E 02	8.4902E 03	6.4108E 01	-8.2895E 01
-2.2937E 01	-7.6909E-01	-6.8428E 00							

ROW 29

7.0745E 00	1.2893E 01	1.8644E 03	-1.3799E 02	1.3995E 02	6.1948E-01	5.8717E 01	2.3600E 01	-5.4260E 01	-2.3245E 02
4.5631E 01	2.3863E 02	-1.4707E 01	-1.1292E 01	1.2626E 02	-1.9327E 02	-1.0902E 01	-4.4857E 01	-9.4898E 01	1.1097E 02
-3.6404E 01	-3.0013E 01	-2.2339E 02	2.4296E 01	2.5729E 01	7.7801E 00	8.6772E 01	6.4108E 01	4.9734E 03	4.4303E 01
-2.8269E 01	9.0357E-01	8.5400E 00							

ROW 30

-1.3184E 01	-3.5571E 01	4.2317E 02	5.0463E 02	-3.0159E 02	3.8952E 00	-1.4417E 02	1.2107E 02	7.1968E 01	8.3820E 02
1.6669E 02	-9.7996E 02	-8.5560E 01	-5.4786E 01	7.4892E 01	2.7595E 02	-1.0247E 01	-1.0943E 01	5.3482E 02	-3.3316E 02
-3.6811E 01	8.5351E 01	3.9886E 02	-3.1707E 00	-8.8547E 01	2.9949E 01	-7.7488E 01	-8.2895E 01	4.4303E 01	8.0695E 03
5.7686E 00	8.1840E 00	7.7366E 00							

ROW 31

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 32

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 33

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

MATRIX *MASS* 33 BY 33 SYMMETRIC MATH MODEL FLIGHT CONDITION 44.2.48.2, 242,000 LBS.

ROW 1

6.2694E 02	0.0	2.3359E 03	-8.0146E 01	-3.3566E 02	-3.5671E 01	9.6222E 01	-2.1749E 02	6.9734E 02	2.6403E 02
5.4747E 01	-8.1514E 01	-3.2964E 01	-7.0080E 01	2.7769E 01	-7.9800E 01	4.2034E 00	-3.9389E 02	4.9374E 01	5.0039E 01
-6.1014E 01	1.0562E 02	-4.1793E 01	-3.8835E 01	7.3936E 01	-6.8222E 00	1.3884E-01	-2.0023E 01	1.0409E 01	-1.9397E 01
0.0	0.0	-5.0108E-01							

ROW 2

0.0	6.2694E 02	2.5005E 03	7.5351E 02	-2.5818E 02	1.8160E 01	-2.1248E 02	3.0668E 02	-1.4996E 02	1.1197E 03
3.3645E 02	-1.4233E 03	-1.6393E 02	-9.2763E 01	2.9401E 02	2.6569E 02	-3.3577E 01	3.9321E 01	8.0570E 02	-4.6851E 02
-9.5508E 01	8.2023E 01	4.1753E 02	3.8264E 01	-1.4385E 02	6.4661E 01	-2.3140E 01	-5.6097E 01	1.7490E 01	-5.2329E 01
0.0	0.0	4.7751E 00							

ROW 3

2.3359E 03	2.5005E 03	7.3708E 07	-3.8753E 04	2.6501E 04	7.8390E 02	4.0338E 03	-1.2907E 04	-2.7014E 04	-7.9451E 04
-3.5070E 04	9.0782E 04	1.6529E 04	1.2970E 04	-3.8476E 04	5.3058E 03	3.5618E 03	2.7040E 04	-5.6545E 04	2.1411E 04
1.5359E 04	-9.9426E 03	-6.4031E 03	-3.1359E 03	3.8642E 03	-5.5260E 03	-7.5532E 03	-1.1967E 03	2.7435E 03	6.2266E 02
-1.3143E 02	-5.3948E 01	-3.7325E 02							

ROW 4

-8.0146E 01	7.5351E 02	-3.8753E 04	4.3976E 05	3.4175E 03	-3.4076E 02	3.4305E 03	-5.2120E 03	3.4661E 03	-1.7060E 04
-5.3173E 03	2.2131E 04	2.5711E 03	1.3841E 03	-4.7910E 03	-4.0700E 03	5.5322E 02	-1.1368E 03	-1.2578E 04	7.3532E 03
1.4745E 03	-1.1067E 03	-6.3836E 03	-6.9586E 02	2.3545E 03	-1.0458E 03	2.5092E 02	7.7463E 02	-2.0289E 02	7.4237E 02
-3.9990E 00	-2.4570E 00	-2.8968E 01							

ROW 5

-3.3566E 02	-2.5818E 02	2.6501E 04	3.4175E 03	7.8047E 05	-1.4989E 02	-4.8636E 02	5.8965E 01	4.0146E 03	7.7015E 03
2.0279E 03	-8.0098E 03	-1.0373E 03	-9.3172E 02	1.5430E 03	1.0093E 03	-1.3023E 02	-2.4181E 03	4.5186E 03	-2.1506E 03
-8.5803E 02	1.1615E 03	2.0725E 03	-9.4669E 01	-2.5648E 02	2.7351E 02	-2.0833E 02	-4.8786E 02	2.0587E 02	-4.4369E 02
-4.4820E 00	2.7769E 01	9.9191E 01							

ROW 6

-3.5671E 01	1.8160E 01	7.8390E 02	-3.4076E 02	-1.4989E 02	1.7525E 05	1.5018E 02	-2.7542E 02	5.6870E 02	-2.2573E 02
-9.6356E 01	4.7325E 02	3.7008E 01	-1.6871E 01	-8.9153E 01	-1.5852E 02	1.5683E 01	-3.0435E 02	-2.6729E 02	2.1229E 02
-9.1557E 00	4.6840E 01	-1.8956E 02	-4.2770E 01	1.0866E 02	-2.9364E 01	9.1895E 00	6.7151E 00	9.1437E-01	5.7287E 00
1.0379E 00	-1.2331E 00	-9.3634E 00							

ROW 7

9.6222E 01	-2.1248E 02	4.0338E 03	3.4305E 03	-4.8636E 02	1.5018E 02	7.8891E 05	1.7158E 03	-2.0482E 03	4.3102E 03
1.2505E 03	-5.9685E 03	-6.0430E 02	-2.3152E 02	1.0697E 03	1.4334E 03	-1.4014E 02	1.0283E 03	3.3307E 03	-2.1526E 03
-2.4147E 02	1.4477E 02	2.0024E 03	2.2219E 02	-7.7524E 02	2.7750E 02	-1.6564E 02	-2.4247E 02	8.6352E 01	-2.1209E 02
7.9174E-01	1.3742E 01	6.0423E 00							

ROW 8

-2.1749E 02	3.0668E 02	-1.2907E 04	-5.2120E 03	5.8965E 01	-2.7542E 02	1.7158E 03	8.1978E 05	4.0436E 03	-6.1348E 03
-2.2711E 03	8.9770E 03	1.0471E 03	3.9015E 02	-2.2692E 03	-1.6701E 03	2.8214E 02	-1.7651E 03	-5.2307E 03	3.1811E 03
5.1527E 02	-6.2954E 01	-2.5563E 03	-4.8904E 02	1.2513E 03	-5.0520E 02	-6.0564E 01	1.4918E 02	3.4771E 01	1.7809E 02
2.0562E 01	-1.7299E 01	-1.5843E 02							

ROW 9

6.9774E 02	-1.4996E 02	-2.7014E 04	3.4661E 03	4.0146E 03	5.6870E 02	-2.0482E 03	4.0436E 03	5.6697E 05	-3.6903E 02
1.9467E 02	-3.1750E 03	-8.1577E 00	7.3875E 02	4.2592E 02	2.0254E 03	-1.5637E 02	5.8205E 03	1.7301E 03	-2.1680E 03
6.1027E 02	-1.2668E 03	1.9385E 03	6.6482E 02	-1.5065E 03	2.8808E 02	-1.0651E 02	9.5478E 01	-7.9858E 01	1.0591E 02
-1.5894E 00	3.7093E-01	-2.3430E 00							

MATRIX *MASS* 33 BY 33 SYMMETRIC MATH MODEL FLIGHT CONDITION 44.2.48.2, 242,000 LBS.

ROW 10
2.6403E 02 1.1197E 03 -7.9451E 04 -1.7060E 04 7.7015E 03 -2.2573E 02 4.3102E 03 -6.1348E 03 -3.6904E 02 5.4645E 05
-8.5240E 03 3.3698E 04 4.1519E 03 2.6628E 03 -7.5759E 03 -5.2577E 03 8.1274E 02 1.5329E 03 -1.9281E 04 1.0533E 04
2.7568E 03 -2.4883E 03 -9.0775E 03 -7.5927E 02 2.9280E 03 -1.5330E 03 2.8415E 02 1.2638E 03 -3.4181E 02 1.2331E 03
2.5904E 01 4.5675E 00 -1.6249E 02

ROW 11
5.4747E 01 3.3645E 02 -3.5070E 04 -5.3173E 03 2.0279E 03 -8.6356E 01 1.2505E 03 -2.2711E 03 1.9467E 02 -8.5240E 03
2.4003E 06 1.0638E 04 1.4916E 03 9.5813E 02 -3.1437E 03 -1.0143E 03 3.2891E 02 6.6792E 02 -6.3106E 03 3.1799E 03
1.0997E 03 -7.2122E 02 -2.2582E 03 -3.6892E 02 9.2480E 02 -5.6825E 02 -2.6120E 02 1.7211E 02 6.7189E 01 2.4523E 02
2.0794E 01 3.2930E 00 1.2157E 02

ROW 12
-8.1514E 01 -1.4233E 03 9.0782E 04 2.2131E 04 -8.0098E 03 4.7325E 02 -5.9685E 03 8.9770E 03 -3.1750E 03 3.3698E 04
1.0638E 04 5.7266E 05 -5.1482E 03 -3.0498E 03 9.6323E 03 6.9975E 03 -1.0680E 03 4.7425E 01 2.4308E 04 -1.3646E 04
-3.2339E 03 2.6128E 03 1.1642E 04 1.1893E 03 -4.1035E 03 1.9989E 03 -3.0025E 02 -1.4637E 03 3.5085E 02 -1.4416E 03
-3.1730E 01 -1.2988E 01 -3.4207E 01

ROW 13
-3.2964E 01 -1.6393E 02 1.6529E 04 2.5711E 03 -1.0373E 03 3.7008E 01 -6.0430E 02 1.0471E 03 -8.1576E 00 4.1519E 03
1.4916E 03 -5.1482E 03 1.0898E 05 -4.6279E 02 1.4771E 03 5.2268E 02 -1.5349E 02 -3.4826E 02 3.0196E 03 -1.5416E 03
-5.2254E 02 3.6203E 02 1.1018E 03 1.6708E 02 -4.3528E 02 2.6686E 02 1.0707E 02 -9.5814E 01 -2.1667E 01 -1.2587E 02
-1.2483E 01 3.9402E 00 -3.8412E 01

ROW 14
-7.0080E 01 -9.2763E 01 1.2970E 04 1.3841E 03 -9.3172E 02 -1.6871E 01 -2.3152E 02 3.9015E 02 7.3875E 02 2.6628E 03
9.5813E 02 -3.0498E 03 -4.6279E 02 7.5216E 04 9.4694E 02 1.5492E 02 -8.9950E 01 -6.5203E 02 1.8079E 03 -8.1816E 02
-3.8820E 02 3.1914E 02 5.3045E 02 6.4659E 01 -1.6798E 02 1.5314E 02 9.3203E 01 -5.6665E 01 -1.6631E 01 -8.0600E 01
-8.9849E 00 8.6546E-01 -8.7207E 00

ROW 15
2.7769E 01 2.9401E 02 -3.8476E 04 -4.7910E 03 1.5430E 03 -8.9153E 01 1.0697E 03 -2.2692E 03 4.2592E 02 -7.5759E 03
-3.1437E 03 9.6323E 03 1.4771E 03 9.4694E 02 2.3863E 05 -4.7771E 02 3.4620E 02 7.1005E 02 -5.7986E 03 2.7857E 03
1.1500E 03 -6.0180E 02 -1.5502E 03 -4.2716E 02 8.2648E 02 -5.6703E 02 -4.8767E 02 -1.2978E 01 1.8582E 02 1.1018E 02
4.2560E 01 -6.0344E 00 8.4763E 01

ROW 16
-7.9800E 01 2.6569E 02 5.3058E 03 -4.0700E 03 1.0093E 03 -1.5852E 02 1.4334E 03 -1.6701E 03 2.0254E 03 -5.2577E 03
-1.0143E 03 6.9975E 03 5.2268E 02 1.5492E 02 -4.7771E 02 2.1095E 05 9.0830E 01 -1.3613E 03 -3.7240E 03 2.6647E 03
5.2941E 01 -2.4512E 02 -3.0206E 03 -1.2323E 02 9.1247E 02 -2.4227E 02 5.6064E 02 5.2647E 02 -7.8431E 02 4.0595E 02
-4.0112E 01 -9.5058E 00 7.5615E 01

ROW 17
4.2034E 00 -3.3577E 01 3.5518E 03 5.5322E 02 -1.3023E 02 1.5683E 01 -1.4014E 02 2.8214E 02 -1.5637E 02 8.1274E 02
3.2891E 02 -1.0680E 03 -1.5349E 02 -8.9950E 01 3.4620E 02 9.0830E 01 2.0951E 04 -5.5257E 00 6.3948E 02 -3.2659E 02
-1.1044E 02 5.1913E 01 2.0876E 02 4.9828E 01 -1.0657E 02 6.2225E 01 4.1381E 01 -4.1274E 00 -1.6046E 01 -1.5074E 01
2.5727E 01 -1.3994E-01 1.3682E 00

ROW 18
-3.9389E 02 3.9321E 01 2.7040E 04 -1.1368E 03 -2.4181E 03 -3.0435E 02 1.0283E 03 -1.7651E 03 5.8205E 03 1.5329E 03
6.6792E 02 4.7424E 01 -3.4826E 02 -6.5203E 02 7.1005E 02 -1.3613E 03 -5.5257E 00 3.2252E 05 1.6343E 02 7.9642E 02
-6.6441E 02 8.1159E 02 -1.1086E 03 -2.4650E 02 7.1643E 02 -2.4880E 01 3.0721E 02 4.9039E 01 -6.5991E 01 -1.6118E 01
5.2182E 00 -6.2092E 00 4.3306E 01

MATRIX *MASS* 33 BY 33 SYMMETRIC MATH MODEL FLIGHT CONDITION 44.2.48.2, 242,000 LBS.

ROW 19

4.9374E 01	8.0570E 02	-5.6545E 04	-1.2578E 04	4.5186E 03	-2.6729E 02	3.3307E 03	-5.2307E 03	1.7301E 03	-1.9281E 04
-6.3106E 03	2.4308E 04	3.0196E 03	1.8079E 03	-5.7986E 03	-3.7240E 03	6.3948E 02	1.6342E 02	1.5968E 05	7.7247E 03
1.9574E 03	-1.5015E 03	-6.4945E 03	-7.1649E 02	2.3411E 03	-1.1804E 03	4.5032E 01	7.6702E 02	-1.3950E 02	7.8680E 02
-5.5509E 01	-2.3686E 00	-7.3899E 01							

ROW 20

5.0039E 01	-4.6851E 02	2.1411E 04	7.3532E 03	-2.1506E 03	2.1229E 02	-2.1526E 03	3.1811E 03	-2.1680E 03	1.0533E 04
3.1799E 03	-1.3646E 04	-1.5416E 03	-8.1816E 02	2.7857E 03	2.6647E 03	-3.2659E 02	7.9642E 02	7.7247E 03	4.7324E 05
-9.5141E 02	6.8284E 02	4.0993E 03	4.0598E 02	-1.4672E 03	6.2947E 02	-2.3433E 02	-5.2807E 02	1.6319E 02	-4.9011E 02
1.6779E 01	-2.3147E 01	-2.2837E 02							

ROW 21

-6.1014E 01	-9.5508E 01	1.5359E 04	1.4745E 03	-8.5803E 02	-9.1557E 00	-2.4147E 02	5.1527E 02	6.1027E 02	2.7568E 03
1.0997E 03	-3.2339E 03	-5.2254E 02	-3.8820E 02	1.1500E 03	5.2941E 01	-1.1044E 02	-6.6441E 02	1.9574E 03	-8.5141E 02
1.0995E 05	3.0969E 02	4.5061E 02	1.0047E 02	-1.9062E 02	1.8030E 02	1.6771E 02	-1.2503E 01	-5.3577E 01	-5.4156E 01
9.4126E 00	-1.6154E 01	-2.0803E 02							

ROW 22

1.0562E 02	8.2023E 01	-9.9626E 03	-1.1067E 03	1.1615E 03	4.6840E 01	1.4477E 02	-6.2954E 01	-1.2668E 03	-2.4883E 03
-7.2121E 02	2.6128E 03	3.6203E 02	3.1914E 02	-6.0180E 02	-2.4512E 02	5.1913E 01	8.1159E 02	-1.5015E 03	6.8284E 02
3.0969E 02	5.1760E 04	-5.9492E 02	1.3814E 01	8.3603E 01	-1.0012E 02	2.1861E 01	1.2915E 02	-4.4144E 01	1.2557E 02
-1.2455E-01	-1.6842E 00	2.1114E 01							

ROW 23

-4.1793E 01	4.1753E 02	-6.4031E 03	-6.3836E 03	2.0725E 03	-1.8956E 02	2.0024E 03	-2.5583E 03	1.9385E 03	-9.0775E 03
-2.2582E 03	1.1642E 04	1.1018E 03	5.3045E 02	-1.5502E 03	-3.0204E 03	2.0876E 02	-1.1086E 03	-6.4945E 03	4.0993E 03
4.5061E 02	-5.9492E 02	2.4879E 05	-2.2866E 02	1.3323E 03	-4.6609E 02	5.9514E 02	7.0704E 02	-3.2861E 02	5.8677E 02
-2.2758E 01	1.0082E 01	-3.6445E 01							

ROW 24

-3.8835E 01	3.8264E 01	-3.1559E 03	-6.9586E 02	-9.4669E 01	-4.2770E 01	2.2219E 02	-4.8904E 02	6.6482E 02	-7.5927E 02
-3.6892E 02	1.1893E 03	1.6708E 02	6.4659E 01	-4.2716E 02	-1.2323E 02	4.9828E 01	-2.4650E 02	-7.1649E 02	4.0598E 02
1.0047E 02	1.3814E 01	-2.2866E 02	1.6312E 04	1.7180E 02	-8.1012E 01	-6.8565E 01	-2.2402E 01	3.5754E 01	-4.6665E 00
-6.9912E 01	-1.8231E 00	3.9448E 01							

ROW 25

7.3936E 01	-1.4385E 02	3.8642E 03	2.3545E 03	-2.5648E 02	1.0866E 02	-7.7523E 02	1.2513E 03	-1.5065E 03	2.9280E 03
9.2480E 02	-4.1035E 03	-4.3528E 02	-1.6798E 02	8.2648E 02	9.1247E 02	-1.0657E 02	7.1643E 02	2.3411E 03	-1.4672E 03
-1.9062E 02	8.3603E 01	1.3323E 03	1.7180E 02	2.6416E 04	2.0434E 02	-7.2996E 01	-1.4065E 02	3.7833E 01	-1.3026E 02
-7.1027E 01	-3.1681E 00	-4.6140E 01							

ROW 26

-6.8222E 00	6.4661E 01	-5.5260E 03	-1.0458E 03	2.7351E 02	-2.9364E 01	2.7750E 02	-5.0520E 02	2.8908E 02	-1.5330E 03
-5.6825E 02	1.9989E 03	2.6686E 02	1.5314E 02	-5.6703E 02	-2.4227E 02	6.2225E 01	-2.4980E 01	-1.1804E 03	6.2947E 02
1.8030E 02	-1.0012E 02	-4.6609E 02	-8.1012E 01	2.0434E 02	3.3896E 04	-3.9229E 01	3.2311E 01	1.1457E 01	4.4059E 01
2.4044E 01	-2.0454E 01	9.5210E 01							

ROW 27

1.3884E-01	-2.3140E 01	-7.5532E 03	2.5092E 02	-2.0833E 02	9.1895E 00	-1.6564E 02	-6.0564E 01	-1.0651E 02	2.8415E 02
-2.6120E 02	-3.0025E 02	1.0708E 02	9.3203E 01	-4.8767E 02	5.6064E 02	4.1391E 01	3.0721E 02	4.5032E 01	-2.3433E 02
1.6771E 02	2.1861E 01	5.9514E 02	-6.8565E 01	-7.2996E 01	-3.9229E 01	2.1159E 04	-1.7408E 02	1.2766E 02	-1.1400E 02
-5.7568E-02	1.6880E 00	-5.5670E 01							

MATRIX *MASS* 33 BY 33 SYMMETRIC MATH MODEL FLIGHT CONDITION 44.2.48.2, 242,000 LBS.

ROW 28

-2.0023E 01	-5.6097E 01	-1.1967E 03	7.7463E 02	-4.8786E 02	6.7151E 00	-2.4247E 02	1.4918E 02	9.5478E 01	1.2638E 03
1.7211E 02	-1.4637E 03	-9.5814E 01	-5.6665E 01	-1.2978E 01	5.2647E 02	-4.1274E 00	4.9039E 01	7.6702E 02	-5.2807E 02
-1.2503E 01	1.2915E 02	7.0704E 02	-2.2402E 01	-1.4069E 02	3.2311E 01	-1.7406E 02	8.4388E 03	9.4313E 01	-1.2195E 02
-2.2937E 01	-7.6909E-01	-6.9428E 00							

ROW 29

1.0409E 01	1.7490E 01	2.7435E 03	-2.0289E 02	2.0587E 02	9.1438E-01	9.6352E 01	3.4771E 01	-7.9858E 01	-3.4181E 02
6.7189E 01	3.5085E 02	-2.1667E 01	-1.6631E 01	1.8582E 02	-2.8431E 02	-1.6046E 01	-6.5991E 01	-1.3950E 02	1.6319E 02
-5.3577E 01	-4.4144E 01	-3.2861E 02	3.5754E 01	3.7833E 01	1.1457E 01	1.2766E 02	9.4313E 01	4.9526E 03	6.5176E 01
-2.8269E 01	9.0357E-01	8.5400E 00							

ROW 30

-1.9397E 01	-5.2329E 01	6.2266E 02	7.4237E 02	-4.4369E 02	5.7286E 00	-2.1209E 02	1.7809E 02	1.0591E 02	1.2331E 03
2.4523E 02	-1.4416E 03	-1.2587E 02	-8.0600E 01	1.1018E 02	4.0595E 02	-1.5074E 01	-1.6119E 01	7.8680E 02	-4.9011E 02
-5.4156E 01	1.2557E 02	5.8677E 02	-4.6665E 00	-1.3026E 02	4.4059E 01	-1.1400E 02	-1.2195E 02	6.5176E 01	8.0383E 03
5.7686E 00	8.1840E 00	7.7366E 00							

ROW 31

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 32

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 33

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

MATRIX *MASS* 33 BY 33 *SYMMETRIC MATH MODEL* FLIGHT CONDITION 44.1.1, 272,300 LBS.

ROW 1

7.0544E 02	0.0	-1.4428E 03	4.9501E 01	2.0732E 02	2.2032E 01	-5.9430E 01	1.3433E 02	-4.3070E 02	-1.6307E 02
-3.3814E 01	5.0346E 01	2.0360E 01	4.3284E 01	-1.7151E 01	4.9287E 01	-2.5962E 00	2.4328E 02	-3.0495E 01	-3.0906E 01
3.7685E 01	-6.5232E 01	2.5813E 01	2.3986E 01	-4.5666E 01	4.2137E 00	-8.5756E-02	1.2367E 01	-6.4288E 00	1.1980E 01
0.0	0.0	-5.0188E-01							

ROW 2

0.0	7.0544E 02	-1.5448E 03	-4.6540E 02	1.5946E 02	-1.1216E 01	1.3123E 02	-1.8943E 02	9.2622E 01	-6.9161E 02
-2.0782E 02	8.7910E 02	1.0125E 02	5.7299E 01	-1.8162E 02	-1.6408E 02	2.0741E 01	-2.4275E 01	-4.9765E 02	2.8937E 02
5.8998E 01	-5.0661E 01	-2.5787E 02	-2.3637E 01	8.8947E 01	-3.9940E 01	1.4282E 01	3.4642E 01	-1.0798E 01	3.2317E 01
0.0	0.0	4.7751E 00							

ROW 3

-1.4428E 03	-1.5448E 03	7.4596E 07	2.3941E 04	-1.6370E 04	-4.8405E 02	-2.4928E 03	7.9745E 03	1.6684E 04	4.9080E 04
2.1664E 04	-5.6081E 04	-1.0210E 04	-8.0119E 03	2.3768E 04	-3.2762E 03	-2.2002E 03	-1.6701E 04	3.4930E 04	-1.3228E 04
-9.4871E 03	6.1415E 03	3.9563E 03	1.9373E 03	-2.3876E 03	3.4136E 03	4.6656E 03	7.3917E 02	-1.6946E 03	-3.8463E 02
-1.3143E 02	-5.3948E 01	-3.7325E 02							

ROW 4

4.9501E 01	-4.6540E 02	2.3941E 04	4.5898E 05	-2.1108E 03	2.1047E 02	-2.1188E 03	3.2193E 03	-2.1408E 03	1.0537E 04
3.2845E 03	-1.3669E 04	-1.5881E 03	-8.5494E 02	2.9595E 03	2.5136E 03	-3.4173E 02	7.0195E 02	7.7692E 03	-4.5416E 03
-9.1086E 02	6.8354E 02	3.9426E 03	4.2985E 02	-1.4542E 03	6.4600E 02	-1.5483E 02	-4.7836E 02	1.2524E 02	-4.5847E 02
-3.9990E 00	-2.4570E 00	-2.8968E 01							

ROW 5

2.0732E 02	1.5946E 02	-1.6370E 04	-2.1108E 03	7.8649E 05	9.2578E 01	3.0037E 02	-3.6442E 01	-2.4796E 03	-4.7567E 03
-1.2526E 03	4.9471E 03	6.4072E 02	5.7549E 02	-9.5310E 02	-6.2326E 02	8.0442E 01	1.4936E 03	-2.7909E 03	1.3283E 03
5.2999E 02	-7.1737E 02	-1.2799E 03	5.8457E 01	1.5840E 02	-1.6894E 02	1.2862E 02	3.0129E 02	-1.2713E 02	2.7402E 02
-6.4920E 00	2.7769E 01	9.9191E 01							

ROW 6

2.2032E 01	-1.1216E 01	-4.8405E 02	2.1047E 02	9.2578E 01	1.7531E 05	-9.2753E 01	1.7011E 02	-3.5125E 02	1.3942E 02
5.3343E 01	-2.9230E 02	-2.2860E 01	1.0419E 01	5.5073E 01	9.7900E 01	-9.6870E 00	1.8798E 02	1.6510E 02	-1.3112E 02
5.6521E 00	-2.8930E 01	1.1707E 02	2.6418E 01	-6.7110E 01	1.8137E 01	-5.6724E 00	-4.1455E 00	-5.6635E-01	-3.5371E 00
1.0379E 00	-1.2331E 00	-9.3634E 00							

ROW 7

-5.9430E 01	1.3123E 02	-2.4928E 03	-2.1188E 03	3.0037E 02	-9.2753E 01	7.9075E 05	-1.0598E 03	1.2650E 03	-2.6622E 03
-7.7244E 02	3.6864E 03	3.7326E 02	1.4301E 02	-6.6075E 02	-8.8526E 02	8.6565E 01	-6.3504E 02	-2.0572E 03	1.3295E 03
1.4917E 02	-8.9417E 01	-1.2366E 03	-1.3725E 02	4.7881E 02	-1.7141E 02	1.0226E 02	1.4973E 02	-5.3313E 01	1.3098E 02
7.9174E-01	1.3742E 01	6.0423E 00							

ROW 8

1.3433E 02	-1.8943E 02	7.9745E 03	3.2193E 03	-3.6443E 01	1.7011E 02	-1.0598E 03	8.2482E 05	-2.4975E 03	3.7894E 03
1.4028E 03	-5.5449E 03	-6.4682E 02	-2.4102E 02	1.4018E 03	1.0315E 03	-1.7428E 02	1.0901E 03	3.2309E 03	-1.9649E 03
-3.1832E 02	3.8900E 01	1.6801E 03	3.0208E 02	-7.7287E 02	3.1206E 02	3.7461E 01	-9.2114E 01	-2.1501E 01	-1.0999E 02
2.0562E 0'	-1.7299E 01	-1.6843E 02							

ROW 9

-4.3070E 02	2622E 01	1.6684E 04	-2.1408E 03	-2.4796E 03	-3.5125E 02	1.2650E 03	-2.4975E 03	5.8394E 05	2.2793E 02
-1.2028E 02	1.9610E 03	5.0563E 00	-4.5627E 02	-2.6313E 02	-1.2504E 03	9.6586F 01	-3.5949E 03	-1.0486E 03	1.3390E 03
-3.7690E 02	7.8241E 02	-1.1973E 03	-4.1063E 02	9.3050E 02	-1.7794E 02	6.5756E 01	-5.8990E 01	4.9338E 01	-6.5424E 01
-1.5894E 00	3.7093E-01	-2.1430E 00							

MATRIX *MASS* 33 BY 33 SYMMETRIC MATH MODEL FLIGHT CONDITION 44.1.1, 272,300 LBS.

ROW 1C
-1.6307E 02 -6.9161E 02 4.9080E 04 1.0537E 04 -4.7567E 03 1.3942E 02 -2.6622E 03 3.7894E 03 2.2743E 02 5.9103E 05
5.2652E 03 -2.0814E 04 -2.5646E 03 -1.6448E 03 4.6798E 03 3.2470E 03 -5.0204E 02 -9.4702E 02 1.1909E 04 -6.5057E 03
-1.7029E 03 1.5369E 03 5.6064E 03 4.6904E 02 -1.8085E 03 9.4692E 02 -1.7528E 02 -7.8044E 02 2.1101E 02 -7.6154E 02
2.5904E 01 4.5675E 00 -1.6249E 02

ROW 11
-3.3814E 01 -2.0782E 02 2.1664E 04 3.2845E 03 -1.2526E 03 5.3343E 01 -7.7244E 02 1.4028E 03 -1.2028E 02 5.2652E 03
2.4054E 06 -6.5711E 03 -9.2139E 02 -5.9184E 02 1.9420E 03 6.2647E 02 -2.0318E 02 -4.1259E 02 3.8490E 03 -1.9642E 03
-6.7932E 02 4.4548E 02 1.3948E 03 2.2790E 02 -5.7123E 02 3.5101E 02 1.6139E 02 -1.0628E 02 -4.1525E 01 -1.5145E 02
2.0794E 01 3.2930E 00 1.2157E 02

ROW 12
5.0346E 01 8.7910E 02 -5.6081E 04 -1.3669E 04 4.9471E 03 -2.9230E 02 3.6964E 03 -5.5449E 03 1.9610E 03 -2.0814E 04
-6.5711E 03 6.4139E 05 3.1806E 03 1.8839E 03 -5.9501E 03 -4.3215E 03 6.5969E 02 -2.8979E 01 -1.4014E 04 8.4287E 03
1.9976E 03 -1.6138E 03 -7.1904E 03 -7.3464E 02 2.5345E 03 -1.2347E 03 1.8517E 02 9.0387E 02 -2.1657E 02 8.9033E 02
-3.1730E 01 -1.2988E 01 -3.4207E 01

ROW 13
2.0360E 01 1.0125E 02 -1.0210E 04 -1.5881E 03 6.4072E 02 -2.2860E 01 3.7326E 02 -6.4682E 02 5.0563E 00 -2.5646E 03
-9.2139E 02 3.1800E 03 1.1013E 05 2.8587E 02 -9.1244E 02 -3.2280E 02 9.4811E 01 2.1513E 02 -1.8652E 03 9.5225E 02
3.2278E 02 -2.2362E 02 -6.8051E 02 -1.0321E 02 2.6886E 02 -1.6484E 02 -6.6166E 01 5.9165E 01 1.3397E 01 7.7736E 01
-1.2483E 01 3.9402E 00 -3.8412E 01

ROW 14
4.3284E 01 5.7299E 01 -8.0119E 03 -8.5494E 02 5.7549E 02 1.0419E 01 1.4301E 02 -2.4102E 02 -4.5627E 02 -1.6448E 03
-5.9184E 02 1.8839E 03 2.8587E 02 7.5789E 04 -5.8495E 02 -9.5677E 01 5.5565E 01 4.0274E 02 -1.1167E 03 5.0538E 02
2.3980E 02 -1.9712E 02 -3.2763E 02 -3.9947E 01 1.0377E 02 -9.4596E 01 -5.7584E 01 3.4992E 01 1.0280E 01 4.9779E 01
-8.9849E 00 8.6546E-01 -8.7207E 00

ROW 15
-1.7151E 01 -1.8162E 02 2.3768E 04 2.9595E 03 -9.5310E 02 5.5075E 01 -6.6075E 02 1.4018E 03 -2.6313E 02 4.6798E 03
1.9420E 03 -5.9501E 03 -9.1244E 02 -5.8495E 02 2.4408E 05 2.9507E 02 -2.1386E 02 -4.3861E 02 3.5819E 03 -1.7208E 03
-7.1037E 02 3.7174E 02 9.5753E 02 2.6397E 02 -5.1053E 02 3.5026E 02 3.0126E 02 8.0312E 00 -1.1479E 02 -6.8047E 01
4.2560E 01 -6.0344E 00 8.4763E 01

ROW 16
4.9287E 01 -1.6408E 02 -3.2762E 03 2.5136E 03 -6.2326E 02 9.7900E 01 -8.8526E 02 1.0315E 03 -1.2509E 03 3.2470E 03
6.2647E 02 -4.3216E 03 -3.2280E 02 -9.5677E 01 2.9507E 02 2.1473E 05 -5.6100E 01 8.4071E 02 2.2999E 03 -1.6457E 03
-3.2707E 01 1.5137E 02 1.8655E 03 7.6112E 01 -5.6353E 02 1.4963E 02 -3.4622E 02 -3.2512E 02 1.7557E 02 -2.5070E 02
-4.0112E 01 -9.5058E 00 7.5615E 01

ROW 17
-2.5962E 00 2.0741E 01 -2.2002E 03 -3.4173E 02 8.0442E 01 -9.6870E 00 8.6565E 01 -1.7428E 02 9.6506E 01 -5.0204E 02
-2.0318E 02 6.5969E 02 9.4811E 01 5.5565E 01 -2.1388E 02 -5.6100E 01 2.1011E 04 3.4188E 00 -3.9501E 02 2.0173E 02
6.8224E 01 -3.2068E 01 -1.2894E 02 -3.0780E 01 6.5827E 01 -3.8437E 01 -2.5565E 01 2.6473E 00 9.9132E 00 9.3098E 00
2.5727E 01 -1.3994E-01 1.3682E 00

ROW 18
2.4328E 02 -2.4275E 01 -1.6701E 04 7.0195E 02 1.4935E 03 1.8798E 02 -6.3504E 02 1.0901E 03 -3.5949E 03 -9.4702E 02
-4.1299E 02 -2.8979E 01 2.1513E 02 4.0274E 02 -4.3861E 02 8.4071E 02 3.4187E 00 3.2829E 05 -1.0110E 02 -4.9179E 02
4.1038E 02 -5.0128E 02 6.8462E 02 1.5224E 02 -4.4246E 02 1.5355E 01 -1.8973E 02 -3.0275E 01 4.0753E 01 9.9665E 00
5.2182E 00 -6.2092E 00 4.3306E 01

MATRIX *MASS* 33 BY 33 SYMMETRIC MATH MODEL FLIGHT CONDITION 44.1.1, 272,300 LBS.

ROW 19

-3.0495E 01	-4.9765E 02	3.4930E 04	7.7692E 03	-2.7909E 03	1.6510E 02	-2.0572E 03	3.2309E 03	-1.0686E 03	1.1909E 04
3.8980E 03	-1.5014E 04	-1.8652E 03	-1.1167E 03	3.5819E 03	2.2999E 03	-3.9501E 02	-1.0110E 02	1.8244E 05	-4.7712E 03
-1.2091E 03	9.2744E 02	4.0111E 03	4.4260E 02	-1.4460E 03	7.2914E 02	-2.7669E 01	-4.7367E 02	8.6091E 01	-4.8592E 02
-5.5509E 01	-2.3686E 00	-7.3899E 01							

ROW 20

-3.0906E 01	2.8937E 02	-1.3228E 04	-4.5416E 03	1.3283E 03	-1.3112E 02	1.3295E 03	-1.9649E 03	1.3390E 03	-6.5057E 03
-1.9642E 03	8.4287E 03	9.5225E 02	5.0538E 02	-1.7208E 03	-1.6457E 03	2.0173E 02	-4.9179E 02	-4.7712E 03	4.8064E 05
5.2594E 02	-4.2175E 02	-2.5318E 03	-2.5078E 02	9.0622E 02	-3.8881E 02	1.4464E 02	3.2610E 02	-1.0075E 02	3.0268E 02
1.6779E 01	-2.3147E 01	-2.2837E 02							

ROW 21

3.7685E 01	5.8998E 01	-9.4871E 03	-9.1086E 02	5.2999E 02	5.6521E 00	1.4917E 02	-3.1832E 02	-3.7690E 02	-1.7029E 03
-6.7932E 02	1.9976E 03	3.2278E 02	2.3980E 02	-7.1037E 02	-3.2707E 01	6.8224E 01	4.1038E 02	-1.2091E 03	5.2594E 02
1.1067E 05	-1.9129E 02	-2.7834E 02	-6.2067E 01	1.1775E 02	-1.1138E 02	-1.0360E 02	7.7180E 00	3.3099E 01	3.3449E 01
9.4126E 00	-1.6154E 01	-2.0803E 02							

ROW 22

-6.5232E 01	-5.0661E 01	6.1415E 03	6.8354E 02	-7.1737E 02	-2.8930E 01	-8.9417E 01	3.8900E 01	7.8240E 02	1.5369E 03
4.4548E 02	-1.6138E 03	-2.2362E 02	-1.9[illegible]2E 02	3.7174E 02	1.5137E 02	-3.2066E 01	-5.0128E 02	9.2744E 02	-4.2175E 02
-1.9129E 02	5.2359E 04	3.6743E 02	-8.5260E 00	-5.1638E 01	6.1845E 01	-1.3486E 01	-7.9761E 01	2.7258E 01	-7.7550E 01
-1.2455E-01	-1.6842E 00	2.1114E 01							

ROW 23

2.5813E 01	-2.5787E 02	3.9563E 03	3.9426E 03	-1.2799E 03	1.1707E 02	-1.2366E 03	1.5801E 03	-1.1973E 03	5.6064E 03
1.3948E 03	-7.1904E 03	-6.8051E 02	-3.2763E 02	9.5753E 02	1.8655E 03	-1.2894E 02	6.8462E 02	4.0111E 03	-2.5318E 03
-2.7834E 02	3.6743E 02	2.5583E 05	1.4124E 02	-8.2283E 02	2.8787E 02	-3.6751E 02	-4.3665E 02	2.0293E 02	-3.6238E 02
-2.2758E 01	1.0082E 01	-3.6445E 01							

ROW 24

2.3986E 01	-2.3637E 01	1.9373E 03	4.2985E 02	5.8457E 01	2.6418E 01	-1.3725E 02	3.0208E 02	-4.1063E 02	4.6904E 02
2.2790E 02	-7.3464E 02	-1.0321E 02	-3.9947E 01	2.6387E 02	7.6112E 01	-3.0780E 01	1.5224E 02	4.4260E 02	-2.5078E 02
-6.2067E 01	-8.5260E 00	1.4124E 02	1.6460E 04	-1.0612E 02	5.0043E 01	4.2357E 01	1.3839E 01	-2.2086E 01	2.8825E 00
-6.9912E 01	-1.8231E 00	3.9448E 01							

ROW 25

-4.5666E 01	8.8847E 01	-2.3876E 03	-1.4542E [illegible]3	1.5840E 02	-6.7110E 01	4.7881E 02	-7.7287E 02	9.3050E 02	-1.8085E 03
-5.7123E 02	2.5345E 03	2.6886E 02	1.0377E [illegible]	-5.1053E 02	-5.6353E 02	6.5827E 01	-4.4246E 02	-1.4460E 03	9.0622E 02
1.1775E 02	-5.1638E 01	-8.2283E 02	-1.0612E 02	2.7298E 04	-1.2621E 02	4.5060E 01	8.6857E 01	-2.3355E 01	8.0445E 01
-7.1027E 01	-3.1681E 00	-4.6190E 01							

ROW 26

4.2137E 00	-3.9940E 01	3.4136E 03	6.4600E 02	-1.6894E 02	1.8137E 01	-1.7141E 02	3.1206E 02	-1.7794E 02	9.4692E 02
3.5101E 02	-1.2347E 03	-1.6484E 02	-9.4596E 01	3.5026E 02	1.4963E 02	-3.8437E 01	1.5355E 01	7.2914E 02	-3.8881E 02
-1.1138E 02	6.1845E 01	2.8787E 02	5.0043E 01	-1.2621E 02	3.4072E 04	2.4241E 01	-1.9952E 01	-7.0813E 00	-2.7211E 01
2.4044E 01	-2.0454E 01	9.5210E 01							

ROW 27

-8.5756E-02	1.4282E 01	4.6656E 03	-1.5483E 02	1.2862E 02	-5.6724E 00	1.0228E 02	3.7461E 01	6.5756E 01	-1.7528E 02
1.6139E 02	1.8517E 02	-6.6166E 01	-5.7584E 01	3.0126E 02	-3.4622E 02	-2.5565E 01	-1.8973E 02	-2.7669E 01	1.4464E 02
-1.0360E 02	-1.3486E 01	-3.6751E 02	4.2356E 01	4.5060E 01	2.4241E 01	2.1583E 04	1.0751E 02	-7.8848E 01	7.0400E 01
-5.7568E-02	1.6880E 00	-5.5870E 01							

MATRIX *MASS* 33 BY 33 SYMMETRIC MATH MODEL FLIGHT CONDITION 44.1.1, 272,300 LBS.

ROW 28

1.2367E 01	3.4643E 01	7.3[illegible]E 02	-4.7836E 02	3.0129E 02	-4.1455E 00	1.4973E 02	-9.2114E 01	-5.8990E 01	-7.8044E 02
-1.0628E 02	9.0307E 02	5.9165E 01	3.4992E 01	8.0312E 00	-3.2512E 02	2.5473E 00	-3.0275E 01	-4.7367E 02	3.2610E 02
7.7180E 00	-7.9761E 01	-4.3665E 02	1.3839E 01	8.6857E 01	-1.9952E 01	1.0751E 02	8.6982E 03	-5.8246E 01	7.5314E 01
-2.2937E 01	-7.6907E-01	-6.8428E 00							

ROW 29

-6.4288E 00	-1.0798E 01	-1.6946E 03	1.2524E 02	-1.2713E 02	-5.6636E-01	-5.3313E 01	-2.1501E 01	4.93[illegible] 01	2.1101E 02
-4.1525E 01	-2.1657E 02	1.3397E 01	1.0280E 01	-1.1479E 02	1.7557E 02	9.9132E 00	4.0753E 01	8.6091E 01	-1.0075E 02
3.3099E 01	2.7253E 01	2.0293E 02	-2.2086E 01	-2.3355E 01	-7.0813E 00	-7.8846E 01	-5.8246E 01	5.0579E 03	-4.0251E 01
-2.8269E 01	9.0357E-01	8.5400E 00							

ROW 30

1.1980E 01	3.2317E 01	-3.8467E 02	-4.5847E 02	2.7402E 02	-3.5371E 00	1.3098E 02	-1.0999E 02	-6.5424E 01	-7.6154E 02
-1.5145E 02	8.9033E 02	7.7736E 01	4.9779E 01	-6.8047E 01	-2.5070E 02	9.3098E 00	9.9665E 00	-4.8592E 02	3.0268E 02
3.3449E 01	-7.7550E 01	-3.6238E 02	2.8825E 00	8.0445E 01	-2.7211E 01	7.0400E 01	7.5314E 01	-4.0251E 01	8.1960E 03
5.7686E 00	8.1840E 00	7.7366E 00							

ROW 31

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 32

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 33

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

MATRIX *MASS* 33 BY 33 SYMMETRIC MATH MODEL FLIGHT CONDITION 44.1.5, 262,400 LBS.

ROW 1

6.7979E 02	0.0	-2.0814E 02	7.1413E 00	2.9909E 01	3.1784E 00	-8.5737E 00	1.9379E 01	-6.2135E 01	-2.3526E 01
-4.8781E 00	7.2632E 00	2.9372E 00	6.2443E 00	-2.4743E 00	7.1104E 00	-3.7454E-01	3.5097E 01	-4.3994E 00	-4.4587E 00
5.4366E 00	-9.4107E 00	3.7239E 00	3.4603E 00	-6.5879E 00	6.0788E-01	-1.2372E-02	1.7841E 00	-9.2745E-01	1.7283E 00
0.0	0.0	-5.0188E-01							

ROW 2

0.0	6.7979E 02	-2.2254E 02	-6.7137E 01	2.3007E 01	-1.6181E 00	1.8935E 01	-2.7319E 01	1.3363E 01	-9.9764E 01
-2.9965E 01	1.2681E 02	1.4601E 01	8.2615E 00	-2.6179E 01	-2.3686E 01	2.9900E 00	-3.5122E 00	-7.1777E 01	4.1746E 01
8.5037E 00	-7.3079E 00	-3.7210E 01	-3.4070E 00	1.2817E 01	-5.7591E 00	2.0687E 00	5.0021E 00	-1.5617E 00	4.6647E 00
0.0	0.0	4.7751E 00							

ROW 3

-2.0814E 02	-2.2254E 02	7.4306E 07	3.4489E 03	-2.3600E 03	-6.9942E 01	-3.5828E 02	1.1485E 03	2.4078E 03	7.0734E 03
3.1231E 03	-8.0814E 03	-1.4719E 03	-1.1552E 03	3.4267E 03	-4.7413E 02	-3.1719E 02	-2.4095E 03	5.0342E 03	-1.9053E 03
-1.3680E 03	8.8549E 02	5.6858E 02	2.7920E 02	-3.4359E 02	4.9205E 02	6.7308E 02	1.0688E 02	-2.4452E 02	-5.5247E 01
-1.3143E 02	-5.3948E 01	-3.7325E 02							

ROW 4

7.1413E 00	-6.7137E 01	3.4489E 03	4.5270E 05	-3.0453E 02	3.0361E 01	-3.0568E 02	4.6428E 02	-3.0884E 02	1.5199E 03
4.7356E 02	-1.9717E 03	-2.2900E 02	-1.2326E 02	4.2660E 02	3.6282E 02	-4.9265E 01	1.0142E 02	1.1205E 03	-5.5516E 02
-1.3128E 02	9.8593E 01	5.6889E 02	6.1964E 01	-2.0977E 02	9.3148E 01	-2.2460E 01	-6.9074E 01	1.8127E 01	-6.6174E 01
-3.9990E 00	-2.4570E 00	-2.8968E 01							

ROW 5

2.9909E 01	2.3007E 01	-2.3600E 03	-3.0453E 02	7.8452E 05	1.3355E 01	4.3358E 01	-5.2232E 00	-3.5771E 02	-6.8623E 02
-1.8063E 02	7.1369E 02	9.2406E 01	8.3001E 01	-1.3739E 02	-9.0010E 01	1.1595E 01	2.1541E 02	-4.0258E 02	1.9165E 02
7.6422E 01	-1.0349E 02	-1.8472E 02	8.4474E 00	2.2855E 01	-2.4359E 01	1.8602E 01	4.3493E 01	-1.8363E 01	3.9547E 01
-6.4820E 00	2.7769E 01	9.9191E 01							

ROW 6

3.1784E 00	-1.6181E 00	-6.9942E 01	3.0361E 01	1.3355E 01	1.7529E 05	-1.3382E 01	2.4538E 01	-5.0674E 01	2.0109E 01
7.6893E 00	-4.2162E 01	-3.2955E 00	1.5048E 00	7.9372E 00	1.4128E 01	-1.3967E 00	2.7122E 01	2.3811E 01	-1.8915E 01
8.1814E-01	-4.1739E 00	1.6892E 01	3.8101E 00	-9.6812E 00	2.6155E 00	-8.2116E-01	-5.9953E-01	-8.0362E-02	-5.1105E-01
1.0379E 00	-1.2331E 00	-9.3634E 00							

ROW 7

-8.5737E 00	1.8935E 01	-3.5828E 02	-3.0568E 02	4.3358E 01	-1.3382E 01	7.9015E 05	-1.5286E 02	1.8231E 02	-3.8406E 02
-1.1137E 02	5.3182E 02	5.3826E 01	2.0613E 01	-9.5235E 01	-1.2779E 02	1.2480E 01	-9.1664E 01	-2.9674E 02	1.9183E 02
2.1489E 01	-1.2900E 01	-1.7847E 02	-1.9788E 01	6.9078E 01	-2.4717E 01	1.4793E 01	2.1625E 01	-7.7106E 00	1.8909E 01
7.9174E-01	1.3742E 01	6.0423E 00							

ROW 8

1.9379E 01	-2.7319E 01	1.1485E 03	4.6428E 02	-5.2232E 00	2.4538E 01	-1.5286E 02	8.2318E 05	-3.6026E 02	5.4642E 02
2.0224E 02	-7.9960E 02	-9.3252E 01	-3.4730E 01	2.0207E 02	1.4883E 02	-2.5126E 01	1.5731E 02	4.6588E 02	-2.8337E 02
-4.5869E 01	5.5934E 00	2.2793E 02	4.3558E 01	-1.1147E 02	4.4994E 01	5.3685E 00	-1.3301E 01	-3.0859E 00	-1.5870E 01
2.0562E 01	-1.7299E 01	-1.5843E 02							

ROW 9

-6.2135E 01	1.3363E 01	2.4078E 03	-3.0884E 02	-3.5771E 02	-5.0674E 01	1.8251E 02	-3.6028E 02	5.7840E 05	3.2888E 01
-1.7306E 01	2.8289E 02	7.1252E-01	-6.5837E 01	-3.7898E 01	-1.8051E 02	1.3928E 01	-5.1865E 02	-1.5413E 02	1.9319E 02
-5.4396E 01	3.1287E 02	-1.7276E 02	-5.9230E 01	1.3424E 02	-2.5662E 01	9.5136E 00	8.4943E 00	7.1045E 00	-9.4293E 00
-1.5894E 00	3.7093E-01	-2.3430E 00							

MATRIX *MASS* 33 BY 33 SYMMETRIC MATH MODEL FLIGHT CONDITION 44.1.5, 262,400 LBS.

ROW 10
-2.3526E 01 -9.9764E 01 7.0734E 03 1.5199E 03 -6.8623E 02 2.0109E 01 -3.8406E 02 5.4642E 02 3.2888E 01 5.7647E 05
7.5916E 02 -3.0021E 03 -3.6980E 02 -2.3716E 02 6.7460E 02 4.6869E 02 -7.2374E 01 -1.3641E 02 1.7176E 03 -9.3845E 02
-2.4549E 02 2.2169E 02 8.0892E 02 6.7595E 01 -2.6086E 02 1.3653E 02 -2.5459E 01 -1.1267E 02 3.0522E 01 -1.0991E 02
2.5904E 01 4.5675E 00 -1.6249E 02

ROW 11
-4.8781E 00 -2.9965E 01 3.1231E 03 4.7356E 02 -1.8063E 02 7.6893E 00 -1.1137E 02 2.0224E 02 -1.7306E 01 7.5916E 02
2.4037E 06 -9.4743E 02 -1.3284E 02 -8.5329E 01 2.7996E 02 9.0354E 01 -2.9291E 01 -5.9491E 01 5.6201E 02 -2.8320E 02
-9.7936E 01 6.4237E 01 2.0113E 02 3.2851E 01 -8.2360E 01 5.0605E 01 2.3252E 01 -1.5335E 01 -5.9782E 00 -2.1845E 01
2.0794E 01 3.2930E 00 1.2157E 02

ROW 12
7.2632E 00 1.2681E 02 -8.0814E 03 -1.9717E 03 7.1369E 02 -4.2162E 01 5.3182E 02 -7.9960E 02 2.8289E 02 -3.0021E 03
-9.4743E 02 6.1893E 05 4.5853E 02 2.7162E 02 -8.5771E 02 -6.2377E 02 9.5102E 01 -4.4444E 00 -2.1654E 03 1.2158E 03
2.8795E 02 -2.3277E 02 -1.0375E 03 -1.0589E 02 3.6558E 02 -1.7803E 02 2.6933E 01 1.3050E 02 -3.1346E 01 1.2850E 02
-3.1730E 01 -1.2988E 01 -3.4207E 01

ROW 13
2.9372E 00 1.4601E 01 -1.4719E 03 -2.2900E 02 9.2406E 01 -3.2955E 00 5.3826E 01 -9.3252E 01 7.1253E-01 -3.6980E 02
-1.3284E 02 4.5853E 02 1.0976E 05 4.1217E 01 -1.3154E 02 -4.6573E 01 1.3668E 01 3.1015E 01 -2.6893E 02 1.3731E 02
4.6534E 01 -3.2248E 01 -9.8150E 01 -1.4877E 01 3.8768E 01 -2.3765E 01 -9.5262E 00 8.5407E 00 1.9244E 00 1.1215E 01
-1.2483E 01 3.9402E 00 -3.8412E 01

ROW 14
6.2443E 00 8.2615E 00 -1.1552E 03 -1.2326E 02 8.3001E 01 1.5048E 00 2.0613E 01 -3.4730E 01 -6.8837E 01 -2.3716E 02
-8.5329E 01 2.7162E 02 4.1217E 01 7.5602E 04 -8.4330E 01 -1.3796E 01 8.0101E 00 5.8091E 01 -1.6101E 02 7.2862E 01
3.4575E 01 -2.8429E 01 -4.7243E 01 -5.7552E 00 1.4956E 01 -1.3637E 01 -8.2980E 00 5.0494E 00 1.4792E 00 7.1803E 00
-8.9849E 00 8.6546E-01 -8.7207E 00

ROW 15
-2.4743E 00 -2.6179E 01 3.4267E 03 4.2660E 02 -1.3739E 02 7.9372E 00 -9.5235E 01 2.0207E 02 -3.7898E 01 6.7460E 02
2.7996E 02 -8.5771E 02 -1.3154E 02 -8.4330E 01 2.4230E 05 4.2503E 01 -3.0830E 01 -6.3259E 01 5.1635E 02 -2.4804E 02
-1.0241E 02 5.3591E 01 1.3601E 02 3.8039E 01 -7.3590E 01 5.0494E 01 4.3440E 01 1.1641E 00 -1.6553E 01 -9.8060E 00
4.2560E 01 -6.0344E 00 8.4763E 01

ROW 16
7.1104E 00 -2.3686E 01 -4.7413E 02 3.6282E 02 -9.0010E 01 1.4128E 01 -1.2779E 02 1.4883E 02 -1.8051E 02 4.6869E 02
9.0354E 01 -6.2377E 02 -4.6573E 01 -1.3796E 01 4.2503E 01 2.1349E 05 -8.0878E 00 1.2137E 02 3.3190E 02 -2.3755E 02
-4.6925E 00 2.1856E 01 2.6929E 02 1.0971E 01 -8.1333E 01 2.1584E 01 -5.0012E 01 -4.6950E 01 2.5362E 01 -3.6198E 01
-4.0112E 01 -9.5058E 00 7.5615E 01

ROW 17
-3.7454E-01 2.9900E 00 -3.1719E 02 -4.9265E 01 1.1595E 01 -1.3967E 00 1.2480E 01 -2.5126E 01 1.3928E 01 -7.2374E 01
-2.9291E 01 9.5102E 01 1.3668E 01 8.0101E 00 -3.0830E 01 -8.0878E 00 2.0991E 04 4.9093E-01 -5.6947E 01 2.9083E 01
9.8352E 00 -4.6224E 00 -1.8590E 01 -4.4376E 00 9.1904E 00 -5.5414E 00 -3.6855E 00 3.6720E-01 1.4292E 00 1.3421E 00
2.5727E 01 -1.3994E-01 1.3682E 00

ROW 18
3.5097E 01 -3.5122E 00 -2.4095E 03 1.0142E 02 2.1541E 02 2.7122E 01 -9.1664E 01 1.5731E 02 -5.1865E 02 -1.3641E 02
-5.9491E 01 -4.4444E 00 3.1015E 01 5.8091E 01 -6.3259E 01 1.2137E 02 4.9093E-01 3.2640E 05 -1.4461E 01 -7.1046E 01
5.9200E 01 -7.2303E 01 9.8862E 01 2.1965E 01 -6.3858E 01 2.2219E 00 -2.7392E 01 -4.3869E 00 5.8904E 00 1.4236E 00
5.2182E 00 -6.2092E 01 4.3306E 01

MATRIX *MASS* 33 BY 33 SYMMETRIC MATH MODEL FLIGHT CONDITION 44.1.5, 262,400 LBS.

ROW 19
-4.3994E 00 -7.1777E 01 5.034.5 03 1.1205E 03 -4.0258E 02 2.3811E 01 -2.9674E 02 4.6588E 02 -1.5413E 02 1.7176E 03
5.6201E 02 -2.1654E 03 -2.6893E 02 -1.6101E 02 5.1635E 02 3.3190E 02 -5.6947E 01 -1.4461E 01 1.7501E 05 -6.8816E 02
-1.7430E 02 1.3376E 02 5.7866E 02 6.3799E 01 -2.0855E 02 1.0513E 02 -4.0960E 00 -6.8376E 01 1.2467E 01 -7.0118E 01
-5.5509E 01 -2.3686E 00 -7.3899E 01

ROW 20
-4.4587E 00 4.1746E 01 -1.9053E 03 -6.5516E 02 1.9165E 02 -1.8915E 01 1.9183E 02 -2.8337E 02 1.9319E 02 -9.3845E 02
-2.8320E 02 1.2158E 03 1.3731E 02 7.2862E 01 -2.4004E 02 -2.3755E 02 2.9083E 01 -7.1046E 01 -6.8816E 02 4.7822E 05
7.5802E 01 -6.0836E 01 -3.6533E 02 -3.5150E 01 1.3073E 02 -5.6065E 01 2.0945E 01 4.7088E 01 -1.4572E 01 4.3689E 01
1.6779E 01 -2.3147E 01 -2.2837E 02

ROW 21
5.4366E 00 8.5037E 00 -1.3680E 03 -1.3128E 02 7.6422E 01 8.1814E-01 2.1489E 01 -4.5869E 01 -5.4396E 01 -2.4549E 02
-9.7936E 01 2.8795E 02 4.6534E 01 3.4575E 01 -1.0241E 02 -4.6925E 00 9.8352E 00 5.9200E 01 -1.7430E 02 7.5802E 01
1.1043E 05 -2.7584E 01 -4.0108E 01 -8.9450E 00 1.6966E 01 -1.6056E 01 -1.4940E 01 1.1105E 00 4.7733E 00 4.8211E 00
9.4126E 00 -1.6154E 01 -2.0803E 02

ROW 22
-9.4107E 00 -7.3079E 00 8.8549E 02 9.8593E 01 -1.0349E 02 -4.1739E 00 -1.2900E 01 5.5934E 00 1.1287E 02 2.2169E 02
6.4237E 01 -2.3277E 02 -3.2248E 01 -2.8429E 01 5.3591E 01 2.1856E 01 -4.6224E 00 -7.2303E 01 1.3376E 02 -6.0836E 01
-2.7584E 01 5.2163E 04 5.3015E 01 -1.2351E 00 -7.4462E 00 8.9167E 00 -1.9580E 00 -1.1513E 01 3.9381E 00 -1.1191E 01
-1.2455E-01 -1.6842E 00 2.1114E 01

ROW 23
3.7239E 00 -3.7210E 01 5.6858E 02 5.6889E 02 -1.8472E 02 1.6892E 01 -1.7847E 02 2.2793E 02 -1.7276E 02 8.0892E 02
2.0113E 02 -1.0375E 03 -9.8150E 01 -4.7243E 01 1.3801E 02 2.6929E 02 -1.8590E 01 9.8362E 01 5.7866E 02 -3.6533E 02
-4.0108E 01 5.3015E 01 2.5353E 05 2.0358E 01 -1.1872E 02 4.1517E 01 -5.3091E 01 -6.3038E 01 2.9311E 01 -5.2306E 01
-2.2758E 01 1.0082E 01 -3.6445E 01

ROW 24
3.4603E 00 -3.4070E 00 2.7920E 02 6.1964E 01 8.4474E 00 3.8101E 00 -1.9788E 01 4.3558E 01 -5.9230E 01 6.7595E 01
3.2851E 01 -1.0589E 02 -1.4877E 01 -5.7552E 00 3.8039E 01 1.0971E 01 -4.4376E 00 2.1965E 01 6.3799E 01 -3.6150E 01
-8.9450E 00 -1.2351E 00 2.0358E 01 1.6412E 04 -1.5301E 01 7.2145E 00 6.1077E 00 1.9972E 00 -3.1853E 00 4.1732E-01
-6.9912E 01 -1.8231E 00 3.9448E 01

ROW 25
-6.5879E 00 1.2817E 01 -3.4359E 02 -2.0977E 02 2.2855E 01 -9.6812E 00 6.9078E 01 -1.1147E 02 1.3424E 02 -2.6086E 02
-8.2360E 01 3.6558E 02 3.8768E 01 1.4956E 01 -7.3590E 01 -8.1333E 01 9.4904E 00 -6.3858E 01 -2.0855F 02 1.3073E 02
1.6966E 01 -7.4462E 00 -1.1872E 02 -1.5301E 01 2.7010E 04 -1.8200E 01 6.5217E 00 1.2541E 01 -3.3793E 00 1.1611E 01
-7.1027E 01 -3.1681E 00 -4.6190E 01

ROW 26
6.0788E-01 -5.7591E 00 4.9205E 02 9.3148E 01 -2.4359E 01 2.6155E 00 -2.4717E 01 4.4994E 01 -2.5662E 01 1.3653E 02
5.0605E 01 -1.7803E 02 -2.3765E 01 -1.3637E 01 5.0494E 01 2.1584E 01 -5.5414E 00 2.2219E 00 1.0513E 02 -5.6065E 01
-1.6056E 01 8.9167E 00 4.1517E 01 7.2145E 00 -1.8200E 01 3.4015E 04 3.4908E 00 -2.8795E 00 -1.0190E 00 -3.9251E 00
2.4044E 01 -2.0454E 01 9.5210E 01

ROW 27
-1.2372E-02 2.0687E 00 6.7308E 02 -2.2460E 01 1.8602E 01 -8.2116E-01 1.4793E 01 9.3685E 00 9.5136E 00 -2.5459E 01
2.3252E 01 2.6933E 01 -9.5262E 00 -8.2980E 00 4.3440E 01 -5.0012E 01 -3.6855E 00 -2.7392E 01 -4.0960E 00 2.0945E 01
-1.4940E 01 -1.9580E 00 -5.3091E 01 6.1077E 00 6.5217E 00 3.4908E 00 2.1446E 04 1.5523E 01 -1.1383E 01 1.0167E 01
-5.7568E-02 1.6880E 00 -5.5870E 01

MATRIX *MASS* 33 BY 33 SYMMETRIC MATH MODEL FLIGHT CONDITION 44.1.5, 262, 400 LBS.

ROW 28

1.7841E 00	5.0021E 00	1.0688E 02	-6.9074E 01	4.3493E 01	-5.9953E-01	2.1625E 01	-1.3301E 01	-8.4943E 00	-1.1267E 02
-1.5335E 01	1.3050E 02	8.5407E 00	5.0494E 00	1.1641E 00	-4.6950E 01	3.6720E-01	-4.3869E 00	-6.8376E 01	4.7088E 01
1.1105E 00	-1.1513E 01	-6.3039E 01	1.9972E 00	1.2541E 01	-2.8795E 00	1.5523E 01	8.6135E 03	-8.4101E 00	1.0873E 01
-2.2937E 01	-7.6900E-01	-6.8423E 00							

ROW 29

-9.2745E-01	-1.5617E 00	-2.4452E 02	1.8127E 01	-1.8363E 01	-8.0363E-02	-7.7106E 00	-3.0859E 00	7.1045E 00	3.0522E 01
-5.9782E 00	-3.1346E 01	1.9244E 00	1.4792E 00	-1.6553E 01	2.5362E 01	1.4292E 00	5.8904E 00	1.2467E 01	-1.4572E 01
4.7733E 00	3.9381E 00	2.9311E 01	-3.1853E 00	-3.3793E 00	-1.0190E 00	-1.1383E 01	-8.4101E 00	5.0235E 03	-5.8121E 00
-2.8269E 01	9.0357E-01	8.5400E 00							

ROW 30

1.7283E 00	4.6647E 00	-5.5247E 01	-6.6174E 01	3.9547E 01	-5.1105E-01	1.8909E 01	-1.5870E 01	-9.4293E 00	-1.0991E 02
-2.1845E 01	1.2850E 02	1.1215E 01	7.1803E 00	-9.8060E 00	-3.6198E 01	1.3421E 00	1.4236E 00	-7.0118E 01	4.3689E 01
4.8211E 00	-1.1191E 01	-5.2306E 01	4.1732E-01	1.1611E 01	-3.9251E 00	1.0167E 01	1.0873E 01	-5.8121E 00	8.1445E 03
5.7686E 00	8.1840E 00	7.7366E 00							

ROW 31

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 32

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 33

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

MATRIX * C1 * 33 BY 33 SYMMETRIC MATH MODEL

ROW 1

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 2

0.0	1.3356E 08	-1.9973E 10	7.6159E 08	2.1287E 09	-1.0698E 08	6.1828E 08	-1.6629E 09	3.2353E 08	-8.1433E 08
3.5693E 08	-6.3950E 08	-4.4153E 08	-1.5471E 08	8.1401E 08	5.4265F 08	2.4142F 08	6.0405E 08	-4.4515E 08	-1.6395E 09
-1.4189E 09	1.7309E 09	-1.0306E 09	3.2205E 09	-2.2041E 08	6.2688E 08	-1.0853E 08	1.7777E 08	2.0232E 08	7.8948E 07
-1.2086E 08	-1.5879E 07	5.2074E 09							

ROW 3

0.0	-2.8891E 10	1.9571E 13	-1.4124E 11	-3.7693E 11	4.2882E 10	-1.1534E 11	3.8329E 11	-2.8492E 10	9.2118E 10
-2.7327E 11	2.5547E 11	2.0390E 11	4.7011E 10	-3.0048E 11	-3.2508E 11	-3.3968E 11	-5.8085E 11	5.3273E 11	8.2546E 11
5.7536E 11	-1.0571E 11	6.7259E 11	-3.0238E 10	1.8739E 11	-3.7783E 11	1.1924E 11	-6.8230E 10	-5.6502E 10	-8.0569E 10
-1.0317E 10	1.0931E 10	-4.6754E 11							

ROW 4

0.0	2.7250E 08	1.2010E 11	1.2205E 11	1.0385E 11	-9.9368E 09	6.9459E 10	3.3622E 10	5.1188E 10	8.0124E 10
-3.6714E 10	5.0867E 10	-5.6582E 08	2.7533E 09	-2.0065E 10	-1.1024E 10	-1.4558F 10	3.8603E 09	2.5800E 10	5.6647E 10
2.1309E 10	-3.0899E 09	3.3805E 10	-3.4023E 09	1.1010E 10	-2.2851E 10	9.4693E 09	-3.3241E 09	3.1107E 08	-1.5451E 09
-2.7258E 09	1.5579E 09	-2.0634E 10							

ROW 5

0.0	1.5119E 09	-6.7843E 10	1.0066E 11	1.1887E 11	-1.0304E 10	7.3813E 10	2.2437E 10	5.3219E 10	5.9309E 10
-3.3592E 10	5.6341E 10	-1.3091E 10	-4.1353E 08	-1.2219E 09	-5.0486E 08	-9.6720E 09	2.0006E 10	1.3408E 10	2.7097E 10
-4.8481E 09	1.2602E 09	1.8391E 10	-7.3957E 08	5.6280E 09	-1.2031E 10	7.8376F 09	-2.2806E 09	1.5797E 09	-2.8870E 08
-2.6569E 09	1.1056E 09	-1.1567E 10							

ROW 6

0.0	-4.6557E 07	-6.6071E 09	-1.0223E 10	-1.1150F 10	1.7431E 09	-8.0637E 09	-5.0559F 09	-5.9325E 09	-7.5415E 09
3.5683F 09	-9.2501F 09	8.4750E 08	1.1958E 09	4.3075E 08	-2.4751E 07	1.2944F 09	-2.6418E 09	-1.7297E 09	-3.9002E 09
-1.0915F 09	-2.2410E 08	-2.0796E 09	1.4049E 08	-5.8167E 08	1.5097F 09	-7.1056E 08	3.5070E 08	-3.9219E 07	-4.3495E 07
1.8654F 08	-1.4005E 08	1.6406E 09							

ROW 7

0.0	7.8699E 08	-2.7546E 11	5.1219E 10	6.7756E 10	-7.2996E 09	5.3521E 10	3.2700E 10	3.9485E 10	4.4443E 10
-2.2658E 10	6.4269E 10	-1.1279E 10	-1.1322E 09	1.5497E 10	7.4930F 09	2.2098E 08	3.0126E 10	-4.6938E 07	8.5968E 09
-4.7115F 09	6.4200E 09	-3.3632F 09	-1.0194E 08	3.4096E 08	1.3199E 09	2.1067E 09	-5.0539E 08	1.2682E 09	2.1381E 09
-4.1159E 08	3.4072E 08	1.8696E 09							

ROW 8

0.0	2.1690E 08	-7.6542E 11	8.6139E 08	2.2850E 10	-5.9324E 09	3.9243E 10	5.0410E 10	2.5740E 10	3.1380E 10
-3.4272E 09	7.0547E 10	-1.9627E 10	-2.4921E 09	2.7338F 10	7.9969E 09	1.6682E 10	5.1431E 10	-1.9785E 10	-2.9269E 10
-1.2232F 10	1.0460E 10	-3.1040E 10	2.6800E 08	-7.4339E 09	1.7445E 10	-4.0312E 09	2.0899E 09	2.0201E 09	5.6238E 09
2.2419E 09	-5.3017E 08	2.4286F 10							

ROW 9

0.0	4.7221E 09	-1.5581E 11	4.6196E 10	5.7532E 10	-6.1862E 09	4.5753E 10	2.9789E 10	3.2460E 10	3.9041E 10
-2.2001E 10	5.3609E 10	-1.0995E 10	-1.3316F 09	5.5810F 09	1.7791E 09	-2.1686E 09	2.2685E 10	3.0856E 09	8.9435E 09
-3.3406E 08	3.6815 09	1.9655E 09	-4.5483E 08	1.6304E 09	-2.5606E 09	3.2129E 09	-8.0411E 08	9.4716E 08	1.1550E 09
-9.9945E 08	4.5644E 08	-1.5296E 09							

MATRIX * C1 * 33 BY 33 SYMMETRIC MATH MODEL

ROW 10
0.0 6.0461E 08 -7.9203E 11 3.7069E 10 4.4343E 10 -6.5178E 09 3.9024E 10 2.8701E 10 2.5688E 10 4.3812E 10
-2.9732E 09 4.2898E 10 -1.7639E 10 -1.8748E 09 1.7912E 10 1.2993E 10 1.4936E 10 4.6085E 10 -1.2924E 10 5.3398E 09
-1.1185E 10 8.3749E 09 -1.9397E 10 -9.1955E 08 -4.0120E 09 1.2646E 10 -2.7044E 09 1.3579E 09 2.2824E 09 4.1100E 09
1.1579E 09 -3.6649E 08 1.9753E 10

ROW 11
0.0 -9.8987E 08 -3.6780E 11 -3.2371E 10 -2.5903E 10 6.2693E 09 -2.6911E 10 -3.3467E 10 -2.1639E 10 -4.1358E 10
7.2039E 10 -6.2075E 10 6.0742E 09 -1.5660E 09 2.3084E 09 -1.1947E 10 1.4367E 10 -1.5306E 10 -1.5560E 10 -2.3608E 10
-2.8449E 10 -3.7986E 09 -1.9020E 10 2.4106E 09 -8.6377E 09 1.6271E 10 -7.8608E 09 2.9178E 09 7.9834E 08 1.4710E 09
7.5667E 09 -5.6476E 08 1.7457E 10

ROW 12
0.0 -9.5482E 08 3.2389E 11 4.3308E 10 5.2859E 10 -8.3344E 09 6.8075E 10 7.8359E 10 4.9210E 10 6.9749E 10
-6.5968E 10 1.4741E 11 -1.9948E 10 -1.9758E 08 1.3232E 10 1.6333E 10 -1.5816E 10 4.3217E 10 1.3968E 10 5.7457E 10
2.6524E 10 1.2689E 10 3.5610E 09 -2.5293E 08 5.9453E 09 -6.2178E 09 7.5408E 09 -3.4171E 09 -9.7943E 08 3.2493E 08
6.7931E 07 6.4248E 08 -1.6620E 10

ROW 13
0.0 -3.8234E 08 6.7013E 10 -5.3683E 09 -1.6074E 10 1.2853E 09 -1.2546E 10 -5.6658E 09 -8.4895E 09 -1.1294E 10
7.2543E 09 -2.1706E 10 1.0897E 10 2.1419E 09 -1.4471E 10 -1.3091E 10 -2.9834E 09 -1.9891E 10 3.7542E 08 -1.5894E 10
7.0196E 09 -5.3565E 09 1.1738E 09 -6.8134E 08 -7.1511E 08 -5.1742E 09 6.5511E 08 -1.9800E 08 -6.8073E 08 -8.6376E 08
3.7671E 08 8.6915E 07 -3.6360E 09

ROW 14
0.0 -2.0497E 08 2.5896E 10 1.6702E 09 -2.1696E 09 8.6782E 07 -1.0939E 09 9.0265E 08 -3.9715E 08 5.2187E 08
-9.8987E 08 -4.3029E 08 2.4221E 09 6.9919E 08 -4.8751E 09 -1.0639E 09 -2.3437E 09 -3.8475E 09 7.2459E 08 8.3889E 08
3.5464E 09 -9.8120E 08 3.3431E 08 -6.1636E 08 1.4942E 08 -2.1736E 09 6.3485E 08 -3.4087E 08 -2.4461E 08 -3.4315E 08
1.8406E 08 6.5612E 07 -2.7161E 09

ROW 15
0.0 8.9992E 08 -9.8198E 10 -9.9169E 09 1.2252E 10 -3.2144E 08 1.0272E 10 1.9433E 09 5.0338E 09 1.3550E 09
2.2706E 09 1.5853E 10 -1.5336E 10 -4.4560E 09 2.8158E 10 9.6123E 09 1.0992E 10 2.6018E 10 -3.4567E 09 1.9012E 09
-1.7097E 10 6.5708E 09 -2.1289E 09 2.8963E 09 -8.9782E 08 1.1597E 10 -3.3263E 09 1.3019E 09 1.0036E 09 1.9281E 09
-6.9554E 08 -2.8706E 08 1.2765E 10

ROW 16
0.0 -4.2729E 08 1.9425E 11 8.2532E 09 5.1338E 09 2.8516E 08 3.2746E 09 -2.1794E 09 2.5198E 09 1.4404E 10
-3.1582E 10 2.5197E 10 -7.8149E 09 3.2899E 08 -1.9873E 09 3.8160E 10 -1.5707E 10 1.3526E 10 8.5187E 09 4.9512E 10
6.3188E 09 5.7472E 09 1.2094E 09 -3.2613E 09 4.6445E 09 -3.7581E 09 3.0646E 09 -1.2489E 09 6.2653E 08 -1.9671E 09
-5.5777E 08 1.2065E 08 -1.7559E 10

ROW 17
0.0 7.0126E 08 -4.0273E 11 -9.8252E 09 7.8656E 08 -1.8841E 08 -4.0467E 09 -1.3672E 10 -4.6465E 09 -1.2564E 10
2.4567E 10 -1.8003E 10 -7.8469E 09 -3.0975E 09 1.9606E 10 -1.1055E 09 2.1015E 10 1.8234E 10 -1.7478E 10 -2.3678E 10
-2.2450E 10 2.9994E 09 -5.9355E 09 4.1452E 09 -3.7725E 09 1.4849E 10 -6.9460E 09 1.2278E 09 3.7824E 08 3.2036E 09
6.7474E 08 -5.5692E 08 2.4495E 10

ROW 18
0.0 5.8797E 08 -3.7791E 11 1.3495E 10 3.1058E 10 -3.5496E 09 2.5050E 10 8.6712E 09 1.6029E 10 2.0740E 10
-1.3176E 10 4.1881E 10 -2.2499E 10 -4.0345E 09 3.0099E 10 2.8909E 10 1.2221E 10 4.9168E 10 -1.2247E 10 1.2664E 10
-1.8200E 10 1.2185E 10 -7.4293E 09 2.5857E 09 -6.8414E 08 1.4554E 10 -4.9144E 09 2.2296E 08 1.2511E 09 3.7091E 09
3.0546E 08 -3.7200E 08 1.5719E 10

MATRIX * C1 * 33 BY 33 SYMMETRIC MATH MODEL

ROW 19
0.0 8.5852E 08 -4.9998E 11 -9.4912E 09 1.6847E 09 -4.8047E 07 -5.3662E 09 -2.5130E 10 -4.7054E 09 -2.4548E 10
5.2413E 09 -2.5800E 09 -5.6098E 09 -7.2673E 08 8.5780E 09 11.9584E 10 5.1882E 09 1.5514E 10 -2.1655E 10 -3.4998E 10
-2.0939E 10 4.8412E 09 -2.9255E 10 4.8241E 09 -5.8907E 09 1.5453E 10 -4.4906E 09 2.5852E 09 2.2404E 09 2.6019E 09
6.2814E 08 -8.3803E 08 1.4100E 10

ROW 20
0.0 -6.9855E 08 1.0701E 11 1.5866E 10 6.9436E 09 -1.0271E 09 1.0948E 10 1.9102E 10 8.3999E 09 3.2223E 10
8.5859E 09 2.9951E 10 -9.6682E 09 1.9416E 08 1.6236E 09 1.7179E 10 -8.9226E 08 1.6053E 10 1.1895E 10 1.5096E 11
-3.0324E 09 1.0091E 10 4.0474E 09 -1.7102E 09 1.6773E 09 -1.1935E 10 9.8254E 09 -3.6968E 09 -8.3527E 07 -1.4266E 09
3.1759E 08 -4.4130E 08 -4.9458E 09

ROW 21
0.0 -5.8787E 08 1.3898E 11 6.0521E 08 -9.5413E 09 1.7841E 09 2.4933E 08 1.2464E 10 8.8022E 08 7.6582E 09
-6.2661E 09 6.6096E 09 4.0017E 09 1.3198E 09 -6.8543E 09 -8.0921E 09 -2.1017E 09 -5.9864E 09 6.4970E 09 -3.1798E 09
1.2122E 10 -3.0348E 09 8.5156E 09 -3.5575E 08 4.2252E 09 -4.1112E 09 5.0189E 08 4.6487E 08 -3.2561E 08 -2.5321E 08
-4.0237E 09 2.2326E 07 -3.5068E 09

ROW 22
0.0 1.6285E 07 3.2085E 10 -1.3940E 09 7.2122E 08 3.4672E 07 1.8079E 09 1.4832E 09 1.1560E 09 1.3302E 09
-4.3386E 09 7.5100E 09 -3.0604E 09 -6.4760E 08 4.0695E 09 5.0659E 09 -1.5010E 08 5.9741E 09 2.2604E 08 8.4456E 09
-1.9017E 09 3.4162E 09 -7.5480E 08 9.6954E 08 -8.4750E 08 -4.7627E 08 -7.2320E 08 -3.5238E 08 2.2164E 08 8.0865E 08
-1.0099E 08 -3.5362E 07 -1.7112E 08

ROW 23
0.0 -6.4264E 08 3.7928E 11 1.5138E 10 6.1264E 09 -3.7151E 08 2.1726E 09 3.5874E 09 3.4645E 09 7.9950E 09
-2.9001E 09 1.2460E 09 2.4116E 09 6.7319E 08 -4.8699E 09 -8.1653E 09 -1.3897E 08 -5.8558E 09 7.8279E 09 2.0459E 10
1.0345E 10 -3.7592E 09 3.1526E 10 1.0797E 09 9.6962E 09 -6.3127E 09 1.2351E 07 -3.4029E 09 -3.3030E 09 -1.1274E 09
1.3635E 07 2.6807E 08 -5.9301E 09

ROW 24
0.0 2.8956E 08 -7.9746E 10 -3.7465E 07 3.6672E 09 -8.0056E 08 -3.2263E 09 -1.8240E 10 -2.4349E 09 -1.7463E 20
1.0009E 09 -3.9637E 08 -1.9945E 09 -3.6625E 09 4.0964E 09 6.6401E 09 2.9302E 09 5.8596E 09 -1.2263E 10 -1.8447E 10
-1.0731E 10 2.8390E 09 -4.8168E 09 6.0615E 09 -1.3504E 09 6.0267E 09 -3.4839E 09 -5.9173E 08 1.1243E 08 1.3738E 09
2.6153E 08 -3.1183E 08 8.5278E 09

ROW 25
0.0 1.2809E 08 -1.2481E 11 3.1258E 09 5.7722E 09 -7.4254E 08 -1.3762E 09 -1.5336E 10 -8.0639E 08 -1.0857E 10
1.7031E 09 3.3833E 09 -3.9720E 09 -2.9038E 08 4.2530E 09 1.1910E 10 3.0423E 09 9.8065E 09 -1.1648E 10 -9.8884E 09
-9.0686E 09 1.5218E 09 -2.1800E 09 3.5064E 09 2.2516E 09 8.4214E 09 -3.1339E 09 2.9479E 08 -3.1736E 08 1.0859E 09
4.8911E 08 -3.7807E 08 9.0902E 09

ROW 26
0.0 8.7779E 07 3.5653E 10 6.5612E 08 4.2822E 09 -8.3082E 08 6.1957E 09 7.2825E 09 3.2571E 09 9.0518E 09
-4.0424E 09 1.1376E 10 -3.6359E 09 -8.3803E 08 4.1968E 09 3.0279E 09 -1.1547E 09 4.8414E 09 4.3918E 09 5.6889E 09
2.5655E 09 2.2141E 08 1.0517E 09 -1.5283E 09 1.3041E 09 1.0094E 09 1.4555E 09 2.6932E 08 2.0877E 08 -1.1667E 09
-4.5984E 08 1.3386E 08 -3.0643E 09

ROW 27
0.0 2.0713E 08 -1.0144E 11 4.1768E 09 8.0669E 09 -6.8584E 08 5.0973E 09 -7.6640E 07 3.6676E 09 1.9255E 09
-9.5392E 08 7.6064E 09 -3.1240E 09 -3.0443E 08 3.5548E 09 4.2380E 09 1.3083E 09 6.4539E 09 -2.9032E 09 5.9946E 09
-4.8049E 09 1.5596E 09 -5.3000E 09 8.1042E 08 -9.0741E 08 2.7686E 09 9.0300E 08 1.7312E 08 7.1747E 08 2.2862E 08
-3.7911E 07 -1.2426E 08 3.2299E 09

MATRIX ◆ C1 ◆ 33 BY 33 SYMMETRIC MATH MODEL

ROW 28

0.0	3.9252E-08	-2.3726E-11	-7.4257E-09	-1.7593E-09	-1.8129E-07	6.5090E-09	-1.7404E-10	-5.2614E-09	-1.7690E-10
1.0879E 10	-1.0003E 10	-2.4969E 09	-7.9127E 08	6.4361E 09	6.1591E 09	6.1548E 09	6.4188E 09	-1.3919E 10	-2.4478E 10
-1.3954E 10	1.3335E 09	-1.1098E 10	2.0241E 09	-2.9751E 09	1.0426E 10	-4.3490E 09	2.0770E 09	8.0925E 08	1.8540E 09
-5.5753E 08	-4.5364E 08	-1.4871E 10							

ROW 29

0.0	-4.2613E-08	-2.3105E-11	-7.9573E-08	5.4281E-09	-7.9833E-08	1.1259E-09	-1.4620E-10	-1.4126E-09	-1.2162E-10
7.3436E 09	-2.8478E 09	-4.6782E 09	-9.4993E 08	8.1070E 09	9.0180E 09	5.7173E 09	1.0858E 10	-1.2988E 10	-1.6411E 10
-1.5131E 10	2.9882E 09	-1.0141E 10	2.7582E 08	-3.1847E 09	9.7833E 09	-3.9924E 09	1.2677E 09	1.2625E 09	2.1344E 09
-4.1991E-08	-3.7631E-08	-1.4930E-10							

ROW 30

0.0	-2.5610E-07	-1.0376E-10	-3.1394E-09	-2.8863E-09	-3.0086E-08	-3.3013E-09	-4.6891E-09	2.5420E-09	5.5048E-09
-3.7135E 09	5.4298E 09	-9.3988E 08	-7.7270E 07	1.4657E 08	9.4566E 08	-8.4311E 08	2.2298E 09	2.2236E 09	7.0948E 09
2.1110E 09	1.0854E 09	7.4868E 08	-5.8868E 08	3.3425E 08	-2.2723E 09	6.7170E 08	-2.1204E 08	5.5019E 07	6.6886E 08
-1.2217E-08	1.8606E-08	-2.4221E-09							

ROW 31

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 32

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

MATRIX *DAMP* 33 BY 33 SYMMETRIC MATH MODEL

ROW 1

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 2

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 3

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 4

0.0	0.0	0.0	4.9806E 04	4.2691E 03	-1.1389E 03	-1.1696E 04	-2.9906E 04	-9.4308E 03	-2.5992E 03
-3.5931E 04	-1.8724E 04	-7.7868E 03	-4.7620E 03	2.0342E 04	-3.1657E 02	4.7556E 03	7.2372E 03	1.2392E 04	-2.3599E 04
-4.0935E 03	2.4341E 03	-1.8973E 04	1.4068E 03	-5.8669E 03	1.9167E 03	4.0871E 03	2.5067E 03	2.0771E 03	-1.3808E 03
0.0	0.0	0.0							

ROW 5

0.0	0.0	0.0	4.2691E 03	1.0256E 05	-1.4310E 02	2.1460E 03	-1.4590E 03	-1.2379E 04	-2.3397E 04
8.6711E 03	2.1209E 04	4.0555E 03	4.1787E 03	-5.4382E 03	-7.1673E 03	5.0510E 03	1.6596E 04	-4.6527E 03	1.3827E 04
2.3053E 03	-1.0333E 04	-1.5452E 04	-3.1350E 03	8.7416E 02	-1.7295E 03	-3.2150E 03	3.2703E 03	1.5766E 03	2.4431E 03
0.0	0.0	0.0							

ROW 6

0.0	0.0	0.0	-1.1389E 03	-1.4310E 02	2.2459E 04	4.9403E 02	5.6838E 03	-1.8030E 03	3.9817E 03
4.3223E 03	-4.3627E 03	-2.8844E 02	8.3522E 01	8.6088E 02	6.9835E 02	-9.6966E 02	1.0466E 03	-3.6564E 02	-1.1823E 02
2.1959E 02	-7.2205E 02	9.9559E 02	5.4288E 02	7.9555E 00	-1.3012E 02	-5.6259E 02	-3.5628E 02	-2.0381E 02	1.0668E 02
0.0	0.0	0.0							

ROW 7

0.0	0.0	0.0	-1.1696E 04	2.1460E 03	4.9404E 02	1.1894E 05	3.0291E 04	1.1416E 04	1.3043E 04
6.0085E 04	-2.2430E 03	5.8524E 03	4.0412E 03	-1.7941E 04	4.7240E 03	1.8752E 01	-2.7643E 03	-6.8588E 03	1.3080E 04
-3.0212E 02	-1.0766E 03	8.0889E 03	-2.2109E 03	3.8743E 03	-3.9643E 02	-2.8325E 03	-3.2533E 02	-3.9189E 01	9.6222E 02
0.0	0.0	0.0							

ROW 8

0.0	0.0	0.0	-2.9906E 04	-1.4589E 03	5.6830E 03	3.0291E 04	2.8102E 05	-2.8496E 03	1.1810E 05
2.4022E 05	-1.1558E 05	7.6359E 02	5.4490E 03	-1.0043E 04	2.8891E 04	-1.5222E 04	8.8203E 03	-1.4288E 04	2.7114E 03
-2.3025E 03	-7.5788E 03	2.6682E 04	6.8904E 03	4.9979E 03	-7.0185E 02	-1.1437E 04	-6.1628E 03	-2.6034E 03	1.9568E 03
0.0	0.0	0.0							

ROW 9

0.0	0.0	0.0	-9.4308E 03	-1.2379E 04	-1.8030E 03	1.1416E 04	-2.8497E 03	1.3558E 05	1.1400E 04
2.7985E 04	7.8846E 03	6.3589E 03	6.7254E 02	-2.7353E 04	9.4303E 03	3.7729E 03	-2.9246E 04	-4.1455E 02	3.3243E 03
-5.4611E 03	1.5626E 04	1.8010E 04	-4.6024E 03	4.0878E 03	2.6639E 03	4.2898E 03	-5.1581E 02	3.3767E 02	-2.1487E 03
0.0	0.0	0.0							

MATRIX *DAMP* 33 BY 33 SYMMETRIC MATH MODEL

ROW 10

0.0	0.0	0.0	-2.5993E 03	-2.3397E 04	3.9817E 03	1.3043E 04	1.1810E 05	1.1400E 04	2.6247E 05
1.8612E 05	-1.7747E 05	-1.7034E 04	-8.7973E 03	2.7832E 04	3.7315E 04	-1.6233E 04	-1.4669E 04	3.0556E 03	-4.9394E 04
-1.3083E 04	1.4619E 04	2.1409E 04	1.3345E 04	-2.2640E 03	4.8031E 03	1.1688E 03	-6.7569E 03	-2.2606E 03	-3.6522E 03
0.0	0.0	0.0							

ROW 11

0.0	0.0	0.0	-3.5931E 04	8.6711E 03	6.3223E 03	6.0085E 04	2.4022E 05	2.7985E 04	1.8612E 05
9.1286E 05	-1.7913E 05	1.1768E 04	1.5054E 04	-5.6588E 04	6.8022E 04	-8.2318E 03	1.7113E 04	-4.3227E 04	-6.3398E 03
-8.8811E 03	-3.0369E 03	1.5741E 04	4.9047E 03	8.6547E 03	9.6635E 02	-1.1329E 04	-3.8821E 03	-7.1432E 02	2.4256E 03
0.0	0.0	0.0							

ROW 12

0.0	0.0	0.0	-1.8724E 04	2.1209E 04	-4.3627E 03	-2.2430E 03	-1.1558E 05	7.8847E 02	-1.7747E 05
-1.7913E 05	3.7315E 05	3.1000E 04	1.6487E 04	-6.7408E 04	-3.3225E 04	1.8269E 04	8.0821E 03	4.8806E 03	7.3836E 04
1.6322E 04	-1.4552E 04	6.3871E 03	-1.9452E 04	5.2139E 03	-5.1829E 03	-5.6854E 03	4.2954E 03	1.8541E 03	4.0250E 03
0.0	0.0	0.0							

ROW 13

0.0	0.0	0.0	-7.7868E 03	4.0555E 03	-2.8844E 02	5.6324E 03	7.6359E 02	6.3589E 03	-1.7035E 04
1.1768E 04	3.1000E 04	3.5453E 04	1.1284E 04	-5.0544E 04	2.8815E 04	7.1087E 03	2.0540E 04	2.6245E 03	-7.1879E 03
3.8479E 03	-3.0669E 02	3.0401E 03	-2.6652E 03	-4.5750E 03	4.3698E 02	-4.6941E 02	-1.0812E 03	-2.4538E 02	-3.4060E 02
0.0	0.0	0.0							

ROW 14

0.0	0.0	0.0	-4.7620E 03	4.1787E 03	8.3518E 01	4.0412E 03	5.4489E 03	6.7254E 02	-8.7923E 03
1.5054E 04	1.6487E 04	1.1284E 04	3.7256E 04	-3.7107E 04	2.4493E 04	5.0350E 03	2.0035E 04	-1.3548E 03	-9.1873E 03
3.3089E 03	-1.2736E 03	-2.1940E 03	-9.4963E 02	-4.0441E 03	9.9274E 01	-2.3847E 02	-7.4309E 02	-3.3219E 02	-1.4077E 02
0.0	0.0	0.0							

ROW 15

0.0	0.0	0.0	2.0342E 04	-5.4382E 03	8.6987E 02	-1.7941E 04	-1.0043E 04	-2.7354E 04	2.7832E 04
-5.6588E 04	-6.7403E 04	-5.0544E 04	-3.7107E 04	2.0688E 05	-1.1989E 05	-2.4026E 04	-7.1690E 04	-1.0043E 04	5.5446E 04
-9.5371E 03	-7.7791E 03	-5.7017E 03	4.6742E 03	2.0407E 04	-3.9599E 03	-4.2455E 03	4.5142E 03	1.8942E 03	3.2592E 03
0.0	0.0	0.0							

ROW 16

0.0	0.0	0.0	-3.1658E 02	-7.1673E 03	6.9832E 02	4.7240E 03	2.8891E 04	9.4303E 03	3.7315E 04
6.8022E 04	-3.3225E 04	2.8815E 04	2.4493E 04	-1.1989E 05	2.2274E 05	1.4498E 04	7.0743E 04	-4.8487E 03	-1.0496E 05
3.4568E 03	1.5848E 04	-2.3059E 04	9.0565E 03	-2.5088E 04	5.7912E 03	1.5030E 04	-3.7578E 03	-4.7654E 03	-4.9329E 03
0.0	0.0	0.0							

ROW 17

0.0	0.0	0.0	4.7556E 03	5.0510E 03	-9.6967E 02	1.8753E 01	-1.5222E 04	3.7729E 03	-1.6233E 04
-8.2318E 03	1.8269E 04	7.1087E 03	5.0350E 03	-2.4026E 04	1.4498E 04	1.7382E 04	1.2743E 04	5.6759E 03	-1.0617E 04
-7.2041E 02	6.4603E 02	-1.7850E 04	-2.4453E 03	-2.4900E 03	2.8285E 02	1.5457E 03	5.6747E 02	5.3140E 02	-5.4578E 02
0.0	0.0	0.0							

ROW 18

0.0	0.0	0.0	7.2372E 03	1.6596E 04	1.0466E 03	-2.7643E 03	8.8202E 03	-2.9246E 04	-1.4649E 04
1.7113E 04	8.0820E 03	2.0540E 04	2.0035E 04	-7.1690E 04	7.0743E 04	1.2743E 04	2.3878E 05	-4.5125E 03	-5.6925E 04
6.9532E 03	-8.5549E 03	-5.5363E 04	4.0539E 03	-1.5147E 04	-9.3447E 02	3.1522E 03	-9.4170E 02	-2.1309E 03	-2.9980E 02
0.0	0.0	0.0							

MATRIX *DAMP* 33 BY 33 SYMMETRIC MATH MODEL

ROW 19

0.0	0.0	0.0	1.2392E 04	-4.6526E 03	-3.6565E 02	-6.8587E 03	-1.4208E 04	-4.1456E 02	3.0555E 03
-4.3227E 04	4.8809E 03	2.6245E 03	-1.3548E 03	-1.0043E 04	-4.8486E 03	5.6759E 03	-4.5123E 03	5.7967E 05	-2.6298E 04
-6.6581E 04	-1.1457E 04	3.7940E 04	-1.6117E 04	-2.2620E 04	2.0172E 04	-1.8881E 04	-1.5111E 04	-1.1253E 04	4.1897E 03
0.0	0.0	0.0							

ROW 20

0.0	0.0	0.0	-2.3599E 04	1.3826E 04	-1.1824E 02	1.3080E 04	2.7116E 03	3.3243E 03	-4.9394E 04
-6.3399E 03	7.3836E 04	-7.1879E 03	-9.1873E 03	5.5446E 04	-1.0496E 05	-1.0617E 04	-5.6925E 04	-2.6298E 04	4.6350E 05
1.5732E 04	-1.9376E 04	1.2067E 05	-1.7169E 04	2.0749E 04	-6.2452E 03	-3.3714E 04	-2.1127E 03	1.3241E 04	2.1212E 03
0.0	0.0	0.0							

ROW 21

0.0	0.0	0.0	-4.0935E 03	2.3053E 03	2.1960E 02	-3.0211E 02	-2.3025E 03	-5.4611E 03	-1.3082E 04
-8.8812E 03	1.6322E 04	3.8479E 03	3.3089E 03	-9.5371E 03	3.4568E 03	-7.2042E 02	6.9532E 03	-6.6581E 04	1.5732E 04
1.0824E 05	7.3002E 02	7.0683E 04	8.2506E 02	-6.4655E 03	-4.7247E 02	-4.1615E 03	5.8812E 02	6.0270E 03	-2.5343E 03
0.0	0.0	0.0							

ROW 22

0.0	0.0	0.0	2.4341E 03	-1.0333E 04	-7.2205E 02	-1.0766E 03	-7.5788E 03	1.5626E 04	1.4619E 04
-3.0369E 03	-1.4552E 04	-3.0668E 02	-1.2736E 03	-7.7791E 03	1.5848E 04	6.4603E 02	-8.5549E 03	-1.1457E 04	-1.9378E 04
7.2996E 02	5.7872E 04	3.2554E 04	4.5876E 03	-8.3367E 03	5.2285E 03	1.2730E 04	4.0097E 03	-1.8740E 03	-9.0506E 02
0.0	0.0	0.0							

ROW 23

0.0	0.0	0.0	-1.8973E 04	-1.5452E 04	9.9559E 02	8.0889E 03	2.6682E 04	1.8010E 04	2.1409E 04
1.5741E 04	6.3869E 03	3.0401E 03	-2.1940E 03	-5.7017E 03	-2.3059E 04	-1.7850E 04	-5.5864E 04	3.7940E 04	1.2067E 05
7.0682E 04	3.2554E 04	1.0877E 06	6.1284E 03	-1.0071E 05	5.0228E 04	-1.1237E 04	1.9494E 04	2.6116E 04	-1.9258E 03
0.0	0.0	0.0							

ROW 24

0.0	0.0	0.0	1.4068E 03	-3.1350E 03	5.4288E 02	-2.2109E 03	6.8904E 03	-4.6024E 03	1.3345E 04
4.9047E 03	-1.9452E 04	-2.6642E 03	-9.4963E 02	4.6742E 03	9.0565E 03	-2.4453E 03	4.0539E 03	-1.6117E 04	-1.7169E 04
8.2506E 02	4.5876E 03	6.1284E 03	2.5043E 04	-6.7759E 03	3.4965E 03	1.5553E 04	7.5699E 03	-5.4602E 03	3.2674E 03
0.0	0.0	0.0							

ROW 25

0.0	0.0	0.0	-5.8669E 03	8.7419E 02	7.9581E 00	3.8743E 03	4.9978E 03	4.0878E 03	-2.2640E 03
8.6547E 03	5.2139E 03	-4.5750E 03	-4.0441E 03	2.0407E 04	-2.5088E 04	-2.4900E 03	-1.5147E 04	-2.2620E 04	2.0749E 04
-6.4655E 03	-8.3367E 03	-1.0071E 05	-6.7759E 03	5.4503E 04	-1.1503E 04	-1.4228E 04	-8.2019E 03	2.4444E 03	-1.6408E 03
0.0	0.0	0.0							

ROW 26

0.0	0.0	0.0	1.9167E 03	-1.7295E 03	-1.3012E 02	-3.9643E 02	-7.0188E 02	2.6640E 03	4.8031E 03
9.6634E 02	-5.1829E 03	4.3700E 02	9.9275E 01	-3.9598E 03	5.7912E 03	2.8285E 02	-9.3446E 02	2.0172E 04	-6.2454E 03
-4.7249E 02	5.2285E 03	5.0228E 04	3.4965E 03	-1.1503E 04	4.3131E 04	9.4274E 03	5.9097E 03	-2.5798E 03	2.3363E 03
0.0	0.0	0.0							

ROW 27

0.0	0.0	0.0	4.0871E 03	-3.2151E 03	-5.6259E 02	-2.8325E 03	-1.1437E 04	4.2898E 03	1.1688E 03
-1.1329E 04	-5.6854E 03	-4.6942E 02	-2.3847E 02	-4.2456E 03	1.5030E 04	1.5457E 03	3.1523E 03	-1.8881E 04	-3.3714E 04
-4.1615E 03	1.2730E 04	-1.1237E 04	1.5553E 04	-1.4228E 04	9.4274E 03	7.3018E 04	2.3127E 04	-1.6517E 04	1.0114E 04
0.0	0.0	0.0							

MATRIX *DAMP* 33 BY 33 SYMMETRIC MATH MODEL

ROW 28

0.0	0.0	0.0	2.5067E 03	3.2703E 03	-3.5628E 02	-3.2532E 02	-6.1629E 03	-5.1579E 02	-6.7569E 03
-3.8821E 03	4.2954E 03	-1.0813E 03	-7.4309E 02	4.5141E 03	-3.7578E 03	5.6746E 02	-9.4168E 02	-1.5111E 04	-2.1126E 03
5.8815E 02	4.0097E 03	1.9494E 04	7.5699E 03	-8.2819E 03	5.9097E 03	2.3127E 04	2.7269E 04	-7.2730E 03	7.7450E 03
0.0	0.0	0.0							

ROW 29

0.0	0.0	0.0	2.0771E 03	1.5766E 03	-2.0382E 02	-3.9202E 01	-2.6035E 03	3.3768E-02	-2.2606E 03
-7.1430E 02	1.8541E 03	-2.4538E 02	-3.3219E 02	1.8942E 03	-4.7654E 03	5.3140E 02	-2.1310E 03	-1.1253E 04	1.3241E 04
6.0270E 03	-1.8740E 03	2.6116E 04	-5.4602E 03	2.4444E 03	-2.5798E 03	-1.6517E 04	-7.2730E 03	1.5465E 04	-4.7885E 03
0.0	0.0	0.0							

ROW 30

0.0	0.0	0.0	-1.3808E 03	2.4432E 03	1.0668E 02	9.6221E 02	1.9568E 03	-2.1488E 03	-3.6823E 03
2.4256E 03	4.0250E 03	-3.4060E 02	-1.4077E 02	3.2592E 03	-4.9329E 03	-5.4578E 02	-2.9982E 02	4.1897E 03	2.1212E 03
-2.5342E 03	-9.0508E 02	-1.9256E 03	3.2674E 03	-1.6408E 03	2.3363E 03	1.0114E 04	7.7450E 03	-4.7884E 03	1.7994E 04
0.0	0.0	0.0							

ROW 31

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 32

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 33

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

MATRIX * C2 * 33 BY 33 SYMMETRIC MATH MODEL

ROW 1

8.2761E 03	3.1751E 04	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 2

-1.0225E 05	7.3914E 05	-3.1915E 08	1.5422E 07	4.3898E 07	-3.5583E 06	2.0960E 07	-8.2960E 06	9.9798E 06	1.0121E 07
2.2074E 07	-1.7388E 07	-3.6789E 06	1.6796E 06	1.0543E 07	-1.2394E 07	9.4262E 06	3.6079E 06	-1.1374E 07	-3.1515E 06
-2.7728E 07	-3.8811E 05	2.5435E 06	-7.2057E 06	-9.9839E 06	3.8331E 04	-1.2694E 06	-3.0783E 06	-3.9550E 06	-3.8345E 05
2.1432E 06	7.2764E 05	-2.4630E 06							

ROW 3

0.0	5.9248E 07	1.1847E 11	-2.4938E 09	-5.5383E 09	6.4697E 07	-7.7524E 09	-1.4602E 10	-3.6655E 09	-1.9734E 10
-6.7791E 09	7.0598E 09	1.1307E 09	1.1351E 09	-4.4964E 09	1.2323E 10	-7.1359E 09	-2.2446E 09	-1.3696E 07	-9.5806E 09
-1.0260E 09	8.8173E 08	-3.2390E 09	7.2950E 09	4.7620E 09	3.0680E 09	-7.7473E 08	2.0661E 09	2.9088E 09	2.3096E 08
-1.1121E 09	-2.6560E 08	3.2872E 09							

ROW 4

0.0	1.5958E 07	-4.8941E 09	1.4956E 09	2.6007E 09	-2.1415E 08	4.4156E 09	-6.0376E 08	7.7643E 08	6.2530E 08
-4.2049E 08	9.4605E 08	-2.4076E 07	7.0317E 07	-2.8268E 08	2.8916E 08	-2.8712E 08	3.1577E 08	-8.4940E 07	-1.7848E 08
-7.4962E 08	1.7298E 08	1.6100E 08	2.1663E 08	8.2658E 07	-3.8106E 08	-1.0678E 08	1.3042E 08	5.7600E 07	-6.6050E 07
-2.5648E 07	2.0498E 07	1.4145E 08							

ROW 5

0.0	1.3712E 07	-5.8773E 09	1.0460E 09	2.3823E 09	-1.9372E 08	1.3936E 09	-6.1776E 08	6.2552E 08	6.2371E 08
-1.5541E 08	9.0319E 08	-1.4348E 08	3.6307E 07	-8.3040E 07	2.2463E 08	-1.6843E 08	4.3618E 08	-1.9630E 08	-1.6776E 08
-9.9334E 08	2.2670E 08	2.3237E 08	1.2921E 08	-3.0776E 07	-3.5968E 08	-1.5873E 08	1.2579E 08	2.4241E 06	-8.6972E 07
-8.1024E 06	3.5303E 07	1.0022E 08							

ROW 6

0.0	-9.3918E 05	4.4961E 08	-1.1751E 08	-2.3075E 08	1.7702E 07	-1.4258E 08	3.9542E 07	-7.2302E 07	-8.1420E 07
3.9917E 07	-1.4504E 08	1.0875E 07	1.1532E 07	1.3649E 07	-4.2549E 07	2.5787E 07	-6.0591E 07	8.7678E 06	5.8208E 06
6.3617E 07	-2.9387E 07	-1.1932E 06	-2.0684E 07	-3.0388E 06	3.4622E 07	2.1331E 07	-1.8016E 07	-3.2026E 06	7.2217E 06
2.7998E 06	-2.1054E 06	-1.3284E 07							

ROW 7

0.0	4.2026E 06	-3.5541E 09	5.1347E 08	1.1767E 09	-9.0634E 07	8.8078E 08	1.3043E 08	4.1690E 08	9.4692E 08
-2.9700E 08	8.6203E 08	-1.2661E 08	-2.3138E 07	1.9242E 08	1.6727E 07	1.9918E 07	4.5327E 08	-8.9294E 06	2.9621E 08
-1.3378E 08	2.3405E 08	9.3262E 06	-4.6184E 07	-8.4322E 07	-2.8098E 08	-1.2876E 08	7.4230E 07	-6.6807E 07	-5.5896E 07
9.5287E 06	1.7463E 07	-1.0354E 07							

ROW 8

0.0	-4.7545E 06	-3.4146E 09	2.2418E 08	1.8723E 08	-6.7007E 06	7.1857E 08	1.3878E 09	3.7374E 08	1.7679E 09
-5.6503E 08	9.0554E 08	-2.5133E 08	-1.2520E 08	4.9256E 08	-5.5687E 08	3.5001E 08	6.1882E 08	2.0310E 08	8.0155E 08
9.1086E 08	1.8284E 08	7.9860E 06	-3.8131E 08	-2.1013E 08	-2.4680E 08	-1.8319E 07	-5.8786E 07	-1.9592E 08	-5.6975E 06
5.4371E 07	-1.4617E 06	-1.9704E 08							

ROW 9

0.0	5.2249E 06	-3.2142E 09	6.1123E 08	1.1412E 09	-9.3585E 07	8.4336E 08	1.2046E 08	4.1951E 08	7.7279E 08
-3.3605E 08	8.1055E 08	-1.4155E 08	-8.3865E 06	7.7286E 07	3.8601E 07	-2.8736E 07	4.0308E 08	-3.7773E 06	1.3928E 08
-1.3146E 08	1.7047E 08	2.3133E 07	-7.8512E 06	-3.3895E 07	-2.0950E 08	-8.1765E 07	6.1664E 07	-3.0683E 07	-3.7074E 07
1.5123E 06	9.6606E 06	1.2878E 07							

MATRIX * C2 * 33 BY 33 SYMMETRIC MATH MODEL

ROW 10
0.0 1.0291E 05 -4.1189E 09 3.3423E 08 6.6643E 08 -4.6230E 07 7.8052E 08 7.5854E 08 3.0847E 08 1.4844E 09
-1.9073E 08 4.0330E 08 -1.7731E 08 -8.5347E 07 3.3506E 08 -4.9196E 08 3.0840E 08 4.5511E 08 1.1398E 08 9.6115E 08
4.1189E 08 1.8814E 08 1.0710E 08 -3.1516E 08 -2.3285E 08 -3.3946E 08 -6.0246E 07 -4.4107E 07 -1.9642E 08 -6.8419E 07
5.6837E 07 1.1430E 07 -1.7093E 08

ROW 11
0.0 -4.9708E 06 -1.8057E 09 -3.7466E 08 -5.6164E 08 1.0598E 08 -3.5073E 08 2.8137E 08 -1.5292E 08 -1.8710E 08
4.9493E 08 -9.5487E 08 1.3717E 08 -2.1648E 07 1.4788E 07 -6.6725E 08 2.8088E 08 -4.1421E 08 -1.1984E 08 9.5085E 07
-1.6104E 08 -2.4434E 08 1.4087E 08 -2.0291E 08 -1.6979E 08 1.0965E 08 9.2947E 07 -1.6621E 08 -8.6277E 07 3.7436E 07
4.8891E 07 5.9201E 06 -1.1028E 08

ROW 12
0.0 2.4971E 06 1.0570E 09 5.4429E 08 7.9824E 08 -8.2514E 07 8.3771E 08 1.0402E 08 3.5658E 08 9.1782E 08
-9.8550E 08 1.9352E 09 -2.7715E 08 -8.2690E 06 1.0825E 08 7.4919E 08 -3.0661E 08 8.1993E 08 2.2583E 08 7.0720E 08
4.2332E 08 4.3945E 08 -4.1688E 08 2.3672E 08 1.1644E 08 -1.3315E 08 -2.6360E 08 2.8079E 08 5.4605E 07 -9.3457E 07
-6.0379E 07 -2.0394E 07 1.2754E 06

ROW 13
0.0 -2.3200E 06 1.2276E 09 -1.1601E 08 -2.2271E 08 2.3861E 07 -1.9689E 08 -2.2009E 07 -7.8787E 07 -2.4532E 08
-2.7354E 06 -2.8788E 08 1.2508E 08 2.5908E 07 -1.7556E 08 -9.9641E 07 -6.9593E 07 -2.6564E 08 6.8978E 07 -4.0921E 08
4.5516E 07 -1.3368E 08 4.7792E 07 1.7417E 07 6.1683E 07 -3.2958E 07 8.4660E 07 -5.9473E 04 6.3598E 07 3.5713E 07
-1.7506E 07 9.8181E 06 2.2789E 07

ROW 14
0.0 -1.0934E 06 4.0415E 08 3.7210E 06 -1.4783E 07 5.1846E 06 -1.2169E 07 1.4337E 06 1.2194E 06 -2.6685E 07
-2.1120E 07 3.1499E 06 2.8582E 07 8.7648E 06 -6.6335E 07 2.4040E 07 -5.2026E 07 -5.1210E 07 4.9300E 07 -5.0510E 07
4.6057E 06 -1.9187E 07 -5.5487E 06 1.9838E 07 3.0872E 07 -1.8397E 07 1.2227E 07 2.2719E 07 3.3182E 07 2.4702E 05
-1.1916E 07 1.1317E 06 1.9773E 07

ROW 15
0.0 3.7267E 06 -1.8138E 09 -2.0034E 07 4.2132E 07 -8.2460E 06 1.0281E 08 3.1226E 07 6.0440E 06 1.8999E 08
7.5040E 07 1.7907E 08 -1.7856E 08 -6.1962E 07 3.4963E 08 -3.0055E 07 2.3920E 08 3.5190E 08 -2.3093E 08 3.8442E 08
8.1231E 06 1.4314E 08 -2.3758E 07 -7.6308E 07 -1.4817E 08 1.1455E 08 -9.9916E 07 -8.8522E 07 -1.6285E 08 -1.1599E 07
5.4461E 07 -1.1171E 07 -8.7706E 07

ROW 16
0.0 1.7799E 06 9.0176E 08 1.4925E 08 1.5815E 08 -3.3122E 07 4.6574E 07 -3.2437E 08 1.6557E 06 -1.6703E 08
1.7573E 08 3.3647E 08 -9.6015E 07 4.1968E 07 -7.0117E 07 6.7513E 08 -2.9502E 08 1.3155E 08 1.2182E 08 5.7548E 08
-3.3734E 08 1.5690E 08 -2.3898E 08 1.4819E 08 9.6626E 07 1.4175E 08 -1.3880E 08 1.9019E 08 1.4480E 08 -8.8725E 07
-4.8123E 07 -2.7505E 07 1.4930E 08

ROW 17
0.0 -2.1112E 06 -2.4414E 09 -1.1300E 08 -1.6537E 08 2.3055E 07 2.9504E 07 4.4261E 08 4.4711E 06 4.2829E 08
1.4353E 08 -2.7344E 08 -4.5167E 07 -5.7497E 07 2.3315E 08 -4.9997E 08 3.8842E 08 1.2260E 08 -6.4639E 07 3.0559E 08
2.0048E 08 -2.7864E 07 2.3449E 08 -1.7052E 08 -1.2258E 08 -5.7010E 07 3.3478E 07 -1.7232E 08 -1.8838E 08 1.3686E 07
4.6049E 07 3.9504E 06 -1.8893E 08

ROW 18
0.0 4.2468E 06 -2.9569E 09 1.8025E 08 3.2920E 08 -3.3746E 07 4.4499E 08 3.7911E 08 1.6567E 08 8.4326E 08
1.3574E 07 4.9011E 08 -2.2337E 08 -5.7521E 07 3.4172E 08 -1.5974E 07 2.3352E 08 5.3729E 08 2.5804E 07 9.1656E 08
1.2428E 08 2.4138E 08 3.5193E 07 -9.7837E 07 -1.0287E 08 -6.6516E 07 -1.4990E 08 -1.0939E 07 -1.5175E 08 -6.3867E 07
2.2516E 07 -1.1155E 07 -1.1213E 08

MATRIX * C2 * 33 BY 33 SYMMETRIC MATH MODEL

ROW 19

0.0	4.3431E 05	-2.5899E 09	-1.3116E 09	-1.3612E 08	2.2938E 07	6.9272E 07	5.0110E 08	2.1697E 07	4.9495E 08
1.8154E 08	-2.4354E 08	-1.6780E 07	-3.3324E 07	1.1344E 08	-3.0943E 08	1.4100E 08	-1.6354E 07	2.3468E 08	3.3780E 08
1.4110E 08	-3.9962E 07	1.4742E 07	-1.6115E 08	-5.2968E 07	-8.9989E 07	5.5099E 07	2.1946E 07	-4.0768E 04	-1.8407E 07
-1.7859E 07	5.3653E 06	-1.0001E 08							

ROW 20

0.0	-2.6257E 05	1.2762E 09	1.4864E 08	1.4256E 08	-9.2727E 06	1.1908E 08	2.7984E 07	7.8946E 07	1.5175E 08
-2.8746E 08	2.9486E 08	-7.6342E 07	-2.2633E 06	-2.4652E 06	1.9454E 08	-4.4820E 07	2.0133E 08	7.0487E 07	1.6438E 09
-1.2984E 08	2.8687E 08	-1.6990E 08	9.2113E 07	-1.0863E 08	-2.5483E 08	-3.1846E 07	4.2137E 07	-4.0965E 07	-1.9563E 08
1.2041E 06	-3.8790E 07	-6.3799E 06							

ROW 21

0.0	4.6700E 06	1.3616E 09	8.1487E 07	-4.9697E 07	6.9205E 06	-6.6393E 07	-4.9395E 07	-1.7098E 07	6.3762E 05
-1.9917E 08	1.5358E 07	1.0274E 07	-1.0073E 07	-3.5744E 06	2.1927E 07	-2.4031E 07	-1.4248E 07	5.5815E 07	-1.3455E 08
3.1051E 08	-9.2365E 06	-6.7134E 05	1.1527E 07	4.9161E 07	-1.5074E 05	1.7941E 07	-8.3543E 06	-4.1247E 06	3.0498E 07
1.5231E 06	-4.8216E 06	-2.8732E 05							

ROW 22

0.0	6.2448E 04	3.2790E 08	-6.6331E 07	-6.6970E 07	6.1418E 06	-5.3741E 07	-8.1121E 07	-5.0329E 07	-5.4336E 07
3.0613E 07	-4.2780E 06	-1.5728E 07	-3.0474E 06	2.4046E 07	7.0330E 07	-1.2895E 06	4.2668E 07	-8.2086E 06	1.1331E 08
-1.4510E 07	6.6804E 07	-4.0633E 07	2.3589E 07	-1.8394E 07	-1.6411E 07	-5.6537E 07	2.1779E 07	-1.1907E 07	-1.0213E 07
-7.2366E 05	-1.1484E 06	5.9472E 06							

ROW 23

0.0	-1.9058E 05	2.0694E 09	6.7860E 07	1.1525E 08	-1.8352E 07	2.7070E 07	-2.5498E 08	8.8381E 06	-2.2952E 08
-1.6135E 08	2.9317E 08	1.5164E 07	2.9993E 07	-1.1749E 08	1.8362E 08	-8.4619E 07	3.0510E 07	7.9424E 07	-1.1923E 08
-7.5975E 07	5.3695E 06	1.7248E 08	2.2857E 08	2.1235E 08	-5.9772E 06	-9.9520E 06	1.7295E 06	9.6677E 06	-4.0387E 06
-3.7982E 07	6.7803E 05	2.9446E 07							

ROW 24

0.0	-7.6618E 05	-1.6109E 09	-4.5801E 07	-4.2904E 07	7.8681E 06	1.1499E 07	1.5420E 08	1.2983E 07	1.1289E 08
4.5441E 07	-7.1580E 07	3.0020E 07	6.1802E 06	-4.6005E 07	-8.1454E 07	4.8534E 07	-4.6720E 06	1.5463E 08	4.1830E 07
2.3097E 07	-1.7791E 07	7.0182E 07	5.7788E 07	7.9233E 07	-8.1231E 07	2.0404E 07	2.8814E 07	3.3961E 07	-7.6245E 06
-4.2536E 07	3.3954E 06	-5.3540E 07							

ROW 25

0.0	-9.7363E 05	-1.0246E 09	9.2144E 06	-1.6881E 07	2.0630E 06	8.8257E 07	2.4221E 08	4.0879E 07	2.8264E 08
2.4024E 07	5.8673E 07	-7.0073E 06	7.6391E 05	-1.3537E 07	-6.5285E 07	5.1885E 07	4.9100E 07	1.9796E 08	2.5995E 08
8.9314E 07	-1.6331E 07	7.4706E 07	2.6792E 07	1.0281E 08	-4.9011E 07	3.0720E 07	4.0067E 07	3.1414E 07	-2.8777E 07
-4.2407E 07	-2.9905E 06	-7.3464E 07							

ROW 26

0.0	1.8306E 06	-9.1784E 08	2.0722E 08	2.0860E 08	-2.3889E 07	1.2179E 08	-2.6907E 07	9.1151E 07	6.4769E 07
-1.2544E 07	2.0160E 08	-5.6234E 07	-3.1620E 06	5.1545E 07	1.0418E 08	-1.2925E 07	1.0593E 08	-8.8754E 07	1.0443E 08
-5.0045E 07	3.2476E 07	-7.0207E 07	-1.5978E 06	-2.9407E 07	1.1833E 08	-3.3465E 07	-1.2155E 07	-1.5470E 07	-5.1035E 06
1.6478E 07	-1.7769E 07	3.5473E 07							

ROW 27

0.0	1.4227E 06	-9.3443E 08	1.0049E 08	1.6487E 08	-1.4537E 07	1.6920E 08	1.6231E 08	1.0084E 08	2.2837E 08
-7.4116E 07	1.6214E 08	-5.5716E 07	-1.4583E 07	6.9596E 07	-1.1419E 07	3.7276E 07	1.2576E 08	1.1541E 07	1.9921E 08
6.7855E 06	3.1647E 07	-1.2767E 07	-3.1168E 07	-2.9251E 07	-2.9014E 07	2.3395E 07	-8.3176E 06	-9.0283E 06	-1.7304E 07
2.2276E 06	-1.4660E 06	-2.9241E 07							

MATRIX * C2 * 33 BY 33 SYMMETRIC MATH MODEL

ROW 28

0.0	-2.5582E 06	-1.2291E 09	-1.5784E 08	-2.1862E 08	2.5671E 07	-5.8348E 07	2.5635E 08	-5.0439E 07	2.0832E 08
1.3133E 08	-2.4433E 08	2.5164E 07	-1.4708E 07	3.5741E 07	-2.5366E 08	1.4332E 08	-4.2474E 07	8.8012E 07	1.0299E 08
1.3143E 08	-5.0399E 07	5.4369E 07	-8.4991E 07	-1.8121E 07	-4.9301E 07	4.1341E 07	1.8267E 06	-8.5541E 06	-7.6115E 06
-1.0333E 07	4.0060E 06	-1.1521E 08							

ROW 29

0.0	-8.6152E 05	-1.7842E 09	-2.1349E 07	-1.8920E 07	6.2277E 06	8.6896E 07	3.0871E 08	4.7952E 07	3.1693E 08
5.1014E 07	-5.7194E 07	-2.0035E 07	-1.8779E 07	6.9437E 07	-1.9299E 08	1.3539E 08	6.7410E 07	9.4285E 07	2.2113E 08
8.6101E 07	-1.0321E 07	5.4776E 07	-6.7088E 07	-1.6562E 07	-7.0676E 07	3.7945E 07	4.8502E 06	-8.2481E 05	-1.2419E 07
-1.3437E 07	3.6141E 06	-1.1344E 08							

ROW 30

0.0	6.4274E 05	-1.7297E 08	8.2307E 07	1.0692E 08	-1.2145E 07	7.0500E 07	-2.1429E 06	4.6360E 07	4.2760E 07
-3.9215E 07	1.0899E 08	-3.3095E 07	-3.4378E 05	2.0372E 07	6.9748E 07	-1.8778E 07	6.5424E 07	-1.3281E 07	7.8297E 07
-3.0882E 07	2.9614E 07	-6.1206E 06	-6.2351E 05	-1.3493E 06	-2.7134E 06	-1.1578E 07	-5.9531E 05	-4.3118E 06	1.1186E 07
3.8080E 06	4.5788E 06	1.9179E 07							

ROW 31

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 32

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 33

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

MATRIX *STIF* 33 BY 33 SYMMETRIC MATH MODEL

ROW 1

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 2

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 3

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 4

0.0	0.0	0.0	1.3782E 07	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 5

0.0	0.0	0.0	0.0	9.3463E 07	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 6

0.0	0.0	0.0	0.0	0.0	2.8006E 07	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 7

0.0	0.0	0.0	0.0	0.0	0.0	1.4383E 08	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 8

0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8836E 08	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 9

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4235E 08	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

MATRIX *STIF* 33 BY 33 SYMMETRIC MATH MODEL

ROW 10									2.0021E 08
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0					
0.0	0.0	0.0							
ROW 11									
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9.3635E 08	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0						
0.0	0.0	0.0							
ROW 12									
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	3.4473E 08	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0						
0.0	0.0	0.0							
ROW 13									
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	1.4478E 08	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0						
0.0	0.0	0.0							
ROW 14									
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	1.0705E 08	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0						
0.0	0.0	0.0							
ROW 15									
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	3.5162E 08	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0					
0.0	0.0	0.0							
ROW 16									
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	4.2008E 08	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0				
0.0	0.0	0.0							
ROW 17									
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	4.7687E 07	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0			
0.0	0.0	0.0							
ROW 18									
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.9849E 08	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
0.0	0.0	0.0							

MATRIX *STIF* 33 BY 33 SYMMETRIC MATH MODEL

ROW 19
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 6.9591E 08 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0

ROW 20
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2.2049E 09
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0

ROW 21
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
6.9514E 08 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0

ROW 22
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 3.7385E 08 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0

ROW 23
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 2.0220E 09 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0

ROW 24
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 1.6687E 08 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0

ROW 25
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 2.9824E 08 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0

ROW 26
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 3.8935E 08 0.0 0.0 0.0 0.0
0.0 0.0 0.0

ROW 27
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 3.4067E 08 0.0 0.0 0.0
0.0 0.0 0.0

MATRIX *STIF* 33 BY 33 SYMMETRIC MATH MODEL

ROW 28

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5458E 08	0.0	0.0
0.0	0.0	0.0							

ROW 29

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.5416E 07	0.0
0.0	0.0	0.0							

ROW 30

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8778E
0.0	0.0	0.0							

ROW 31

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
-1.0000E 00	0.0	0.0							

ROW 32

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	-1.0000E 00	0.0							

ROW 33

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	-1.0000E 00							

MATRIX * C3 * 33 BY 33 SYMMETRIC MATH MODEL

ROW 1

0.0	0.0	1.9372E 04	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 2

0.0	0.0	-1.4416E 06	2.6745E 04	2.5588E 05	-1.9728E 04	1.2092E 05	-1.1995E 05	2.9946E 04	1.7913E 04
1.4217E 05	-9.1596E 04	-1.0394E 04	-1.6926E 03	4.0192E 04	-6.8020E 04	5.1479E 04	1.3770E 04	-1.5046E 05	-5.1117E 04
-2.4805E 05	4.9805E 03	4.9865E 04	-4.9592E 04	-8.3548E 04	-8.8122E 03	-3.3689E 04	-4.0058E 04	-5.4742E 04	-1.3735E 03
6.4579E 04	2.2677E 04	2.6429E 04							

ROW 3

0.0	0.0	9.9952E 07	5.6224E 05	-3.6562E 07	6.0475E 05	-3.3066E 07	-1.8234E 07	-5.0535E 06	-5.9768E 07
-3.0603E 07	3.4232E 07	1.2493E 07	1.0271E 07	-4.4477E 07	6.4935E 07	-3.7825E 07	-1.1234E 07	4.7674E 07	-2.8624E 07
5.8132E 06	-4.0660E 06	-3.1165E 07	4.6675E 07	4.8464E 07	7.4279E 06	8.8656E 06	3.5367E 07	4.3534E 07	-2.6351E 06
-5.4297E 07	-6.1926E 06	5.6654E 06							

ROW 4

0.0	0.0	-2.4912E 07	1.1539E 06	1.1471E 07	-7.3394E 05	7.0063E 06	-5.7630E 06	1.1921E 06	3.1906E 06
3.5072E 05	2.3136E 06	5.8951E 05	5.1218E 05	-2.4783E 06	7.5006E 05	-1.4910E 06	6.1310E 05	9.4744E 05	-1.6378E 06
-6.3577E 06	1.3500E 06	7.2488E 05	1.4927E 06	6.3410E 05	-4.4997E 06	-1.1130E 06	2.3366E 06	9.8209E 05	-1.0911E 06
-1.9691E 06	1.1758E 06	3.0080E 05							

ROW 5

0.0	0.0	-2.0331E 07	7.6285E 05	7.5766E 06	-5.2623E 05	5.3232E 06	-4.5812E 06	3.4688E 05	2.9392E 06
6.4391E 05	2.2566E 06	-6.6281E 04	3.1874E 05	-1.3866E 06	5.7158E 05	-8.1113E 05	1.1254E 06	-3.7067E 03	-7.2890E 05
-4.9008E 06	1.3611E 06	3.4874E 05	7.8269E 05	2.6827E 04	-3.1023E 06	-1.2325E 06	1.6326E 06	3.5079E 05	-8.8874E 05
-1.1446E 06	1.2190E 06	5.5959E 05							

ROW 6

0.0	0.0	1.2649E 06	-7.0527E 04	-8.3186E 05	-8.1934E 04	-5.6981E 05	4.4683E 05	-9.2362E 04	-4.1565E 05
2.3556E 04	-3.8177E 05	-4.3056E 04	1.0032E 05	1.9169E 05	-1.2394E 05	1.2602E 05	-1.7185E 05	-1.1755E 05	7.8208E 03
3.1081E 05	-1.7765E 05	2.6643E 04	-1.2081E 05	-2.7653E 04	3.9211E 05	1.6314E 05	-2.3129E 05	-6.3670E 04	1.0219E 05
1.7405E 05	-1.0188E 05	-4.3796E 04							

ROW 7

0.0	0.0	-8.7225E 06	2.0520E 05	4.2396E 06	-2.6054E 05	2.3487E 06	-1.8985E 06	3.2369E 05	3.3833E 06
7.1403E 04	1.7041E 06	-5.5870E 04	-2.4154E 04	6.4280E 05	-1.9683E 05	1.6957E 05	1.1451E 06	-3.7557E 05	1.1805E 06
-9.4360E 05	1.3780E 06	4.8194E 04	-2.4848E 05	-7.5946E 05	-1.7691E 06	-1.2135E 06	5.3307E 05	-6.4122E 05	-5.0387E 05
2.9518E 05	5.8526E 05	2.1162E 04							

ROW 8

0.0	0.0	-3.6967E 06	-1.4711E 05	2.7863E 06	-1.8493E 05	3.2318E 06	-2.2258E 05	-2.1314E 05	5.6607E 06
7.4677E 04	1.0363E 06	-1.0982E 06	-5.9288E 05	2.6861E 06	-2.7183E 06	1.8067E 06	2.1930E 06	-1.6944E 06	2.7849E 06
2.0905E 06	1.7133E 06	8.7695E 05	-2.1158E 06	-2.5168E 06	-1.6510E 06	-1.5208E 06	-1.0977E 06	-2.6058E 06	-2.0649E 05
2.9453E 06	8.6010E 04	-8.0873E 05							

ROW 9

0.0	0.0	-1.0206E 07	3.4696E 05	4.7573E 06	-3.5604E 05	3.6922E 06	-2.4475E 06	1.2760E 05	3.2018E 06
6.9012E 04	1.6733E 06	-2.8687E 05	5.9146E 04	-1.0584E 05	-2.3650E 05	-9.2748E 04	1.1877E 06	-1.6706E 05	4.7516E 05
-1.6555E 06	1.2562E 06	2.2498E 05	-4.0086E 04	-5.2071E 05	-2.1630E 06	-1.0788E 06	7.6121E 05	-3.6905E 05	-5.5495E 05
-7.3418E 04	5.0631E 05	4.6754E 04							

MATRIX * C3 * 33 BY 33 SYMMETRIC MATH MODEL

ROW 10
0.0 0.0 -9.2132E 06 1.2234E 05 3.6260E 06 -2.5786E 05 2.8996E 06 -5.4981E 05 2.4740E 05 3.3722E 06
1.1974E 06 -3.8452E 05 -6.7998E 05 -4.2149E 05 1.8585E 06 -2.3925E 06 1.5043E 06 1.2879E 06 -1.6262E 06 2.5701E 06
-1.2045E 05 1.1407E 06 1.1168E 06 -1.5313E 06 -2.1149E 06 -1.3261E 06 -1.0923E 06 -1.0723E 06 -2.1035E 05 -3.1128E 05
2.5764E 06 3.5248E 05 -6.8745E 05

ROW 11
0.0 0.0 5.6467E 06 -3.3331E 05 -2.7657E 06 5.0208E 05 -1.5721E 06 2.7376E 06 1.7005E 05 -5.7910E 05
-2.6472E 06 -2.4640E 06 1.3047E 03 -3.2406E 05 9.6028E 05 -2.4376E 06 1.2743E 06 -8.3949E 05 -1.3826E 06 1.1353E 05
8.5686E 05 -1.1956E 06 1.0929E 06 -1.2330E 06 -9.6605E 05 1.4343E 06 7.0831E 05 -1.9002E 06 -1.1014E 06 6.9960E 05
2.8658E 06 -6.1315E 04 -1.0381E 05

ROW 12
0.0 0.0 2.2249E 05 1.3903E 05 3.6466E 06 -2.7859E 05 3.2736E 06 -2.4101E 06 -1.5133E 05 3.5903E 06
-2.0287E 06 3.5802E 06 -1.9499E 05 1.9170E 05 -7.7268E 05 2.1105E 06 -1.2567E 06 1.8390E 06 1.8299E 06 3.2891E 06
1.2277E 06 2.4159E 06 -2.2480E 06 1.1220E 06 3.3752E 05 -2.2912E 06 -1.7838E 06 2.5191E 04 6.9485E 05 -1.1120E 06
-2.1539E 06 -1.3463E 05 1.1794E 05

ROW 13
0.0 0.0 4.4056E 06 -7.8940E 04 -1.3223E 06 6.2980E 04 -7.4704E 05 7.6576E 05 -5.0279E 04 -9.1528E 05
-2.5262E 05 -4.0833E 05 1.1429E 05 3.2937E 04 -3.0157E 05 -4.7619E 04 -2.4182E 05 -6.0172E 05 3.8168E 05 -1.4535E 06
5.7978E 05 -6.5999E 05 5.1317E 04 -2.2151E 04 4.0653E 05 7.8984E 05 6.9282E 05 -4.3674E 04 4.9315E 05 2.9183E 05
-5.2519E 05 1.3282E 05 -8.0751E 04

ROW 14
0.0 0.0 2.0916E 06 -2.2017E 04 -7.3320E 05 6.9173E 04 -7.0450E 04 1.7190E 05 1.7881E 03 -2.0145E 04
-1.5038E 05 1.0493E 05 4.4377E 04 -4.6299E 04 -1.3728E 05 8.5938E 04 -1.8169E 05 -1.1861E 05 3.0512E 05 -1.4084E 05
2.9864E 05 -7.5503E 04 -1.4820E 05 2.7513E 04 1.3218E 05 -7.2747E 04 1.3073E 05 1.7443E 05 2.4036E 05 -1.2906E 03
-3.7433E 05 2.2981E 04 -1.4738E 04

ROW 15
0.0 0.0 -6.9511E 06 4.2985E 04 8.0419E 05 -3.1015E 04 5.0245E 05 -6.9738E 05 -6.6890E 04 5.3349E 05
4.2837E 05 -1.7288E 04 -2.7567E 05 -8.7451E 04 6.0055E 05 -2.4767E 05 8.1211E 05 8.9633E 05 -1.1563E 06 1.4164E 06
-6.5652E 05 6.0506E 05 4.3190E 05 -6.4853E 04 -6.4526E 05 2.1480E 05 -8.2502E 05 -6.7366E 05 -1.1759E 06 -9.7320E 04
1.7301E 06 -2.2137E 05 1.1558E 05

ROW 16
0.0 0.0 3.7419E 05 1.2198E 05 6.7271E 05 -7.5824E 02 2.4596E 05 -9.1904E 05 -1.7126E 04 8.5505E 03
1.2562E 05 9.0421E 05 1.2864E 05 1.5932E 05 -6.9982E 05 1.4973E 06 -1.1051E 06 -1.3865E 05 1.0776E 06 2.1297E 06
-1.1249E 06 5.9408E 05 -1.5472E 06 6.3580E 05 3.7564E 05 -1.7293E 05 -4.9320E 05 1.6534E 06 1.2230E 06 -7.1874E 05
-1.9778E 06 -4.6302E 05 4.6252E 05

ROW 17
0.0 0.0 -2.0766E 06 -1.2304E 05 -1.2872E 05 3.7539E 04 1.1068E 05 9.2719E 05 2.4191E 04 1.0392E 06
7.2010E 05 -1.1641E 06 -4.0899E 05 -3.4315E 05 1.5736E 06 -2.1024E 06 1.6373E 06 5.1827E 05 -1.6006E 06 9.2127E 05
4.9928E 05 1.5749E 03 1.5684E 06 -1.1408E 06 -1.2662E 06 7.5696E 05 -2.5136E 05 -1.8924E 06 -1.9769E 06 3.0577E 05
2.2841E 06 7.7112E 03 -3.6999E 05

ROW 18
0.0 0.0 -5.4493E 06 2.6616E 04 7.0868E 06 -1.0492E 05 1.6117E 06 -5.4649E 05 2.8288E 04 2.6569E 06
7.0364E 05 2.2486E 05 -5.1509E 05 -2.6288E 05 1.4385E 06 -1.1637E 06 1.0846E 06 1.2267E 06 -1.0766E 06 3.2857E 06
-1.9922E 05 1.1929E 06 4.7886E 05 -7.9958E 05 -1.4113E 06 -5.6803E 05 -1.3181E 06 -6.1051E 05 -1.6446E 06 -3.9424E 05
1.3192E 06 -1.5006E 05 -1.1891E 05

MATRIX * C3 * 33 BY 33 SYMMETRIC MATH MODEL

ROW 19

0.0	0.0	-9.0284E 06	-5.1241E 04	5.4596E 05	-1.7334E 04	3.4975E 05	5.5931E 05	7.2245E 04	1.0456E 06
1.5894E 06	-1.8054E 06	-4.9513E 05	-3.2986E 05	1.7615E 06	-1.8399E 06	1.2659E 06	2.0818E 05	-2.4210E 06	5.4731E 05
-8.2616E 05	-3.5249E 04	1.0509E 05	-1.8366E 06	-1.9786E 06	6.4023E 05	-1.8949E 05	-1.0647E 06	-1.1981E 06	1.6475E 05
4.3450E 05	1.1966E 04	-2.0408E 05							

ROW 20

0.0	0.0	3.8309E 05	1.0444E 05	6.4632E 05	-2.9925E 04	2.2005E 05	-4.6994E 05	1.3030E 05	5.6547E 04
7.2159E 04	9.0132E 05	1.2997E 05	6.4220E 04	-5.1570E 05	6.5098E 05	-3.6998E 05	3.7867E 05	5.5794E 05	2.0622E 06
-1.0261E 06	8.5486E 05	-3.0388E 05	6.8272E 05	3.1078E 04	-1.5206E 06	-1.8469E 05	5.7897E 05	1.3775E 05	-7.8899E 05
-1.1643E 05	-7.1591E 05	-5.4962E 05							

ROW 21

0.0	0.0	-9.5547E 06	2.8180E 05	1.7195E 06	-9.5822E 04	6.5181E 05	-1.3174E 06	2.2908E 05	-7.2619E 05
5.0869E 05	-2.3870E 05	1.9115E 05	1.6911E 05	-6.1701E 05	2.4340E 05	-1.8899E 05	-2.3745E 05	-4.4405E 05	-1.3971E 06
-2.6484E 06	-2.3592E 05	4.0565E 05	4.1799E 05	2.2380E 05	-1.0106E 05	-1.8992E 04	1.2985E 05	2.3769E 05	5.2223E 03
-8.8232E 04	-5.0072E 04	-2.4806E 05							

ROW 22

0.0	0.0	3.6553E 05	-2.0207E 04	-4.9141E 05	3.3639E 04	-3.8606E 05	1.3223E 05	-2.9593E 04	-4.5038E 05
-2.2536E 04	-1.4422E 05	1.5907E 04	1.4909E 04	-4.3819E 04	1.4495E 05	-2.2695E 04	-7.7401E 04	-2.1650E 03	-1.6140E 04
-1.0243E 05	-7.7977E 04	-3.1069E 04	8.3306E 04	8.4795E 04	2.1563E 05	1.9737E 04	-2.0938E 04	5.8994E 04	4.6320E 04
-4.7460E 04	-6.8506E 04	8.2906E 04							

ROW 23

0.0	0.0	3.3810E 06	-1.3474E 02	-2.5648E 05	2.8182E 04	-2.0921E 05	-4.0544E 05	-8.1884E 04	-3.5977E 05
-8.3472E 05	9.9511E 05	2.2392E 05	1.4759E 05	-7.9092E 05	1.1211E 06	-5.8319E 05	5.7648E 04	1.1217E 06	2.9748E 05
5.9605E 05	1.8864E 05	-4.9717E 05	1.1017E 06	1.0163E 06	-6.4865E 04	-5.0839E 04	5.4695E 05	4.4735E 05	-1.5988E 05
-1.1923E 06	3.7144E 04	-1.0737E 05							

ROW 24

0.0	0.0	-1.7858E 06	-5.2611E 04	1.0812E 03	-2.9221E 03	1.0970E 05	4.8714E 05	2.1874E 04	5.1167E 05
5.3290E 05	-7.2932E 05	-2.1047E 05	-1.4897E 05	7.4633E 05	-9.2433E 05	5.4386F 05	5.1531E 04	-8.0278E 05	8.6537E 04
-5.0533F 03	-8.1131E 04	2.2794E 05	-8.2794E 05	-7.6242E 05	1.1514F 05	5.4894F 03	-5.1010E 05	-5.0628E 05	1.2904E 05
-6.9830E 05	2.5251E 04	-1.6062E 02							

ROW 25

0.0	0.0	-2.4667E 06	-3.5960E 04	5.2302E 05	3.5875E 03	4.3448E 05	2.6016E 05	4.4163E 04	1.0506E 06
6.0907E 05	-5.1338E 05	-2.3417E 05	-1.9470E 05	8.5806E 05	-9.3736F 05	5.9552E 05	2.1633E 05	-8.5352E 05	1.1098E 06
1.0850E 04	1.8351E 05	-2.6359E 03	-8.6100E 05	-9.6390E 05	9.8246E 04	-2.2122E 05	-4.0829E 05	-6.3692E 05	-7.9914E 04
-6.4406E 05	-6.7360E 04	-2.2405E 05							

ROW 26

0.0	0.0	-2.4620E 06	1.4695E 05	1.6849E 06	-1.1665F 05	1.1373E 06	-8.6890F 05	1.1584E 05	8.5039E 05
8.7037E 04	6.7690E 05	2.5685E 04	5.0628E 04	-2.7367E 05	1.4796E 05	-1.9784E 05	3.0378E 05	2.5941E 05	2.7454E 05
-6.5162E 05	4.2554E 05	1.1215E 05	2.4471E 05	5.6159E 04	-9.0461E 05	-2.9045E 05	3.7123F 05	3.1169E 04	-2.7902E 05
2.4530E 05	-2.0342E 05	2.3482E 05							

ROW 27

0.0	0.0	-3.8505E 06	5.1936E 04	1.1203E 06	-6.5824E 04	7.7130E 05	-5.0735E 05	3.4054E 04	9.2471E 05
1.9368E 05	1.9877E 05	-1.6149E 05	-5.7252E 04	3.7471E 05	-1.9112E 05	2.4059E 05	4.7901E 05	-4.1416F 05	9.9275E 05
3.9970E 05	5.0633E 05	-7.6517E 04	-2.1830F 05	-5.1243E 05	-3.2087E 05	-5.1666F 05	1.5802E 04	-3.9933E 05	-2.0379E 05
1.8101E 05	1.6896E 04	-1.0212E 05							

MATRIX * C3 * 33 BY 33 SYMMETRIC MATH MODEL

ROW 28

0.0	0.0	-6.6040E 05	-1.2977E 05	-6.8148E 05	6.3656E 04	-3.5194E 05	9.9904E 05	-4.7837E 03	3.4019E 05
6.3671E 05	-1.1615E 06	-2.4645E 05	-2.3848E 05	1.0777E 06	-1.4005E 06	9.4096E 05	-2.4959E 04	-1.1505E 06	1.8544E 05
4.5743E 05	-3.1277E 05	5.0827E 05	-1.1267E 06	-1.0008E 06	5.9461E 05	1.6467E 06	-1.0472E 06	-8.8442E 05	2.7911E 05
2.4773E 05	-1.1589E 04	-2.3134E 05							

ROW 29

0.0	0.0	-2.7136E 06	-5.7997E 04	3.7150E 05	-6.7974E 03	4.0992E 05	4.4215E 05	3.3572E 04	1.0685E 06
6.0927E 05	-7.1546E 05	-3.1942E 05	-2.2921E 05	1.0983E 06	-1.3067E 06	9.1062E 05	3.5572E 05	-1.1425E 06	8.7121E 05
8.1988E 04	1.5684E 05	4.1402E 05	-1.0791E 06	-1.1777E 06	5.9081E 04	-2.3120E 05	-7.7924E 05	-9.9886E 05	6.4036E 04
1.7283E 05	4.1978E 04	-1.9029E 05							

ROW 30

0.0	0.0	-7.9805E 05	5.3917E 04	5.7422E 05	-3.3535E 04	3.7828E 05	-3.4821E 05	3.1575E 04	2.7837E 05
3.8442E 04	3.0480E 05	1.5572E 02	2.2728E 04	-1.2291E 05	1.9930E 05	-1.2970E 05	1.5490E 05	1.5253E 05	5.4255E 05
-3.0591E 05	2.7838E 05	-1.1516E 05	1.6793E 05	2.1947E 04	-3.4593E 05	-2.1008E 05	2.4989E 05	4.5896E 04	-1.8927E 05
3.7427E 04	1.1421E 05	4.2947E 04							

ROW 31

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 32

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 33

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

MATRIX * D1 * 33 BY 33 SYMMETRIC MATH MODEL

ROW 1

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 2

0.0	-9.2725E 01	6.7836E 04	3.2746E 03	-2.5601E 04	2.4588E 03	-1.1306E 04	1.2888E 04	-3.5865E 03	7.4447E 03
-1.6031E 04	2.5127E 03	1.0672E 02	-6.0033E 02	-3.0343E 03	4.8052E 03	-1.5425E 03	1.5152E 03	1.1205E 04	8.2795E 03
2.7503E 04	-6.5719E 02	-2.4385E 03	4.8323E 02	3.6116E 03	3.2212E 02	2.4668E 03	1.6370E 03	2.7784E 03	7.3930E 02
-2.5656E 03	-2.2889E 03	-2.3157E 03							

ROW 3

0.0	2.8720E 05	3.8387E 07	-4.1639E 06	3.8816E 06	-3.3037E 05	2.1535E 06	-1.2515E 06	8.9124E 05	-3.8118E 06
1.8769E 06	3.0144E 06	-7.4345E 05	-4.8252E 05	3.2333E 06	-2.1708E 06	-2.5558E 05	-7.1540E 05	2.5664E 04	-3.3147E 06
-3.3121E 06	6.2017E 05	-1.7177E 06	9.6129E 05	-1.0660E 06	2.6929E 05	3.5617E 05	1.7150E 05	-3.4298E 04	-2.8895E 05
-2.0148E 05	2.8709E 05	-5.3722E 05							

ROW 4

0.0	1.7616E 04	5.6724E 06	-2.4710E 05	-4.6643E 05	5.5674E 04	-1.3241E 05	2.6575E 05	-5.2825E 04	-6.3998E 04
-3.6360E 05	3.3096E 05	-4.0154E 04	-5.0100E 04	1.0873E 05	-1.6747E 04	-1.0359E 05	-3.5455E 04	4.2824E 05	1.7891E 04
6.0536E 05	3.1043E 04	-1.7753E 05	1.1945E 05	1.2770E 05	-3.4444E 04	1.1280E 05	9.0034E 04	1.0114E 05	-1.0982E 04
-1.4775E 05	-3.7071E 04	-1.4523E 05							

ROW 5

0.0	1.1006E 04	3.9059E 06	-1.3760E 05	-3.6958E 05	3.9619E 04	-1.2001E 05	1.9690E 05	-4.8682E 04	-1.2044E 04
-2.7472E 05	2.0045E 05	-2.8076E 04	-3.4595E 04	7.0146E 04	1.3093E 03	-6.3813E 04	-1.4221E 04	2.9340E 05	3.6696E 04
4.7369E 05	2.0188E 04	-1.1491E 05	6.8430E 04	8.8043E 04	-1.8685E 04	7.5009E 04	5.4397E 04	6.4786E 04	-3.2991E 03
-9.4197E 04	-2.9801E 04	-9.6359E 04							

ROW 6

0.0	-1.2335E 03	-4.0137E 05	1.8111E 04	2.5981E 04	-3.3845E 03	6.1542E 03	-1.3386E 04	3.8123E 03	5.4867E 03
2.1445E 04	-2.0138E 04	3.3670E 03	2.7859E 03	-9.0408E 03	2.3599E 03	6.5696E 03	2.6389E 03	-2.7077E 04	7.8578E 02
-3.6111E 04	-2.8241E 03	1.0608E 04	-7.6064E 03	-6.9575E 03	3.2136E 03	-6.8325E 03	-5.4805E 03	-5.8460E 03	1.0542E 03
8.7666E 03	1.7491E 03	9.5656E 03							

ROW 7

0.0	6.0758E 02	1.0399E 06	-5.3320E 03	-1.9135E 05	1.8119E 04	-7.1246E 04	8.8313E 04	-3.4310E 04	4.8238E 04
-1.3659E 05	3.7427E 04	-8.8291E 02	-4.6807E 03	-2.4992E 04	2.9045E 04	-2.4755E 04	1.8445E 03	1.1969E 05	6.0694E 04
2.2446E 05	-1.0203E 02	-2.0727E 04	1.6749E 04	5.2384E 04	-1.8385E 04	2.4653E 04	2.3408E 04	2.8216E 04	1.3286E 03
-3.8020E 04	-1.3701E 04	-3.1779E 04							

ROW 8

0.0	-1.4359E 04	-1.7523E 06	1.7530E 05	-1.8812E 05	1.3043E 04	-9.0930E 04	5.7922E 04	-4.8162E 04	1.8531E 05
-1.1091E 05	-1.2775E 05	4.5095E 04	3.1173E 04	-1.8241E 05	1.0390E 05	-5.1950E 02	2.1344E 04	2.0962E 04	1.7669E 05
1.5254E 05	-3.0929E 04	7.4769E 04	-3.2881E 04	7.0189E 04	-3.3023E 04	-1.1820E 04	1.0345E 04	1.3342E 04	1.0730E 04
-8.7627E 03	-1.0252E 04	1.8603E 04							

ROW 9

0.0	2.7859E 03	1.8384E 06	-3.8766E 04	-2.2171E 05	2.2060E 04	-7.5845E 04	1.0614E 05	-3.6398E 04	3.1219E 04
-1.5974E 05	7.3088E 04	-4.2121E 03	-1.0179E 04	-5.2231E 03	2.4352E 04	-3.4815E 04	-4.0120E 03	1.5761E 05	5.1488E 04
2.6361E 05	4.6227E 03	-4.0184E 04	3.0775E 04	6.0840E 04	-2.0181E 04	3.4379E 04	3.2224E 04	3.7731E 04	-6.8791E 02
-5.2256E 04	-1.5872E 04	-4.5314E 04							

MATRIX * D1 * 33 BY 33 SYMMETRIC MATH MODEL

ROW 10
0.0 -8.7168E 03 -6.6197E 05 1.2480E 05 -2.4845E 05 2.3947E 04 -1.0967E 05 1.1356E 05 -4.1476E 04 1.5101E 05
-1.6269E 05 -4.4227E 04 3.4372E 04 1.7199E 04 -1.4141E 05 8.3415E 04 -1.4579E 04 1.3072E 04 7.9874E 04 1.6348E 05
2.4436E 05 -2.6138E 04 2.8629E 04 -1.2361E 04 8.2631E 04 -2.5523E 04 1.2454E 04 2.0835E 04 2.6334E 04 1.0290E 04
-2.9161E 04 -1.8699E 04 -6.7733E 03

ROW 11
0.0 -9.1973E 03 -2.3798E 06 1.4337E 05 7.8513E 04 -1.0837E 04 8.7745E 03 -5.2993E 04 6.0378E 03 7.7681E 04
8.0090E 04 -1.3428E 05 2.4832E 04 2.2116E 04 -8.4564E 04 3.1779E 04 3.7538E 04 2.1437E 04 -1.3841E 05 6.3500E 04
-1.1725E 05 -2.1506E 04 7.7475E 04 -5.6406E 04 -2.0149E 04 2.9821E 03 -3.2725E 04 -3.1994E 04 -3.5074E 04 8.9210E 03
5.2290E 04 5.6076E 03 4.7529E 04

ROW 12
0.0 1.4751E 04 1.8445E 06 -1.2589E 05 -1.3525E 04 4.6834E 02 1.7139E 04 -5.7580E 03 -1.3719E 04 -6.0313E 04
-3.3960E 04 7.1096E 04 -2.0927E 04 -1.2856E 04 6.5354E 04 -1.8193E 04 -3.0483E 04 -1.5718E 04 1.0452E 05 -7.6989E 04
4.1440E 04 2.3492E 04 -3.4305E 04 4.4122E 04 8.6124E 03 -2.1265E 04 1.3751E 04 2.5099E 04 2.4803E 04 -1.1662E 04
-3.7056E 04 4.2394E 03 -3.3536E 04

ROW 13
0.0 -2.4855E 02 -3.8783E 05 6.3147E 03 9.1505E 04 -8.2830E 03 3.6962E 04 -4.6268E 04 1.3894E 04 -1.8697E 04
6.2035E 04 -2.4387E 04 -2.4366E 03 1.7566E 03 1.1432E 04 -4.2643E 03 7.8453E 03 7.5318E 03 -4.2771E 04 -3.9358E 04
-1.0547E 05 2.1271E 03 1.7686E 04 -3.3740E 03 -2.2735E 04 6.3738E 03 -1.4188E 04 -1.0169E 04 -9.2615E 03 -1.9907E 03
1.4629E 04 6.9055E 03 1.4298E 04

ROW 14
0.0 1.1405E 02 -7.5397E 04 -1.8594E 03 3.8478E 04 -3.4060E 03 1.5787E 04 -2.2662E 04 3.9818E 03 -1.0078E 04
2.6210E 04 -1.1542E 04 -2.1638E 03 2.1658E 02 7.4831E 03 -5.9272E 02 1.7177E 03 8.9131E 02 -1.2082E 04 -2.2914E 04
-4.2636E 04 2.4057E 03 8.5120E 03 6.6471E 02 -9.4503E 03 9.6316E 02 -6.3957E 03 -3.5527E 03 -2.6664E 03 -1.5943E 03
4.8257E 03 3.3579E 03 4.7948E 03

ROW 15
0.0 -8.2686E 02 1.7036E 05 6.4191E 03 -1.3595E 05 1.0794E 04 -5.5653E 04 7.8384E 04 -1.5827E 04 3.8972E 04
-9.1270E 04 3.9694E 04 1.0435E 04 1.1290E 03 -3.2740E 04 -4.4661E 03 -3.3427E 03 -6.1305E 03 3.2476E 04 9.7540E 04
1.5288E 05 -9.8643E 03 -3.0777E 04 -7.8242E 03 3.3318E 04 -7.5181E 03 2.3890E 04 1.2250E 04 5.1230E 03 6.3575E 03
-1.3254E 04 -1.0957E 04 -1.7118E 04

ROW 16
0.0 5.5860E 03 9.2086E 05 -5.8527E 04 2.4759E 04 -1.0929E 03 3.7014E 03 -2.9139E 04 -4.2495E 03 -5.1777E 04
2.1533E 04 1.7980E 03 -2.2383E 04 -1.2908E 04 6.7999E 04 2.5315E 03 -8.3628E 03 4.1702E 03 4.1638E 04 -1.0647E 05
-1.4939E 04 1.8735E 04 -7.0082E 03 2.2816E 04 -1.8282E 04 8.8090E 03 -5.9034E 03 -1.2584E 03 9.5749E 03 -6.8399E 03
-8.9274E 03 2.1552E 03 -6.7715E 03

ROW 17
0.0 -8.9840E 03 -1.4263E 06 1.1632E 05 -9.1225E 04 6.7183E 03 -4.6780E 04 4.5711E 04 -1.2473E 04 1.0220E 05
-4.7951E 04 -4.9538E 04 3.3728E 04 1.9397E 04 -1.1347E 05 2.7686E 04 1.2629E 04 3.7757E 03 -4.3372E 04 1.5206E 05
7.5319E 04 -2.7238E 04 2.9309E 04 -3.7946E 04 3.2246E 04 -1.1248E 04 7.1550E 02 -2.5138E 03 -1.0598E 04 1.1560E 04
1.3945E 04 -7.0134E 03 1.6146E 04

ROW 18
0.0 -5.6067E 03 -4.3235E 05 7.3528E 04 -1.6068E 05 1.3230E 04 -7.4593E 04 6.7843E 04 -3.0304E 04 9.2136E 04
-9.7969E 04 -2.9059E 04 2.2126E 04 1.0835E 04 -8.6675E 04 3.9429E 04 -3.9079E 03 4.3385E 03 3.3568E 04 1.2030E 05
1.6306E 05 -1.6540E 04 1.3412E 04 -1.6512E 04 4.6159E 04 -1.6557E 04 9.1023E 03 9.3458E 03 7.9767E 03 7.7975E 03
-9.6378E 03 -1.1191E 04 -2.3780E 03

MATRIX * D1 * 33 BY 33 SYMMETRIC MATH MODEL

ROW 19

0.0	-1.1730E 04	-1.6069E 06	1.8773E 05	-1.9930E 05	1.5845E 04	-1.1861E 05	7.1715E 04	-4.0939E 04	1.6958E 05
-1.0110E 05	-1.3922E 05	2.5922E 04	1.8589E 04	-1.2861E 05	8.1707E 04	1.0077E 04	4.2983E 04	1.4232E 04	1.1310E 05
1.6027E 05	-2.5021E 04	7.1009E 04	-3.6153E 04	4.6574E 04	7.0036E 03	-2.0664E 04	-8.5701E 03	1.0980E 04	1.3709E 04
1.6019E 02	-1.7908E 04	3.1344E 04							

ROW 20

0.0	4.2656E 03	7.4190E 05	-5.7963E 04	6.1017E 03	5.6223E 03	1.1746E 04	8.3533E 03	8.1514E 03	-4.0855E 04
-6.5111E 03	6.1004E 04	-8.3816E 02	-5.2811E 03	2.0708E 04	-2.5052E 04	-1.5638E 04	-1.9597E 04	3.6829E 04	-3.5358E 04
2.7807E 03	3.1382E 03	-3.0254E 04	2.4208E 04	8.5013E 03	-3.9447E 03	1.2499E 04	1.5461E 04	1.1768E 04	-3.5210E 03
-1.9412E 04	3.9571E 02	-1.7724E 04							

ROW 21

0.0	3.8548E 03	1.3264E 06	-5.3067E 04	-1.5951E 05	1.8038E 04	-5.4838E 04	1.0313E 05	-1.1229E 04	-2.3056E 03
-1.2721E 05	9.8823E 04	-5.0263E 03	-1.1029E 04	1.2289E 04	5.4429E 03	-2.8560E 04	-7.2896E 03	1.1750E 05	2.0771E 04
1.7525E 05	2.1676E 03	-5.9464E 04	3.4449E 04	4.4850E 04	1.9294E 03	3.3096E 04	2.9402E 04	3.4737E 04	-6.0228E 02
-4.9144E 04	-1.4899E 04	-3.3678E 04							

ROW 22

0.0	2.0843E 02	-4.7653E 04	-2.8509E 03	1.3275E 04	-1.7780E 03	4.2015E 03	-5.1899E 03	2.7041E 03	-5.8677E 03
1.0187E 04	8.1007E 02	-9.4660E 02	-4.0384E 02	5.9990E 03	-5.2673E 03	2.6978E 03	-4.0491E 02	-1.0554E 04	-5.6140E 03
-1.5197E 04	2.9838E 02	-1.5782E 03	-1.7907E 03	-5.4686E 03	3.3038E 03	-1.0594E 03	-2.2852E 03	-3.0296E 03	-2.0801E 01
3.5363E 03	6.9503E 02	2.4746E 03							

ROW 23

0.0	5.0835E 03	7.3920E 05	-7.9976E 04	8.9440E 04	-7.3430E 03	5.2899E 04	-2.6746E 04	2.2207E 04	-8.0219E 04
4.3265E 04	7.0808E 04	-8.7329E 03	-6.3659E 03	5.0012E 04	-5.3714E 04	-8.2464E 03	-2.5015E 04	-7.3201E 03	-4.5618E 04
-7.7236E 04	9.4197E 03	-3.7363E 04	1.9986E 04	-1.8551E 04	1.2958E 03	1.0330E 04	5.9363E 03	-2.8967E 03	-5.5224E 03
-2.3483E 03	6.9860E 03	-6.3989E 03							

ROW 24

0.0	-5.2463E 03	-7.5467E 05	7.6516E 04	-5.5858E 04	3.6180E 03	-3.4126E 04	1.8021E 04	-1.2346E 04	6.3803E 04
-2.1328E 04	-5.1674E 04	1.3482E 04	9.3083E 03	-5.5663E 04	3.4009E 04	7.3516E 03	1.1981E 04	-1.6227E 04	6.1042E 04
4.2046E 04	-1.1886E 04	3.2220E 04	-2.1308E 04	1.3544E 04	-2.5288E 02	-9.1226E 03	-6.6687E 03	-3.7631E 03	5.9691E 03
9.0786E 03	-4.6086E 03	1.5619E 04							

ROW 25

0.0	-5.5192E 03	-7.0749E 05	7.8665E 04	-7.6168E 04	6.6979E 03	-4.2591E 04	2.8758E 04	-1.5125E 04	7.1511E 04
-4.0852E 04	-5.0398E 04	1.6408E 04	1.0546E 04	-6.6973E 04	4.0406E 04	3.1168E 03	1.1083E 04	-1.6991E 03	6.9371E 04
6.4735E 04	-1.3260E 04	3.1616E 04	-1.8105E 04	2.2621E 04	-4.9224E 03	-6.7018E 03	-2.2818E 03	1.4070E 03	6.1804E 03
2.8690E 03	-5.9064E 03	1.1920E 04							

ROW 26

0.0	2.4843E 03	8.0519E 05	-4.2235E 04	-5.6554E 04	6.5118E 03	-1.5486E 04	2.4908E 04	-1.0505E 04	-1.4177E 04
-3.3793E 04	3.8513E 04	-7.5125E 03	-7.3303E 03	2.1565E 04	-4.1526E 03	-1.2143E 04	-4.2780E 03	5.4785E 04	-4.1256E 03
7.3956E 04	6.8019E 03	-2.2870E 04	1.5047E 04	1.2826E 04	-6.6508E 03	1.3520E 04	1.1183E 04	1.1[illegible]E 04	-2.3706E 03
-1.7763E 04	-3.2304E 03	-2.0060E 04							

ROW 27

0.0	-1.1349E 03	1.0527E 05	1.7997E 04	-8.3345E 04	7.6991E 03	-3.7265E 04	3.8129E 04	-1.4141E 04	3.3560E 04
-5.8964E 04	-6.5484E 02	4.9190E 03	1.1084E 03	-2.4260E 04	1.8770E 04	-6.0597E 03	2.9377E 03	3.5459E 04	3.5528E 04
8.7778E 04	-4.1367E 03	-1.8121E 03	5.3630E 02	2.2421E 04	-4.8298E 03	6.5986E 03	7.1963E 03	9.5188E 03	2.5172E 03
-1.2039E 04	-6.4986E 03	-7.4450E 03							

MATRIX * D1 * 33 BY 33 SYMMETRIC MATH MODEL

ROW 28

0.0	-8.9439E 03	-1.2943E 06	1.0426E 05	-4.3916E 04	2.6494E 03	-3.1992E 04	1.4950E 04	-9.3091E 03	8.3818E 04
-2.0748E 04	-7.0708E 04	2.1825E 04	1.4886E 04	-8.0723E 04	3.6274E 04	1.4504E 04	1.4236E 04	-4.4233E 04	8.7194E 04
2.7980E 04	-1.8286E 04	4.2094E 04	-3.2872E 04	1.4427E 04	-5.5651E 03	-1.0499E 04	-1.0109E 04	-1.0216E 04	8.0259E 03
1.7534E 04	-3.5059E 03	1.6689E 04							

ROW 29

0.0	-6.4626E 03	-9.0401E 05	9.1048E 04	-9.0585E 04	7.0859E 03	-4.8019E 04	3.7733E 04	-1.6902E 04	8.7236E 04
-5.5092E 04	-5.0348E 04	2.1624E 04	1.2674E 04	-8.1460E 04	3.7076E 04	6.6778E 03	1.0706E 04	-1.0973E 04	9.9318E 04
8.5519E 04	-1.7497E 04	3.0664E 04	-2.6023E 04	2.7744E 04	-1.1093E 04	-1.6624E 03	-2.3546E 03	-2.6178E 03	7.7442E 03
6.1776E 03	-6.7411E 03	5.4947E 03							

ROW 30

0.0	1.0492E 03	3.0618E 05	-1.6072E 04	-1.5009E 04	2.1204E 03	-4.2928E 03	6.2745E 03	-2.8269E 03	-7.6663E 03
-9.1790E 03	1.2509E 04	-3.3612E 03	-2.8925E 03	1.0235E 04	-7.8406E 02	-4.5486E 02	-1.6385E 03	2.0789E 04	-1.0471E 04
2.0367E 04	3.0485E 03	-7.8644E 03	7.1921E 03	3.2800E 03	-6.2488E 02	3.4100E 03	3.9962E 03	5.0190E 03	-1.2468E 03
-7.0216E 03	-1.0060E 03	-5.3798E 03							

ROW 31

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 32

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 33

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

MATRIX * D2 *- 33 BY 33 SYMMETRIC MATH MODEL

ROW 1

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 2

0.0	2.7832E 03	-1.6895E 04	-7.7682E 03	-2.5674E 04	1.7654E 03	-2.7811E 04	-3.6802E 04	-7.8441E 03	-5.7884E 04
-4.0636E 04	4.1918E 04	-9.0258E 03	-1.7154E 03	1.3378E 04	4.3728E 04	-1.1142E 04	1.8401E 04	2.7014E 03	-5.9338E 04
3.2102E 04	1.2366E 04	-5.5711E 04	2.8607E 04	1.1008E 04	2.2695E 04	-1.8208E 02	1.3840E 04	1.5003E 04	3.5565E 03
-1.6994E 04	-6.8684E 03	1.7370E 04							

ROW 3

0.0	-1.5624E 06	3.0285E 08	1.2817E 07	2.8024E 06	8.0193E 05	1.2835E 07	4.0941E 07	6.7136E 06	4.8415E 07
1.6068E 07	-2.1317E 07	7.7751E 06	1.4862E 06	-1.2697E 07	-3.1713E 07	4.1598E 05	-2.0341E 07	2.6636E 07	6.0578E 07
1.2205E 07	-9.8235E 06	4.2628E 07	-1.5951E 07	2.8721E 06	-2.1591E 07	5.9438E 06	-6.2905E 06	-6.5068E 06	-3.6008E 06
8.2490E 06	2.1398E 06	-2.7393E 07							

ROW 4

0.0	-3.0315E 04	1.8607E 07	1.3938E 06	-6.4868E 05	1.0183E 04	-2.6544E 05	2.5771E 06	4.3220E 05	2.7859E 06
-4.6730E 05	-2.6820E 05	2.8635E 05	6.2986E 04	-3.7915E 05	-1.1504E 06	-1.0786E 05	-7.6478E 05	1.9166E 06	3.0870E 06
2.5423E 06	-3.4274E 05	1.4996E 06	-6.0295E 05	4.2014E 05	-7.7327E 05	3.7323E 05	-1.8412E 05	-1.7231E 05	-9.7052E 04
2.4970E 05	-1.3105E 05	-1.3439E 06							

ROW 5

0.0	-1.5354E 04	1.0456E 07	7.8769E 05	-5.8184E 05	5.0106E 04	-2.8568E 05	1.5995E 06	2.7028E 05	1.5554E 06
-5.3753E 05	1.2000E 05	1.6433E 05	4.2098E 04	-2.8806E 05	-5.3461E 05	-1.209[illegible] 05	-3.8928E 05	1.1862E 06	1.7056E 06
1.6264E 06	-1.8854E 05	6.8932E 05	-2.4529E 05	3.4086E 05	-3.9488E 05	2.430[illegible] 05	-3.2154E 04	-1.9126E 04	-5.5950E 04
4.8391E 04	-1.1870E 05	-6.1360E 05							

ROW 6

0.0	3.1772E 03	-1.0320E 06	-1.1093E 05	4.1453E 04	3.2529E 03	1.8393E 04	-2.0522E 05	-4.0815E 04	-2.1443E 05
3.7914E 04	1.1181E 03	-2.8801E 04	3.3378E 03	4.0651E 04	8.4559E 04	4.3669E 03	4.9920E 04	-1.2021E 05	-2.2360E 05
-1.6893E 05	2.8778E 04	-1.0251E 05	4.5621E 04	-2.7358E 04	5.2888E 04	-2.6082E 04	1.4480E 04	1.3036E 04	6.5189E 03
-1.8662E 04	1.0696E 04	1.0174E 05							

ROW 7

0.0	1.3693E 04	-6.3211E 05	2.7302E 05	-2.4060E 05	1.4777E 04	-3.0650E 05	1.0919E 05	7.7590E 04	-3.0366E 04
-3.0523E 05	3.9025E 05	-1.9206E 04	-1.1566E 04	1.3653E 05	2.3208E 05	-3.0705E 04	1.3255E 05	4.8399E 04	-1.4246E 05
4.8353E 05	6.3264E 04	-3.0776E 05	9.7922E 04	6.7864E 04	2.0826E 05	-6.0017E 03	4.0764E 04	5.5924E 04	3.8815E 04
-5.7101E 04	-9.5506E 04	9.7467E 04							

ROW 8

0.0	7.9837E 04	-1.4958E 07	-2.3534E 05	7.9410E 04	-4.5297E 04	-6.8450E 05	-1.9359E 06	-1.8524E 05	-2.3244E 06
-7.4907E 05	1.0183E 06	-4.3649E 05	-1.0737E 05	8.3241E 05	1.5113E 06	4.0344E 04	1.0255E 06	-1.3719E 06	-2.9405E 06
-6.0927E 05	4.7864E 05	-1.9233E 06	6.8678E 05	-2.3318E 05	1.2368E 06	-3.6705E 05	1.9063E 05	2.2544E 05	2.1249E 05
-2.6922E 05	-1.4930E 05	1.5742E 06							

ROW 9

0.0	7.6824E 03	1.7702E 06	4.4092E 05	-2.3372E 05	1.2955E 04	-2.8765E 05	4.3979E 05	1.3404E 05	3.5423E 05
-3.4473E 05	3.0166E 05	-3.8672E 03	-7.7119E 02	-3.8318E 04	1.5653E 04	-3.6213E 04	2.4971E 04	2.7140E 05	2.8527E 05
7.5371E 05	2.2357E 03	-5.6742E 04	-7.9153E 03	1.0445E 05	6.0464E 04	5.7463E 04	-7.1253E 02	1.5459E 04	1.8030E 04
-1.9881E 03	-9.7694E 04	-1.2195E 05							

MATRIX * D2 * 33 BY 33 SYMMETRIC MATH MODEL

ROW 10

0.0	6.2395E 04	-8.2199E 06	-1.9416E 05	-1.3921E 05	-5.1415E 05	-6.1713E 05	-1.4136E 06	-2.2044E 05	-1.6961E 06
-1.5627E 05	6.7068E 05	-3.6726E 05	-8.2726E 04	6.9672E 05	1.1838E 06	-1.0394E 04	7.4218E 05	-7.5451E 05	-2.0777E 06
-2.1806E 05	3.7852E 05	-1.3803E 06	5.4179E 05	-1.1085E 05	9.3993E 05	-2.9066E 05	1.7433E 05	2.0013E 05	1.6348E 05
-2.4057E 05	2773E 05	1.2585E 06							

ROW 11

0.0	2.9825E 04	-9.9993E 06	-6.9733E 05	1.4617E 05	-1.7795E 04	-1.2480E 05	-1.4765E 06	-2.8359E 05	-1.6035E 06
-1.0063E 04	2.6130E 05	-2.1504E 05	-3.6160E 04	3.0578E 05	8.7019E 05	7.2890E 03	5.0895E 05	-8.9161E 05	-1.9266E 06
-1.2049E 06	2.5403E 05	-1.0555E 06	4.8157E 05	-1.5481E 05	6.5620E 05	-3.1220E 05	2.0283E 05	1.9520E 05	1.1092E 05
-2.6167E 05	2.4261E 04	1.1473E 06							

ROW 12

0.0	-6.1147E 04	3.7435E 06	8.9151E 05	-3.3101E 04	3.3426E 04	7.2727E 04	1.3444E 06	3.8339E 05	1.4331E 06
-2.0995E 05	9.7273E 04	2.2712E 05	2.8798E 04	-3.2043E 05	-7.6189E 05	5.4863E 04	-3.3979E 05	4.1752E 05	1.6367E 06
1.0428E 06	-2.1784E 05	6.3022E 05	-4.2091E 05	5.6175E 04	-4.2344E 05	2.7582E 05	-2.1195E 05	-1.9666E 05	-7.6607E 04
2.6470E 05	-5.7465E 04	-1.0444E 06							

ROW 13

0.0	-6.4296E 03	-1.4965E 05	-1.4460E 05	9.9693E 03	-4.7039E 03	5.8487E 04	2.6668E 04	-3.6624E 04	7.0267E 04
-9.6423E 04	-7.6401E 04	4.6481E 04	8.9550E 03	-8.0787E 04	-1.6549E 05	3.2510E 04	-6.5022E 04	-7.7003E 04	1.3119E 05
3.2901E 04	-2.3880E 04	3.6449E 04	-7.7816E 04	-3.9997E 04	-1.6297E 05	6.6753E 04	-2.8587E 04	-4.5285E 04	-3.0469E 04
4.3264E 04	3.8027E 04	-2.5352E 05							

ROW 14

0.0	-3.8929E 03	-2.0047E 05	-1.1654E 04	-1.0914E 04	-1.1206E 03	2.4723E 04	9.2088E 04	9.5511E 03	1.1356E 05
-1.2410E 05	1.9239E 04	3.3127E 04	4.6977E 03	-5.6010E 04	-1.0455E 05	1.9753E 04	-2.9560E 04	-3.6800E 04	1.4132E 05
9.2599E 04	-1.7725E 04	9.7643E 03	-5.3169E 04	-1.5910E 04	-9.0288E 04	5.0594E 04	-2.1195E 04	-2.8447E 04	-1.7454E 04
2.9622E 04	1.0438E 04	-1.8827E 05							

ROW 15

0.0	1.4109E 04	-1.8848E 05	1.0501E 05	1.1708E 05	7.2830E 03	-7.0685E 04	-3.9325E 05	-7.8210E 03	-4.7037E 05
5.9681E 05	-8.5519E 04	-1.4104E 05	-2.1239E 04	2.3256E 05	4.7336E 05	-7.3520E 04	1.5462E 05	9.9167E 04	-6.5691E 05
-5.7073E 05	6.5993E 04	-2.3416E 04	2.3269E 05	5.1293E 04	4.4433E 05	-2.5755E 05	8.6902E 04	1.2427E 05	8.6089E 04
-1.2777E 05	-4.6454E 04	9.2144E 05							

ROW 16

0.0	-2.7090E 04	3.3122E 06	2.4176E 05	-1.8591E 05	3.3721E 04	2.0795E 05	9.4364E 05	1.7642E 05	9.9365E 05
-8.1174E 05	2.8366E 05	2.1245E 05	2.9820E 04	-3.9690E 05	-6.4992E 05	5.8710E 03	-2.7177E 05	2.3726E 05	1.3181E 06
9.0611E 05	-1.5236E 05	2.6483E 05	-2.9082E 05	7.3263E 04	-5.8139E 05	3.6473E 05	-9.9761E 04	-1.2281E 05	-1.1700E 05
1.4586E 05	9.4579E 03	-1.3070E 06							

ROW 17

0.0	4.6102E 04	-8.3868E 06	-3.6816E 05	1.4990E 05	-4.1942E 04	-3.1110E 05	-1.4658E 06	-2.3803E 05	-1.6210E 06
5.2459E 05	1.0614E 05	-3.3692E 05	-5.4751E 04	5.6920E 05	1.1524E 06	-1.2701E 04	6.1837E 05	-6.0771E 05	-2.1400E 06
-1.1567E 06	2.8941E 05	-8.8480E 05	5.3694E 05	-9.1331E 04	9.2649E 05	-4.5891E 05	2.0497E 05	2.3769E 05	1.7213E 05
-2.8972E 05	-5.0455E 04	1.6982E 06							

ROW 18

0.0	3.7210E 04	-6.7818E 06	-2.9998E 04	-2.4972E 02	-1.3205E 04	-3.0845E 05	-8.7977E 05	-7.9382E 04	-1.0570E 06
5.1653E 04	4.1153E 05	-2.3878E 05	-4.7399E 04	4.1636E 05	8.8011E 05	-1.8026E 04	5.2603E 05	-4.5380E 05	-1.4428E 06
-4.7718E 05	2.2403E 05	-8.2118E 05	4.0439E 05	-3.1201E 04	7.1604E 05	-2.7021E 05	1.4851E 05	1.8121E 05	1.2860E 05
-2.1259E 05	-9.1951E 04	1.0411E 06							

MATRIX * 02 * 33 BY 33 SYMMETRIC MATH MODEL

ROW 19
0.0 7.1134E 04 -1.1743E 07 -7.2939E 05 -2.3823E 05 3.3675E 02 -5.1052E 05 -1.7952E 06 -3.2468E 05 -2.2574E 06
-8.6096E 05 1.1017E 06 -3.0967E 05 -7.9595E 04 5.2019E 05 1.2287E 06 -4.2286E 04 8.0224E 05 -1.1310E 06 -2.4637E 06
-1.7461E 05 4.2990E 05 -2.0014E 06 6.9560E 05 -1.0903E 05 7.4502E 05 -7.3382E 04 2.7140E 05 2.6334E 05 1.0294E 05
-3.3816E 05 -8.2977E 04 6.1607E 05

ROW 20
0.0 -1.5351E 04 4.9080E 06 2.6936E 05 5.8645E 04 -6.9883E 04 1.5344E 05 5.8065E 05 1.0619E 05 6.2486E 05
2.8265E 05 -2.5123E 05 9.1179E 03 7.6343E 03 1.4526E 04 -3.5145E 05 2.5279E 04 -1.8077E 05 3.9640E 05 9.6866E 05
3.2186E 05 -7.2998E 04 5.5755E 05 -2.3379E 05 7.6722E 03 -2.1812E 05 7.0084E 04 -1.2106E 05 -1.1071E 05 -3.8568E 04
1.4941E 05 3.6159E 03 -2.1908E 05

ROW 21
0.0 3.6047E 03 6.7133E 06 2.3485E 05 -6.9641E 04 -2.7055E 03 -3.5498E 04 3.2143E 05 4.1819E 04 3.1141E 05
3.2085E 05 -2.0053E 05 -3.9555E 02 -5.5770E 03 6.0619E 04 -2.3209E 05 -4.9628E 04 -2.1432E 05 5.1815E 05 5.8399E 05
6.2080E 05 -5.0618E 04 4.0387E 05 -1.1783E 05 8.7110E 04 -1.8000E 05 8.4254E 04 -6.2223E 04 -5.4670E 04 -2.0947E 04
8.7226E 04 -2.2795E 04 -2.8265E 05

ROW 22
0.0 -2.2274E 03 2.9855E 05 -1.7021E 04 2.8273E 04 6.7328E 03 4.6552E 04 1.4016E 04 3.6253E 03 1.2101E 04
6.1525E 04 -5.7235E 04 3.0911E 03 2.7616E 03 -2.7105E 04 -2.4669E 04 -4.4883E 03 -2.7375E 04 2.9467E 04 5.0864E 04
-6.5919E 04 -1.2425E 04 6.2935E 04 -6.9326E 03 4.2679E 03 -2.7330E 04 -2.9077E 03 -1.7567E 03 9.2656E 01 -3.5583E 03
1.3753E 03 9.1047E 03 -1.5899E 04

ROW 23
0.0 -2.8959E 04 4.8523E 06 2.7016E 05 1.0756E 04 6.7091E 03 1.9297E 05 7.9354E 05 1.0626E 05 9.7813E 05
5.5968E 05 -5.0242E 05 1.1290E 05 2.0666E 04 -1.6757E 05 -5.1662E 05 4.3716E 04 -3.2013E 05 5.5779E 05 1.0941E 06
9.9184E 04 -1.8655E 05 9.1235E 05 -3.0894E 05 7.1333E 04 -2.9344E 05 9.2456E 02 -1.0948E 05 -1.1008E 05 -3.6530E 04
1.3166E 05 3.0102E 04 -2.6366E 05

ROW 24
0.0 2.7329E 04 -6.2266E 06 -2.8365E 05 -3.1650E 04 -4.7832E 03 -2.0299E 05 -7.6939E 05 -1.3383E 05 -9.1180E 05
-2.0169E 05 2.8540E 05 -1.4409E 05 -2.8005E 04 2.2733E 05 5.8031E 05 1.0295E 03 3.6341E 05 -4.5545E 05 -1.1597E 06
-3.4275E 05 1.7332E 05 -7.7354E 05 3.1380E 05 -4.8314E 04 3.9466E 05 -1.0895E 05 1.3217E 05 1.3599E 05 6.3287E 04
-1.7537E 05 -3.0450E 04 4.9287E 05

ROW 25
0.0 3.1358E 04 -6.2870E 06 -2.4133E 05 -5.5261E 04 -1.9481E 04 -2.4075E 05 -8.1736E 05 -1.4157E 05 -9.6055E 05
-1.5195E 05 3.5087E 05 -1.7368E 05 -4.0558E 04 3.0624E 05 6.2022E 05 8.1389E 03 4.0227E 05 -4.8584E 05 -1.2127E 06
-2.9340E 05 1.9417E 05 -8.3196E 05 3.2023E 05 -6.0642E 04 4.5504E 05 -1.1414E 05 1.2712E 05 1.2798E 05 7.0434E 04
-1.6735E 05 -4.4902E 04 5.4685E 05

ROW 26
0.0 -6.4856E 03 2.1099E 06 2.9919E 05 -1.1947E 04 -2.0957E 03 1.1461E 04 4.3607E 05 1.1940E 05 4.9216E 05
-2.3053E 05 1.2393E 04 6.7379E 04 1.6484E 04 -1.2427E 05 -1.8647E 05 -1.8957E 04 -1.1245E 05 2.3262E 05 4.8524E 05
3.1796E 05 -7.1799E 04 2.3647E 05 -9.5644E 04 6.3890E 04 -1.1265E 05 5.3909E 04 -3.5209E 04 -2.5967E 04 -1.1665E 04
4.4327E 04 -2.1797E 04 -1.9504E 05

ROW 27
0.0 1.2469E 04 -1.2871E 06 1.1099E 04 -5.0669E 04 -1.6179E 03 -1.1415E 05 -2.0539E 05 -1.3370E 04 -3.0354E 05
-1.1236E 04 2.0432E 05 -6.8709E 04 -1.4508E 04 1.2893E 05 2.3752E 05 -1.7270E 04 1.4413E 05 -9.4458E 04 -3.4072E 05
4.5827E 04 7.1666E 04 -2.7575E 05 1.1362E 05 3.0930E 03 1.7452E 05 -3.1449E 04 3.8221E 04 4.8403E 04 2.5768E 04
-5.2977E 04 -3.6615E 04 1.9547E 05

MATRIX * D2 * 33 BY 33 SYMMETRIC MATH MODEL

ROW 28

0.0	4.2569E 04	-7.4903E 06	-4.0125E 05	6.0328E 04	-2.4404E 04	-2.2919E 05	-1.1636E 06	-2.0610E 05	-1.3113E 06
8.2605E 04	2.3373E 05	-2.1927E 06	-4.1450E 04	3.6557E 05	8.0191E 05	-6.7869E 02	4.6198E 05	-6.2252E 05	-1.6293E 06
-7.3603E 05	2.2836E 05	-8.8995E 05	4.0364E 05	-9.8454E 04	6.0147E 05	-2.3497E 05	1.6012E 05	1.6614E 05	1.0065E 05
-2.1094E 05	-2.6261E 04	9.9529E 05							

ROW 29

0.0	3.5132E 04	-6.9538E 06	-2.7307E 05	3.7133E 04	-2.0408E 04	-2.5961E 05	-1.0251E 06	-1.5992E 05	-1.1952E 06
7.7628E 04	2.6858E 05	-2.2731E 05	-4.3130E 04	3.8687E 05	8.0512E 05	-7.2329E 03	4.6770E 05	-5.3438E 05	-1.5273E 06
-6.2718E 05	2.2453E 05	-8.4966E 05	3.9549E 05	-7.7420E 04	6.2871E 05	-2.3830E 05	1.5408E 05	1.6823E 05	1.0747E 05
-2.0727E 05	-4.7373E 04	1.0103E 06							

ROW 30

0.0	-3.1288E 03	1.0229E 06	9.5664E 04	-3.6315E 04	-2.8504E 02	9.3242E 03	1.9977E 05	4.2138E 04	2.0624E 05
-1.1407E 05	3.1882E 04	2.9757E 04	4.9721E 03	-5.3156E 04	-1.0033E 05	-3.3135E 03	-4.8426E 04	8.8093E 04	2.6335E 05
1.8379E 05	-2.7711E 04	8.7639E 04	-5.2872E 04	2.3376E 04	-7.9434E 04	4.7664E 04	-2.1563E 04	-2.0500E 04	-1.2171E 04
2.7916E 04	-6.9583E 03	-1.7445E 05							

ROW 31

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 32

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

ROW 33

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0							

MATRIX * B1 * 1 BY 33 SYMMETRIC MATH MODEL

ROW 1

1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03
1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03
1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03
1.0000E-03	1.0000E-03	1.0000E-03							

MATRIX * B2 * 1 BY 33

ROW 1

3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03
3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03
3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03
3.5000E-03	3.5000E-03	3.5000E-03							

MATRIX * R0 * 33 BY 20 SYMMETRIC MATH MODEL

ROW 1
1.9398E 03 -3.4690E 03 -3.5720E 03 -3.3403E 03 -2.9152E 03 -1.6232E 03 -1.1935E 03 -1.3195E 03 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 2
1.4435E 05 2.5815E 05 2.6581E 05 2.4857E 05 2.1694E 05 1.2079E 05 8.8814E 04 9.8191E 04 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 3
7.9052E 07 8.1765E 07 -1.0950E 07 -2.9055E 07 -4.1515E 07 -3.6765E 07 -6.4921E 07 -7.7563E 07 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 4
1.9718E 06 2.6617E 06 1.7157E 06 5.0893E 06 9.5313E 06 9.1385E 06 -2.3610E 06 -2.8352E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 5
2.5509E 06 3.5942E 06 1.6595E 06 2.8324E 06 4.8594E 06 7.4395E 06 -1.0985E 06 -1.5062E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 6
-1.2109E 05 -1.4994E 05 1.0867E 05 -6.9394E 04 -5.2998E 05 -8.9782E 05 1.6638E 05 2.2830E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 7
6.0401E 05 4.3961E 05 -1.1595E 05 -3.1874E 05 2.0270E 06 5.3048E 06 3.5647E 05 4.2533E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 8
-1.6181E 06 -3.8199E 06 -1.6750E 06 -2.9638E 06 1.2606E 06 6.0535E 06 2.6641E 06 3.7953E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 9
6.0297E 05 6.6671E 05 2.3029E 04 2.4172E 05 2.9165E 06 5.7361E 06 1.2803E 04 -5.4072E 04 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 10
-1.4005E 06 -2.9276E 06 8.4083E 05 8.8783E 05 2.5585E 06 4.3497E 06 1.8402E 06 3.0643E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 11
-1.3731E 05 -3.1508E 06 -3.3307E 06 4.8266E 05 4.0200E 05 -3.8263E 06 1.4580E 06 2.4558E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 12
4.9832E 05 1.3867E 06 -2.5850E 06 -3.9196E 06 2.8625E 05 7.3104E 06 -9.2139E 05 -2.2781E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 13
-5.9193E 05 -5.8591E 05 -7.8375E 05 -3.6239E 05 2.0502E 05 -1.9472E 06 7.5154E 04 -4.2471E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

MATRIX * RO * 33 BY 20 SYMMETRIC MATH MODEL

ROW 14
-4.4984E 05 -4.3772E 05 -5.0614E 05 -2.6495E 05 1.6676E 03 -1.9321E 05 6.3243E 04 -3.0464E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 15
1.8697E 06 1.4049E 06 1.5672E 06 3.5170E 05 -7.0396E 05 1.4239E 06 -3.6252E 05 1.3802E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 16
-1.0505E 06 1.1320E 06 7.9387E 05 8.6484E 05 -1.6237E 06 1.4658E 06 8.1942E 04 -2.0385E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 17
-5.9988E 05 -2.6160E 06 5.3040E 05 4.9077E 05 1.8927E 05 -2.9668E 04 9.1796E 05 3.1938E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 18
-9.6581E 05 -1.6023E 06 1.1239E 06 2.4999E 05 -2.1336E 05 3.6256E 06 1.0106E 06 2.2207E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 19
-1.1761E 06 2.8068E 05 1.7340E 06 1.3158E 06 6.0410E 05 1.9887E 05 3.2740E 06 2.7971E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 20
9.5971E 05 -6.1471E 05 -1.2581E 06 1.9905E 06 -5.2125E 05 8.5557E 05 -9.7372E 05 -8.2108E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 21
1.5667E 06 2.6686E 06 2.1017E 06 2.4465E 06 1.5660E 06 2.8297E 05 -5.7569E 05 -5.0234E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 22
1.3782E 05 4.0979E 05 2.4569E 05 -2.6468E 04 -3.3269E 05 -6.3936E 05 -8.7823E 04 -7.2486E 04 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 23
1.0466E 06 1.4658E 05 -5.8057E 05 -6.3848E 05 -1.0915E 06 3.8860E 05 -1.4363E 06 -1.2160E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 24
-8.1479E 05 -7.3307E 05 3.2533E 05 1.4628E 05 4.7130E 05 -1.4783E 05 1.1440E 06 1.4046E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 25
-8.9847E 05 -1.2794E 06 4.1581E 05 6.6804E 05 -5.7172E 04 8.8249E 05 1.1972E 06 1.5382E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 26
1.9147E 05 4.8906E 04 -2.3055E 05 4.2589E 05 9.8145E 05 1.8498E 06 -3.4160E 05 -4.6036E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

MATRIX * RO * 33 BY 20 SYMMETRIC MATH MODEL

ROW 27
1.5798E 05 3.9199E 05 4.3577E 05 1.6030E 05 2.1756E 05 1.5851E 06 3.5934E 05 5.4246E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 28
-7.9401E 05 -1.7159E 06 3.6103E 05 3.9138E 05 -7.5901E 04 -8.4771E 05 1.1526E 06 2.1889E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 29
-6.9550E 05 -1.5241E 06 4.9527E 05 3.1558E 05 3.4939E 05 5.6395E 05 1.0343E 06 2.1747E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 30
2.6868E 04 7.3619E 04 1.3766E 04 2.7038E 05 6.6167E 04 7.4250E 05 -8.4223E 04 -3.1103E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 31
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 32
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 33
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

MATRIX -*-R1-* 33-BY-20 SYMMETRIC MATH MODEL

ROW 1
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 2
-2.1825E 04 -6.2215E 04 -3.9951E 04 -2.9527E 04 -2.5836E 04 -1.0597E 04 -3.5777E 03 -1.8435E 03 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 3
1.9310E 06 2.8846E 07 1.8764E 06 8.4528E 05 1.3086E 06 4.3983E 05 -1.9006E 05 -7.6210E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 4
-7.2122E 05 -1.9827E 05 -1.1653E 06 -8.4387E 05 -6.2581E 05 -1.8720E 05 -2.5282E 05 -2.2806E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 5
-5.8023E 05 -2.8477E 05 -8.2680E 05 -6.2281E 05 -2.8298E 05 -1.2315E 05 -1.5557E 05 -1.4462E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 6
5.8440E 04 -1.7970E 03 6.3838E 04 5.2332E 04 2.9079E 04 6.2901E 03 1.6431E 04 1.6208E 04 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 7
-3.0130E 05 -5.1714E 05 -3.4808E 05 -2.6148E 05 -1.4170E 05 -2.3031E 04 -6.7536E 04 -5.2832E 04 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 8
-1.4572E 05 -1.5030E 06 -1.1493E 05 -6.8397E 04 1.4075E 04 2.4425E 04 -2.7935E 04 2.0968E 04 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 9
-3.6555E 05 -4.4344E 05 -4.4045E 05 -3.2851E 05 -1.4907E 05 -5.1033E 04 -9.0436E 04 -7.5641E 04 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 10
-8.1873E 04 -1.3985E 06 -3.4967E 05 -1.8779E 05 -2.4233E 05 -1.8486E 04 -5.8023E 04 -4.6000E 03 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 11
2.1448E 05 -5.4698E 05 5.7748E 05 2.5840E 05 1.2008E 04 2.6387E 04 7.2458E 04 9.1295E 04 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 12
-4.8628E 05 5.2447E 05 -1.8055E 05 -1.5742E 05 -1.7792E 05 6.6785E 04 -6.3810E 04 -9.3484E 04 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 13
-6.2284E 04 2.9386E 05 1.3964E 05 1.0539E 05 1.0786E 05 1.3260E 04 2.4461E 04 6.0781E 03 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

MATRIX * R1 * 33 BY 20 SYMMETRIC MATH MODEL

ROW 14
-9.3141E 04 1.4892E 05 4.8550E 04 3.9848E 04 3.5452E 04 1.3654E 04 6.8619E 03 -5.0404E-03 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 15
 4.6417E 05 -6.3246E 05 -1.4059E 05 -1.2793E 05 -1.2814E 05 -3.3299E 04 -2.3200E 04 2.9624E 04 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 16
-6.3440E 05 6.5728E 05 -6.0413E 04 -3.5132E 04 -4.3726E 04 2.2215E 04 1.9525E 02 -5.9052E 04 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 17
 5.3275E 05 -1.0782E 06 2.1089E 04 3.0470E 04 -9.8502E 03 -8.1572E 03 6.7180E 03 6.9895E 04 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 18
 9.1732E 04 -9.3677E 05 -1.6894E 05 -1.0671E 05 -1.2632E 05 1.9585E 03 -2.5188E 04 1.4246E 04 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 19
-3.3552E 05 -9.8136E 05 -1.1821E 05 -9.2574E 04 -1.0371E 05 -5.0987E 04 3.0998E 04 2.4446E 04 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 20
 7.3454E 04 1.7599E 05 -8.4158E 04 -1.5453E 04 -1.1134E 04 5.4364E 04 -3.7934E 04 -2.7995E 04 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 21
-8.7734E 04 -8.2446E 04 -2.7660E 05 -2.4996E 05 -1.5292E 05 -8.7996E 04 -6.0055E 04 -4.0621E 04 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 22
 3.4414E 04 6.7547E 04 3.4389E 04 1.5224E 04 1.1617E 04 4.9721E 03 8.3236E 03 7.3519E 03 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 23
 1.4162E 05 5.3376E 05 4.9118E 04 3.9686E 04 2.1781E 04 2.3490E 04 -1.0638E 04 -7.1125E 03 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 24
-1.3487E 04 -4.3859E 05 -8.7035E 03 4.5000E 00 -6.4381E 03 -8.5376E 03 1.8198E 04 1.8729E 04 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 25
-1.5171E 04 -5.5734E 05 -4.0573E 04 -1.5059E 04 -4.2322E 04 -9.1049E 03 6.1440E 03 9.6852E 03 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 26
-1.2114E 05 1.2190E 03 -1.5760E 05 -9.9667E 04 -6.7664E 04 -1.5975E 04 -3.2800E 04 -2.8018E 04 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

MATRIX * R1 * 33 BY 20 SYMMETRIC MATH MODEL

ROW 27
-4.6817E 04 -3.1036E 05 -1.1102E 05 -8.6166E 04 -8.2312E 04 -1.0905E 04 -1.7684E 04 -9.2023E 03 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 28
2.5050E 05 -7.5620E 05 6.3277E 04 5.5652E 04 2.1361E 04 -6.8955E 03 2.2248E 04 3.8836E 04 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 29
2.1341E 05 -8.6109E 05 -3.1540E 04 -1.4331E 04 -3.2438E 04 -7.6325E 03 1.0975E 03 2.2771E 04 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 30
-9.0427E 04 6.7569E 04 -5.4221E 04 -3.4861E 04 -2.6241E 04 4.0126E 03 -1.0268E 04 -1.2405E 04 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 31
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 32
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 33
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

MATRIX * R2 * 33 BY 20 SYMMETRIC MATH MODEL

ROW 1
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 2
9.6420E 05 1.1736E 06 -4.0477E 05 -3.0865E 05 -7.6436E 04 -6.4574E 04 -9.3667E 04 -9.9055E 04 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 3
-1.0058E 09 -1.3927E 09 2.0932E 08 1.4159E 08 6.6546E 07 2.6860E 07 9.8552E 06 2.5756E 07 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 4
-5.2177E 07 -6.6127E 07 8.1501E 05 6.1914E 05 2.7432E 06 -1.4597E 06 -4.3017E 05 3.4067E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 5
-2.5812E 07 -3.0563E 07 -1.7665E 06 -7.5834E 05 -5.1832E 06 -1.9655E 06 -6.4488E 05 3.5321E 04 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 6
3.2430E 06 5.0080E 06 1.4098E 05 -1.2240E 05 4.5239E 04 1.8651E 05 2.6921E 03 -7.8477E 04 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 7
4.6216E 06 4.2842E 06 -3.4190E 06 -1.8936E 06 -2.1548E 06 -1.8854E 06 -2.3968E 05 -2.8216E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 8
4.6819E 07 7.1576E 07 -9.3418E 06 -5.8915E 06 -5.3150E 06 -2.3234E 06 1.7104E 04 -1.3727E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 9
-2.2897E 06 -5.8702E 06 -2.7000E 06 -1.3779E 06 -3.0731E 06 -1.4809E 06 -2.5608E 05 -1.6193E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 10
2.6795E 07 5.5464E 07 -6.4060E 06 -5.8192E 06 2.6027E 05 -2.4479E 06 -1.6645E 05 -1.4504E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 11
2.9699E 07 4.9791E 07 -1.2408E 07 -3.0535E 06 3.4052E 06 6.9975E 05 1.8934E 05 -7.9528E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 12
-1.0056E 07 -4.3414E 07 2.9661E 06 2.9610E 06 5.4539E 06 -2.0042E 06 1.4871E 05 1.3086E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 13
4.9500E 06 -7.3470E 06 1.6252E 06 1.1343E 06 -3.9754E 05 8.7201E 05 7.9203E 04 4.9741E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

MATRIX * R2 * 33 BY 20 **SYMMETRIC MATH MODEL**

ROW 14
3.6089E 06 -5.6303E 06 7.8128E 05 5.0026E 05 1.8263E 05 1.5412E 05 3.9936E 04 3.5426E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 15
-1.6443E 07 2.7029E 07 -3.5587E 06 -2.0195E 06 -3.5796E 05 -8.9109E 05 1.1260E 03 -1.4959E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 16
1.0374E 07 -4.2088E 07 3.1137E 06 1.5564E 06 1.7804E 06 -5.7213E 05 -4.1935E 05 1.4909E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 17
7.2380E 06 6.2912E 07 -6.2484E 06 -4.3412E 06 -1.9787E 06 -6.1773E 05 1.9855E 05 -1.8418E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 18
1.2592E 07 4.1488E 07 -5.6070E 06 -4.0581E 06 -7.6340E 05 -1.9411E 06 -9.0304E 04 -1.1802E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 19
5.4821E 07 4.6374E 07 -8.9670E 06 -5.7388E 06 -3.0381E 06 -1.0872E 06 -1.1954E 06 -8.3151E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 20
-1.8668E 07 -1.4126E 07 2.7458E 06 2.8663E 05 3.2298E 05 -1.6904E 06 3.0632E 05 1.4427E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 21
-1.5121E 07 -1.3526E 07 -1.4506E 06 4.5430E 04 -1.0861E 06 5.4646E 04 -4.2739E 05 -5.4711E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 22
-1.3895E 06 -1.1335E 06 1.2065E 05 2.6837E 05 4.3401E 04 -1.6119E 04 -2.2608E 04 -3.3738E 04 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 23
-2.4632E 07 -2.0105E 07 3.3574E 06 2.1519E 06 1.8148E 06 2.8580E 05 3.2622E 05 1.3508E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 24
1.2669E 07 2.5161E 07 -3.2936E 06 -2.2793E 06 -1.3892E 06 -3.4837E 05 -3.1360E 05 -3.5903E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 25
1.8864E 07 2.7918E 07 -3.3474E 06 -2.8721E 06 -8.7421E 05 -6.1877E 05 -2.6673E 05 -3.5457E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 26
-6.6150E 06 -1.0132E 07 7.4001E 05 1.1942E 05 2.4008E 05 -2.5013E 05 1.0600E 03 4.1537E 04 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

MATRIX * R2 * 33 BY 20 SYMMETRIC MATH MODEL

ROW 27
4.4550E 06 8.8977E 06 -2.0628E 06 -1.3007E 06 -1.0152E 05 -7.9688E 05 -1.5587E 05 -2.7911E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 28
1.6036E 07 4.2304E 07 -4.1819E 06 -2.9348E 06 -1.5637E 06 -1.0790E 05 2.7735E 04 -5.9809E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 29
1.3119E 07 4.1547E 07 -4.6035E 06 -3.1782E 06 -1.4158E 06 -7.1734E 05 2.7116E 04 -6.4555E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 30
-1.0251E 06 -6.5685E 06 4.4077E 05 1.3605E 05 2.4175E 05 -3.6457E 05 -5.6292E 04 7.6684E 04 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 31
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 32
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 33
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

MATRIX * R3 * 33 BY 20 SYMMETRIC MATH MODEL

ROW 1
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 2
-3.4111E 06 -3.8986E 06 4.6716E 05 4.3237E 05 -8.9364E 04 1.4366E 05 1.5440E 05 2.3438E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 3
2.7178E 09 3.8367E 09 -4.0149E 08 -2.4319E 08 -1.1388E 08 -6.9130E 07 4.3526E 07 -6.6712E 07 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 4
1.4069E 09 1.7181E 08 -5.7108E 06 -8.3868E 06 -1.3562E 07 7.1356E 06 3.9053E 06 -1.0978E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 5
6.6747E 07 9.9291E 07 2.3793E 06 -3.7176E 06 1.5169E 07 8.7286E 06 2.9961E 06 -6.8885E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 6
-9.2271E 06 -1.3647E 07 -7.2003E 05 8.6587E 05 1.0833E 05 -9.3817E 05 -2.3219E 05 2.5135E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 7
-1.3141E 07 -1.1695E 07 7.4121E 06 -3.4469E 05 3.7029E 06 7.8341E 06 3.1214E 05 6.8483E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 8
-1.2690E 08 -1.9021E 08 1.9587E 07 5.3177E 06 1.1473E 07 8.2880E 06 -3.2783E 06 4.5546E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 9
6.0928E 06 1.5135E 07 5.3300E 06 -2.0063E 06 7.4435E 06 6.3029E 06 9.0240E 05 3.6107E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 10
-7.6202E 07 -1.5257E 08 8.6835E 06 7.9719E 06 -8.3783E 06 8.7218E 06 -2.4778E 06 4.7003E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 11
-8.4708E 07 -1.3403E 08 3.9140E 07 9.1722E 06 -1.2467E 07 -4.1738E 06 -3.4021E 06 2.4540E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 12
3.6236E 07 1.2438E 08 -2.0840E 06 -1.0514E 07 -2.1939E 07 1.0383E 07 2.6940E 06 -4.0115E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 13
-1.1763E 07 2.0609E 07 -3.8964E 06 -1.6432E 06 3.7914E 06 -3.6125E 06 4.8587E 05 -1.6771E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

MATRIX * R3 * 33 BY 20 SYMMETRIC MATH MODEL

ROW 14
-8.5334E 06 1.5915E 07 -1.5520E 06 -8.1286E 05 -1.5295E 03 -4.7048E 05 4.1554E 05 -1.2097E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 15
4.0551E 07 -7.4032E 07 8.7588E 06 3.3584E 06 -1.7559E 06 1.2528E 06 -2.4393E 06 5.2703E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 16
-2.8453E 07 1.1193E 08 -5.8821E 06 -1.5811E 06 -6.4974E 06 3.4887E 06 4.2858E 06 -5.6711E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 17
-2.2624E 07 -1.7046E 08 1.2743E 07 8.3819E 06 3.7005E 06 1.1418E 06 -4.8213E 06 6.4810E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 18
-3.7136E 07 -1.1288E 08 1.2089E 07 6.3608E 06 -2.9406E 06 7.4168E 06 -2.3935E 06 3.9034E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 19
-1.5278E 08 -1.3265E 08 1.5282E 07 9.8405E 06 5.5266E 06 2.2129E 06 1.3595E 06 1.0829E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 20
5.3807E 07 3.7681E 07 -6.6737E 06 2.6278E 06 -2.1559E 06 8.9106E 06 -4.1229E 04 1.8363E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 21
3.5487E 07 3.0436E 07 3.0850E 06 -1.8898E 06 3.1305E 06 -7.2575E 05 1.7833E 06 1.9246E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 22
2.9223E 06 2.9078E 06 2.1185E 05 -1.4022E 05 1.7842E 05 1.2983E 05 6.5523E 04 1.2304E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 23
6.9391E 07 5.5944E 07 -4.0650E 06 -3.4024E 06 -4.7273E 06 -2.9267E 05 -2.2671E 05 5.5182E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 24
-5.1897E 07 -6.9103E 07 5.7239E 06 3.9493E 06 3.1265E 06 5.4215E 05 -5.9003E 05 6.3768E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 25
-5.2134E 07 -7.7095E 07 7.4812E 06 5.3142E 06 2.5394E 05 1.6711E 06 -7.5956E 05 6.4726E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 26
1.9022E 07 2.7589E 07 -2.5463E 06 -9.9797E 05 -1.6377E 06 1.3842E 06 4.9166E 05 -4.0173E 04 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

MATRIX * R3 * 33 BY 20 SYMMETRIC MATH MODEL

ROW 27
-1.3424E 07 -2.4845E 07 4.4130E 06 1.6472E 06 -1.8226E 06 3.0510E 06 -9.4830E 04 7.0696E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 28
-4.5395E 07 -1.1462E 08 7.8587E 06 5.8732E 06 3.7199E 06 -7.4004E 05 -2.5857E 06 1.4604E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 29
-3.7777E 07 -1.1231E 08 8.8317E 06 5.5474E 06 2.0949E 06 1.9314E 06 -2.6216E 06 1.6339E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 30
3.2921E 06 1.7296E 07 -1.0081E 06 -3.5721E 05 -1.2248E 06 1.7226E 06 5.8271E 05 -2.1521E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 31
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 32
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 33
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

MATRIX * R4 * 33 BY 20 SYMMETRIC MATH MODEL

ROW 1
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 2
2.5313E 06 2.7976E 06 -2.2049E 05 -3.2158E 05 5.1139E 04 -1.5192E 05 -1.7387E 05 -2.0480E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 3
-1.9329E 09 -2.7644E 09 2.1876E 08 1.3345E 08 8.9644E 07 6.8374E 07 2.8741E 07 9.4012E 07 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 4
-9.7201E 07 -1.1756E 08 3.8501E 06 3.6294E 06 4.0185E 06 -1.1482E 07 -2.4093E 05 2.8502E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 5
-4.6272E 07 -6.9143E 07 -2.0780E 06 6.1273E 06 -1.8482E 07 -1.2015E 07 -7.8125E 05 1.8583E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 6
6.5768E 06 9.5288E 06 6.7893E 05 -6.7739E 05 5.2121E 05 1.3692E 06 -2.1070E 03 -3.5420E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 7
9.4054E 06 8.6368E 06 -3.9185E 05 2.5041E 06 -5.2931E 06 -9.8938E 06 -4.5076E 05 -6.5228E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 8
9.0348E 07 1.3548E 08 -8.5252E 06 2.8923E 06 -1.0555E 07 -9.8974E 06 -1.0466E 05 -5.9963E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 9
-4.0695E 06 -9.8585E 06 -2.5554E 06 3.2081E 06 -9.5327E 06 -8.6251E 06 -5.7842E 05 -9.5940E 04 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 10
5.6475E 07 1.1020E 08 -1.5260E 06 -2.8855E 06 7.2984E 06 -9.8738E 06 3.5974E 05 -5.6198E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 11
6.2317E 07 9.5739E 07 -2.2225E 07 -7.5408E 06 1.2976E 07 6.0773E 06 1.3591E 06 -3.5590E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 12
-2.9372E 07 -8.9079E 07 1.5027E 06 1.1179E 07 1.7104E 07 -1.3983E 07 -1.6751E 06 4.6360E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 13
8.2568E 06 -1.4112E 07 2.9268E 06 4.8371E 05 -3.6080E 06 4.4259E 06 -6.9694E 05 1.6473E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

MATRIX * R4 * 33 BY 20 SYMMETRIC MATH MODEL

ROW 14
6.0871E 06 -1.0927E 07 1.1345E 06 4.4201E 05 -1.8136E 05 4.8813E 05 -5.5120E 05 1.2057E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 15
-2.9399E 07 5.0480E 07 -6.6840E 06 -1.1930E 06 2.5601E 06 -3.6778E 06 2.9808E 06 -5.3800E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 16
2.1961E 07 -7.8546E 07 2.1041E 06 7.5449E 04 6.1434E 06 -4.6715E 06 -4.0979E 06 6.3985E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 17
1.6936E 07 1.2063E 08 -7.2838E 06 -4.6238E 06 -1.9314E 06 -5.6333E 05 3.6286E 06 -7.6710E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 18
2.7907E 07 7.9882E 07 -7.3410E 06 -1.9832E 06 3.4701E 06 -8.6801E 06 1.3255E 06 -4.6580E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 19
1.0765E 08 9.5158E 07 -8.3524E 06 -5.1475E 06 -3.0478E 06 -1.3598E 06 -4.4318E 06 -1.7614E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 20
-3.9179E 07 -2.4578E 07 4.4883E 06 -4.9637E 06 3.2856E 06 -9.4200E 06 9.9035E 05 6.3704E.04 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 21
-2.3557E 07 -2.0786E 07 -3.7131E 05 5.5249E 05 -3.5148E 06 8.2434E 05 -6.3954E 05 -1.2487E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 22
-1.9825E 06 -2.4969E 06 -6.2017E 05 -5.9208E 04 2.4619E 05 -4.4651E 04 6.7125E 04 -8.5375E 04 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 23
-4.9987E 07 -3.9667E 07 1.8768E 06 2.1755E 06 3.7474E 06 -2.5562E 04 1.9249E 06 -5.1431E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 24
3.6952E 07 4.9011E 07 -2.6544E 06 -2.0579E 06 -2.1351E 06 -1.7570E 05 -5.1022E 05 -1.2069E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 25
3.7190E 07 5.5359E 07 -4.2604E 06 -2.7810E 06 5.3490E 05 -1.5737E 06 -4.7385E 05 -1.2426E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 26
-1.3492E 07 -1.9039E 07 2.2057E 06 9.4183E 05 3.8937E 05 -2.3010E 06 -3.1763E 04 3.0505E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

MATRIX * R4 * 33 BY 20 SYMMETRIC MATH MODEL

ROW 27
9.5962E 06 1.7455E 07 -2.7151E 06 -4.3135E 05 1.7793E 06 -3.5373E 06 -1.9387E 05 -7.4926E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 28
3.2518E 07 8.1054E 07 -4.2181E 06 -3.3311E 06 -2.1628E 06 1.5703E 06 1.1219E 06 -2.1586E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 29
2.7378E 07 7.9244E 07 -4.7377E 06 -2.7425E 06 -1.0112E 06 -1.7508E 06 1.3255E 06 -2.2796E 06 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 30
-2.3675E 06 -1.1812E 07 5.5718E 05 1.5254E 05 9.1753E 05 -2.1506E 06 -4.1992E 05 3.3271E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 31
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 32
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 33
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

MATRIX * BG1* 1 BY 20 SYMMETRIC MATH MODEL

ROW 1

1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03
1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03

MATRIX * BG2* 1 BY 20

ROW 1

3.0000E-03	3.0000E-03	3.0000E-03	3.0000E-03	3.0000E-03	3.0000E-03	3.0000E-03	3.0000E-03	3.0000E-03	3.0000E-03
3.0000E-03	3.0000E-03	3.0000E-03	3.0000E-03	3.0000E-03	3.0000E-03	3.0000E-03	3.0000E-03	3.0000E-03	3.0000E-03

MATRIX * BG3* 1 BY 20

ROW 1

5.0000E-03	5.0000E-03	5.0000E-03	5.0000E-03	5.0000E-03	5.0000E-03	5.0000E-03	5.0000E-03	5.0000E-03	5.0000E-03
5.0000E-03	5.0000E-03	5.0000E-03	5.0000E-03	5.0000E-03	5.0000E-03	5.0000E-03	5.0000E-03	5.0000E-03	5.0000E-03

MATRIX * BG4* 1 BY 20

ROW 1

7.0000E-03	7.0000E-03	7.0000E-03	7.0000E-03	7.0000E-03	7.0000E-03	7.0000E-03	7.0000E-03	7.0000E-03	7.0000E-03
7.0000E-03	7.0000E-03	7.0000E-03	7.0000E-03	7.0000E-03	7.0000E-03	7.0000E-03	7.0000E-03	7.0000E-03	7.0000E-03

MATRIX *XGST* 1 BY 10 SYMMETRIC MATH MODEL

ROW 1
4.5000E 02 6.0000E 02 7.3000E 02 8.7000E 02 1.0200E 03 1.1800E 03 1.5000E 03 1.6900E 03 1.6500E 03 -1.0030E 02

MATRIX *YGST* 1 BY 10

ROW 1
0.0 2.2100E 02 4.0600E 02 5.8800E 02 7.8800E 02 1.0050E 03 0.0 2.2100E 02 0.0 0.0

MATRIX *ZGST* 1 BY 10

ROW 1
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 -1.5000E 02 0.0

MATRIX *PHI.* 57 BY 30 **SYMMETRIC MATH MODEL**

ROW 1

0.0	0.0	0.0	6.4237E 07	1.0154E 08	-1.7415E 07	-5.6174E 07	-3.8390E 08	-4.1295E 07	-3.0252E 08
-3.4459E 08	5.6745E 07	-1.3658E 08	-8.5756E 07	4.5754E 08	-1.8546E 08	-2.0083E 07	-3.4221E 07	-4.7013E 08	-4.0458E 08
-2.5481E 08	2.2618E 07	-1.3214E 09	2.3040E 08	-3.1440E 07	9.8356E 07	4.4358E 08	2.5714E 08	-2.0550E 08	1.7057E 08

ROW 2

0.0	0.0	0.0	2.4957E 07	5.5367E 07	-1.0025E 08	-1.9046E 07	-2.3101E 08	-9.7901E 05	-2.8703E 08
-2.5687E 08	3.2896E 08	8.8482E 07	6.4435E 07	-2.6174E 08	1.1077E 08	4.3305E 07	1.4433E 08	-4.6788E 08	1.4402E 08
1.9762E 08	-6.3891E 07	1.8793E 08	-1.0568E 08	4.1560E 07	-1.0297E 08	-3.6774E 08	-2.4262E 08	1.6972E 08	-1.8361E 08

ROW 3

0.0	0.0	0.0	1.4758E 07	3.4730E 07	-6.3374E 06	-1.1333E 07	-1.4870E 08	6.0024E 05	-1.9541E 08
-1.7359E 08	2.4510E 08	8.9488E 07	6.5557E 07	-2.8534E 08	1.6933E 08	3.3615E 07	1.5590E 08	1.0764E 08	-2.2193E 07
7.6908E 07	-3.4591E 07	3.3597E 08	-1.0189E 07	-7.3041E 07	-5.5398E 06	-1.2012E 08	-8.7455E 07	3.2550E 07	-5.2144E 07

ROW 4

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 5

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 6

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 7

0.0	0.0	0.0	-7.0214E 07	-9.5014E 06	-3.4524E 06	5.5470E 07	9.6039E 07	5.7369E 07	-6.0206E 07
5.3962E 07	2.4180E 08	4.8631E 07	1.8157E 07	-6.7198E 07	-1.8546E 06	-1.7442E 05	-1.2883E 08	-7.3238E 07	3.1053E 08
-2.7230E 07	-3.4373E 07	-1.1061E 08	-9.2898E 06	5.7988E 07	9.5890E 05	7.8053E 07	5.2476E 07	-4.1536E 07	2.4538E 07

ROW 8

0.0	0.0	0.0	-1.4620E 07	-2.6693E 07	5.6183E 06	-4.3845E 07	-7.4164E 07	-3.7505E 07	-7.4791E 04
6.4837E 07	-5.5799E 07	-1.1793E 07	1.8205E 06	-1.8182E 07	3.7261E 07	3.7157E 06	-1.3901E 07	3.4543E 06	2.4665E 08
-2.7777E 07	-2.6912E 07	1.7790E 07	-1.4693E 07	3.5971E 07	2.2307E 07	3.9443E 07	5.0042E 06	-8.4664E 06	-2.4187E 07

ROW 9

0.0	0.0	0.0	-6.2194E 06	-1.9561E 07	2.6247E 06	-1.9753E 07	-3.3329E 07	-2.3031E 07	-2.4104E 07
3.2149E 07	-7.5318E 07	4.0865E 07	3.0130E 06	-2.2182E 07	-3.3807E 07	1.1328E 06	-4.9591E 07	4.8389E 06	1.4879E 08
1.6204E 07	1.3212E 07	-7.4739E 07	3.2363E 07	-5.2979E 07	-5.5841E 06	1.1850E 06	-1.6689E 07	1.2345E 07	1.1552E 06

ROW 10

0.0	0.0	0.0	6.6863E 06	-1.5247E 08	-4.7399E 07	8.1496E 07	-2.9330E 08	5.7618E 06	1.4025E 08
-3.2097E 07	-1.0886E 08	1.5291E 07	-5.3241E 07	-1.7675E 07	2.0665E 08	5.1222E 07	-9.2971E 08	3.3461E 07	-1.3827E 08
-2.8067E 07	5.4253E 08	2.3480E 07	-9.6192E 07	1.7691E 08	8.3246E 07	1.9739E 08	-9.0409E 07	3.5127E 07	-1.6206E 08

MATRIX *PHI.* 57 BY 30 SYMMETRIC MATH MODEL

ROW 11

0.0	0.0	0.0	-1.1809E 06	-1.1791E 07	-4.1411E 06	-6.4301E 07	-6.4714E 07	1.4756E 08	4.6653E 07
5.9673E 07	-2.3970E 07	2.2080E 07	2.5441E 06	-8.9050E 06	-1.8881E 08	-3.9682E 07	6.6282E 08	2.7298E 06	1.4388E 08
-7.9374E 06	-2.4653E 08	3.8611E 07	3.4851E 07	-5.6781E 07	2.0466E 07	8.8545E 07	-1.4940E 07	-3.7801E 06	-1.0614E 08

ROW 12

0.0	0.0	0.0	-2.8241E 05	-9.2449E 06	-3.2156E 06	-6.8345E 06	-2.9864E 07	5.8895E 07	5.3916E 06
1.5863E 07	-5.0849E 07	4.5270E 07	3.6262E 06	-2.1306E 07	-1.9542E 08	-3.4210E 07	5.4170E 08	1.1221E 07	1.3248E 08
-1.1014E 06	1.4272E 08	-1.6369E 07	-1.1045E 07	6.1693E 07	1.6476E 08	1.0710E 08	-5.3781E 07	2.1789E 07	-8.6467E 07

ROW 13

0.0	0.0	0.0	-7.0214E 07	-9.5014E 06	-3.4524E 06	5.5470E 07	9.6039E 07	5.7369E 07	-6.0206E 07
5.3962E 07	2.4130E 08	4.8631E 07	1.8157E 07	-6.7198E 07	-1.8546E 08	-1.7442E 05	-1.2883E 08	-7.3238E 07	3.1053E 08
-2.7230E 07	-3.4373E 07	-1.1061E 08	-9.2898E 06	5.7983E 07	9.5890E 05	7.8053E 07	5.2476E 07	-4.1536E 07	2.4538E 07

ROW 14

0.0	0.0	0.0	-1.4620E 07	-2.6693E 07	5.6181E 06	-4.3845E 07	-7.4184E 07	-3.7505E 07	-7.4791E 04
6.4837E 07	-5.5799E 07	-1.1795E 07	1.8205E 06	-1.8182E 07	3.7261E 07	3.7157E 06	-1.3901E 07	3.4543E 06	2.4665E 08
-2.7777E 07	-2.6912E 07	1.7790E 07	-1.4693E 07	3.5971E 07	2.2307E 07	3.9443E 07	5.0042E 06	-8.4664E 06	-2.4187E 07

ROW 15

0.0	0.0	0.0	-6.2194E 06	-1.9561E 07	2.6247E 06	-1.9753E 07	-3.3329E 07	-2.3031E 07	-2.4104E 07
3.2149E 07	-7.5318E 07	4.0865E 07	3.0130E 06	-2.2182E 07	-3.3807E 07	1.1328E 06	-4.9591E 07	4.8389E 06	1.4879E 08
1.6204E 07	1.5212E 07	-7.4739E 07	3.2363E 07	-5.2979E 07	-5.5841E 06	1.1850E 06	-1.8889E 07	1.2345E 07	1.1552E 06

ROW 16

0.0	0.0	0.0	6.6683E 05	-1.5247E 08	-4.7399E 07	8.1496E 07	-2.9330E 08	5.7818E 08	1.4025E 08
-3.2097E 07	-1.0883E 08	1.5294E 07	-5.3241E 07	-1.7675E 07	2.0658E 08	5.1222E 07	-9.2971E 08	3.3461E 07	-1.3827E 08
-2.6087E 07	5.4253E 06	2.3480E 07	-4.5192E 07	1.7691E 08	8.3246E 07	1.9739E 08	-9.0409E 07	3.5127E 07	-1.6206E 08

ROW 17

0.0	0.0	0.0	-1.1809E 06	-1.1791E 07	-4.1411E 06	-6.4301E 07	-6.4714E 07	1.4756E 08	4.6653E 07
5.9673E 07	-2.3970E 07	2.2080E 07	2.5441E 06	-8.9050E 06	-1.8881E 08	-3.9682E 07	6.6282E 08	2.7298E 06	1.4388E 08
-7.9374E 06	-2.4653E 08	3.8611E 07	3.4851E 07	-5.6781E 07	2.0466E 07	8.8545E 07	-1.4940E 07	-3.7801E 06	-1.0614E 08

ROW 18

0.0	0.0	0.0	-2.8241E 05	-9.2449E 06	-3.2156E 06	-6.8345E 06	-2.9864E 07	5.8895E 07	5.3916E 06
1.5863E 07	-5.0849E 07	4.5270E 07	3.6262E 06	-2.1306E 07	-1.9542E 08	-3.4210E 07	5.4170E 08	1.1221E 07	1.3248E 08
-1.1014E 06	1.4272E 08	-1.6369E 07	-1.1045E 07	6.1693E 07	1.6476E 08	1.0710E 08	-5.3781E 07	2.1789E 07	-8.6467E 07

ROW 19

0.0	0.0	0.0	3.6087E 05	8.3179E 05	-1.6405E 05	-2.7820E 05	-3.8580E 06	1.5070E 05	-5.0984E 06
-4.6685E 06	6.9517E 06	4.1725E 06	3.2769E 06	-1.5681E 07	2.7404E 07	-3.9519E 07	-2.5637E 07	-1.7394E 07	5.1103E 06
4.1066E 06	4.5936E 05	1.3525E 07	-9.5970E 06	-1.0636E 07	2.6430E 06	-1.6175E 07	-5.8921E 07	-5.6517E 07	7.4194E 06

ROW 20

0.0	0.0	0.0	3.6087E 05	8.3179E 05	-1.6405E 05	-2.7820E 05	-3.8580E 06	1.5070E 05	-5.0984E 06
-4.6685E 06	6.9517E 06	4.1725E 06	3.2769E 06	-1.5681E 07	2.7404E 07	-3.9519E 07	-2.5637E 07	-1.7394E 07	5.1103E 06
4.1066E 06	4.5936E 05	1.3525E 07	-9.5970E 06	-1.0636E 07	2.6430E 06	-1.6175E 07	-5.8921E 07	-5.6517E 07	7.4194E 06

MATRIX *PHI.* 57 BY 30 **SYMMETRIC MATH MODEL**

ROW 21

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 22

0.0	0.0	1.0000E 00	1.0797E-02	6.9051E-03	4.7645E-04	8.6433E-03	3.5384E-02	4.3101E-03	3.9992E-02
5.9522E-02	-5.1477E-02	-2.0124E-02	-1.5045E-02	6.7013E-02	-4.5338E-02	-7.0762E-03	-3.2556E-02	6.7395E-02	3.2367E-04
-2.3796E-02	3.0039E-03	-1.0911E-02	8.4440E-03	-5.3544E-03	9.8319E-03	2.3085E-02	1.1228E-02	-1.1167E-02	5.0974E-03

ROW 23

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 24

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 25

0.0	-2.5910E-03	-1.7923E 00	3.0273E-02	-1.5118E-02	-3.2491E-03	-4.7553E-02	-1.5424E-01	-3.0049E-02	-1.0524E-01
-2.8841E-01	8.8173E-02	-2.1253E-02	-1.9488E-02	8.4610E-02	-7.9655E-02	-7.6098E-03	-3.8962E-02	6.1540E-02	3.8255E-02
-1.4884E-03	-4.9757E-03	3.2533E-02	-4.8893E-03	2.5551E-03	-4.2146E-04	-8.9105E-03	-2.6847E-03	2.6469E-03	-3.1935E-04

ROW 26

0.0	-2.5910E-03	-9.6176E-03	3.8468E-02	-1.5171E-02	9.7202E-04	-1.2405E-02	1.2875E-02	-8.5521E-03	5.5605E-02
1.0961E-02	-6.9722E-02	-5.7267E-03	-2.7091E-03	5.4505E-03	2.1253E-02	-8.4717E-04	6.8048E-03	3.7199E-02	-2.5171E-02
-1.6078E-03	4.0838E-03	2.8473E-02	6.2825E-04	-7.6909E-03	2.2835E-03	-5.3161E-03	-5.3601E-03	2.8693E-03	-4.2067E-03

ROW 27

-1.4270E-04	-2.5871E-03	2.0489E 00	7.9772E-02	3.7327E-02	-5.5228E-03	-9.2025E-03	-8.1141E-02	3.3294E-03	-5.0946E-02
-4.2417E-02	2.1095E-02	-7.3661E-03	-5.7617E-03	2.8124E-02	-2.9268E-02	9.4218E-03	-7.3587E-03	-8.6527E-02	2.5927E-02
1.6786E-02	2.9389E-03	4.9668E-02	-5.8770E-03	-4.2664E-03	1.1693E-04	-4.6666E-03	1.5425E-03	9.2704E-03	-4.6956E-03

ROW 28

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 29

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 30

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

MATRIX *PHI.* 57 BY 30 SYMMETRIC MATH MODEL

ROW 31
2.7058E-04 -2.5744E-03 2.0295E-01 -4.7275E-02 -3.3808E-02 -2.3654E-03 2.7117E-02 9.2047E-02 2.6633E-02 1.4903E-02
-2.5646E-02 9.8167E-02 5.2930E-03 1.9773E-03 1.7268E-03 -3.5349E-02 -2.0679E-03 -1.4880E-03 -5.8003E-03 -7.0115E-02
-9.6746E-03 7.6645E-03 -1.6681E-02 1.0435E-02 -1.8136E-02 -9.2110E-04 -2.2752E-03 -5.3334E-03 3.4084E-03 -2.6250E-03

ROW 32
2.7058E-04 -2.5744E-03 8.3911E-01 -2.0970E-01 -1.9041E-01 1.8143E-02 -1.2120E-01 -1.1703E-01 -9.5228E-02 -8.3258E-02
6.8802E-02 -1.1209E-01 9.8630E-03 -5.9597E-04 4.2044E-03 3.3780E-02 2.8289E-03 -1.1545E-02 3.4857E-03 1.9082E-01
-2.2948E-02 2.9073E-02 -3.0738E-02 1.1370E-02 -2.6430E-02 -3.3097E-02 -4.2174E-03 -3.8288E-03 3.5437E-03 1.2506E-02

ROW 33
2.7058E-04 -2.5744E-03 1.1036E 00 -2.8796E-01 -3.2340E-01 3.4491E-02 -2.6616E-01 -2.4138E-01 -1.8689E-01 -2.5107E-01
1.8776E-01 -4.4946E-01 1.5090E-01 1.5652E-02 -1.2830E-01 -2.1316E-01 2.1528E-03 -2.7077E-01 -1.2554E-02 -5.5337E-01
7.9598E-02 -1.1626E-01 3.9209E-02 -7.1315E-03 1.9115E-02 3.1700E-02 -3.7057E-02 3.8037E-02 -2.6365E-02 -8.1766E-02

ROW 34
2.7058E-04 -2.5744E-03 9.1101E-02 -1.8673E-01 2.5667E-01 -7.3176E-03 2.0651E-01 -3.7373E-01 -1.0740E-01 2.9187E-01
9.7171E-02 7.0783E-02 1.5120E-02 -2.3618E-04 -9.6065E-04 -1.0690E-02 -5.2375E-04 -1.2131E-03 2.8921E-03 2.1027E-03
2.2913E-02 -1.6071E-02 -8.5766E-03 3.3782E-03 -1.2810E-03 1.3059E-02 2.5444E-03 -2.0419E-03 1.0225E-03 -7.0219E-04

ROW 35
2.7058E-04 -2.5744E-03 2.0295E-01 -4.7275E-02 -3.3808E-02 -2.3654E-03 2.7117E-02 9.2047E-02 2.6633E-02 1.4903E-02
-2.5646E-02 9.8167E-02 5.2930E-03 1.9773E-03 1.7268E-03 -3.5349E-02 -2.0679E-03 -1.4880E-03 -5.8003E-03 -7.0115E-02
-9.6746E-03 7.6645E-03 -1.6681E-02 1.0435E-02 -1.8136E-02 -9.2110E-04 -2.2752E-03 -5.3334E-03 3.4084E-03 -2.6250E-03

ROW 36
2.7058E-04 -2.5744E-03 8.3911E-01 -2.0970E-01 -1.9041E-01 1.8143E-02 -1.2120E-01 -1.1703E-01 -9.5228E-02 -8.3258E-02
6.8802E-02 -1.1209E-01 9.8630E-03 -5.9597E-04 4.2044E-03 3.3780E-02 2.8289E-03 -1.1545E-02 3.4857E-03 1.9082E-01
-2.2948E-02 2.9073E-02 -3.0738E-02 1.1370E-02 -2.6430E-02 -3.3097E-02 -4.2174E-03 -3.8288E-03 3.5437E 03 1.2506E-02

ROW 37
2.7058E-04 -2.5744E-03 1.1036E 00 -2.8796E-01 -3.2340E-01 3.4491E-02 -2.6616E-01 -2.4138E-01 -1.8689E-01 -2.5107E-01
1.8776E-01 -4.4946E-01 1.5090E-01 1.5652E-02 -1.2830E-01 -2.1316E-01 2.1528E-03 -2.7077E-01 -1.2554E-02 -5.5337E-01
7.9598E-02 -1.1626E-01 3.9209E-02 -7.1315E-03 1.9115E-02 3.1700E-02 -3.7057E-02 3.8037E-02 -2.6365E-02 -8.1766E-02

ROW 38
2.7058E-04 -2.5744E-03 9.1101E-02 -1.8673E-01 2.5667E-01 -7.3176E-03 2.0651E-01 -3.7373E-01 -1.0740E-01 2.9187E-01
9.7171E-02 7.0783E-02 1.5120E-02 -2.3618E-04 -9.6065E-04 -1.0690E-02 -5.2375E-04 -1.2131E-03 2.8921E-03 2.1027E-03
2.2913E-02 -1.6071E-02 -8.5766E-03 3.3782E-03 -1.2810E-03 1.3059E-02 2.5444E-03 -2.0419E-03 1.0225E-03 -7.0219E-04

ROW 39
1.5792E-04 -2.5537E-03 -5.9692E-01 9.8159E-03 4.1342E-02 9.3730E-03 3.5925E-02 -7.3246E-03 2.9544E-02 -9.2752E-02
4.3349E-01 3.7498E-02 -3.0447E-03 -3.6755E-03 1.0871E-02 -1.3423E-03 9.7747E-05 -1.3454E-02 3.2160E-03 2.6007E-03
-3.3182E-03 4.7193E-03 -1.4109E-03 8.1472E-04 -1.7217E-04 5.2076E-03 -1.0396E-03 -1.3741E-04 8.8742E-05 8.0773E-06

ROW 40
-1.1814E-05 1.1240E-04 2.5727E-02 1.2737E-02 -9.1746E-03 1.2512E-01 4.4687E-02 -1.9061E-02 2.4761E-02 -2.7814E-03
-1.8679E-02 -2.1021E-03 1.9926E-04 -1.5715E-02 -6.6659E-03 3.6837E-03 -1.7759E-04 7.1978E-03 1.3431E-03 2.9353E-03
9.3042E-03 -5.1667E-04 2.1847E-03 -2.3301E-03 3.4174E-03 -2.9729E-03 2.7425E-03 5.4289E-04 -5.5612E-04 -6.8962E-04

MATRIX *PHI.* 57 BY 30 **SYMMETRIC MATH MODEL**

ROW 41

1.5792E-04	-2.5837E-03	5.4658E-03	-9.3140E-02	1.5350E-01	-6.0905E-03	6.3304E-02	7.7773E-02	8.4998E-02	-8.4067E-02
-1.6529E-01	-8.3273E-02	-6.7954E-03	-1.2053E-03	4.1014E-03	1.3058E-02	2.5975E-04	5.4982E-03	1.2510E-03	-9.3745E-03
-1.3972E-03	-3.9417E-03	-9.6066E-03	-3.1906E-03	2.8473E-03	-7.3663E-03	1.2868E-03	8.2494E-04	-5.2531E-04	7.3691E-04

ROW 42

-1.1814E-05	1.1240E-04	-3.9333E-04	2.6147E-02	-1.1541E-01	-2.1842E-02	2.4088E-01	-5.6437E-03	-2.5937E-02	-4.2959E-02
-4.4917E-02	-3.5195E-02	2.0439E-02	-1.8333E-03	1.7639E-02	1.0237E-02	8.3391E-04	-1.0098E-02	1.1540E-03	5.6755E-03
8.7550E-03	6.6937E-03	-6.3842E-03	3.6484E-04	9.6655E-04	4.2177E-03	-3.9615E-03	7.6544E-04	-6.3988E-05	2.1978E-03

ROW 43

[illegible]	0.0	-8.3862E-01	-1.4770E-02	1.0574E-01	-1.4783E-02	3.3449E-02	-9.2568E-02	2.0582E-02	-1.5264E-01
2.[illegible]7E-01	-6.7995E-03	-1.4287E-02	9.7564E-03	3.0241E-02	3.1997E-02	3.5529E-03	-7.5879E-03	-9.4944E-02	-1.1300E-01
-3.4981E-01	-4.7125E-03	6.2058E-04	3.4991E-02	-2.9034E-02	1.4626E-01	-9.0952E-02	5.6204E-03	3.4125E-03	2.3152E-02

ROW 44

0.0	0.0	-8.2511E-01	-7.1464E-02	5.5859E-01	-1.9944E-02	3.5468E-01	-5.7245E-01	-1.2651E-01	4.2766E-01
1.8013E-01	-4.0134E-02	1.0367E-01	9.4687E-03	-9.3816E-02	-2.0682E-01	-1.1819E-02	5.8079E-02	8.7162E-03	2.8162E-01
-2.2109E-01	5.2174E-01	-1.5166E-01	5.4356E-02	-3.1128E-01	-7.8496E-01	-9.6984E-01	6.7614E-01	-4.1608E-01	-9.9354E-01

ROW 45

0.0	0.0	-8.2511E-01	-7.1464E-02	5.5859E-01	-1.9944E-02	3.5468E-01	-5.7245E-01	-1.2651E-01	4.2766E-01
1.8013E-01	-4.0134E-02	1.0367E-01	9.4687E-03	-9.3816E-02	-2.0682E-01	-1.1819E-02	5.8079E-02	8.7162E-03	2.8162E-01
-2.2109E-01	5.2174E-01	-1.5166E-01	5.4356E-02	-3.1128E-01	-7.8496E-01	-9.6984E-01	6.7614E-01	-4.1608E-01	-9.9354E-01

ROW 46

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 47

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 48

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 49

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 50

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

MATRIX *PHI.* 57 BY 30 SYMMETRIC MATH MODEL

ROW 51

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 52

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 53

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 54

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 55

1.1750E-04	0.0	9.6837E-01	2.2039E-03	1.3275E-03	3.3714E-03	3.1091E-02	1.4335E-01	2.0107E-02	1.3743E-01
3.0998E-01	-1.4571E-01	4.5132E-02	4.4173E-02	-1.9859E-01	2.3927E-01	2.4050E-02	1.3576E-01	-2.8098E-01	-2.1075E-01
1.4282E-02	3.7439E-02	-2.5068E-01	4.7465E-02	-2.8961E-02	3.4711E-03	1.3224E-01	4.4069E-02	-4.7478E-02	5.7021E-03

ROW 56

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 57

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

MATRIX *PHFF* 24 BY 30 SYMMETRIC MATH MODEL

ROW 1
1.0000E 00 0.0 1.0862E 01 1.8903E 00 6.7204E 00 8.7301E-01 -1.1274E 00 8.9611E 00 -1.3933E 01 -1.2927E 00
4.5068E 00 -1.6152E 00 3.4322E-01 1.1170E 00 6.3438E-01 -2.7651E-02 -3.9524E-01 6.7273E 00 5.1819E 00 1.7465E 00
1.5423E 00 -2.6234E 00 6.6291E 00 1.2094E-02 -1.4327E 00 -7.8926E-02 -1.2870E 00 -1.7823E-01 1.9524E-01 8.5255E-02

ROW 2
1.0000E 00 0.0 1.0862E 01 1.8903E 00 6.7204E 00 8.7301E-01 -1.1274E 00 8.9611E 00 -1.3933E 01 -1.2927E 00
4.5068E 00 -1.6152E 00 3.4322E-01 1.1170E 00 6.3438E-01 -2.7651E-02 -3.9524E-01 6.7273E 00 5.1819E 00 1.7465E 00
1.5423E 00 -2.6234E 00 6.6291E 00 1.2094E-02 -1.4327E 00 -7.8926E-02 -1.2870E 00 -1.7823E-01 1.9524E-01 8.5255E-02

ROW 3
1.0000E 00 0.0 1.0862E 01 1.8903E 00 6.7204E 00 8.7301E-01 -1.1274E 00 8.9611E 00 -1.3933E 01 -1.2927E 00
4.5068E 00 -1.6152E 00 3.4322E-01 1.1170E 00 6.3438E-01 -2.7651E-02 -3.9524E-01 6.7273E 00 5.1819E 00 1.7465E 00
1.5423E 00 -2.6234E 00 6.6291E 00 1.2094E-02 -1.4327E 00 -7.8926E-02 -1.2870E 00 -1.7823E-01 1.9524E-01 8.5255E-02

ROW 4
1.0000E 00 0.0 1.0862E 01 1.8903E 00 6.7204E 00 8.7301E-01 -1.1274E 00 8.9611E 00 -1.3933E 01 -1.2927E 00
4.5068E 00 -1.6152E 00 3.4322E-01 1.1170E 00 6.3438E-01 -2.7651E-02 -3.9524E-01 6.7273E 00 5.1819E 00 1.7465E 00
1.5423E 00 -2.6234E 00 6.6291E 00 1.2094E-02 -1.4327E 00 -7.8926E-02 -1.2870E 00 -1.7823E-01 1.9524E-01 8.5255E-02

ROW 5
1.0000E 00 0.0 1.0862E 01 1.8903E 00 6.7204E 00 8.7301E-01 -1.1274E 00 8.9611E 00 -1.3933E 01 -1.2927E 00
4.5068E 00 -1.6152E 00 3.4322E-01 1.1170E 00 6.3438E-01 -2.7651E-02 -3.9524E-01 6.7273E 00 5.1819E 00 1.7465E 00
1.5423E 00 -2.6234E 00 6.6291E 00 1.2094E-02 -1.4327E 00 -7.8926E-02 -1.2870E 00 -1.7823E-01 1.9524E-01 8.5255E-02

ROW 6
1.0000E 00 0.0 1.0862E 01 1.8903E 00 6.7204E 00 8.7301E-01 -1.1274E 00 8.9611E 00 -1.3933E 01 -1.2927E 00
4.5068E 00 -1.6152E 00 3.4322E-01 1.1170E 00 6.3438E-01 -2.7651E-02 -3.9524E-01 6.7273E 00 5.1819E 00 1.7465E 00
1.5423E 00 -2.6234E 00 6.6291E 00 1.2094E-02 -1.4327E 00 -7.8926E-02 -1.2870E 00 -1.7823E-01 1.9524E-01 8.5255E-02

ROW 7
1.0000E 00 0.0 1.0862E 01 1.8903E 00 6.7204E 00 8.7301E-01 -1.1274E 00 8.9611E 00 -1.3933E 01 -1.2927E 00
4.5068E 00 -1.6152E 00 3.4322E-01 1.1170E 00 6.3438E-01 -2.7651E-02 -3.9524E-01 6.7273E 00 5.1819E 00 1.7465E 00
1.5423E 00 -2.6234E 00 6.6291E 00 1.2094E-02 -1.4327E 00 -7.8926E-02 -1.2870E 00 -1.7823E-01 1.9524E-01 8.5255E-02

ROW 8
1.0000E 00 0.0 1.0862E 01 1.8903E 00 6.7204E 00 8.7301E-01 -1.1274E 00 8.9611E 00 -1.3933E 01 -1.2927E 00
4.5068E 00 -1.6152E 00 3.4322E-01 1.1170E 00 6.3438E-01 -2.7651E-02 -3.9524E-01 6.7273E 00 5.1819E 00 1.7465E 00
1.5423E 00 -2.6234E 00 6.6291E 00 1.2094E-02 -1.4327E 00 -7.8926E-02 -1.2870E 00 -1.7823E-01 1.9524E-01 8.5255E-02

ROW 9
0.0 1.0000E 00 2.4752E 02 -1.2978E 01 6.3197E 00 -3.9262E-02 7.5440E 00 8.4636E 00 4.6768E 00 -7.7786E 00
1.4652E 01 1.3014E 01 -1.3277E 00 -1.7232E 00 9.6270E 00 -1.7187E 01 -1.2904E 00 -9.6886E 00 8.7655E 00 1.3535E 01
-2.5901E 00 -1.5891E 00 2.4264E-01 -2.3593E-01 1.4363E 00 5.5870E-01 2.7786E 00 1.9967E 00 -1.7652E 00 1.0849E 00

ROW 10
0.0 1.0000E 00 2.9774E 02 -1.2779E 01 6.1596E 00 7.9794E-02 8.3014E 00 1.2389E 01 5.0722E 00 -4.1427E 00
1.9795E 01 1.0079E 01 -1.5472E 00 -1.9382E 00 1.0383E 01 -1.8333E 01 -1.5242E 00 -1.0722E 01 1.3816E 01 1.5839E 01
-2.3652E 00 -1.9973E 00 5.2647E 00 -1.0107E 00 1.5629E 00 3.7335E-01 1.3796E 00 1.3930E 00 -1.2951E 00 8.1542E-01

MATRIX *PHFF* 24 BY 30

SYMMETRIC MATH MODEL

ROW 11									
0.0	1.0000E 00	3.2574E 02	-1.2672E 01	6.0789E 00	1.4813E-01	8.7578E 00	1.4710E 01	5.3196E 00	-1.9918E 00
2.3068E 01	8.2998E 00	-1.5906E 00	-1.9826E 00	1.0481E 01	-1.8634E 01	-1.6190E 00	-1.1115E 01	1.6332E 01	1.7020E 01
-2.2571E 00	-2.2481E 00	8.1363E 00	-1.4645E 00	1.6821E 00	2.7251E-01	2.8652E-01	9.5275E-01	-9.0661E-01	6.6392E-01
ROW 12									
0.0	1.0000E 00	3.5374E 02	-1.2570E 01	6.0079E 00	2.1873E-01	9.2534E 00	1.7183E 01	5.5986E 00	3.0403E-01
2.6811E 01	6.3184E 00	-1.5391E 00	-1.9350E 00	1.0187E 01	-1.8513E 01	-1.6691E 00	-1.1272E 01	1.8425E 01	1.8014E 01
-2.1627E 00	-2.5080E 00	1.0974E 01	-1.9504E 00	1.8410E 00	1.7598E-01	-1.0884E 00	4.1771E-01	-3.9929E-01	5.1227E-01
ROW 13									
0.0	1.0000E 00	4.3774E 02	-1.2290E 01	5.8490E 00	4.4369E-01	1.0968E 01	2.5498E 01	6.6203E 00	8.0553E 00
4.0814E 01	-6.9542E-01	-8.0176E-01	-1.2334E 00	6.8602E 00	-1.5397E 01	-1.5254E 00	-1.0183E 01	2.1562E 01	1.9295E 01
-1.9024E 00	-3.1747E 00	1.8211E 01	-3.3577E 00	2.3931E 00	-7.4513E-02	-6.0781E 00	-1.4922E 00	1.5442E 00	7.2718E-02
ROW 14									
0.0	1.0000E 00	5.3274E 02	-1.2031E 01	5.7809E 00	7.2792E-01	1.3413E 01	3.6930E 01	8.2024E 00	1.8867E 01
6.3035E 01	-1.1313E 01	1.5057E 00	9.9901E-01	-3.2498E 00	-4.1797E 00	-5.2562E-01	-4.4163E 00	1.4408E 01	1.3691E 01
-1.3635E 00	-2.7886E 00	1.7631E 01	-3.5301E 00	2.3415E 00	-1.8685E-01	-9.1219E 00	-2.8327E 00	3.0269E 00	-2.5392E-01
ROW 15									
0.0	1.0000E 00	6.0374E 02	-1.1869E 01	5.7920E 00	9.5860E-01	1.5548E 01	4.6727E 01	9.6534E 00	2.8200E 01
8.3638E 01	-2.1018E 01	4.2335E 00	3.6549E 00	-1.5221E 01	9.8614E 00	8.4626E-01	3.3134E 00	1.1728E-01	3.0641E 00
-6.2313E-01	-1.1923E 00	7.6875E 00	-1.8478E 00	1.2873E 00	-9.8529E-02	-6.1699E 00	-2.0611E 00	2.2720E 00	-2.3668E-01
ROW 16									
0.0	1.0000E 00	6.9174E 02	-1.1686E 01	5.8350E 00	1.2540E 00	1.8353E 01	5.9528E 01	1.1598E 01	4.0616E 01
1.1131E 02	-3.4030E 01	8.1949E 00	7.5215E 00	-3.2656E 01	3.0743E 01	2.9370E 00	1.5038E 01	-2.3752E 01	-1.4765E 01
5.7446E-01	1.8818E 00	-1.2556E 01	1.8870E 00	-9.8614E-01	1.6266E-01	3.4390E 00	1.0362E 00	-1.0216E 00	1.2325E-01
ROW 17									
0.0	0.0	1.0000E 00	4.0448E-03	-3.3356E-03	2.3376E-03	1.4499E-02	7.5916E-02	7.4110E-03	7.0310E-02
9.5509E-02	-5.5847E-02	-5.6964E-03	-5.5460E-03	2.0451E-02	-2.8341E-02	-5.2308E-03	-2.3556E-02	1.0507E-01	4.7079E-02
4.8300E-03	-7.5751E-03	9.7761E-02	-1.3359E-02	1.5417E-03	-3.7206E-03	-2.1766E-02	-1.0014E-02	6.9447E-03	-5.3300E-03
ROW 18									
0.0	0.0	1.0000E 00	3.8869E-03	-3.0142E-03	2.4101E-03	1.5769E-02	8.0823E-02	8.4154E-03	7.4880E-02
1.1055E-01	-6.1498E-02	-2.7974E-03	-2.7801E-03	8.6340E-03	-1.6173E-02	-3.9578E-03	-1.6980E-02	9.4875E-02	4.4096E-02
4.1021E-03	-8.6767E-03	1.0197E-01	-1.5547E-02	3.5742E-03	-3.6473E-03	-3.4525E-02	-1.4223E-02	1.2030E-02	-5.3983E-03
ROW 19									
0.0	0.0	1.0000E 00	3.7426E-03	-2.7219E-03	2.4775E-03	1.6943E-02	8.5384E-02	9.3520E-03	7.9175E-02
1.2458E-01	-6.6857E-02	-1.9818E-05	-1.2025E-04	-2.7915E-03	-4.0572E-03	-2.6809E-03	-1.0319E-02	8.3457E-02	3.9580E-02
3.5908E-03	-9.2288E-03	1.0281E-01	-1.6904E-02	5.0196E-03	-3.5402E-03	-4.4178E-02	-1.7434E-02	1.5992E-02	-5.4183E-03
ROW 20									
0.0	0.0	1.0000E 00	3.5623E-03	-2.3583E-03	2.5636E-03	1.8434E-02	9.1212E-02	1.0553E-02	8.4736E-02
1.4258E-01	-7.3866E-02	3.6534E-03	3.4115E-03	-1.8052E-02	1.2628E-02	-9.0957E-04	-9.8634E-04	6.6002E-02	3.1229E-02
3.1843E-03	-9.2438E-03	9.9396E-02	-1.7663E-02	6.2239E-03	-3.3499E-03	-5.3460E-02	-2.0596E-02	2.0031E-02	-5.4033E-03

MATRIX *PHFF* 24 BY 30 SYMMETRIC MATH MODEL

ROW 21

0.0	0.0	1.0000E 00	3.0790E-03	-1.3952E-03	2.8042E-03	2.2566E-02	1.0754E-01	1.3948E-02	1.0073E-01
1.9344E-01	-9.4417E-02	1.4663E-02	1.4075E-02	-6.4625E-02	6.6333E-02	4.8653E-03	2.9904E-02	1.8847E-04	-7.3499E-03
3.4708E-03	-5.1314E-03	6.2523E-02	-1.3756E-02	5.6565E-03	-2.4544E-03	-5.9133E-02	-2.2870E-02	2.4105E-02	-4.8648E-03

ROW 22

0.0	0.0	1.0000E 00	2.4147E-03	-1.1138E-04	3.1664E-03	2.8678E-02	1.3228E-01	1.9196E-02	1.2621E-01
2.7185E-01	-1.2839E-01	3.3632E-02	3.2678E-02	-1.4734E-01	1.6989E-01	1.6223E-02	9.1853E-02	-1.5478E-01	-1.1526E-01
8.4601E-03	1.4965E-02	-8.5787E-02	1.2877E-02	-8.6094E-03	2.5027E-04	6.6923E-03	-1.2861E-03	2.4764E-03	-1.5680E-03

ROW 23

0.0	0.0	1.0000E 00	2.1604E-03	3.6027E-04	3.3147E-03	3.1169E-02	1.4253E-01	2.1434E-02	1.3721E-01
3.0489E-01	-1.4344E-01	4.2370E-02	4.1316E-02	-1.8624E-01	2.2124E-01	2.1946E-02	1.2329E-01	-2.4183E-01	-1.8016E-01
1.2251E-02	2.9424E-02	-1.8987E-01	3.3887E-02	-2.0804E-02	2.1660E-03	7.6250E-02	2.3096E-02	-2.3967E-02	2.0815E-03

ROW 24

0.0	0.0	1.0000E 00	2.0493E-03	5.5614E-04	3.3800E-03	3.2286E-02	1.4714E-01	2.2484E-02	1.4224E-01
3.1998E-01	-1.5048E-01	4.6627E-02	4.5540E-02	-2.0543E-01	2.4741E-01	2.4917E-02	1.3956E-01	-2.9117E-01	-2.1813E-01
1.4581E-02	3.9032E-02	-2.6002E-01	4.9079E-02	-2.9773E-02	3.5988E-03	1.3690E-01	4.5590E-02	-4.9117E-02	5.8858E-03

MATRIX *PHAF* 48 BY 30 **SYMMETRIC MATH MODEL**

ROW 1
1.0000E 00 0.0 -4.8138E 01 1.6516E 00 6.9172E 00 7.3509E-01 -1.9829E 00 4.4820E 00 -1.4370E 01 -5.4410E 00
-1.1282E 00 1.6798E 00 6.7931E-01 1.4442E 00 -5.7224E-01 1.6445E 00 -8.6622E-02 8.1171E 00 -1.0175E 00 -1.0312E 00
1.2573E 00 -2.1765E 00 8.6124E-01 8.0029E-01 -1.5236E 00 1.4059E-01 -2.8612E-03 4.1262E-01 -2.1450E-01 3.9972E-01

ROW 2
1.0000E 00 0.0 -4.8138E 01 1.6516E 00 6.9172E 00 7.3509E-01 -1.9829E 00 4.4820E 00 -1.4370E 01 -5.4410E 00
-1.1282E 00 1.6798E 00 6.7931E-01 1.4442E 00 -5.7224E-01 1.6445E 00 -8.6622E-02 8.1171E 00 -1.0175E 00 -1.0312E 00
1.2573E 00 -2.1765E 00 8.6124E-01 8.0029E-01 -1.5236E 00 1.4059E-01 -2.8612E-03 4.1262E-01 -2.1450E-01 3.9972E-01

ROW 3
1.0000E 00 0.0 -4.8138E 01 1.6516E 00 6.9172E 00 7.3509E-01 -1.9829E 00 4.4820E 00 -1.4370E 01 -5.4410E 00
-1.1282E 00 1.6798E 00 6.7931E-01 1.4442E 00 -5.7224E-01 1.6445E 00 -8.6622E-02 8.1171E 00 -1.0175E 00 -1.0312E 00
1.2573E 00 -2.1765E 00 8.6124E-01 8.0029E-01 -1.5236E 00 1.4059E-01 -2.8612E-03 4.1262E-01 -2.1450E-01 3.9972E-01

ROW 4
1.0000E 00 0.0 -4.8138E 01 1.6516E 00 6.9172E 00 7.3509E-01 -1.9829E 00 4.4820E 00 -1.4370E 01 -5.4410E 00
-1.1282E 00 1.6798E 00 6.7931E-01 1.4442E 00 -5.7224E-01 1.6445E 00 -8.6622E-02 8.1171E 00 -1.0175E 00 -1.0312E 00
1.2573E 00 -2.1765E 00 8.6124E-01 8.0029E-01 -1.5236E 00 1.4059E-01 -2.8612E-03 4.1262E-01 -2.1450E-01 3.9972E-01

ROW 5
1.0000E 00 0.0 -4.8138E 01 1.6516E 00 6.9172E 00 7.3509E-01 -1.9829E 00 4.4820E 00 -1.4370E 01 -5.4410E 00
-1.1282E 00 1.6798E 00 6.7931E-01 1.4442E 00 -5.7224E-01 1.6445E 00 -8.6622E-02 8.1171E 00 -1.0175E 00 -1.0312E 00
1.2573E 00 -2.1765E 00 8.6124E-01 8.0029E-01 -1.5236E 00 1.4059E-01 -2.8612E-03 4.1262E-01 -2.1450E-01 3.9972E-01

ROW 6
1.0000E 00 0.0 -4.8138E 01 1.6516E 00 6.9172E 00 7.3509E-01 -1.9829E 00 4.4820E 00 -1.4370E 01 -5.4410E 00
-1.1282E 00 1.6798E 00 6.7931E-01 1.4442E 00 -5.7224E-01 1.6445E 00 -8.6622E-02 8.1171E 00 -1.0175E 00 -1.0312E 00
1.2573E 00 -2.1765E 00 8.6124E-01 8.0029E-01 -1.5236E 00 1.4059E-01 -2.8612E-03 4.1262E-01 -2.1450E-01 3.9972E-01

ROW 7
1.0000E 00 0.0 -4.8138E 01 1.6516E 00 6.9172E 00 7.3509E-01 -1.9829E 00 4.4820E 00 -1.4370E 01 -5.4410E 00
-1.1282E 00 1.6798E 00 6.7931E-01 1.4442E 00 -5.7224E-01 1.6445E 00 -8.6622E-02 8.1171E 00 -1.0175E 00 -1.0312E 00
1.2573E 00 -2.1765E 00 8.6124E-01 8.0029E-01 -1.5236E 00 1.4059E-01 -2.8612E-03 4.1262E-01 -2.1450E-01 3.9972E-01

ROW 8
0.0 1.0000E 00 -3.7326E 02 -2.0778E 01 -2.3723E-01 8.7079E-02 2.9949E 00 -3.9341E 00 2.1106E 00 -2.1140E 01
-1.2131E 01 3.2846E 01 9.1363E 00 6.1653E 00 -2.7109E 01 1.1494E 01 1.7034E 00 7.7970E 00 -1.1309E 00 3.9189E 00
5.6191E 00 -2.6244E-01 2.3285E 01 -2.1629E 00 -2.8719E 00 -8.9541E-02 -4.6400E 00 -3.5562E 00 1.7199E 00 -2.4795E 00

ROW 9
9.9848E-01 -5.5076E-02 3.0405E 01 3.9802E 00 8.4482E 00 5.5377E-01 -2.0799E 00 2.1678E 00 -1.4296E 01 -7.0718E 00
-1.7609E 00 1.8286E 00 -3.4736E-01 7.0521E-01 3.2975E 00 -1.6843E 00 -4.1258E-02 6.8729E 00 -9.0107E 00 1.1465E 00
1.6839E 00 -2.8253E 00 -6.7056E 00 4.2404E-01 5.1944E-01 -9.4958E-01 -9.3174E-01 3.1244E-01 4.1625E-01 3.4628E-01

ROW 10
9.9848E-01 -5.5076E-02 3.0405E 01 3.9802E 00 8.4482E 00 5.5377E-01 -2.0799E 00 2.1678E 00 -1.4296E 01 -7.0718E 00
-1.7609E 00 1.8286E 00 -3.4736E-01 7.0521E-01 3.2975E 00 -1.6843E 00 -4.1258E-02 6.8729E 00 -9.0107E 00 1.1465E 00
1.6839E 00 -2.8253E 00 -6.7056E 00 4.2404E-01 5.1944E-01 -9.4958E-01 -9.3174E-01 3.1244E-01 4.1625E-01 3.4628E-01

MATRIX *PHAF* 48 BY 30 SYMMETRIC MATH MODEL

ROW 11

9.9848E-01	-5.5076E-02	3.0405E 01	3.9802E 00	8.4482E 00	5.5377E-01	-2.0799E 00	2.1678E 00	-1.4296E 01	-7.0718E 00
-1.7609E 00	1.8286E 00	-3.4736E-01	7.0521E-01	3.2975E 00	-1.6843E 00	-4.1258E-02	6.8729E 00	-9.0107E 00	1.1465E 00
1.6839E 00	-2.8253E 00	-6.7056E 00	4.2404E-01	5.1944E-01	-9.4959E-01	-9.3175E-01	3.1243E-01	4.1626E-01	3.4627E-01

ROW 12

9.9848E-01	-5.5076E-02	3.0405E 01	3.9802E 00	8.4482E 00	5.5377E-01	-2.0799E 00	2.1678E 00	-1.4296E 01	-7.0718E 00
-1.7609E 00	1.8286E 00	-3.4736E-01	7.0521E-01	3.2975E 00	-1.6843E 00	-4.1258E-02	6.8729E 00	-9.0107E 00	1.1465E 00
1.6839E 00	-2.8253E 00	-6.7056E 00	4.2404E-01	5.1944E-01	-9.4958E-01	-9.3174E-01	3.1244E-01	4.1625E-01	3.4628E-01

ROW 13

9.9848E-01	-5.5076E-02	3.0405E 01	3.9802E 00	8.4482E 00	5.5377E-01	-2.0799E 00	2.1678E 00	-1.4296E 01	-7.0718E 00
-1.7609E 00	1.8286E 00	-3.4736E-01	7.0521E-01	3.2975E 00	-1.6843E 00	-4.1258E-02	6.8729E 00	-9.0107E 00	1.1465E 00
1.6839E 00	-2.8253E 00	-6.7056E 00	4.2404E-01	5.1944E-01	-9.4958E-01	-9.3174E-01	3.1244E-01	4.1625E-01	3.4628E-01

ROW 14

9.9848E-01	-5.5076E-02	3.0405E 01	3.9802E 00	8.4482E 00	5.5377E-01	-2.0799E 00	2.1678E 00	-1.4296E 01	-7.0718E 00
-1.7609E 00	1.8286E 00	-3.4736E-01	7.0521E-01	3.2975E 00	-1.6843E 00	-4.1258E-02	6.8729E 00	-9.0107E 00	1.1465E 00
1.6839E 00	-2.8253E 00	-6.7056E 00	4.2404E-01	5.1944E-01	-9.4958E-01	-9.3174E-01	3.1244E-01	4.1625E-01	3.4628E-01

ROW 15

9.9848E-01	-5.5076E-02	3.0405E 01	3.9802E 00	8.4482E 00	5.5377E-01	-2.0799E 00	2.1678E 00	-1.4296E 01	-7.0718E 00
-1.7609E 00	1.8286E 00	-3.4736E-01	7.0521E-01	3.2975E 00	-1.6843E 00	-4.1258E-02	6.8729E 00	-9.0107E 00	1.1465E 00
1.6839E 00	-2.8253E 00	-6.7056E 00	4.2404E-01	5.1944E-01	-9.4958E-01	-9.3174E-01	3.1244E-01	4.1625E-01	3.4628E-01

ROW 16

9.9848E-01	-5.5076E-02	3.0405E 01	3.9802E 00	8.4482E 00	5.5377E-01	-2.0799E 00	2.1678E 00	-1.4296E 01	-7.0718E 00
-1.7609E 00	1.8286E 00	-3.4736E-01	7.0521E-01	3.2975E 00	-1.6843E 00	-4.1258E-02	6.8729E 00	-9.0107E 00	1.1465E 00
1.6839E 00	-2.8253E 00	-6.7056E 00	4.2404E-01	5.1944E-01	-9.4959E-01	-9.3175E-01	3.1243E-01	4.1626E-01	3.4627E-01

ROW 17

0.0	1.0000E 00	2.4752E 02	-1.2978E 01	6.3197E 00	-3.9262E-02	7.5440E 00	8.4636E 00	4.6768E 00	-7.7786E 00
1.4652E 01	1.3014E 01	-1.3277E 00	-1.7232E 00	9.6270E 00	-1.7187E 01	-1.2904E 00	-9.6886E 00	8.7655E 00	1.3535E 01
-2.5901E 00	-1.5891E 00	2.4264E-01	-2.8593E-01	1.4363E 00	5.5870E-01	2.7786E 00	1.9967E 00	-1.7652E 00	1.0849E 00

ROW 18

0.0	1.0000E 00	1.6874E 02	-1.3389E 01	6.4574E 00	-2.0024E-01	6.4853E 00	2.9825E 00	4.1417E 00	-1.3028E 01
7.5459E 00	1.7565E 01	-6.1688E-01	-1.1135E 00	7.2187E 00	-1.4763E 01	-8.2848E-01	-7.6770E 00	3.9451E-01	1.0855E 01
-2.4220E 00	-1.2506E 00	-6.3945E 00	3.8083E-01	1.6641E 00	5.2417E-01	3.8536E 00	2.6095E 00	-2.0777E 00	1.5232E 00

ROW 19

0.0	1.0000E 00	5.8739E 01	-1.4252E 01	6.2333E 00	-3.4870E-01	5.2620E 00	-3.0155E 00	3.5361E 00	-1.9237E 01
-9.4312E-01	2.4032E 01	1.0853E 00	2.0582E-01	1.6319E 00	-1.0699E 01	-6.8791E-02	-4.4310E 00	-1.0531E 01	9.6490E 00
-7.3309E-01	-1.3882E 00	-1.1556E 01	2.4907E-01	2.6258E 00	-3.0642E-01	3.3610E 00	2.6868E 00	-1.7366E 00	1.8898E 00

ROW 20

0.0	1.0000E 00	-5.3261E 01	-1.5463E 01	5.4635E 00	-4.0255E-01	4.2969E 00	-6.9918E 00	3.0570E 00	-2.3763E 01
-7.6339E 00	2.9889E 01	3.3749E 00	1.9150E 00	-5.9712E 00	-5.6178E 00	7.3671E-01	-7.5782E-01	-1.8318E 01	9.7828E 00
2.0220E 00	-1.7746E 00	-1.0403E 01	-7.5139E-01	3.3229E 00	-1.4765E 00	6.9621E-01	1.4288E 00	-4.5603E-01	1.3479E 00

MATRIX *PHAF* 48 BY 30 **SYMMETRIC MATH MODEL**

ROW 21

0.0	1.0000E 00	-1.6426E 02	-1.7001E 01	4.0761E 00	-3.4519E-01	3.6097E 00	-8.4732E 00	2.6868E 00	-2.5759E 01
-1.1860E 01	3.3809E 01	5.7996E 00	3.7016E 00	-1.4333E 01	3.0895E-01	1.4048E 00	2.8999E 00	-1.9612E 01	9.4079E 00
4.7072E 00	-1.8419E 00	-1.9422E 00	-1.9549E 00	2.6126E 00	-2.1287E 00	-2.9945E 00	-9.9533E-01	1.2780E 00	-3.0884E-01

ROW 22

0.0	1.0000E 00	-2.7126E 02	-1.8800E 01	2.1030E 00	-1.7637E-01	3.1925E 00	-7.3430E 00	2.3907E 00	-2.4815E 01
-1.3286E 01	3.4854E 01	7.8381E 00	5.1993E 00	-2.1798E 01	6.2992E 00	1.7534E 00	5.8833E 00	-1.3255E 01	7.4594E 00
6.0818E 00	-1.2909E 00	1.0959E 01	-2.5589E 00	2.8689E-01	-1.6375E 00	-5.2917E 00	-3.1252E 00	2.2609E 00	-2.0246E 00

ROW 23

0.0	1.0000E 00	-3.7326E 02	-2.0778E 01	-3.3723E-01	8.7079E-02	2.9949E 00	-3.9341E 00	2.1106E 00	-2.1140E 01
-1.2131E 01	3.2846E 01	9.1363E 00	6.1653E 00	-2.7109E 01	1.1494E 01	1.7034E 00	7.7970E 00	-1.1309E 00	3.9189E 00
5.6191E 00	-2.6244E-01	2.3285E 01	-2.1629E 00	-2.8719E 00	-8.9541E-02	-4.6400E 00	-3.5562E 00	1.7199E 00	-2.4795E 00

ROW 24

-1.0000E 00	0.0	-9.8621E 00	-2.8401E 00	-8.4424E 00	-5.5941E-01	1.9179E 00	-1.9541E 00	1.4201E 01	8.2486E 00
2.4327E 00	-3.6431E 00	-1.5607E-01	-1.0464E 00	-1.8071E 00	1.0528E 00	-5.2639E-02	-7.3134E 00	9.0867E 00	-1.3644E 00
-1.9964E 00	2.8441E 00	5.4315E 00	-3.0538E-01	-3.6183E-01	9.5597E-01	1.1891E 00	-1.1674E-01	-5.1176E-01	-2.1003E-01

ROW 25

5.5076E-02	9.9848E-01	-4.4226E 02	-2.2074E 01	-1.8170E 00	3.5068E-01	2.8403E 00	-3.0032E-01	1.0938E 00	-1.7605E 01
-1.0156E 01	2.9945E 01	9.5937E 00	6.5521E 00	-2.9178E 01	1.4347E 01	1.4353E 00	8.9470E 00	8.4632E 00	9.1420E-01
4.4926E 00	2.9733E-01	2.8654E 01	-1.3766E 00	-4.8301E 00	1.1239E 00	-2.9517E 00	-2.8952E 00	7.1021E-01	-1.9625E 00

ROW 26

5.5076E-02	9.9848E-01	-5.1236E 02	-2.3652E 01	-3.9623E 00	6.2491E-01	2.8620E 00	4.1524E 00	7.9837E-01	-1.2511E 01
-7.0227E 00	2.5487E 01	9.5101E 00	6.5745E 00	-2.9883E 01	1.6477E 01	9.5203E-01	9.2306E 00	1.8668E 01	-2.3775E 00
2.6594E 00	7.7654E-01	3.0047E 01	-3.2668E-01	-6.0645E 00	2.1688E 00	-7.4673E-01	-1.7551E 00	-5.6245E-01	-9.7425E-01

ROW 27

5.5076E-02	9.9848E-01	-5.8247E 02	-2.5320E 01	-6.3046E 00	9.4090E-01	2.9473E 00	9.5491E 00	4.2378E-01	-6.2501E 00
-2.8206E 00	1.9534E 01	8.9204E 00	6.2266E 00	-2.8787E 01	1.7572E 01	2.2935E-01	8.9397E 00	2.7940E 01	-5.6096E 00
3.6482E-01	9.3552E-01	2.6409E 01	8.6506E-01	-6.3005E 00	2.8124E 00	1.5410E 00	-3.7602E-01	-1.9093E 00	3.2490E-01

ROW 28

5.5076E-02	9.9848E-01	-6.5258E 02	-2.7077E 01	-8.8430E 00	1.2995E 00	3.0941E 00	1.5913E 01	-4.4687E-02	1.2243E 00
2.4951E 00	1.1970E 01	7.6822E 00	5.4368E 00	-2.5516E 01	1.7324E 01	-7.6246E-01	7.9217E 00	3.4868E 01	-8.3830E 00
-2.1676E 00	6.9576E-01	1.7075E 01	1.9724E 00	-5.2595E 00	2.8327E 00	3.3401E 00	8.0152E-01	-3.0991E 00	1.6164E 00

ROW 29

5.5076E-02	9.9848E-01	-7.1667E 02	-2.8760E 01	-1.1333E 01	1.6650E 00	3.2800E 00	2.2587E 01	-5.6507E-01	9.1548E 00
8.3616E 00	3.5402E 00	5.8806E 00	4.2546E 00	-2.0245E 01	1.5599E 01	-1.9317E 00	6.1711E 00	3.7523E 01	-1.0031E 01
-4.3918E 00	7.9125E-02	3.2136E 00	2.5953E 00	-2.9506E 00	2.0816E 00	3.8447E 00	1.1021E 00	-3.7729E 00	2.3465E 00

ROW 30

5.5076E-02	9.9848E-01	-7.9078E 02	-3.0788E 01	-1.4406E 01	2.1315E 00	3.5517E 00	3.1317E 01	-1.2850E 00	1.9663E 01
1.6371E 01	-8.1430E 00	2.8430E 00	2.2237E 00	-1.0855E 01	1.1296E 01	-3.6363E 00	2.8401E 00	3.3395E 01	-1.0007E 01
-6.2856E 00	-1.1343E 00	-1.9169E 01	2.2682E 00	1.6443E 00	-4.5128E-02	1.8012E 00	-5.9532E-01	-3.5779E 00	1.8123E 00

MATRIX *PHAF* 48 BY 30 **SYMMETRIC MATH MODEL**

ROW 31

5.5076E-02	9.9848E-01	-8.5488E 02	-3.2603E 01	-1.7216E 01	2.5677E 00	3.8304E 00	3.9637E 01	-1.9801E 00	2.9818E 01
2.4266E 01	-1.9835E 01	-6.4414E-01	-1.4891E-01	2.6146E-01	5.2982E 00	-5.3175E 00	-1.4526E 00	2.0974E 01	-7.2051E 00
-6.0715E 00	-1.9696E 00	-3.3074E 01	6.3194E-01	4.5246E 00	-1.7311E 00	-1.0779E 00	-3.0881E 00	-3.0100E 00	5.9705E-01

ROW 32

5.5076E-02	9.9848E-01	-9.3500E 02	-3.4965E 01	-2.0974E 01	3.1603E 00	4.2520E 00	5.1190E 01	-2.8881E 00	4.4188E 01
3.5630E 01	-3.6936E 01	-6.4017E 00	-4.1501E 00	1.8981E 01	-5.6294E 00	-9.0269E 00	-1.0851E 01	-1.5428E 01	3.7463E 00
8.7941E-01	6.2061E-02	-1.1497E 00	5.0602E-01	1.7694E 00	-7.8100E-01	-1.1995E 00	-2.5534E 00	-1.8740E 00	8.0591E-02

ROW 33

0.0	0.0	1.0000E 00	4.0448E-03	-3.3356E-03	2.3376E-03	1.4499E-02	7.5916E-02	7.4110E-03	7.0310E-02
9.5509E-02	-5.5847E-02	-5.6964E-03	-5.5460E-03	2.0451E-02	-2.6341E-02	-5.2308E-03	-2.3556E-02	1.0507E-01	4.7079E-02
4.8300E-03	-7.5751E-03	9.1761E-02	-1.3359E-02	1.5417E-02	-3.7206E-03	-2.1766E-02	-1.0014E-02	6.9447E-03	-5.3300E-03

ROW 34

0.0	0.0	1.0000E 00	6.3451E-03	-1.8384E-04	1.7544E-03	1.2426E-02	6.3326E-02	6.2[illegible]26E-03	6.2771E-02
8.4896E-02	-5.9088E-02	-1.2059E-02	-9.7408E-03	3.9898E-02	-3.3214E-02	-6.4102E-03	-2.7353E-02	1.0[illegible]3E-01	2.2457E-02
-8.4398E-03	-1.4313E-03	7.0136E-02	-3.9702E-03	-6.5034E-03	4.0797E-03	-5.8770E-03	-5.3190E-03	1.0[illegible]E-03	-5.3655E-03

ROW 35

0.0	0.0	1.0000E 00	9.3162E-03	4.3254E-03	9.3546E-04	9.8519E-03	4.5497E-02	4.8475E-03	4.9432E-02
6.9083E-02	-5.7177E-02	-1.8447E-02	-1.3952E-02	6.0549E-02	-4.0871E-02	-7.2426E-03	-3.1429E-02	8.9141E-02	1.9994E-03
-2.1201E-02	3.2021E-03	2.1443E-02	5.7530E-03	-9.3903E-03	1.0097E-02	1.4497E-02	4.5248E-03	-7.2631E-03	-3.6167E-04

ROW 36

0.0	0.0	1.0000E 00	1.2333E-02	9.5786E-03	7.3657E-07	7.3908E-03	2.4903E-02	3.7532E-03	3.0209E-02
4.9614E-02	-4.5569E-02	-2.1861E-02	-1.6179E-02	7.3713E-02	-4.9967E-02	-6.9036E-03	-3.3724E-02	4.4854E-02	-1.4130E-03
-2.6486E-02	2.8085E-03	-4.4442E-02	1.1233E-02	-1.1716E-03	9.5574E-03	3.1987E-02	1.8174E-02	-1.5213E-02	1.0755E-02

ROW 37

0.0	0.0	1.0000E 00	1.5378E-02	1.5497E-02	-1.0492E-03	5.0056E-03	1.4014E-03	2.9795E-03	4.9129E-03
2.5917E-02	-2.3511E-02	-2.1121E-02	-1.5520E-02	7.4793E-02	-5.5996E-02	-4.8621E-03	-3.1333E-02	-2.4067E-02	1.0017E-02
-2.0096E-02	-2.1220E-03	-1.0499E-01	9.2999E-03	1.4566E-02	1.1891E-03	3.1242E-02	2.3664E-02	-1.4411E-02	1.7832E-02

ROW 38

0.0	0.0	1.0000E 00	1.8207E-02	2.1369E-02	-2.1071E-03	2.8292E-03	-2.2590E-02	2.6351E-03	-2.2956E-02
4.9338E-04	5.0170E-03	-1.6315E-02	-1.2010E-02	6.2547E-02	-5.4740E-02	-1.4317E-03	-2.3598E-02	-9.4296E-02	2.7151E-02
-4.2563E-03	-8.2897E-03	-1.3017E-01	1.0970E-03	2.8436E-02	-1.0779E-02	8.6120E-03	1.3926E-02	-2.3917E-03	1.2372E-02

ROW 39

0.0	0.0	1.0000E 00	2.0491E-02	2.6298E-02	-3.0289E-03	1.1212E-03	-4.3586E-02	2.9163E-03	-4.8408E-02
-2.2492E-02	3.3851E-02	-9.0214E-03	-6.8587E-03	4.1023E-02	-4.6505E-02	2.4011E-03	-1.3857E-02	-1.3912E-01	4.1303E-02
1.2743E-02	-1.1510E-02	-1.0850E-01	-8.5329E-03	3.2508E-02	-1.8906E-02	-2.0453E-02	-5.1014E-03	1.2522E-02	-3.2705E-03

ROW 40

0.0	0.0	1.0000E 00	2.0491E-02	2.6298E-02	-3.0289E-03	1.1212E-03	-4.3586E-02	2.9163E-03	-4.8408E-02
-2.2492E-02	3.3851E-02	-9.0214E-03	-6.8587E-03	4.1023E-02	-4.6505E-02	2.4011E-03	-1.3857E-02	-1.3912E-01	4.1303E-02
1.2743E-02	-1.1510E-02	-1.0850E-01	-8.5329E-03	3.2508E-02	-1.8906E-02	-2.0453E-02	-5.1014E-03	1.2522E-02	-3.2705E-03

MATRIX *PHAF* 48 BY 30

SYMMETRIC MATH MODEL

ROW 41

0.0	0.0	1.0000E 00	2.1842E-02	2.9186E-02	-3.6164E-03	1.5445E-04	-5.6849E-02	3.7200E-03	-6.4505E-02
-3.7212E-02	5.3384E-02	-2.8739E-03	-2.6877E-03	2.1416E-02	-3.6576E-02	5.3070E-03	-7.6200E-03	-1.4698E-01	4.5966E-02
2.2117E-02	-8.7380E-03	-5.2401E-02	-1.3177E-02	2.3532E-02	-1.6887E-02	-2.8827E-02	-1.3197E-02	1.6805E-02	-1.0921E-02

ROW 42

0.0	0.0	1.0000E 00	2.3152E-02	3.2010E-02	-4.2077E-03	-7.6814E-04	-7.0204E-02	4.7426E-03	-8.0897E-02
-5.2227E-02	7.4005E-02	4.3031E-03	2.1743E-03	-2.0041E-03	-2.3634E-02	8.5367E-03	-2.3558E-04	-1.4177E-01	4.7212E-02
2.9862E-02	-4.7517E-03	1.4307E-02	-1.6408E-02	1.1123E-02	-1.2521E-02	-3.3146E-02	-1.8762E-02	1.9147E-02	-1.6880E-02

ROW 43

0.0	0.0	1.0000E 00	2.4437E-02	3.4812E-02	-4.8098E-03	-1.6601E-03	-8.3829E-02	5.9805E-03	-9.7850E-02
-6.7777E-02	9.6113E-02	1.2773E-02	7.9274E-03	-3.0174E-02	-6.8598E-03	1.2155E-02	8.9050E-03	-1.1945E-01	4.3974E-02
3.5100E-02	4.0578E-04	9.1167E-02	-1.7120E-02	-5.0625E-03	-5.3185E-03	-3.0824E-02	-1.9590E-02	1.8755E-01	-1.9471E-02

ROW 44

0.0	0.0	1.0000E 00	2.5692E-02	3.7596E-02	-5.4224E-03	-2.5225E-03	-9.7746E-02	7.4122E-03	-1.1548E-01
-8.3959E-02	1.1998E-01	2.2837E-02	1.4810E-02	-6.4199E-02	1.4823E-02	1.6216E-02	2.0647E-02	-7.3697E-02	3.3814E-02
3.6335E-02	6.5708E-03	1.7615E-01	-1.3616E-02	-2.5310E-02	5.3586E-03	-1.8561E-02	-1.2372E-02	1.4435E-02	-1.6168E-02

ROW 45

0.0	0.0	1.0000E 00	2.6784E-02	4.0085E-02	-5.9800E-03	-3.2688E-03	-1.1051E-01	8.8429E-03	-1.3204E-01
-9.9150E-02	1.4331E-01	3.3676E-02	2.2297E-02	-1.0136E-01	3.9994E-02	2.0345E-02	3.4591E-02	-3.9294E-03	1.5993E-02
3.2024E-02	1.2732E-02	2.5652E-01	-4.7500E-03	-4.7337E-02	1.8722E-02	5.1616E-03	5.0545E-03	5.7001E-03	-5.0680E-03

ROW 46

0.0	0.0	1.0000E 00	2.7920E-02	4.2812E-02	-6.6036E-03	-4.0418E-03	-1.2497E-01	1.0612E-02	-1.5160E-01
-1.1704E-01	1.7244E-01	4.8922E-02	3.2974E-02	-1.5439E-01	7.8243E-02	2.5832E-02	5.6692E-02	1.2716E-01	-2.0343E-02
1.6624E-02	2.0069E-02	3.4686E-01	1.6005E-02	-7.7908E-02	4.0081E-02	5.5357E-02	4.5523E-02	-1.3016E-02	2.3097E-02

ROW 47

0.0	0.0	1.0000E 00	2.8756E-02	4.4988E-02	-7.0298E-03	-4.6904E-03	-1.3528E-01	1.1061E-02	-1.6640E-01
-1.3030E-01	1.9433E-01	6.1313E-02	4.2154E-02	-1.9754E-01	1.1341E-01	2.7168E-02	8.0783E-02	2.8534E-01	-7.6063E-02
-3.1420E-02	8.4206E-04	3.4215E-02	3.8344E-02	-3.1180E-04	7.8032E-03	3.2272E-02	3.1294E-02	-4.1092E-03	1.4790E-02

ROW 48

0.0	0.0	1.0000E 00	3.0742E-02	5.0347E-02	-8.0325E-03	-6.2777E-03	-1.5990E-01	1.1574E-02	-2.0262E-01
-1.6239E-01	2.4790E-01	9.0994E-02	6.4129E-02	-2.9874E-01	1.7481E-01	8.9708E-02	1.9294E-01	7.8303E-01	-2.5532E-01
-1.9631E-01	-7.7073E-02	-1.2831E 00	-9.1934E-02	8.4067E-02	-4.4717E-02	-5.8865E-02	-8.6164E-02	-4.1352E-02	-7.2846E-03

MATRIX -PHWG* 96 BY 30

SYMMETRIC MATH MODEL

ROW 1

9.9452E-01	1.0453E-01	4.5551E-01	3.7679E-01	7.4650E 00	7.7945E-01	-8.5786E-01	7.0470E 00	-1.3636E 01	-4.6453E 00
2.5543E 00	1.7768E 00	4.0889E-01	1.1316E 00	8.9645E-01	-7.9750E-01	-3.3850E-01	6.5310E 00	2.2639E 00	1.4465E 00
1.0882E 00	-2.5008E 00	3.0773E 00	4.6602E-01	-1.3305E 00	1.1467E-01	-2.0119E-01	3.9418E-01	-2.4189E-01	3.9124E-01

ROW 2

9.9452E-01	1.0453E-01	4.5551E-01	3.7679E-01	7.4650E 00	7.7945E-01	-8.5786E-01	7.0470E 00	-1.3636E 01	-4.6453E 00
2.5543E 00	1.7768E 00	4.0889E-01	1.1316E 00	8.9645E-01	-7.9750E-01	-3.3850E-01	6.5310E 00	2.2639E 00	1.4465E 00
1.0882E 00	-2.5008E 00	3.0773E 00	4.6602E-01	-1.3305E 00	1.1467E-01	-2.0119E-01	3.9418E-01	-2.4189E-01	3.9124E-01

ROW 3

8.4326E-01	1.1171E-01	3.6540E 00	1.0567E-02	6.3780E 00	6.2724E-01	-5.2573E-01	5.7823E 00	-1.1073E 01	-4.1955E 00
2.2378E 00	1.8716E 00	3.4114E-01	8.8676E-01	9.1655E-01	-8.3969E-01	-2.6252E-01	4.6125E 00	1.8980E 00	1.3005E 00
8.4995E-01	-1.6326E 00	2.0810E 00	3.3934E-01	-9.3991E-01	2.1414E-01	1.6423E-01	3.1585E-01	-2.3171E-01	1.9300E-01

ROW 4

8.4326E-01	1.1171E-01	-1.6130E 00	-6.7332E-03	5.5020E 00	3.5768E-01	-1.0345E-01	3.6637E 00	-7.7210E 00	-3.7528E 00
1.5203E 00	1.5427E 00	4.5329E-01	5.8392E-01	7.0416E-01	5.6743E-01	7.2617E-02	-1.0857E 00	1.5808E 00	1.4155E-01
7.7473E-01	2.0031E 00	1.8925E 00	-1.8107E-01	1.7900E-01	8.3913E-01	.6825E 00	-2.3517E-01	-4.7160E-02	-9.0819E-01

ROW 5

8.4326E-01	1.1171E-01	-2.2946E 00	-8.8254E-03	5.3355E 00	3.0355E-01	-2.4000E-02	3.2866E 00	-7.0839E 00	-3.6458E 00
1.4236E 00	1.4611E 00	4.7100E-01	5.3353E-01	6.7454E-01	8.0611E-01	1.4144E-01	-2.0847E 00	1.5478E 00	-4.4609E-02
7.5641E-01	2.5983E 00	1.8279E 00	-2.6901E-01	3.6003E-01	9.2876E-01	1.9017E 00	-3.2182E-01	-1.5904E-02	-1.0672E 00

ROW 6

8.4326E-01	1.1171E-01	-6.8800E 00	-2.2789E-02	3.9314E 00	-1.8928E-01	6.0920E-01	1.9443E-01	-1.6973E 00	-2.6505E 00
8.1620E-01	6.9224E-01	5.9625E-01	1.8935E-01	4.9438E-01	2.5887E 00	5.8029E-01	-9.6265E 00	1.3284E 00	-1.3880E 00
5.4777E-01	6.5804E 00	1.3565E 00	-8.6571E-01	1.5550E 00	1.4106E 00	3.1034E 00	-8.5892E-01	1.9923E-01	-1.9064E 00

ROW 7

8.4326E-01	1.1171E-01	-1.0730E 01	-3.5410E-02	2.4000E 00	-7.9426E-01	1.2180E 00	-3.1053E 00	4.2240E 00	-1.4635E 00
4.5852E-01	-2.3697E-01	6.9590E-01	-4.5962E-02	4.1261E-01	4.1401E 00	9.5982E-01	-1.6242E 01	1.1025E 00	-2.5602E 00
2.0224E-01	9.2078E 00	8.5009E-01	-1.2215E 00	2.2331E 00	1.5049E 00	3.3235E 00	-1.1268E 00	3.5714E-01	-1.9958E 00

ROW 8

8.1880E-01	1.1079E-01	-1.1738E 01	-7.1172E-02	1.5928E 00	-1.0834E 00	1.4770E 00	-4.6239E 00	7.0381E 00	-8.5174E-01
3.5293E-01	-6.6088E-01	7.1495E-01	-1.3678E-01	4.0504E-01	4.6623E 00	1.0950E 00	-1.8692E 01	9.5828E-01	-3.0078E 00
-1.6489E-02	9.8923E 00	5.4339E-01	-1.2871E 00	2.3612E 00	1.4420E 00	3.1356E 00	-1.1671E 00	4.0925E-01	-1.8307E 00

ROW 9

8.1880E-01	1.1079E-01	-1.5832E 01	-8.7038E-02	-4.4824E-01	-1.9639E 00	2.0943E 00	-9.0163E 00	1.5107E 01	8.5612E-01
3.9125E-01	-2.0088E 00	8.3520E-01	-2.5310E-01	5.1374E-01	6.0092E 00	1.4026E 00	-2.4092E 01	1.5933E-01	-3.9775E 00
-2.2837E-01	1.0319E 01	-1.3363E-01	-1.2853E 00	2.2721E 00	8.5295E-01	1.8559E 00	-9.5450E-01	4.3522E-01	-8.0755E-01

ROW 10

8.1880E-01	1.1079E-01	-1.9925E 01	-1.0553E-01	-2.7718E 00	-2.9504E 00	2.5445E 00	-1.4101E 01	2.4606E 01	2.9472E 00
8.4501E-01	-3.6295E 00	1.0468E 00	-3.0023E-01	7.7511E-01	6.7408E 00	1.5360E 00	-2.6421E 01	4.1223E-01	-4.1730E 00
4.0998E-01	8.2245E 00	-7.6860E-01	-1.0216E 00	1.6116E 00	-3.5426E-01	-1.8022E-01	-2.7578E-01	2.4529E-01	6.8843E-01

MATRIX *PHWG* 96 BY 30 **SYMMETRIC MATH MODEL**

ROW 11

8.1880E-01	1.1079E-01	-2.4018E 01	-1.3044E-01	-5.2995E 00	-4.0037E 00	2.6403E 00	-1.9826E 01	3.5492E 01	5.4351E 00
1.7894E 00	-5.4832E 00	1.3625E 00	-2.9798E-01	1.0780E 00	6.2969E 00	1.3995E 00	-2.4203E 01	2.2454E-01	-3.4121E 00
1.7037E 00	3.6157E 00	-1.3932E 00	-3.9549E-01	2.8226E-01	-1.8567E 00	-2.3081E 00	6.0523E-01	-8.1663E-02	2.0053E 00

ROW 12

8.1880E-01	1.1079E-01	-2.8111E 01	-1.6752E-01	-7.8925E 00	-5.0680E 00	2.1233E 00	-2.6092E 01	4.7633E 01	8.3123E 00
3.2870E 00	-7.5392E 00	1.7626E 00	-2.8208E-01	1.1597E 00	3.9351E 00	8.8876E-01	-1.5946E 01	9.1061E-02	-1.4832E 00
2.9729E 00	-2.8192E 00	-1.9128E 00	5.9446E-01	-1.5990E 00	-3.1000E 00	-3.3205E 00	1.1928E 00	-3.7984E-01	2.1590E 00

ROW 13

8.1880E-01	1.1079E-01	-3.3524E 01	-2.3260E-01	-1.1385E 01	-6.4776E 00	7.3946E-01	-3.5074E 01	6.5258E 01	1.2459E 01
5.9147E 00	-1.0998E 01	3.0493E 00	-2.5063E-01	3.1781E-01	-3.3945E 00	-5.3592E-01	6.7698E 00	1.1658E-01	3.4760E 00
4.1884E 00	-1.0010E 01	-2.7153E 00	1.9920E 00	-3.5796E 00	-2.1422E 00	-1.9746E 00	8.2119E-01	-3.7337E-01	1.8857E-01

ROW 14

8.1880E-01	1.1079E-01	-3.8938E 01	-3.0908E-01	-1.5023E 01	-7.9378E 00	-8.3015E-01	-4.4726E 01	8.3853E 01	1.6695E 01
8.9975E 00	-1.5817E 01	5.9868E 00	-8.0206E-02	-3.3076E-01	-1.6880E 01	-2.9307E 00	4.4361E 01	4.2171E-01	8.7573E 00
3.8515E 00	-7.4608E 00	-2.4555E 00	1.5765E 00	-1.4174E 00	3.3744E 00	1.4150E 00	-5.7207E-01	1.2392E-01	-1.9800E 00

ROW 15

8.1880E-01	1.1079E-01	-4.3823E 01	-3.8487E-01	-1.8333E 01	-9.2838E 00	-2.2944E 00	-5.3731E 01	1.0085E 02	2.0561E 01
1.1987E 01	-2.0876E 01	9.5276E 00	1.8970E-01	-2.0355E 00	-3.2629E 01	-5.6264E 00	8.6044E 01	7.9580E-01	1.2347E 01
2.0340E 00	2.1122E 00	-8.4970E-01	-4.5642E-01	3.9150E 00	1.0950E 01	5.4397E 00	-2.2241E 00	7.7985E-01	-3.4688E 00

ROW 16

8.1880E-01	1.1079E-01	-4.8708E 01	-4.6076E-01	-2.1652E 01	-1.0634E 01	-3.7587E 00	-6.2788E 01	1.1795E 02	2.4455E 01
1.4996E 01	-2.5988E 01	1.3163E 01	4.5390E-01	-3.7283E 00	-4.8713E 01	-8.3869E 00	1.2892E 02	1.1969E 00	1.6315E 01
2.1758E-01	1.1966E 01	7.7010E-01	-2.5630E 00	9.6248E 00	1.9454E 01	1.0000E 01	-4.1153E 00	1.5226E 00	-5.3909E 00

ROW 17

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 18

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 19

5.2727E-01	1.8124E-02	-8.9808E 00	6.8379E-01	3.7220E 00	4.1471E-01	-7.3617E-01	3.4205E 00	-7.4041E 00	-2.1727E 00
8.0779E-01	4.5666E-01	2.6630E-01	6.6421E-01	1.1624E-01	2.1817E-01	-1.3134E-01	3.8239E 00	8.7337E-01	2.6211E-01
6.7352E-01	-1.2666E 00	1.6224E 00	2.5773E-01	-7.5898E-01	3.9957E-02	-2.1029E-01	1.3452E-01	-6.2408E-02	1.6697E-01

ROW 20

5.2727E-01	1.8124E-02	-8.9808E 00	6.8379E-01	3.7220E 00	4.1471E-01	-7.3617E-01	3.4205E 00	-7.4041E 00	-2.1727E 00
8.0779E-01	4.5666E-01	2.6630E-01	6.6421E-01	1.1624E-01	2.1817E-01	-1.3134E-01	3.8239E 00	8.7337E-01	2.6211E-01
6.7352E-01	-1.2666E 00	1.6224E 00	2.5773E-01	-7.5898E-01	3.9957E-02	-2.1029E-01	1.3452E-01	-6.2408E-02	1.6697E-01

MATRIX *PHWG* 96 BY 30 **SYMMETRIC MATH MODEL**

ROW 21

5.2727E-01	1.8124E-02	-8.9898E 00	6.8379E-01	3.7220E 00	4.1471E-01	-7.3617E-01	3.4205E 00	-7.4041E 00	-2.1727E 00
8.0779E-01	4.5666E-01	2.6630E-01	6.6421E-01	1.1624E-01	2.1817E-01	-1.3134E-01	3.8239E 00	8.7337E-01	2.6211E-01
6.7352E-01	-1.2666E 00	1.6224E 00	2.5773E-01	-7.5898E-01	3.9958E-02	-2.1029E-01	1.3452E-01	-6.2408E-02	1.6696E-01

ROW 22

5.2727E-01	1.8124E-02	-8.9898E 00	6.8379E-01	3.7220E 00	4.1471E-01	-7.3617E-01	3.4205E 00	-7.4041E 00	-2.1727E 00
8.0779E-01	4.5666E-01	2.6630E-01	6.6421E-01	1.1624E-01	2.1817E-01	-1.3134E-01	3.8239E 00	8.7337E-01	2.6211E-01
6.7352E-01	-1.2666E 00	1.6224E 00	2.5773E-01	-7.5898E-01	3.9958E-02	-2.1029E-01	1.3452E-01	-6.2408E-02	1.6697E-01

ROW 23

5.2727E-01	1.8124E-02	-8.9898E 00	6.8379E-01	3.7220E 00	4.1471E-01	-7.3617E-01	3.4205E 00	-7.4041E 00	-2.1727E 00
8.0779E-01	4.5666E-01	2.6630E-01	6.6421E-01	1.1624E-01	2.1817E-01	-1.3134E-01	3.8239E 00	8.7337E-01	2.6211E-01
6.7352E-01	-1.2666E 00	1.6224E 00	2.5773E-01	-7.5898E-01	3.9958E-02	-2.1029E-01	1.3452E-01	-6.2408E-02	1.6697E-01

ROW 24

5.6450E-01	2.3107E-02	-9.4612E 00	6.8152E-01	3.8258E 00	3.7873E-01	-6.8089E-01	3.2780E 00	-7.2075E 00	-2.2361E 00
8.2752E-01	4.4559E-01	2.9719E-01	6.6148E-01	1.3460E-01	4.0331E-01	-8.8232E-02	3.0928E 00	9.2186E-01	1.4722E-01
6.8190E-01	-8.5305E-01	1.6589E 00	2.0279E-01	-6.5824E-01	1.0730E-01	-6.1280E-02	8.3933E-02	-4.6355E-02	7.7488E-02

ROW 25

5.6450E-01	2.3107E-02	-9.4611E 00	6.8152E-01	3.8258E 00	3.7873E-01	-6.8089E-01	3.2780E 00	-7.2075E 00	-2.2361E 00
8.2752E-01	4.4559E-01	2.9719E-01	6.6148E-01	1.3460E-01	4.0331E-01	-8.8232E-02	3.0928E 00	9.2186E-01	1.4723E-01
6.8190E-01	-8.5305E-01	1.6589E 00	2.0279E-01	-6.5823E-01	1.0730E-01	-6.1280E-02	8.3934E-02	-4.6356E-02	7.7489E-02

ROW 26

5.6450E-01	2.3107E-02	-9.4611E 00	6.8152E-01	3.8258E 00	3.7873E-01	-6.8089E-01	3.2780E 00	-7.2075E 00	-2.2361E 00
8.2752E-01	4.4560E-01	2.9719E-01	6.6148E-01	1.3460E-01	4.0331E-01	-8.8232E-02	3.0928E 00	9.2186E-01	1.4723E-01
6.8190E-01	-8.5305E-01	1.6589E 00	2.0279E-01	-6.5823E-01	1.0730E-01	-6.1280E-02	8.3935E-02	-4.6356E-02	7.7489E-02

ROW 27

5.6450E-01	2.3107E-02	-9.4611E 00	6.8151E-01	3.8258E 00	3.7873E-01	-6.8089E-01	3.2780E 00	-7.2075E 00	-2.2361E 00
8.2753E-01	4.4560E-01	2.9719E-01	6.6148E-01	1.3459E-01	4.0330E-01	-8.8232E-02	3.0928E 00	9.2186E-01	1.4724E-01
6.8190E-01	-8.5305E-01	1.6589E 00	2.0278E-01	-6.5823E-01	1.0730E-01	-6.1277E-02	8.3934E-02	-4.6357E-02	7.7490E-02

ROW 28

5.6450E-01	2.3107E-02	-9.4611E 00	6.8151E-01	3.8258E 00	3.7873E-01	-6.8089E-01	3.2780E 00	-7.2075E 00	-2.2361E 00
8.2753E-01	4.4560E-01	2.9719E-01	6.6148E-01	1.3459E-01	4.0330E-01	-8.8232E-02	3.0928E 00	9.2186E-01	1.4724E-01
6.8190E-01	-8.5306E-01	1.6589E 00	2.0279E-01	-6.5824E-01	1.0730E-01	-6.1281E-02	8.3937E-02	-4.6358E-02	7.7493E-02

ROW 29

5.6450E-01	2.3107E-02	-9.4611E 00	6.8151E-01	3.8258E 00	3.7873E-01	-6.8089E-01	3.2780E 00	-7.2075E 00	-2.2361E 00
8.2752E-01	4.4561E-01	2.9719E-01	6.6148E-01	1.3460E-01	4.0330E-01	-8.8232E-02	3.0928E 00	9.2185E-01	1.4722E-01
6.8190E-01	-8.5305E-01	1.6589E 00	2.0279E-01	-6.5824E-01	1.0730E-01	-6.1281E-02	8.3934E-02	-4.6355E-02	7.7489E-02

ROW 30

5.6450E-01	2.3107E-02	-9.4611E 00	6.8151E-01	3.8258E 00	3.7873E-01	-6.8089E-01	3.2780E 00	-7.2075E 00	-2.2361E 00
8.2752E-01	4.4561E-01	2.9719E-01	6.6148E-01	1.3460E-01	4.0329E-01	-8.8233E-02	3.0928E 00	9.2185E-01	1.4722E-01
6.8190E-01	-8.5306E-01	1.6589E 00	2.0279E-01	-6.5824E-01	1.0729E-01	-6.1281E-02	8.3934E-02	-4.6356E-02	7.7488E-02

MATRIX *PHWG* 96 BY 30

SYMMETRIC MATH MODEL

ROW 31
5.6450E-01 2.3107E-02 -9.4611E 00 6.8150E-01 3.8257E 00 3.7873E-01 -6.8089E-01 3.2780E 00 -7.2075E 00 -2.2361E 00
8.2751E-01 4.4561E-01 2.9719E-01 6.6148E-01 1.3460E-01 4.0329E-01 -8.8235E-02 3.0929E 00 9.2185E-01 1.4720E-01
6.8191E-01 -8.5306E-01 1.6589E 00 2.0279E-01 -6.5824E-01 1.0730E-01 -6.1280E-02 8.3933E-02 -4.6355E-02 7.7487E-02

ROW 32
5.6450E-01 2.3107E-02 -9.4611E 00 6.8150E-01 3.8257E 00 3.7873E-01 -6.8089E-01 3.2780E 00 -7.2075E 00 -2.2361E 00
8.2751E-01 4.4561E-01 2.9719E-01 6.6148E-01 1.3460E-01 4.0328E-01 -8.8237E-02 3.0929E 00 9.2185E-01 1.4720E-01
6.8190E-01 -8.5304E-01 1.6589E 00 2.0279E-01 -6.5824E-01 1.0730E-01 -6.1278E-02 8.3931E-02 -4.6354E-02 7.7487E-02

ROW 33
-1.0453E-01 9.9452E-01 2.4884E 02 -1.3288E 01 5.6577E 00 -1.3741E-01 7.9075E 00 8.0575E 00 6.3512E 00 -7.6034E 00
1.5232E 01 1.3584E 01 -1.2060E 00 -1.7556E 00 9.2960E 00 -1.7825E 01 -1.2552E 00 -1.0953E 01 8.3217E 00 1.4996E 01
-3.1259E 00 -1.5834E 00 -1.2247E-01 -5.1455E-01 2.0343E 00 6.2219E-01 2.9011E 00 2.2614E 00 -1.9371E 00 1.3450E 00

ROW 34
-1.0453E-01 9.9452E-01 2.4884E 02 -1.3090E 01 5.5699E 00 -1.2140E-01 7.6757E 00 7.7696E 00 6.1359E 00 -7.3332E 00
1.4464E 01 1.2899E 01 -1.3780E 00 -1.8516E 00 9.5858E 00 -1.7198E 01 -1.2620E 00 -1.0428E 01 8.5759E 00 1.3458E 01
-2.7187E 00 -1.3350E 00 -7.9434E-02 -3.3649E-01 1.5841E 00 5.4972E-01 2.8150E 00 1.9662E 00 -1.7495E 00 1.0497E 00

ROW 35
-1.0443E-01 9.9358E-01 2.1912E 02 -1.2614E 01 5.5411E 00 -1.5812E-01 6.6150E 00 4.6345E 00 5.3093E 00 -8.7206E 00
9.9180E 00 1.2427E 01 -1.7379E 00 -1.9605E 00 9.8807E 00 -1.4487E 01 -1.1267E 00 -8.2279E 00 6.2201E 00 7.4864E 00
-2.1103E 00 -3.9729E-01 -2.6956E 00 5.9593E-01 2.0367E-01 6.3316E-01 3.0521E 00 1.3966E 00 -1.3927E 00 3.8946E-01

ROW 36
-1.0443E-01 9.9358E-01 1.5564E 02 -1.0089E 01 5.6989E 00 -1.6568E-01 3.1260E 00 -4.2203E 00 2.2815E 00 -1.0419E 01
-1.0878E 00 6.1464E 00 -3.6219E 00 -2.6179E 00 1.2159E 01 -4.7183E 00 -8.5206E-01 -7.4151E-01 2.9810E 00 -1.2265E 01
-2.0188E-01 2.4189E 00 -5.9614E 00 2.8550E 00 -4.1042E 00 7.5570E-01 2.1416E 00 -9.2306E-01 1.8633E-01 -1.5980E 00

ROW 37
-1.0443E-01 9.9358E-01 1.4742E 02 -9.6174E 00 5.7409E 00 -1.5463E-01 2.5854E 00 -5.5189E 00 1.7959E 00 -1.0520E 01
-2.4777E 00 4.9076E 00 -3.9238E 00 -2.7109E 00 1.2491E 01 -3.2015E 00 -8.1318E-01 3.6598E-01 2.7137E 00 -1.4842E 01
1.3866E-01 2.7408E 00 -6.0358E 00 3.0329E 00 -4.5351E 00 6.9113E-01 1.9166E 00 -1.1942E 00 3.8724E-01 -1.7580E 00

ROW 38
-1.0443E-01 9.9358E-01 9.2150E 01 -5.4869E 00 6.2007E 00 3.3783E-02 -1.4022E 00 -1.4814E 01 -1.8542E 00 -1.0517E 01
-1.0176E 01 -5.4835E 00 -5.9151E 00 -3.1763E 00 1.4093E 01 7.5235E 00 -5.0092E-01 7.6122E 00 1.7379E 00 -2.7577E 01
3.1237E 00 3.8866E 00 -3.8211E 00 2.7434E 00 -5.1278E 00 -4.6989E-01 6.2536E-02 -2.0364E 00 1.2028E 00 -1.5537E 00

ROW 39
-1.0443E-01 9.9358E-01 4.5737E 01 -5.7747E-01 6.9478E 00 3.8405E-01 -4.9226E 00 -2.2759E 01 -5.1275E 00 -9.7304E 00
-1.1874E 01 -1.6014E 01 -6.9273E 00 -3.1535E 00 1.3575E 01 1.5574E 01 -1.4762E-01 1.1765E 01 1.8834E 00 -2.6502E 01
6.2382E 00 2.9145E 00 1.4501E 00 1.6984E-01 -1.5474E 00 -1.9033E 00 -1.3631E 00 -8.8249E-01 7.4900E-01 2.8743E-01

ROW 40
-1.0443E-01 9.9358E-01 2.7384E 01 1.5841E 00 7.5110E 00 5.3808E-01 -6.1084E 00 -2.5651E 01 -6.2460E 00 -9.5746E 00
-1.0112E 01 -1.9962E 01 -6.9992E 00 -3.0108E 00 1.2809E 01 1.7869E 01 8.1488E-03 1.2364E 01 1.9692E 00 -2.2554E 01
6.7631E 00 2.1298E 00 3.8168E 00 -1.1333E 00 5.9363E-01 -1.9364E 00 -1.8408E 00 -3.7214E-02 3.0431E-01 1.1603E 00

MATRIX *PHWG* 96 BY 30 **SYMMETRIC MATH MODEL**

ROW 41
-1.0443E-01 9.9358E-01 -2.5473E 01 8.9984E 00 9.7034E 00 9.0247E-01 -9.0335E 00 -3.2535E 01 -8.9731E 00 -8.4054E 00
-1.0986E 00 -3.0501E 01 -5.8025E 00 -2.1469E 00 7.9501E 00 2.0106E 01 4.7134E-01 9.7231E 00 2.2752E 00 -1.0725E 00
6.4548E 00 -6.6348E-01 8.7030E 00 -4.3194E 00 6.4309E 00 -1.0952E 00 -1.6913E 00 2.1483E 00 -1.0417E 00 2.4987E 00

ROW 42
-1.0443E-01 9.9358E-01 -7.8330E 01 1.8246E 01 1.3048E 01 9.1292E-01 -1.0466E 01 -3.5526E 01 -1.0279E 01 -5.7519E 00
9.8981E 00 -3.7888E 01 -2.0428E 00 -7.6314E-01 -6.6645E-01 1.3643E 01 7.9811E-01 5.7430E-01 2.2386E 00 2.7061E 01
3.7339E 00 -2.9581E 00 6.4380E 00 -4.0274E 00 6.9995E 00 3.5550E-01 8.7810E-01 2.0584E 00 -1.3155E 00 1.0131E 00

ROW 43
-1.0443E-01 9.9358E-01 -1.3119E 02 2.9338E 01 1.8387E 01 3.8759E-01 -8.6165E 00 -3.1972E 01 -8.7228E 00 -2.1273E 00
1.8566E 01 -3.9582E 01 4.1911E 00 6.7326E-01 -1.0535E 01 -1.3168E 00 7.5260E-01 -1.1759E 01 1.7344E 00 4.3530E 01
1.3600E 00 -3.1329E 00 -3.8923E 00 8.2605E-01 -3.8706E-01 9.1987E-01 3.2612E 00 -8.2844E-01 3.0444E-02 -1.5298E 00

ROW 44
-1.0443E-01 9.9358E-01 -1.8404E 02 4.2037E 01 2.7313E 01 -8.1957E-01 -8.7311E-01 -1.9237E 01 -2.2610E 00 9.1725E-01
1.7663E 01 -3.5159E 01 1.1149E 01 1.6761E 00 -1.7108E 01 -1.8666E 01 2.6550E-01 -2.0521E 01 1.1180E 00 2.9240E 01
3.2427E 00 -8.9794E-01 -1.3657E 01 5.8957E 00 -9.5629E 00 -1.8674E 00 1.4698E 00 -2.7900E 00 1.6069E 00 -8.7585E-01

ROW 45
-1.0443E-01 9.9358E-01 -2.5395E 02 6.0792E 01 4.6182E 01 -3.4492E 00 1.8226E 01 1.0752E 01 1.4810E 01 8.0052E 00
-1.9859E-01 -1.2514E 01 1.2545E 01 1.9640E 00 -1.6601E 01 -3.1278E 01 -7.3672E-01 -1.7327E 01 -2.8044E-01 -3.9032E 01
7.4665E 00 5.0928E-01 -6.0206E 00 3.1486E 00 -6.9840E 00 -6.1563E 00 -5.2704E 00 4.1203E-01 3.4993E-01 3.0242E 00

ROW 46
-1.0443E-01 9.9358E-01 -3.2386E 02 8.0933E 01 7.3489E 01 -7.0025E 00 4.6778E 01 4.5168E 01 3.6753E 01 3.2133E 01
-2.6554E 01 4.3262E 01 -3.8066E 00 2.3001E-01 -1.6227E 00 -1.3038E 01 -1.0918E 00 4.4556E 00 -1.3453E 00 -7.3646E 01
8.8567E 00 -1.1221E 01 1.1883E 01 -4.3882E 00 1.0201E 01 1.2774E 01 1.6277E 00 1.4777E 00 -1.3677E 00 -4.8268E 00

ROW 47
-1.0443E-01 9.9358E-01 -3.8694E 02 9.9420E 01 1.0433E 02 -1.0754E 01 8.0265E 01 7.3779E 01 5.7676E 01 7.0087E 01
-5.3444E 01 1.1825E 02 -3.2921E 01 -3.2624E 00 2.6064E 01 3.6642E 01 -8.0362E-01 5.0996E 01 1.1629E 00 4.1328E 01
-2.7231E 00 -1.7280E 00 4.7025E 00 -2.5590E 00 9.5791E 00 1.9552E 01 1.5932E 01 -8.2073E 00 4.1966E 00 3.3144E 00

ROW 48
-1.0443E-01 9.9358E-01 -4.5003E 02 1.1839E 02 1.3748E 02 -1.4894E 01 1.1661E 02 1.0515E 02 8.1066E 01 1.1348E 02
-8.4226E 01 2.0761E 02 -7.3900E 01 -7.7588E 00 6.4021E 01 1.1049E 02 -8.4771E-01 1.3759E 02 7.1220E 00 3.2009E 02
-4.8034E 01 7.3689E 01 -2.7398E 01 6.0368E 00 -1.7863E 01 -3.1890E 01 1.3295E 01 -1.8683E 01 1.3872E 01 4.9023E 01

ROW 49
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 50
0.0 0.0 0.0 7.2107E-03 -3.1975E-03 5.8277E-04 -8.4346E-03 -1.0479E-02 -7.8383E-03 9.8373E-03
-2.7940E-02 -2.4937E-02 -6.2591E-03 -3.4948E-03 1.0547E-02 2.2838E-02 -2.4437E-04 1.9090E-02 9.2526E-03 -5.6061E-02
1.4822E-02 9.0401E-03 1.5665E-03 6.4811E-03 -1.6386E-02 -2.6377E-03 -3.1344E-03 -1.0744E-02 6.8265E-03 -1.0746E-02

MATRIX *PHWG* 96 BY 30

SYMMETRIC MATH MODEL

ROW 51
0.0 0.0 -5.2577E-01 1.2512E-02 1.3946E-04 -5.4308E-04 -2.2606E-02 -6.2432E-02 -1.8548E-02 2.1163E-02
-8.6677E-02 -2.4080E-02 -1.0250E-02 -3.6672E-03 1.1827E-02 6.1006E-02 2.2738E-03 4.8705E-02 -3.6493E-02 -1.3577E-01
1.1829E-02 2.0895E-02 -4.2292E-02 1.9698E-02 -3.2609E-02 2.6996E-03 -7.2503E-05 -1.5424E-02 9.9430E-03 -1.6028E-02

ROW 52
0.0 0.0 -5.2577E-01 2.9090E-02 2.5152E-03 5.9035E-04 -3.4052E-02 -8.2191E-02 -3.0497E-02 -7.3678E-03
-8.9966E-02 -7.6441E-02 -1.9116E-02 -6.0467E-03 2.1549E-02 9.5787E-04 2.4396E-03 7.0457E-02 -1.8149E-02 -1.6798E-01
2.0911E-02 2.1504E-02 -7.9506E-03 1.2901E-02 -2.9743E-02 -3.1848E-03 -1.3755E-02 -1.8207E-02 1.3275E-02 -1.1646E-02

ROW 53
0.0 0.0 -5.2577E-01 3.1288E-02 2.8650E-03 8.2743E-04 -3.5121E-02 -8.3988E-02 -3.1645E-02 -5.6387E-03
-8.7810E-02 -8.2077E-02 -1.9485E-02 -5.8461E-03 2.0894E-02 9.8275E-02 2.5373E-03 7.1214E-02 -1.6061E-02 -1.6166E-01
2.2667E-02 1.9662E-02 -1.5571E-03 9.8285E-03 -2.5331E-02 -5.0705E-03 -1.5010E-02 -1.6454E-02 1.2412E-02 -8.8120E-03

ROW 54
0.0 0.0 -5.2577E-01 4.7773E-02 6.1927E-03 2.9098E-03 -3.9901E-02 -9.1150E-02 -3.6948E-02 5.4666E-03
-5.1475E-02 -1.1310E-01 -1.6599E-02 -2.2772E-03 6.1860E-03 1.0102E-01 3.5021E-03 6.1784E-02 -2.8757E-03 -6.1768E-02
3.3846E-02 -3.1391E-04 4.4423E-02 -1.7392E-02 1.8629E-02 -1.6537E-02 -1.8602E-02 2.8658E-03 1.4081E-03 1.3750E-02

ROW 55
0.0 0.0 -5.2577E-01 6.3806E-02 1.1248E-02 5.0134E-03 -3.8866E-02 -8.6937E-02 -3.6198E-02 1.1336E-02
2.1121E-02 -1.2204E-01 -4.8764E-03 2.9090E-03 -1.9200E-02 7.6946E-02 4.4708E-03 2.8158E-02 5.7003E-03 9.2752E-02
3.3915E-02 -2.0840E-02 7.1008E-02 -3.9082E-02 6.0744E-02 -1.1756E-02 -1.2597E-02 2.2622E-02 -1.1551E-02 2.5550E-02

ROW 56
0.0 0.0 -5.6328E-01 6.9558E-02 1.8957E-02 5.0644E-03 -3.5114E-02 -8.6172E-02 -3.3124E-02 4.6229E-03
7.6124E-02 -1.1950E-01 1.3135E-03 5.4472E-03 -2.9235E-02 6.1710E-02 4.9230E-03 8.1388E-03 3.7004E-03 1.5549E-01
1.2524E-02 -2.6977E-02 7.3709E-02 -4.2058E-02 7.1551E-02 4.3175E-03 -1.2750E-02 2.8874E-02 -1.5842E-02 2.6578E-02

ROW 57
0.0 0.0 -5.6328E-01 8.8659E-02 2.8496E-02 2.3586E-03 -2.5540E-02 -5.6872E-02 -2.3468E-02 2.0557E-02
1.1211E-01 -1.0054E-01 2.5528E-02 1.2618E-02 -7.3998E-02 -1.9082E-02 4.6247E-03 -6.4940E-02 2.0466E-03 2.8853E-01
-1.8521E-02 -3.0211E-02 2.1551E-02 -2.0491E-02 4.3554E-02 1.3371E-02 1.6323E-02 1.4197E-02 -1.0739E-02 -4.2709E-04

ROW 58
0.0 0.0 -5.6328E-01 1.0846E-01 4.4180E-02 -2.4495E-03 -1.8962E-03 -2.1838E-03 -1.8808E-03 3.5177E-02
1.1487E-01 -5.2072E-02 5.4642E-02 1.5991E-02 -1.0522E-01 -1.1891E-01 1.8854E-03 -1.2429E-01 -3.0737E-03 2.7734E-01
-3.4320E-02 -1.5538E-02 -7.2850E-02 2.9506E-02 -3.7774E-02 1.4671E-02 3.3728E-02 -1.7224E-02 6.2434E-03 -2.7873E-02

ROW 59
0.0 0.0 -5.6328E-01 1.2757E-01 7.2339E-02 -8.9843E-03 4.6011E-02 8.2719E-02 3.8675E-02 3.9365E-02
5.7175E-02 1.7167E-02 7.5123E-02 1.3723E-02 -9.6717E-02 -1.8916E-01 -3.0307E-03 -1.2577E-01 -7.0236E-03 3.6377E-02
-8.4166E-03 1.2521E-02 -1.3168E-01 6.6083E-02 -1.0862E-01 -7.2705E-03 8.9364E-03 -3.4076E-02 1.9843E-02 -1.7804E-02

ROW 60
0.0 0.0 -5.6328E-01 1.4198E-01 1.2306E-01 -1.7129E-02 1.2508E-01 1.9292E-01 1.0404E-01 2.0430E-02
-9.6411E-02 7.0646E-02 6.7333E-02 6.7909E-03 -3.3789E-02 -1.5877E-01 -6.7989E-03 -4.8872E-02 -4.6829E-03 -3.5056E-01
5.1432E-02 3.1429E-02 -4.7307E-02 2.6073E-02 -6.1757E-02 -5.6766E-02 -4.8806E-02 -3.7319E-03 9.0124E-03 3.6569E-02

MATRIX *PHWG* 96 BY 30 **SYMMETRIC MATH MODEL**

ROW 61

0.0	0.0	-5.6328E-01	1.5907E-01	1.8404E-01	-2.5362E-02	1.8708E-01	2.8055E-01	1.6681E-01	1.0928E-01
-1.8889E-01	3.1226E-01	-5.9164E-02	-4.0183E-03	5.3769E-02	-6.6271E-03	-7.6478E-03	1.1005E-01	-1.5846E-02	-6.2571E-01
1.0951E-02	-2.1858E-02	1.6520E-01	-7.0825E-02	1.1906E-01	3.5326E-02	-3.0713E-02	4.5760E-02	-2.7349E-02	-5.7907E-03

ROW 62

0.0	0.0	-5.6328E-01	1.6213E-01	2.6176E-01	-3.1214E-02	2.8208E-01	2.3911E-01	1.7215E-01	3.0819E-01
-2.1683E-01	5.8926E-01	-1.9727E-01	-2.5162E-02	1.9246E-01	3.1959E-01	4.5594E-03	2.0707E-01	6.9219E-03	2.5910E-01
5.1180E-02	-1.9794E-01	3.5579E-02	-6.2593E-03	8.1337E-02	2.4905E-01	1.4896E-01	-5.7583E-02	2.0167E-02	-8.0830E-02

ROW 63

0.0	0.0	-5.6328E-01	1.6785E-01	2.8861E-01	-3.5748E-02	3.1551E-01	2.7139E-01	2.0104E-01	3.4969E-01
-2.6271E-01	7.5085E-01	-3.2603E-01	-3.7026E-02	3.0459E-01	5.7721E-01	6.7529E-04	6.3730E-01	4.0658E-02	1.9056E 00
-2.8168E-01	4.2596E-01	-1.9147E-01	4.9229E-02	-1.3326E-01	-2.1447E-01	6.7042E-02	-1.0648E-01	7.9526E-02	2.7505E-01

ROW 64

0.0	0.0	-5.6328E-01	1.6985E-01	2.9854E-01	-3.7413E-02	3.2746E-01	2.8306E-01	2.1144E-01	3.9358E-01
-2.7883E-01	8.1438E-01	-3.8066E-01	-4.1033E-02	3.5117E-01	6.8995E-01	-7.2393E-04	8.2290E-01	5.8238E-02	2.7146E 00
-4.5103E-01	7.7203E-01	-3.2516E-01	8.8117E-02	-2.9178E-01	-5.6241E-01	-5.3662E-02	-9.6659E-02	9.5685E-02	4.9007E-01

ROW 65

0.0	0.0	1.0000E 00	4.0448E-03	-3.3356E-03	2.3376E-03	1.4499E-02	7.5916E-02	7.4110E-03	7.0310E-02
9.5509E-02	-5.5847E-02	-5.6964E-03	-5.5460E-03	2.0451E-02	-2.8341E-02	-5.2308E-03	-2.3556E-02	1.0507E-01	4.7079E-02
4.8300E-03	-7.5751E-03	9.7761E-02	-1.3359E-02	1.5417E-03	-3.7206E-03	-2.1766E-02	-1.0014E-02	6.9447E-03	-5.3300E-03

ROW 66

0.0	0.0	1.0000E 00	4.0448E-03	-3.3356E-03	2.3376E-03	1.4499E-02	7.5916E-02	7.4110E-03	7.0310E-02
9.5509E-02	-5.5847E-02	-5.6964E-03	-5.5460E-03	2.0451E-02	-2.8341E-02	-5.2308E-03	-2.3556E-02	1.0507E-01	4.7079E-02
4.8300E-03	-7.5751E-03	9.7761E-02	-1.3359E-02	1.5417E-03	-3.7206E-03	-2.1766E-02	-1.0014E-02	6.9447E-03	-5.3300E-03

ROW 67

0.0	0.0	8.4950E-01	7.7391E-03	-1.2894E-02	3.3597E-03	4.6047E-03	6.1960E-02	3.7412E-04	7.2442E-02
3.5634E-02	-5.5075E-02	-6.0819E-03	-6.4912E-03	1.7557E-02	-1.4161E-02	-4.4488E-03	-8.7415E-03	9.4138E-02	2.4355E-02
4.0846E-02	-2.9630E-03	7.9040E-02	-1.1965E-02	-1.3859E-03	-1.8062E-02	-1.0919E-02	-1.1819E-02	7.4479E-03	-9.8685E-03

ROW 68

0.0	0.0	8.4950E-01	9.1642E-03	-3.6356E-02	6.3541E-03	-4.5582E-03	7.0311E-02	-4.6441E-03	9.3472E-02
-5.0215E-02	-3.9634E-02	-3.5791E-04	-6.3289E-03	2.5707E-03	-2.0015E-02	-4.0998E-03	-5.3884E-03	9.4161E-02	6.2952E-02
1.2180E-01	-6.3906E-03	6.5618E-02	-2.3296E-02	1.5288E-02	-5.5883E-02	1.4817E-02	-5.2850E-03	1.7737E-03	-8.4859E-03

ROW 69

0.0	0.0	8.4950E-01	9.3806E-03	-3.9949E-02	6.8002E-03	-5.9865E-03	7.1375E-02	-5.4187E-03	9.6603E-02
-6.3183E-02	-3.7169E-02	4.7398E-04	-6.4169E-03	5.8525E-04	-2.0847E-02	-4.0622E-03	-4.8466E-03	9.4180E-02	6.7175E-02
1.3387E-01	-6.3294E-03	6.2709E-02	-2.4366E-02	1.6768E-02	-6.1051E-02	1.8838E-02	-4.8734E-03	1.2411E-03	-8.9115E-03

ROW 70

0.0	0.0	8.4950E-01	1.1115E-02	-6.8734E-02	1.0375E-02	-1.7431E-02	8.1705E-02	-1.1625E-02	1.2169E-01
-1.6710E-01	-1.7415E-02	7.1577E-03	-7.1225E-03	-1.5324E-02	-2.7511E-02	-3.7609E-03	-5.0528E-04	9.4332E-02	1.0101E-01
2.3051E-01	-5.8390E-03	3.9404E-02	-3.2937E-02	2.8622E-02	-1.0246E-01	5.1058E-02	-1.5751E-03	-3.0261E-03	-1.2322E-02

MATRIX *PHWG* 96 BY 30 **SYMMETRIC MATH MODEL**

ROW 71

0.0	0.0	8.4950E-01	1.2974E-02	-1.0000E-01	1.3971E-02	-3.0238E-02	9.2204E-02	-1.8559E-02	1.4744E-01
-2.7760E-01	4.8832E-03	1.3049E-02	-9.4249E-03	-2.7264E-02	-3.2255E-02	-3.6699E-03	6.1840E-03	9.4728E-02	1.0811E-01
3.3003E-01	3.4878E-03	4.5979E-03	-3.3890E-02	2.7668E-02	-1.3914E-01	8.4625E-02	-5.4845E-03	-3.0547E-03	-2.1856E-02

ROW 72

0.0	0.0	8.2511E-01	1.6998E-02	-1.1286E-01	1.5791E-02	-3.7430E-02	9.3018E-02	-2.3091E-02	1.5908E-01
-3.2234E-01	9.1761E-03	1.5784E-02	-1.0167E-02	-3.3933E-02	-3.1678E-02	-3.4078E-03	9.3289E-03	8.5212E-02	1.1905E-01
3.7435E-01	6.2313E-03	-7.0922E-03	-3.6357E-02	3.0728E-02	-1.5509E-01	9.8798E-02	-5.7889E-03	-3.8538E-03	-2.4759E-02

ROW 73

0.0	0.0	8.2511E-01	2.1278E-02	-1.5243E-01	1.6597E-02	-5.1133E-02	1.0488E-01	-2.8219E-02	1.5690E-01
-2.7923E-01	6.1334E-02	1.5365E-02	-1.0663E-02	-1.9947E-02	-3.1381E-02	-3.9472E-03	1.7632E-02	8.9450E-02	8.5248E-02
4.0766E-01	2.0103E-02	-5.7105E-02	-1.6231E-02	8.5543E-03	-1.1231E-01	5.4926E-02	-1.6664E-03	-1.4109E-03	1.0056E-02

ROW 74

0.0	0.0	8.2511E-01	2.6851E-02	-2.0305E-01	1.7293E-02	-6.8964E-02	1.1836E-01	-3.5078E-02	1.5144E-01
-2.1777E-01	1.2510E-01	1.1353E-02	-1.1452E-02	2.3011E-03	-2.2374E-02	-4.4491E-03	3.2131E-02	8.2282E-02	3.1789E-02
4.4114E-01	4.1276E-02	-1.0956E-01	4.5143E-03	-9.0893E-03	-4.4881E-02	-7.1593E-03	7.7729E-03	-9.8068E-04	4.7064E-02

ROW 75

0.0	0.0	8.2511E-01	3.4453E-02	-2.6978E-01	1.7446E-02	-9.3834E-02	1.3397E-01	-4.4718E-02	1.4185E-01
-1.3063E-01	2.0269E-01	1.7529E-03	-1.1159E-02	3.0093E-02	-1.9900E-03	-4.3080E-03	4.7347E-02	7.1842E-02	-4.8057E-03
4.6277E-01	6.8678E-02	-1.5972E-01	2.0590E-02	-6.0919E-03	6.9311E-02	-8.5512E-02	2.7805E-02	-7.4192E-03	6.5981E-02

ROW 76

0.0	0.0	8.2511E-01	4.5988E-02	-3.6682E-01	1.6640E-02	-1.3307E-01	1.5497E-01	-5.9290E-02	1.2651E-01
1.5507E-03	3.0766E-01	-1.3582E-02	-8.9965E-03	6.1554E-02	2.7387E-02	-2.8492E-03	4.8554E-02	8.4786E-02	2.1667E-02
4.6137E-01	1.0680E-01	-2.3476E-01	4.3841E-02	6.8137E-03	2.6004E-01	-1.7891E-01	5.2339E-02	-1.7934E-02	5.2771E-02

ROW 77

0.0	0.0	8.2511E-01	5.6590E-02	-4.4352E-01	1.7857E-02	-2.1574E-01	3.2796E-01	1.8522E-02	-8.8445E-02
-8.0157E-02	2.3081E-01	-7.4663E-02	-1.4772E-02	1.0622E-01	1.6428E-01	2.0061E-03	1.1443E-01	3.4861E-02	3.3621E-01
2.4203E-01	1.8611E-02	-1.3890E-01	2.1440E-02	6.3263E-02	3.2942E-01	-1.8861E-02	1.2922E-02	-1.5904E-02	-1.3865E-01

ROW 78

0.0	0.0	8.2511E-01	7.3524E-02	-5.4430E-01	1.9866E-02	-3.3740E-01	5.7831E-01	1.3719E-01	-3.9625E-01
-1.9387E-01	1.0649E-01	-1.4315E-01	-1.7756E-02	1.3972E-01	2.9005E-01	8.5336E-03	1.2463E-01	5.6846E-03	4.8202E-01
-3.9225E-02	-6.2103E-02	-1.1633E-02	8.6508E-03	1.4850E-02	9.5353E-02	9.0743E-02	-4.2194E-02	1.7842E-02	-3.3812E-02

ROW 79

0.0	0.0	8.2511E-01	7.2613E-02	-5.5108E-01	1.9940E-02	-3.4539E-01	5.7674E-01	1.3279E-01	-4.1086E-01
-1.8839E-01	7.8858E-02	-1.2912E-01	-1.4402E-02	1.2288E-01	2.6310E-01	1.0140E-02	5.4180E-02	9.9947E-04	2.1946E-01
6.3590E-02	-2.4032E-01	4.4765E-02	-1.3108E-02	1.2771E-01	3.6997E-01	4.7689E-01	-3.2953E-01	2.0062E-01	4.5324E-01

ROW 80

0.0	0.0	8.2511E-01	7.0755E-02	-5.6322E-01	1.9947E-02	-3.6042E-01	5.6980E-01	1.2264E-01	-4.3802E-01
-1.7504E-01	1.6237E-02	-8.7961E-02	-6.4245E-03	7.5885E-02	1.7209E-01	1.2855E-02	-1.2735E-01	-1.4712E-02	-5.9082E-01
3.1828E-01	-6.9539E-01	2.1753E-01	-7.9809E-02	4.2456E-01	1.0410E 00	1.2740E 00	-8.9002E-01	5.4903E-01	1.3270E 00

MATRIX *PHWG* 96 BY 30

SYMMETRIC MATH MODEL

ROW 81

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 82

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 83

0.0	0.0	4.3619E-02	1.5662E-04	3.7750E-03	1.1306E-03	-1.6769E-03	1.0837E-02	-1.4519E-02	-4.6307E-04
5.3238E-03	2.4622E-04	-6.5232E-04	1.4333E-03	1.4514E-03	-7.2119E-03	-1.7401E-03	2.6645E-02	3.3918E-03	6.5233E-03
2.8784E-04	-1.8539E-02	4.0654E-03	2.3682E-03	-5.6434E-03	-3.5210E-03	-8.0531E-03	2.7412E-03	-8.1734E-04	6.0236E-03

ROW 84

0.0	0.0	4.3619E-02	1.3452E-04	1.0295E-02	3.3159E-03	-4.9364E-03	2.3430E-02	-3.9387E-02	-6.5073E-03
6.2019E-03	4.9471E-03	-1.1185E-03	3.1872E-03	1.8981E-03	-1.4968E-02	-3.6886E-03	6.2524E-02	2.1441E-03	1.1756E-02
1.0953E-03	-3.7390E-02	4.1144E-03	5.5492E-03	-1.1472E-02	-5.8041E-03	-1.4147E-02	5.5366E-03	-1.9779E-03	1.0293E-02

ROW 85

0.0	0.0	4.3619E-02	1.3332E-04	1.1016E-02	3.6131E-03	-5.2284E-03	2.4829E-02	-4.2154E-02	-7.1959E-03
6.1779E-03	5.4946E-03	-1.1468E-03	3.2584E-03	1.8896E-03	-1.5568E-02	-3.8370E-03	6.5286E-02	2.0925E-03	1.2065E-02
1.2527E-03	-3.8106E-02	4.1563E-03	5.6967E-03	-1.1681E-02	-5.6571E-03	-1.3882E-02	5.5456E-03	-2.0204E-03	1.0034E-02

ROW 86

0.0	0.0	4.3619E-02	1.3541E-04	1.5616E-02	5.8254E-03	-6.6525E-03	3.3880E-02	-6.0103E-02	-1.1694E-02
5.1007E-03	9.1079E-03	-1.1920E-03	3.0945E-03	1.4101E-03	-1.7792E-02	-4.3704E-03	7.5707E-02	2.2275E-03	1.3203E-02
2.8904E-03	-3.5355E-02	4.9750E-03	5.2050E-03	-1.0169E-02	-3.0092E-03	-7.6291E-03	4.2680E-03	-1.9709E-03	4.[illegible]152E-03

ROW 87

0.0	0.0	4.3619E-02	1.5346E-04	1.9003E-02	7.9126E-03	-7.0073E-03	4.0779E-02	-7.3869E-02	-1.5139E-02
2.7473E-03	1.1899E-02	-1.0298E-03	2.1331E-03	3.3709E-04	-1.6932E-02	-4.1226E-03	7.2390E-02	2.9817E-03	1.3389E-02
5.1720E-03	-2.2860E-02	6.6927E-03	2.4830E-03	-4.5184E-03	9.9003E-04	3.3599E-03	1.6709E-03	-1.5992E-03	-3.3393E-03

ROW 88

0.0	0.0	4.3619E-02	1.6524E-04	2.0161E-02	8.7556E-03	-6.9179E-03	4.3230E-02	-7.8786E-02	-1.6348E-02
1.4364E-03	1.2880E-02	-9.0667E-04	1.5983E-03	-2.3586E-04	-1.5901E-02	-3.8558E-03	6.8211E-02	3.4184E-03	1.3536E-02
6.4441E-03	-1.5997E-02	7.6579E-03	8.4337E-04	-1.2723E-03	2.7035E-03	8.6968E-03	4.7586E-04	-1.4477E-03	-7.1616E-03

ROW 89

0.0	0.0	4.3619E-02	1.7727E-04	2.3316E-02	9.9909E-03	-5.9968E-03	5.0454E-02	-9.3417E-02	-2.0150E-02
-2.4235E-03	1.5848E-02	-1.7115E-03	8.6112E-04	-2.0507E-03	-1.2035E-02	-2.5387E-03	4.4228E-02	2.9372E-03	6.6504E-03
-2.1688E-03	8.0388E-03	6.8670E-03	-1.1354E-03	3.5889E-03	9.8430E-03	1.8337E-02	-4.9735E-03	9.1598E-04	-1.4243E-02

ROW 90

0.0	0.0	4.3619E-02	2.2354E-04	2.6058E-02	1.0963E-02	-3.2690E-03	5.7796E-02	-1.0891E-01	-2.4433E-02
-7.3685E-03	1.8617E-02	-2.8213E-03	1.7473E-04	-3.3228E-03	-2.5740E-03	-1.3748E-04	2.8233E-03	2.3192E-03	-2.8110E-03
-1.1099E-02	3.6606E-02	6.7275E-03	-4.6651E-03	1.0673E-02	1.5343E-02	2.3913E-02	-9.0385E-03	2.9968E-03	-1.6516E-02

MATRIX *PHWG* 96 BY 30

SYMMETRIC MATH MODEL

ROW 91

0.0	0.0	4.3619E-02	3.1738E-04	2.7581E-02	1.1391E-02	1.6782E-03	6.4065E-02	-1.2291E-01	-2.8588E-02
-1.2876E-02	2.0842E-02	-3.8771E-03	-1.6501E-04	-2.6868E-03	1.3336E-02	3.2332E-03	-5.2784E-02	1.6895E-03	-1.3794E-02
-1.5349E-02	6.0557E-02	6.4295E-03	-8.7002E-03	1.7498E-02	1.5770E-02	1.9406E-02	-8.9095E-03	3.6969E-03	-9.8825E-03

ROW 92

0.0	0.0	4.3619E-02	4.9214E-04	2.7279E-02	1.1156E-02	1.0188E-02	6.9331E-02	-1.3573E-01	-3.2787E-02
-1.9275E-02	2.3045E-02	-4.5571E-03	-1.0435E-04	1.9051E-03	3.9408E-02	7.9741E-03	-1.2774E-01	1.1942E-03	-2.8228E-02
-9.2795E-03	7.4514E-02	4.0864E-03	-1.2275E-02	2.2145E-02	9.5029E-03	-1.4391E-03	-2.1940E-03	2.1890E-03	9.2767E-03

ROW 93

0.0	0.0	4.3619E-02	5.6366E-04	2.8899E-02	1.1552E-02	1.2040E-02	7.5300E-02	-1.4728E-01	-3.3903E-02
-2.3081E-02	3.3071E-02	-1.6724E-02	-5.6461E-04	4.6524E-03	8.1557E-02	1.5286E-02	-2.4223E-01	-1.5372E-03	-4.7634E-02
-7.2875E-03	3.0595E-02	6.0248E-03	-7.4205E-03	4.7548E-03	-2.6572E-02	-2.0406E-02	8.0493E-03	-2.3086E-03	2.0526E-02

ROW 9 ,

0.0	0.0	4.3619E-02	6.7581E-04	2.9484E-02	1.1986E-02	1.3064E-02	7.9979E-02	-1.5087E-01	-3.4293E-02
-2.6527E-02	4.4741E-02	-3.0847E-02	-2.4566E-03	1.5334E-02	1.3793E-01	2.3449E-02	-3.6267E-01	-3.1186E-03	-2.9109E-02
1.6396E-02	-8.3587E-02	-1.4344E-02	1.7686E-02	-4.4894E-02	-6.0557E-02	-3.1853E-02	1.2915E-02	-5.1918E-03	9.9062E-03

ROW 95

0.0	0.0	4.3619E-02	6.7737E-04	2.9607E-02	1.2042E-02	1.3075E-02	8.0737E-02	-1.5243E-01	-3.4698E-02
-2.6817E-02	4.5514E-02	-3.2225E-02	-2.3730E-03	1.5143E-02	1.4277E-01	2.4471E-02	-3.7987E-01	-3.5144E-03	-3.4474E-02
1.6206E-02	-8.7251E-02	-1.4417E-02	1.8614E-02	-5.0008E-02	-7.3573E-02	-3.9360E-02	1.6282E-02	-6.4125E-03	1.6068E-02

ROW 96

0.0	0.0	4.3619E-02	6.7770E-04	2.9636E-02	1.2056E-02	1.3072E-02	8.0903E-02	-1.5277E-01	-3.4784E-02
-2.6874E-02	4.5701E-02	-3.2555E-02	-2.3536E-03	1.5106E-02	1.4395E-01	2.4722E-02	-3.8410E-01	-3.6071E-03	-3.5862E-02
1.6263E-02	-8.8369E-02	-1.4510E-02	1.8920E-02	-5.1456E-02	-7.6990E-02	-4.1330E-02	1.7155E-02	-6.7292E-03	1.7636E-02

MATRIX *PHHT* 48 BY 30

SYMMETRIC MATH MODEL

ROW 1

1.0000E 00	0.0	-1.3638E 01	2.2673E 00	7.6261E 00	6.7265E-01	-1.8803E 00	3.9299E 00	-1.4349E 01	-5.9325E 00
-8.2397E-01	1.3333E 00	-1.9304E-01	8.2608E-01	2.6970E 00	-1.0398E 00	-2.5075E-01	7.0318E 00	-6.9610E 00	5.1309E-01
1.2500E 00	-2.9236E 00	-8.4114E 00	5.7657E-01	7.6689E-01	-1.0194E 00	-8.9007E-01	2.3849E-01	2.3716E-01	4.2430E-01

ROW 2

1.0000E 00	0.0	-1.3638E 01	2.2673E 00	7.6261E 00	6.7265E-01	-1.8803E 00	3.9299E 00	-1.4349E 01	-5.9325E 00
-8.2397E-01	1.3333E 00	-1.9304E-01	8.2608E-01	2.6970E 00	-1.0398E 00	-2.5075E-01	7.0318E 00	-6.9610E 00	5.1309E-01
1.2500E 00	-2.9236E 00	-8.4114E 00	5.7657E-01	7.6689E-01	-1.0194E 00	-8.9007E-01	2.3849E-01	2.3716E-01	4.2430E-01

ROW 3

1.0000E 00	0.0	-1.3638E 01	2.2673E 00	7.6261E 00	6.7265E-01	-1.8803E 00	3.9299E 00	-1.4349E 01	-5.9325E 00
-8.2397E-01	1.3333E 00	-1.9304E-01	8.2608E-01	2.6970E 00	-1.0398E 00	-2.5075E-01	7.0318E 00	-6.9610E 00	5.1309E-01
1.2500E 00	-2.9236E 00	-8.4114E 00	5.7657E-01	7.6689E-01	-1.0194E 00	-8.9007E-01	2.3849E-01	2.3716E-01	4.2430E-01

ROW 4

1.0000E 00	0.0	-1.3638E 01	2.2673E 00	7.6261E 00	6.7265E-01	-1.8803E 00	3.9299E 00	-1.4349E 01	-5.9325E 00
-8.2397E-01	1.3333E 00	-1.9304E-01	8.2608E-01	2.6970E 00	-1.0398E 00	-2.5075E-01	7.0318E 00	-6.9610E 00	5.1309E-01
1.2500E 00	-2.9236E 00	-8.4114E 00	5.7657E-01	7.6689E-01	-1.0194E 00	-8.9007E-01	2.3849E-01	2.3716E-01	4.2430E-01

ROW 5

8.7235E-01	0.0	-1.1897E 01	1.9778E 00	6.6526E 00	5.8679E-01	-1.6403E 00	3.4283E 00	-1.2518E 01	-5.1752E 00
-7.1879E-01	1.1631E 00	-1.6840E-01	7.2063E-01	2.3528E 00	-9.0708E-01	-2.1874E-01	6.1343E 00	-6.0724E 00	4.4760E-01
1.0904E 00	-2.5504E 00	-7.3377E 00	5.0298E-01	6.6900E-01	-8.8927E-01	-7.7645E-01	2.0805E-01	2.0689E-01	3.7014E-01

ROW 6

8.7235E-01	0.0	-1.1897E 01	1.9778E 00	6.6526E 00	5.8679E-01	-1.6403E 00	3.4283E 00	-1.2518E 01	-5.1752E 00
-7.1879E-01	1.1631E 00	-1.6840E-01	7.2063E-01	2.3528E 00	-9.0708E-01	-2.1874E-01	6.1343E 00	-6.0724E 00	4.4760E-01
1.0904E 00	-2.5504E 00	-7.3377E 00	5.0298E-01	6.6900E-01	-8.8927E-01	-7.7645E-01	2.0805E-01	2.0689E-01	3.7014E-01

ROW 7

8.7235E-01	0.0	-1.1897E 01	1.9778E 00	6.6526E 00	5.8679E-01	-1.6403E 00	3.4283E 00	-1.2518E 01	-5.1752E 00
-7.1879E-01	1.1631E 00	-1.6840E-01	7.2063E-01	2.3528E 00	-9.0708E-01	-2.1874E-01	6.1343E 00	-6.0724E 00	4.4760E-01
1.0904E 00	-2.5504E 00	-7.3377E 00	5.0298E-01	6.6900E-01	-8.8927E-01	-7.7645E-01	2.0805E-01	2.0689E-01	3.7014E-01

ROW 8

8.7235E-01	0.0	-1.1897E 01	1.9778E 00	6.6526E 00	5.8679E-01	-1.6403E 00	3.4283E 00	-1.2518E 01	-5.1752E 00
-7.1879E-01	1.1631E 00	-1.6840E-01	7.2063E-01	2.3528E 00	-9.0708E-01	-2.1874E-01	6.1343E 00	-6.0724E 00	4.4760E-01
1.0904E 00	-2.5504E 00	-7.3377E 00	5.0298E-01	6.6900E-01	-8.8927E-01	-7.7645E-01	2.0805E-01	2.0689E-01	3.7014E-01

ROW 9

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 10

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

MATRIX *PHHT* 48 BY 30

SYMMETRIC MATH MODEL

ROW 11

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 12

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 13

4.8887E-01	0.0	-6.6672E 00	1.1084E 00	3.7282E 00	3.2884E-01	-9.1921E-01	1.9212E 00	-7.0149E 00	-2.9003E 00
-4.0282E-01	6.5180E-01	-9.4370E-02	4.0385E-01	1.3185E 00	-5.0834E-01	-1.2258E-01	3.4377E 00	-3.4030E 00	2.5084E-01
6.1109E-01	-1.4293E 00	-4.1121E 00	2.8187E-01	3.7491E-01	-4.9836E-01	-4.3513E-01	1.1659E-01	1.1594E-01	2.0743E-01

ROW 14

4.8887E-01	0.0	-6.6672E 00	1.1084E 00	3.7282E 00	3.2884E-01	-9.1921E-01	1.9212E 00	-7.0149E 00	-2.9003E 00
-4.0282E-01	6.5180E-01	-9.4370E-02	4.0385E-01	1.3185E 00	-5.0834E-01	-1.2258E-01	3.4377E 00	-3.4030E 00	2.5084E-01
6.1109E-01	-1.4293E 00	-4.1121E 00	2.8187E-01	3.7491E-01	-4.9836E-01	-4.3513E-01	1.1659E-01	1.1594E-01	2.0743E-01

ROW 15

4.8887E-01	0.0	-6.6672E 00	1.1084E 00	3.7282E 00	3.2884E-01	-9.1921E-01	1.9212E 00	-7.0149E 00	-2.9003E 00
-4.0282E-01	6.5180E-01	-9.4370E-02	4.0385E-01	1.3185E 00	-5.0834E-01	-1.2258E-01	3.4377E 00	-3.4030E 00	2.5084E-01
6.1109E-01	-1.4293E 00	-4.1121E 00	2.8187E-01	3.7491E-01	-4.9836E-01	-4.3513E-01	1.1659E-01	1.1594E-01	2.0743E-01

ROW 16

4.8887E-01	0.0	-6.6672E 00	1.1084E 00	3.7282E 00	3.2884E-01	-9.1921E-01	1.9212E 00	-7.0149E 00	-2.9003E 00
-4.0282E-01	6.5180E-01	-9.4370E-02	4.0385E-01	1.3185E 00	-5.0834E-01	-1.2258E-01	3.4377E 00	-3.4030E 00	2.5084E-01
6.1109E-01	-1.4293E 00	-4.1121E 00	2.8187E-01	3.7491E-01	-4.9836E-01	-4.3513E-01	1.1659E-01	1.1594E-01	2.0743E-01

ROW 17

0.0	1.0000E 00	-8.2106E 02	-3.1789E 01	-1.6116E 01	2.2929E 00	3.7788E 00	3.4831E 01	-8.1148E-01	2.4471E 01
1.9870E 01	-1.3260E 01	1.4729E 00	1.2542E 00	-6.6764E 00	9.2615E 00	-4.3880E 00	9.3386E-01	3.1197E 01	-9.8587E 00
-7.2296E 00	-1.7223E 00	-3.1484E 01	1.9190E 00	4.4784E 00	-1.4093E 00	7.8749E-02	-2.0304E 00	-3.1689E 00	1.0829E 00

ROW 18

0.0	1.0000E 00	-8.2106E 02	-3.1794E 01	-1.6127E 01	2.2949E 00	3.7822E 00	3.4878E 01	-8.1332E-01	2.4534E 01
1.9927E 01	-1.3344E 01	1.4241E 00	1.2159E 00	-6.4939E 00	8.9462E 00	-3.9324E 00	1.2305E 00	3.1432E 01	-9.9315E 00
-7.2967E 00	-1.7363E 00	-3.1860E 01	1.9094E 00	4.4907E 00	-1.3983E 00	3.2911E-01	-1.1820E 00	-2.3758E 00	9.8745E-01

ROW 19

0.0	1.0000E 00	-8.2106E 02	-3.1810E 01	-1.6163E 01	2.3021E 00	3.7945E 00	3.5047E 01	-8.1987E-01	2.4756E 01
2.0131E 01	-1.3645E 01	1.2484E 00	1.0783E 00	-5.8363E 00	7.8057E 00	-2.2846E 00	2.3024E 00	3.2247E 01	-1.0181E 01
-7.5188E 00	-1.7776E 00	-3.2991E 01	1.9970E 00	4.6456E 00	-1.3999E 00	1.1723E 00	1.7217E 00	3.5445E-01	6.5211E-01

ROW 20

0.0	1.0000E 00	-8.2106E 02	-3.1842E 01	-1.6238E 01	2.3168E 00	3.8194E 00	3.5392E 01	-8.3327E-01	2.5210E 01
2.0547E 01	-1.4262E 01	8.8113E-01	7.9001E-01	-4.4573E 00	5.3999E 00	1.1897E 00	4.5594E 00	3.3848E 01	-1.0658E 01
-7.9196E 00	-1.8353E 00	-3.4632E 01	2.5722E 00	5.3245E 00	-1.5351E 00	2.7487E 00	7.3109E 00	5.6654E 00	-2.4102E-02

MATRIX *PHHT* 48 BY 30 SYMMETRIC MATH MODEL

0.0	1.0000E 00	-8.4022E 02	-3.2465E 01	-1.7272E 01	2.4857E 00	3.9652E 00	3.8798E 01	-1.0800E 00	2.9513E 01
2.4061E 01	-1.9579E 01	-1.3233E 00	-8.2281E-01	3.1919E 00	-3.1077E 00	9.0448E 00	8.1057E 00	2.8835E 01	-9.1872E 00
-7.3529E 00	-1.9329E 00	-3.9486E 01	-3.7401E 00	-6.4991E-01	5.7326E-01	4.9952E 00	1.3987E 01	1.1836E 01	-8.7050E-01
ROW 22									
0.0	1.0000E 00	-8.6956E 02	-3.3470E 01	-1.8979E 01	2.7689E 00	4.2292E 00	4.4605E 01	-1.4826E 00	3.6919E 01
3.0192E 01	-2.8913E 01	-5.5498E 00	-3.9677E 00	1.8163E 01	-2.1965E 01	2.9243E 01	1.8688E 01	2.1302E 01	-6.8480E 00
-5.9183E 00	-1.6768E 00	-3.7691E 01	-7.8599E 00	-5.0686E 00	2.2224E 00	8.1246E 00	2.4430E 01	2.1816E 01	-2.3051E 00
ROW 23									
0.0	1.0000E 00	-8.9987E 02	-3.4587E 01	-2.0941E 01	3.1011E 00	4.5663E 00	5.1572E 01	-1.9416E 00	4.5952E 01
3.7799E 01	-4.0670E 01	-1.1599E 01	-8.5632E 00	4.0159E 01	-5.3507E 01	6.7076E 01	4.0297E 01	1.3726E 01	-3.3473E 00
-1.8711E 00	7.4804E-02	-1.8364E-01	8.6440E 00	8.5657E 00	-2.4575E 00	6.2791E 00	2.3786E 01	2.3105E 01	-3.2030E 00
ROW 24									
0.0	1.0000E 00	-9.2822E 02	-3.5682E 01	-2.2913E 01	3.4399E 00	4.9244E 00	5.8799E 01	-2.4071E 00	5.5503E 01
4.5933E 01	-5.3523E 01	-1.8989E 01	-1.4257E 01	6.7536E 01	-9.5726E 01	1.1998E 02	7.1310E 01	1.1310E 00	2.6596E 00
6.5374E 00	3.9597E 00	8.8982E 01	5.1804E 01	4.5270E 01	-1.5472E 01	-5.7648E 00	-3.2919E 00	2.2756E 00	-2.4361E 00
ROW 25									
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ROW 26									
0.0	0.0	0.0	-3.2193E-04	-7.3771E-04	1.4530E-04	2.4722E-04	3.4074E-03	-1.3166E-04	4.4734E-03
4.0940E-03	-6.0337E-03	-3.5000E-03	-2.7410E-03	1.3091E-02	-2.2647E-02	3.2729E-02	2.1305E-02	1.6682E-02	-5.1509E-03
-4.6972E-03	-9.4392E-04	-2.5566E-02	1.3042E-04	1.6322E-03	5.1005E-04	1.7597E-02	5.9934E-02	5.6127E-02	-6.7952E-03
ROW 27									
0.0	0.0	0.0	-6.9787E-04	-1.6028E-03	3.1586E-04	5.3679E-04	7.4160E-03	-2.8774E-04	9.7618E-03
8.9361E-03	-1.3225E-02	-7.7826E-03	-6.1025E-03	2.9170E-02	-5.0697E-02	7.3220E-02	4.7601E-02	3.5224E-02	-1.0676E-02
-9.3210E-03	-1.6030E-03	-4.4372E-02	6.8753E-03	9.5571E-03	-1.0757E-03	3.5865E-02	1.2474E-01	1.1772E-01	-1.4649E-02
ROW 28									
0.0	0.0	0.0	-1.1276E-03	-2.5977E-03	5.1231E-04	8.6937E-04	1.2047E-02	-4.6986E-04	1.5915E-02
1.4575E-02	-2.1693E-02	-1.3027E-02	-1.0235E-02	4.8977E-02	-8.5782E-02	1.2393E-01	8.0486E-02	5.5142E-02	-1.6218E-02
-1.3042E-02	-1.4761E-03	-4.3593E-02	2.9072E-02	3.2050E-02	-7.7264E-03	5.2268E-02	1.8921E-01	1.8105E-01	-2.3567E-02
ROW 29									
0.0	0.0	-4.8887E-01	-1.6217E-02	-2.7177E-02	4.4647E-03	3.9789E-03	9.0653E-02	-6.4522E-03	1.1493E-01
9.4378E-02	-1.4308E-01	-6.1303E-02	-4.5134E-02	2.1434E-01	-2.4996E-01	2.4524E-01	1.1826E-01	-1.2519E-01	3.7944E-02
1.6176E-02	-1.4615E-03	-1.0634E-01	-1.5883E-01	-1.5378E-01	5.4890E-02	6.3168E-02	1.8735E-01	1.7228E-01	-2.3025E-02
ROW 30									
0.0	0.0	-4.8887E-01	-1.7367E-02	-2.9973E-02	5.0226E-03	4.8973E-03	1.0410E-01	-7.0261E-03	1.3369E-01
1.1162E-01	-1.7086E-01	-8.1976E-02	-6.1617E-02	2.9404E-01	-3.9583E-01	4.5181E-01	2.4921E-01	-1.1377E-01	4.2816E-02
3.6657E-02	1.2495E-02	2.2551E-01	5.0949E-02	3.1252E-02	-8.7436E-03	3.0721E-02	1.3236E-01	1.3567E-01	-2.2221E-02

MATRIX *PHHT* 48 BY 30 SYMMETRIC MATH MODEL

ROW 31
0.0 0.0 -4.8887E-01 -1.8582E-02 -3.3137E-02 5.6623E-03 5.9112E-03 1.1994E-01 -7.7685E-03 1.5707E-01
1.3319E-01 -2.0813E-01 -1.1396E-01 -8.7302E-02 4.1893E-01 -6.2831E-01 7.7605E-01 4.5144E-01 -1.6598E-01 7.7766E-02
1.0350E-01 4.7436E-02 1.0656E 00 5.0481E-01 4.2478E-01 -1.4880E-01 -1.1365E-01 -2.2980E-01 -1.6556E-01 2.1348E-03

ROW 32
0.0 0.0 -4.8887E-01 -1.8953E-02 -3.4409E-02 5.9306E-03 6.2807E-03 1.2714E-01 -8.1960E-03 1.6935E-01
1.4459E-01 -2.3092E-01 -1.3803E-01 -1.0676E-01 5.1418E-01 -8.0700E-01 1.0179E 00 5.9803E-01 -2.7875E-01 1.3187E-01
1.8667E-01 8.4990E-02 1.9684E 00 9.3234E-01 7.8849E-01 -2.8186E-01 -3.0393E-01 -7.4237E-01 -6.0124E-01 3.6815E-02

ROW 33
0.0 0.0 1.0000E 00 2.8756E-02 4.4988E-02 -7.0298E-03 -4.6904E-03 -1.3528E-01 1.1061E-02 -1.6640E-01
-1.3030E-01 1.9433E-01 6.1313E-02 4.2154E-02 -1.9754E-01 1.1341E-01 2.7168E-02 8.0783E-02 2.8534E-01 -7.6063E-02
-3.1420E-02 8.4206E-04 3.4215E-02 3.8344E-02 -3.1180E-04 7.8032E-03 3.2272E-02 3.1294E-02 -4.1092E-03 1.4790E-02

ROW 34
0.0 0.0 1.0000E 00 2.9193E-02 4.6138E-02 -7.2603E-03 -5.0392E-03 -1.4093E-01 1.1344E-02 -1.7466E-01
-1.3779E-01 2.0711E-01 7.0385E-02 4.9184E-02 -2.3138E-01 1.6272E-01 -2.7129E-02 5.2979E-02 3.2878E-01 -9.1583E-02
-4.1853E-02 2.0052E-03 1.0312E-01 1.9697E-01 1.6757E-01 -5.1100E-02 1.6528E-02 3.9605E-02 2.0826E-02 8.2619E-03

ROW 35
0.0 0.0 1.0000E 00 2.9495E-02 4.6931E-02 -7.4191E-03 -5.2807E-03 -1.4481E-01 1.1537E-02 -1.8033E-01
-1.4294E-01 2.1583E-01 7.6554E-02 5.3965E-02 -2.5440E-01 1.9645E-01 -6.4625E-02 3.3572E-02 3.5698E-01 -1.0171E-01
-4.8663E-02 2.7843E-03 1.4918E-01 3.0235E-01 2.7925E-01 -9.0334E-02 5.6679E-03 4.4583E-02 3.7336E-02 3.6195E-03

ROW 36
0.0 0.0 1.0000E 00 2.9847E-02 4.7803E-02 -7.5926E-03 -5.5570E-03 -1.4899E-01 1.1727E-02 -1.8620E-01
-1.4828E-01 2.2450E-01 8.2369E-02 5.8491E-02 -2.7615E-01 2.3016E-01 -1.0583E-01 1.0131E-02 3.6915E-01 -1.0660E-01
-5.1817E-02 3.5215E-03 1.8734E-01 3.7691E-01 3.5940E-01 -1.1906E-01 -7.1339E-03 3.8605E-02 4.4538E-02 -2.1796E-03

ROW 37
0.0 0.0 8.7235E-01 2.5709E-02 4.1048E-02 -6.4968E-03 -4.6020E-03 -1.2714E-01 1.0165E-02 -1.5924E-01
-1.2638E-01 1.9251E-01 7.0654E-02 4.9987E-02 -2.3604E-01 1.8394E-01 -5.4853E-02 3.8875E-02 3.8740E-01 -1.1395E-01
-5.9443E-02 4.3059E-03 2.2336E-01 5.0196E-01 4.9744E-01 -1.6668E-01 8.9940E-03 1.6756E-01 1.9216E-01 -3.1392E-02

ROW 38
0.0 0.0 8.7235E-01 2.5887E-02 4.1526E-02 -6.5936E-03 -4.7492E-03 -1.2955E-01 1.0286E-02 -1.6286E-01
-1.2969E-01 1.9835E-01 7.5490E-02 5.3820E-02 -2.5464E-01 2.1534E-01 -9.4343E-02 1.6215E-02 4.1166E-01 -1.2435E-01
-7.1902E-02 1.0588E-03 1.6250E-01 5.4712E-01 5.6192E-01 -1.8949E-01 3.0676E-02 3.1029E-01 3.5834E-01 -7.1046E-02

ROW 39
0.0 0.0 8.7235E-01 2.6053E-02 4.2022E-02 -6.6958E-03 -4.8982E-03 -1.3219E-01 1.0430E-02 -1.6708E-01
-1.3358E-01 2.0571E-01 8.2611E-02 5.9541E-02 -2.8256E-01 2.6583E-01 -1.6063E-01 -2.2966E-02 4.5172E-01 -1.4251E-01
-9.7005E-02 -7.7644E-03 -3.2584E-02 5.4308E-01 5.9195E-01 -1.9972E-01 8.7671E-02 5.8644E-01 6.6025E-01 -1.3598E-01

ROW 40
0.0 0.0 8.7235E-01 2.6036E-02 4.2162E-02 -6.7307E-03 -4.9193E-03 -1.3338E-01 1.0541E-02 -1.6984E-01
-1.3616E-01 2.1202E-01 9.0719E-02 6.6126E-02 -3.1495E-01 3.2614E-01 -2.3888E-01 -6.8453E-02 5.1831E-01 -1.7146E-01
-1.3676E-01 -2.2865E-02 -3.8404E-01 4.5323E-01 5.4182E-01 -1.7996E-01 1.8192E-01 9.3940E-01 1.0130E 00 -1.9539E-01

MATRIX *PHHT* 48 BY 30

SYMMETRIC MATH MODEL

ROW 41
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 42
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 43
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 44
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 45
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 46
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 47
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 48
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

MATRIX *PHIN* 12 BY 30 SYMMETRIC MATH MODEL

ROW 1
9.7348E-01 -2.2834E-01 -2.3205E 01 -2.1413E-01 8.0672E-01 -8.2042E-01 2.8000E 00 6.5825E 00 3.7077E 00 1.2968E 00
4.0444E 00 6.2926E 00 3.0196E 00 1.2365E 00 -3.8286E 00 -2.0309E 00 8.0433E-01 -1.7001E 01 5.8595E-01 5.1565E 00
-1.8760E 00 6.5596E 00 5.0583E-02 -5.2277E-01 1.2956E 00 1.8191E 00 3.0186E 00 -8.5330E-01 1.9433E-01 -1.7684E 00

ROW 2
9.9813E-01 6.1090E-02 4.4727E 01 -1.2194E 00 -4.4889E 00 7.1266E 00 2.6478E 00 6.2005E 00 3.7160E 00 1.2081E 01
-5.1466E 01 2.9836E 00 4.7378E 00 -8.7582E 00 -1.1485E 01 -1.3720E 00 8.7802E-01 -1.5111E 01 -2.4587E 00 4.0685E 00
-1.0123E 01 4.4577E 00 1.1423E-01 2.6577E-01 4.4218E-01 4.0727E 00 2.5542E-01 -4.5547E-01 1.9720E-01 -6.1492E-01

ROW 3
4.5595E-03 -4.3380E-02 -1.1956E 00 6.0299E-01 2.2616E 00 9.2364E-01 -1.3951E 00 5.3144E 00 -9.9209E 00 -1.3666E 00
4.8447E-01 7.4064E-01 -1.5766E-01 6.2344E-01 -1.1720E-01 -2.2956E 00 -6.9026E-01 1.3094E 01 7.2106E-01 1.8174E 00
5.7247E-01 -6.2820E 00 1.0637E 00 8.9319E-01 -1.8750E 00 -7.2440E-01 -1.8185E 00 7.2737E-01 -2.6902E-01 1.0962E 00

ROW 4
4.5595E-03 -4.3380E-02 -9.9292E 00 -4.9157E 00 3.5410E 00 -4.8288E 01 -1.7247E 01 7.3567E 00 -9.5567E 00 1.0735E 00
7.2091E 00 8.1130E-01 -7.6905E-02 6.0654E 00 2.5727E 00 -1.4217E 00 6.8540E-02 -2.7780E 00 -5.1836E-01 -1.1329E 00
-3.2050E 00 1.9941E-01 -8.4320E-01 8.9929E-01 -1.3189E 00 1.1474E 00 -1.0585E 00 -2.0953E-01 2.1464E-01 2.6616E-01

ROW 5
2.2875E-01 9.7261E-01 2.0910E 01 1.6031E 00 8.2354E 00 2.8388E-01 -5.4929E 00 -2.4871E 01 -5.3223E 00 -9.6874E 00
-9.2994E 00 -1.8947E 01 -6.3598E 00 -2.7574E 00 1.2230E 01 1.8216E 01 2.8901E-01 7.1670E 00 2.2911E 00 -2.2088E 01
6.5086E 00 4.5420E 00 4.0597E 00 -1.3825E 00 1.0804E 00 -1.4167E 00 -8.9710E-01 -3.3681E-01 3.8997E-01 6.1241E-01

ROW 6
-6.0949E-02 9.9719E-01 2.2959E 02 -3.7885E 00 -1.5956E 01 -3.6175E 00 -1.3865E 01 2.8269E 00 -1.1402E 01 3.5798E 01
-1.6730E 02 -1.4471E 01 1.1751E 00 1.4186E 00 -4.1955E 00 5.1807E-01 -3.7725E-02 5.1924E 00 -1.2412E 00 -1.0037E 00
1.2807E 00 -1.8214E 00 5.4453E-01 -3.1444E-01 6.6447E-02 -2.0099E 00 4.0122E-01 5.3034E-02 -3.4250E-02 -3.1175E-03

ROW 7
0.0 0.0 -1.4358E-02 6.3242E-02 -5.1939E-02 9.4748E-03 -4.5035E-02 -3.1911E-02 -1.2193E-02 9.3679E-02
-1.1272E-01 -9.2547E-02 9.7263E-03 -1.6911E-03 -4.0788E-02 3.6494E-02 3.2942E-03 -1.1138E-02 5.2451E-02 1.8020E-01
2.0695E-01 -1.2456E-02 5.1187E-02 -5.2434E-02 7.2579E-02 -8.0044E-02 3.9794E-02 1.9279E-02 -1.3930E-02 9.9031E-03

ROW 8
0.0 0.0 -1.9027E-03 8.4514E-02 -9.9908E-02 1.0143E 00 3.8708E-01 -2.4095E-01 3.6179E-01 2.4990E-02
-3.4216E-01 -1.0044E-01 -1.0612E-01 1.0273E 00 5.5796E-01 -8.5195E-02 5.2502E-04 -1.2406E-01 1.1392E-02 -1.0864E-01
-2.0773E-02 2.5749E-02 -3.4242E-02 2.7452E-02 -4.7956E-02 4.7284E-03 -1.5084E-02 -1.2735E-02 9.2122E-03 1.3906E-03

ROW 9
0.0 0.0 9.9905E-01 -2.5180E-02 -1.0390E-01 1.0187E-02 -1.1115E-02 1.2541E-01 -3.9458E-04 1.2878E-01
-3.0914E-01 7.4953E-02 1.2295E-02 -1.1469E-02 -1.1542E-02 -6.0956E-02 -5.5902E-03 3.1159E-03 7.6549E-02 1.0656E-02
3.0211E-01 2.0357E-02 -4.7416E-02 -6.3143E-03 -1.4963E-02 -1.3052E-01 8.8786E-03 -2.1061E-02 5.7492E-03 -3.5434E-02

ROW 10
0.0 0.0 9.9905E-01 -2.4259E-02 -1.3678E-01 1.5513E-01 2.6613E-02 1.1395E-01 2.9879E-02 2.8993E-01
-1.2150E 00 -1.3780E-03 6.5105E-02 1.8788E-02 -1.5691E-01 -1.0958E-01 3.9756E-03 -5.9004E-02 -1.2294E-01 1.4011E-01
-4.0189E-01 -7.0493E-02 -2.1845E-03 3.0569E-02 -1.6104E-02 1.3965E-01 -9.0461E-02 1.9131E-02 -5.1638E-03 3.1438E-02

MATRIX *PHIN* 12 BY 30 SYMMETRIC MATH MODEL

ROW 11

0.0	0.0	4.1189E-02	2.2220E-02	3.2454E-03	1.2575E-02	-2.3025E-02	3.4658E-02	-8.7686E-02	1.5342E-02
-3.7770E-02	-1.8621E-02	2.4302E-03	1.1031E-03	-1.4468E-02	-4.1179E-03	-2.9350E-03	6.8354E-02	2.1904E-02	7.7147E-02
7.8963E-02	-.1283E-02	2.5953E-02	-1.7385E-02	2.3953E-02	-2.5056E-02	2.3081E-02	7.2244E-03	-6.3889E-03	-4.1322E-03

ROW 12

0.0	0.0	4.3578E-02	9.4143E-03	1.1914E-02	3.6040E-01	1.5624E-01	-2.4639E-02	5.9613E-02	-1.1133E-01
2.8329E-01	9.1100E-02	2.5570E-02	-5.0940E-01	-2.0717E-01	4.2451E-02	-7.1936E-03	1.5687E-01	-2.5655E-03	-1.0650E-01
3.2735E-02	-4.9494E-02	-2.2666E-02	1.9849E-02	-4.2398E-02	-3.1379E-02	-2.5145E-02	-3.1434E-03	4.8613E-03	1.1459E-02

MATRIX *PHON* 12 BY 30 SYMMETRIC MATH MODEL

ROW 1
9.7690E-01 -2.1328E-01 3.0783E 01 -1.2988E 01 -1.2731E 01 -3.5128E 00 1.5748E 00 -1.2651E 01 3.4197E 01 5.0315E 00
-2.5354E 00 5.3859E 00 -1.9657E 00 -3.9429E-01 6.3622E 00 9.1717E 00 5.6603E-01 -4.3916E 00 2.1311E-01 -1.0280E 01
1.6755E 00 -2.3846E 00 3.6838E 00 -1.2798E 00 1.4018E 00 -1.7857E 00 -3.0982E 00 1.8576E 00 -8.2803E-01 2.0095E 00

ROW 2
9.9813E-01 6.1090E-02 3.[illegible]399E 01 -2.9097E 00 -3.6886E 01 -4.1248E 00 8.6266E 00 -2.5074E 01 2.2150E 01 1.1974E 01
1.6981E 01 1.1916E 01 -1.2[illegible]77E 01 6.3520E-01 -4.7792E 00 1.4417E 00 1.1823E-01 -1.4174E 00 -8.0481E-01 -1.5193E 01
-3.5190E 00 -4.0012E 00 5.7274E 00 -1.2924E 00 5.3370E-01 -4.5840E 00 -1.2911E 00 1.1556E 00 -5.4406E-01 1.3137E 00

ROW 3
4.5595E-03 -4.3380E-02 8.0355E 00 6.5734E-01 7.6096E 00 3.1702E 00 -1.7595E 00 1.7418E 01 -3.2809E 01 -6.5334E 00
-1.1696E 00 4.6188E 00 -7.4831E-01 7.0536E-01 -5.4272E-01 -1.8856E 00 -5.7397E-01 1.1545E 01 7.1002E-01 9.5779E-01
-1.1129E 00 8.8503E-01 2.4485E 00 -1.6768E-01 3.5793E-01 1.8365E 00 1.3215E 00 -6.0320E-01 1.7589E-01 -1.1533E 00

ROW 4
4.5595E-03 -4.3380E-02 1.5181E-01 -1.0091E 01 4.4542E 01 8.4300E 00 -9.2966E 01 2.1702E 00 1.0010E 01 1.6580E 01
1.7336E 01 1.3584E 01 -7.8383E 00 7.0755E-01 -6.8078E 00 -3.9510E 00 -3.2185E-01 3.8973E 00 -4.4540E-01 -2.1905E 00
-3.3790E 00 -2.5835E 00 2.4040E 00 -1.4081E-01 -3.7304E-01 -1.5278E 00 1.5289E 00 -2.9542E-01 2.4696E-02 -8.4824E-01

ROW 5
2.1367E-01 9.7603E-01 -1.8368E 02 3.9981E 01 2.4555E 01 -2.0273E 00 -3.9784E-01 -2.4456E 01 8.9491E 00 2.6336E 00
1.7767E 01 -3.5254E 01 1.1094E 01 1.6351E 00 -1.5915E 01 -1.6625E 01 4.6722E-01 -2.3074E 01 1.2484E 00 2.7397E 01
3.9720E 00 -1.73[illegible]8E 00 -1.5167E 01 5.7870E 00 -9.6098E 00 -2.5588E 00 5.2148E-01 -2.3237E 00 1.4185E 00 -2.5670E-01

ROW 6
-6.0949E-02 9.9719E-01 -2.1095E 00 3.5947E 01 -5.9244E 01 2.3506E 00 -2.4432E 01 -3.0017E 01 -3.2905E 01 3.2446E 01
6.3794E 01 3.2140E 01 2.6227E 00 4.6519E-01 -1.5829E 00 -5.0396E 00 -1.0035E-01 -2.1221E 00 -4.8281E-01 3.6181E 00
5.3925E-01 1.5213E 00 -3.7077E 00 1.2314E 00 -1.0989E 00 2.8430E 00 -4.9663E-01 -3.1839E-01 2.0275E-01 -2.8441E-01

ROW 7
0.0 0.0 -1.3719E-02 1.3577E-01 -1.0842E-01 -8.0320E-03 2.3639E-02 2.1238E-01 9.2520E-02 9.4038E-02
-6.8692E-02 2.1280E-01 4.6952E-02 6.9855E-04 5.8549E-03 -1.2221E-01 -9.3632E-03 2.7849E-02 2.5275E-02 -2.5436E-01
2.9017E-01 5.8364E-02 -1.6402E-01 4.7765E-02 -5.1735E-02 9.1484E-02 -1.3356E-01 2.5777E-02 -3.2210E-03 5.3995E-02

ROW 8
0.0 0.0 -1.9027E-03 1.7308E-01 -5.1369E-01 -7.5322E-02 9.1210E-01 1.1668E-01 -2.0431E-01 -5.7476E-02
-5.4580E-02 1.5219E-01 1.0228E 00 -6.1665E-02 9.9446E-01 3.6616E-01 -6.9130E-03 4.3784E-01 -2.1971E-02 3.4884E-02
-2.4858E-01 -1.9163E-01 2.0578E-01 -2.7042E-02 6.9475E-04 -1.1844E-01 9.0984E-02 -1.0735E-02 -2.1817E-03 -4.2077E-02

ROW 9
0.0 0.0 9.9905E-01 -4.2071E-02 -3.7234E-01 2.3401E-02 -1.8042E-01 1.9213E-02 -1.0762E-01 9.2967E-02
5.5639E-02 2.1426E-01 -4.9181E-02 -1.1372E-02 6.9888E-02 1.1214E-01 1.4802E-03 6.7655E-02 4.7888E-02 2.1555E-01
3.5205E-01 7.0484E-02 -1.6722E-01 2.1508E-02 4.0447E-02 2.4678E-01 -1.2024E-01 4.5331E-02 -1.9893E-02 2.2965E-02

ROW 10
0.0 0.0 9.9905E-01 -2.5943E-02 -5.4251E-01 1.8670E-02 -1.4835E-01 -1.2094E-01 -2.2526E-01 2.6646E-01
4.5759E-01 5.4153E-01 -1.0427E-01 2.0922E-03 3.8970E-02 3.3735E-03 -5.7238E-03 1.0615E-01 -6.5330E-02 -5.3632E-01
-3.6452E-01 -2.5521E-02 2.6202E-01 -7.0404E-02 5.0142E-02 -1.9094E-01 8.9500E-02 -1.7860E-02 5.3300E-03 -1.0984E-02

MATRIX *PHON* 12 BY 30 SYMMETRIC MATH MODEL

ROW 11

0.0	0.0	4.1406E-02	4.5504E-02	-7.1864E-03	9.0915E-03	1.8566E-02	1.4341E-01	-1.1233E-01	-3.3820E-03
-4.3066E-02	9.4785E-02	1.0756E-02	1.2153E-04	3.9469E-03	1.0221E-03	5.2981E-03	-1.2534E-01	9.6325E-03	-1.1401E-01
8.6367E-02	9.7835E-02	-5.0040E-02	2.8951E-03	6.1876E-03	4.0389E-02	-4.5771E-02	6.2294E-03	1.2388E-03	2.7603E-02

ROW 12

0.0	0.0	4.3578E-02	2.8481E-02	-3.9535E-01	-7.2623E-02	1.0515E 00	-8.2378E-02	-3.7720E-01	-3.1424E-01
-1.5284E-01	-3.5050E-01	-5.1665E-01	3.9872E-02	-5.0844E-01	-2.4594E-01	-1.6602E-02	1.7213E-01	1.4426E-03	9.2360E-02
-3.1659E-02	-4.2142E-02	7.4780E-03	9.3706E-03	-1.6234E-02	-1.0719E-03	4.6925E-02	-1.5524E-02	4.3537E-03	-3.1711E-02

TABLE 27. EQUATION OF MOTION AND MODAL COEFFICIENT MATRICES FOR ANTISYMMETRIC ANALYSES

MATRIX NAME	NO. OF ROWS	NO. OF COLUMNS	DESCRIPTION
MASS	32	32	Generalized Mass - Nominal Gross Weight 260,731 Lbs.
MASS	32	32	Generalized Mass - Condition 45.2.5 246,500 Lbs.
MASS	32	32	Generalized Mass - Condition 45.1.1 254,000 Lbs.
C1	32	32	Aerodynamic Influence Coefficients (acceleration)
DAMP	32	32	Generalized Damping
C2	32	32	Aerodynamic Influence Coefficients (velocity)
STIF	32	32	Generalized Stiffness
C3	32	32	Aerodynamic Influence Coefficients (displacement)
D1	32	32	First Aerodynamic Lag Coefficients
B1	1	32	First Aerodynamic Lag Constants
D2	32	32	Second Aerodynamic Lag Coefficients
B2	1	32	Second Aerodynamic Lag Constants
R0	32	20*	Gust Influence Coefficients
R1	32	20*	First Gust Lag Coefficients
BG1	1	20*	First Gust Lag Constants
R2	32	20*	Second Gust Lag Coefficients
BG2	1	20*	Second Gust Lag Constants
R3	32	20*	Third Gust Lag Coefficients
BG3	1	20*	Third Gust Lag Constants
R4	32	20*	Fourth Gust Lag Coefficients
BG4	1	20*	Fourth Gust Lag Constants
XGST	1	10	X Locations of the Gust Reference Stations
YGST	1	10	Y Locations of the Gust Reference Stations
ZGST	1	10	Z Locations of the Gust Reference Stations
PHI	57	30	Modal Coefficients for Flight Test Sensor Stations
PHFF	24	30	Forward Fuselage Modal Displacements and Slopes
PHAF	48	30	Aft Fuselage Modal Displacements and Slopes
PHVT	30	30	Vertical Tail Modal Displacements and Slopes
PHWG	96	30	Wing Modal Displacements and Slopes
PHHT	48	30	Horizontal Tail Modal Displacements and Slopes
PHIN	12	30	Inboard Nacelle Modal Displacements and Slopes
PHON	12	30	Outboard Nacelle Modal Displacements and Slopes

*This matrix is partitioned by columns, the first ten columns are vertical gust terms and the last ten columns are lateral gust terms.

TABLE 28. RIGID AIRPLANE STABILITY DERIVATIVES - ANTISYMMETRIC MODEL, MACH = .687, ALTITUDE = 21,000 FT., CG = .33 MAC

Derivative		Equation of Motion Coefficients
C_{y_β}	-.09870/Deg	$-\frac{2}{57.3S}\left[C_3\right]_{1,3}$
C_{ℓ_β}	-.001605/Deg	$-\frac{2}{57.3Sb}\left[C_3\right]_{2,3}$
C_{n_β}	.002506/Deg	$\frac{2}{57.3Sb}\left[C_3\right]_{3,3}$
$C_{y_{\hat{p}}}$	-.01381/Rad	$\frac{4}{Sb}\left[C_2 + \frac{1}{B_1}D_1 + \frac{1}{B_2}D_2\right]_{1,2}$
$C_{\ell_{\hat{p}}}$	-.4754/Rad	$-\frac{4}{Sb^2}\left[C_2 + \frac{1}{B_1}D_1 + \frac{1}{B_2}D_2\right]_{2,2}$
$C_{n_{\hat{p}}}$	.02088/Rad	$-\frac{4}{Sb^2}\left[C_2 + \frac{1}{B_1}D_1 + \frac{1}{B_2}D_2\right]_{3,2}$
$C_{y_{\hat{r}}}$	.4063/Rad	$\frac{4}{Sb}\left[C_2 + \frac{1}{B_1}D_1 + \frac{1}{B_2}D_2\right]_{1,3}$
$C_{\ell_{\hat{r}}}$	.06667/Rad	$\frac{4}{Sb^2}\left[C_2 + \frac{1}{B_1}D_1 + \frac{1}{B_2}D_2\right]_{2,3}$
$C_{n_{\hat{r}}}$	-.1392/Rad	$-\frac{4}{Sb^2}\left[C_2 + \frac{1}{B_1}D_1 + \frac{1}{B_2}D_2\right]_{3,3}$
$C_{y_{\delta_r}}$	.002207/Deg	$\frac{2}{57.3S}\left[C_3\right]_{1,31}$
$C_{\ell_{\delta_r}}$	.000185/Deg	$\frac{2}{57.3Sb}\left[C_3\right]_{2,31}$
$C_{n_{\delta_r}}$	-.000881/Deg	$\frac{2}{57.3Sb}\left[C_3\right]_{3,31}$

TABLE 28. RIGID AIRPLANE STABILITY DERIVATIVES - ANTISYMMETRIC MODEL
MACH = .687, ALTITUDE = 21,000 FT., CG = .33 MAC (Concluded)

Derivative		Equation of Motion Coefficients
$C_{y_{\delta_{vc}}}$	.000151/Deg	$\frac{2}{57.3S}\left[C_3\right]_{1,32}$
$C_{\ell_{\delta_{vc}}}$	-.000007/Deg	$\frac{2}{57.3Sb}\left[C_3\right]_{2,32}$
$C_{n_{\delta_{vc}}}$	.000047/Deg	$\frac{2}{57.3Sb}\left[C_3\right]_{3,32}$

S = 576,000 $IN.^2$ = wing area

b = 2220 IN. = wingspan

MATRIX *MASS* 32 BY 32 ANTISYMMETRIC MATH MODEL NOMINAL GROSS WEIGHT, 260,731 LBS.

ROW 1
6.7547E 02 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0

ROW 2
0.0 1.0877E 08 1.9338E 06 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
-1.1690E 01 0.0

ROW 3
0.0 1.9338E 06 1.8101E 08 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
4.3218E 01 0.0

ROW 4
0.0 0.0 0.0 7.9193E 05 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
7.4272E 00 0.0

ROW 5
0.0 0.0 0.0 0.0 2.7459E 05 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
2.8029E 00 0.0

ROW 6
0.0 0.0 0.0 0.0 0.0 1.1865E 06 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
-5.1444E-01 0.0

ROW 7
0.0 0.0 0.0 0.0 0.0 0.0 1.6881E 05 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
7.8467E-02 0.0

ROW 8
0.0 0.0 0.0 0.0 0.0 0.0 0.0 8.1768E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
-1.7567E 00 0.0

ROW 9
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 3.5429E 05 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
-3.6039E 00 0.0

MATRIX *MASS* 32 BY 32 ANTISYMMETRIC MATH MODEL NOMINAL GROSS WEIGHT, 260,731 LBS.

ROW 10
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2.0646E 06
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
-7.1139E-01 0.0

ROW 11
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
4.4616E 05 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
7.3601E-01 0.0

ROW 12
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 7.9204E 05 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
8.8514E 00 0.0

ROW 13
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 2.2669E 05 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
-9.3256E 00 0.0

ROW 14
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 1.2427E 05 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
1.1670E 00 0.0

ROW 15
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 3.4920E 04 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
2.2714E 00 0.0

ROW 16
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 3.0010E 04 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
3.0064E 00 0.0

ROW 17
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 3.5052E 04 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
3.4491E 00 0.0

ROW 18
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 3.9449E 05 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
-4.8691E 00 0.0

MATRIX *MASS* 32 BY 32

ROW 19

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.7451E 04	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7.2740E 00	0.0								

ROW 20

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8580E 04
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
-6.3758E-01	0.0								

ROW 21

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.8040E 04	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3.3487E 00	0.0								

ROW 22

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	3.4440E 04	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.9989E 00	0.0								

ROW 23

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	1.8767E 04	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.1860E 00	0.0								

ROW 24

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	8.0225E 04	0.0	0.0	0.0	0.0	0.0	0.0
-3.8758E-01	0.0								

ROW 25

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	8.3993E 03	0.0	0.0	0.0	0.0	0.0
-3.6749E 00	0.0								

ROW 26

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	1.9437E 03	0.0	0.0	0.0	0.0
-2.1032E 00	0.0								

ROW 27

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	2.0230E 04	0.0	0.0	0.0
8.7397E 00	0.0								

MATRIX *MASS* 32 BY 32 ANTISYMMETRIC MATH MODEL NOMINAL GROSS WEIGHT, 260,731 LBS.

ROW 28

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.1943E 03	0.0	0.0
-9.7240E 00	0.0								

ROW 29

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3638E 05	0.0
8.8591E 00	0.0								

ROW 30

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1635E 03
1.6722E 01	0.0								

ROW 31

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0								

ROW 32

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0								

MATRIX *MASS* 32 BY 32 ANTISYMMETRIC MATH MODEL FLIGHT CONDITION 45,2.5, 246,500 LBS.

ROW 1

6.3860E 02	-1.7747E 03	-1.8906E 03	-4.5662E 01	9.1046E 01	-1.1349E 02	-6.6537E 01	-3.1538E 02	-2.7247E 01	3.0939E 02
1.5518E 02	8.5684E 02	-3.2018E 02	1.1618E 02	2.6290E 01	5.0558E 01	-8.6484E 00	9.9486E 01	1.8226E 01	1.4247E 02
2.1760E 02	5.7645E 00	-1.0403E 02	-1.9939E 02	-2.3250E 02	-7.5185E 00	-1.9374E 02	7.8364E 01	-7.0785E 01	5.1178E 00
0.0	0.0								

ROW 2

-1.7747E 03	1.0868E 08	1.8424E 06	-2.1981E 03	4.3828E 03	-5.4631E 03	-3.2030E 03	-1.5182E 04	-1.3116E 03	1.4893E 04
7.4699E 03	4.1247E 04	-1.5413E 04	5.5925E 03	1.2655E 03	2.4338E 03	-4.1632E 02	4.7891E 03	8.7738E 02	6.8581E 03
1.0475E 04	2.7749E 02	5.0080E 03	-9.5984E 03	-1.1192E 04	-3.6192E 02	-9.3262E 03	3.7723E 03	-3.4074E 03	2.4636E 02
-1.1690E 01	0.0								

ROW 3

-1.8996E 03	1.8424E 06	1.8068E 08	-1.2592E 04	3.6009E 03	-5.6513E 03	-2.8894E 03	-1.4826E 04	2.2921E 03	1.9268E 04
8.8857E 03	5.2209E 04	-3.3963E 04	5.7605E 03	1.8418E 03	3.3818E 03	1.1223E 03	3.7637E 03	1.9525E 03	9.0931E 03
1.5053E 04	1.4830E 03	-5.9071E 03	-1.3359E 04	-1.9159E 04	3.3283E 02	-1.1813E 04	5.0089E 03	-4.4056E 03	2.0962E 02
4.3218E 01	0.0								

ROW 4

-4.5662E 01	-2.1981E 03	-1.2592E 04	7.9141E 05	6.1424E 01	-1.2868E 02	-5.8904E 01	-3.2682E 02	1.2868E 02	5.2795E 02
2.3061E 02	1.4075E 03	-1.1640E 03	1.3345E 02	5.3129E 01	9.7503E 01	5.9426E 01	5.1410E 01	7.6014E 01	2.5145E 02
4.3135E 02	5.9009E 01	-1.5248E 02	-3.8080E 02	-6.0342E 02	2.5765E 01	-3.0844E 02	1.3634E 02	-1.1581E 02	3.2317E 00
7.4272E 00	0.0								

ROW 5

9.1046E 01	4.3828E 03	3.6009E 03	6.1424E 01	2.7435E 05	2.8212E 02	1.6680E 02	7.8589E 02	8.4653E 01	-7.4882E 02
-3.7924E 02	-2.0804E 03	7.0865E 02	-2.8811E 02	-6.2878E 01	-1.2099E 02	2.9080E 01	-2.5553E 02	-3.7680E 01	-3.4418E 02
-5.2132E 02	-8.7352E 00	2.5446E 02	4.7841E 02	5.4044E 02	2.2939E 01	4.7329E 02	-1.8994E 02	1.7274E 02	-1.3103E 01
2.8029E 00	0.0								

ROW 6

-1.1349E 02	-5.4631E 03	-5.6513E 03	-1.2868E 02	2.8212E 02	1.1861E 06	-2.0524E 02	-9.7239E 02	-8.7080E 01	9.4986E 02
4.7709E 02	2.6327E 03	-9.7045E 02	3.5796E 02	8.0730E 01	1.5476E 02	-2.8313E 01	3.1062E 02	5.2842E 01	4.3757E 02
6.6834E 02	1.6782E 01	-3.1987E 02	-6.1157E 02	-7.0946E 02	-2.4685E 01	-5.9798E 02	2.4129E 02	-2.1862E 02	1.5996E 01
-5.1444E-01	0.0								

ROW 7

-6.6537E 01	-3.2030E 03	-2.8894E 03	-5.8904E 01	1.6680E 02	-2.0524E 02	1.6869E 05	-5.7246E 02	-5.7698E 01	5.5068E 02
2.7800E 02	1.5277E 03	-5.3756E 02	2.1019E 02	4.6315E 01	8.9461E 01	-1.9212E 01	1.8257E 02	3.0646E 01	2.5306E 02
3.8377E 02	7.6656E 00	-1.8649E 02	-3.5272E 02	-4.0304E 02	-1.5196E 01	-3.4531E 02	1.3915E 02	-1.2595E 02	9.3537E 00
7.8467E-02	0.0								

ROW 8

-3.1538E 02	-1.5182E 04	-1.4826E 04	-3.2682E 02	7.8589E 02	-9.7239E 02	-5.7246E 02	8.1498E 05	-2.5565E 02	2.6265E 03
1.3221E 03	7.2814E 03	-2.6323E 03	9.9527E 02	2.2201E 02	4.2767E 02	-8.3697E 01	8.6071E 02	1.4873E 02	1.2083E 03
1.8387E 03	4.2097E 01	-8.8665E 02	-1.6870E 03	-1.9450E 03	-6.9099E 01	-1.6475E 03	6.6480E 02	-6.0148E 02	4.4192E 01
-1.7567E 00	0.0								

ROW 9

-2.7247E 01	-1.3116E 03	2.2921E 03	1.2868E 02	8.4652E 01	-8.7080E 01	-5.7698E 01	-2.5565E 02	3.5421E 05	1.7604E 02
1.0061E 02	5.0591E 02	3.9829E 01	8.9446E 01	1.1744E 01	2.5045E 01	-3.1248E 01	9.5467E 01	-2.8530E 00	7.7615E 01
1.0022E 02	-1.4504E 01	-6.8243E 01	-9.8575E 01	-5.8191E 01	-1.7065E 01	-1.1459E 02	4.2649E 01	-4.0475E 01	4.6614E 00
-3.6039E 00	0.0								

MATRIX *MASS* 32 BY 32 ANTISYMMETRIC MATH MODEL FLIGHT CONDITION 45,2,5, 246,500 LBS.

ROW 10
3.0939E 02 1.4893E 04 1.9268E 04 5.2795E 02 -7.4882E 02 9.4986E 02 5.5068E 02 2.6265E 03 1.7604E 02 2.0619E 06
-1.3150E 03 -7.3059E 03 2.9355E 03 -9.7178E 02 -2.2763E 02 -4.3527E 02 5.0367E 01 -8.1653E 02 -1.6660E 02 -1.2207E 03
-1.8813E 03 -6.5278E 01 8.8085E 02 1.7173E 03 2.0533E 03 5.3142E 01 1.6529E 03 -6.7174E 02 6.0527E 02 -4.2242E 01
-7.1139E-01 0.0

ROW 11
1.5518E 02 7.4699E 03 8.8857E 03 2.3061E 02 -3.7924E 02 4.7709E 02 2.7800E 02 1.3221E 03 1.0061E 02 -1.3150E 03
4.4550E 05 -3.6375E 03 1.4141E 03 -4.8816E 02 -1.1255E 02 -2.1572E 02 3.0495E 01 -4.1415E 02 -8.0133E 01 -6.0642E 02
-9.3083E 02 -2.8789E 01 4.3998E 02 8.5108E 02 1.0059E 03 2.9073E 01 8.2302E 02 -3.3370E 02 3.0108E 02 -2.1371E 01
7.3601E-01 0.0

ROW 12
8.5684E 02 4.1247E 04 5.2209E 04 1.4075E 03 -2.0804E 03 2.6327E 03 1.5277E 03 7.2814E 03 5.0591E 02 -7.3059E 03
-3.6375E 03 7.7185E 05 8.0430E 03 -2.6926E 03 -6.2828E 02 -1.2013E 03 1.4769E 02 -2.2721E 03 -4.5336E 02 -3.3726E 03
-5.1935E 03 -1.7497E 02 2.4369E 03 4.7414E 03 5.6508E 03 1.5190E 02 4.5726E 03 -1.8567E 03 1.6742E 03 -1.1750E 02
8.8514E 00 0.0

ROW 13
-3.2018E 02 -1.5413E 04 -3.3963E 04 -1.1640E 03 7.0865E 02 -9.7045E 02 -5.3756E 02 -2.6323E 03 3.9829E 01 2.9355E 03
1.4141E 03 8.0430E 03 2.2260E 05 9.9200E 02 2.6464E 02 4.9729E 02 4.2346E 01 7.6037E 02 2.3537E 02 1.3681E 03
2.1761E 03 1.3873E 02 -9.4432E 02 -1.9622E 03 -2.5561E 03 -1.0929E 01 -1.8177E 03 7.5271E 02 -6.7071E 02 4.0295E 01
-9.5556E 00 0.0

ROW 14
1.1618E 02 5.5925E 03 5.7605E 03 1.3345E 02 -2.8811E 02 3.5796E 02 2.1019E 02 9.9527E 02 8.9446E 01 -9.7178E 02
-4.8816E 02 -2.6926E 03 9.9200E 02 1.2390E 05 -8.2410E 01 -1.5853E 02 2.8829E 01 -3.1536E 02 -5.6053E 01 -4.4733E 02
-6.8227E 02 -1.7025E 01 3.2732E 02 6.2541E 02 7.2568E 02 2.4544E 01 6.0927E 02 -2.4615E 02 2.2255E 02 -1.6212E 01
1.1670E 00 0.0

ROW 15
2.6290E 01 1.2655E 03 1.8418E 03 5.3129E 01 -6.2878E 01 8.0730E 01 4.6315E 01 2.2201E 02 1.1744E 01 -2.2763E 02
-1.1255E 02 -6.2828E 02 2.6464E 02 -8.2410E 01 3.4900E 04 -3.7620E 01 2.9865E 00 -6.8881E 01 -1.4529E 01 -1.0537E 02
-1.6360E 02 -6.5928E 00 7.5348E 01 1.4871E 02 1.8072E 02 4.0850E 00 1.4273E 02 -5.8119E 01 5.2388E 01 -3.5842E 00
2.2714E 00 0.0

ROW 16
5.0558E 01 2.4558E 03 3.3818E 03 9.7903E 01 -1.2099E 02 1.5476E 02 8.9461E 01 4.2767E 02 2.5045E 01 -4.3527E 02
-2.1572E 02 -1.2013E 03 4.9729E 02 -1.5853E 02 -3.7620E 01 2.9939E 04 6.5505E 00 -1.3108E 02 -7.8974E 01 -2.0108E 02
-3.1073E 02 -1.1841E 01 1.4446E 02 2.8360E 02 3.4276E 02 7.6783E 00 2.7098E 02 -1.1047E 02 9.9248E 01 -6.7886E 00
3.0064E 00 0.0

ROW 17
-8.6484E 00 -4.1632E 02 1.1223E 03 5.9426E 01 2.9080E 01 -2.8313E 01 -1.9212E 01 -8.3697E 01 -3.1248E 01 5.0367E 01
3.0495E 01 1.4769E 02 4.2346E 01 2.8829E 01 2.9865E 00 6.5505E 00 3.5039E 04 3.3860E 01 -3.5548E 00 2.1864E 01
2.6002E 01 -6.5953E 00 -2.0772E 01 -2.6222E 01 -6.2621E 00 -6.9978E 00 -3.4500E 01 1.2238E 01 -1.2096E 01 1.6475E 00
3.4491E 00 0.0

ROW 18
9.9486E 01 4.7891E 03 3.7637E 03 5.1410E 01 -2.5553E 02 3.1062E 02 1.8257E 02 8.6071E 02 9.5467E 01 -8.1653E 02
-4.1415E 02 -2.2721E 03 7.6037E 02 -3.1536E 02 -6.8881E 01 -1.3108E 02 3.3860E 01 3.9421E 05 -3.4400E 01 -3.7602E 02
-5.7123E 02 -8.7598E 00 2.7787E 02 5.2146E 02 5.8481E 02 2.7936E 01 5.2369E 02 -2.0903E 02 1.9161E 02 -1.4850E 01
-4.8691E 00 0.0

MATRIX *MASS* 32 BY 32 ANTISYMMETRIC MATH MODEL FLIGHT CONDITION 45.2.5, 246,500 LBS.

ROW 19
1.8226E 01 8.7738E 02 1.9525E 03 7.6014E 01 -3.7680E 01 5.2842E 01 3.0646E 01 1.4873E 02 -2.8530E 00 -1.6660E 02
-8.0133E 01 -4.5336E 02 2.3537E 02 -5.6053E 01 -1.4529E 01 -2.8974E 01 -3.5548E 00 -3.4400E 01 7.7431E 04 -7.6694E 01
-1.1942E 02 -7.9044E 00 5.3556E 01 1.1091E 02 1.4662E 02 -1.9794E 00 9.5090E 01 -4.0539E 01 3.4536E 01 -1.7549E 00
7.2740E 00 0.0

ROW 20
1.4247E 02 6.8581E 03 9.0931E 03 2.5145E 02 -3.4418E 02 4.3757E 02 2.5306E 02 1.2083E 03 7.7615E 01 -1.2207E 03
-6.0642E 02 -3.3726E 03 1.3681E 03 -4.4733E 02 -1.0537E 02 -2.0108E 02 2.1864E 01 -3.7602E 02 -7.6694E 01 4.8016E 04
-8.7066E 02 -3.1193E 01 4.0617E 02 7.9388E 02 9.5221E 02 2.4171E 01 7.6415E 02 -3.1060E 02 2.7998E 02 -1.9480E 01
-6.3758E-01 0.0

ROW 21
2.1760E 02 1.0475E 04 1.5053E 04 4.3135E 02 -5.2132E 02 6.6834E 02 3.8377E 02 1.8387E 03 1.0022E 02 -1.8813E 03
-9.3083E 02 -5.1935E 03 2.1761E 03 -6.8227E 02 -1.6360E 02 -3.1073E 02 2.6002E 01 -5.7123E 02 -1.1942E 02 -8.7066E 02
1.6689E 04 -5.3597E 01 6.2319E 02 1.2283E 03 1.4899E 03 3.4402E 01 1.1799E 03 -4.8024E 02 4.3298E 02 -2.9710E 01
3.3687E 00 0.0

ROW 22
5.7645E 00 2.7749E 02 1.4830E 03 5.9009E 01 -8.7352E 00 1.6782E 01 7.6656E 00 4.2097E 01 -1.4504E 01 -6.5278E 01
-2.8789E 01 -1.7497E 02 1.3873E 02 -1.7025E 01 -6.5928E 00 -1.1841E 01 -6.5953E 00 -8.7598E 00 -7.9044E 00 -3.1193E 01
-5.3597E 01 3.4433E 04 1.9046E 01 4.6859E 01 7.2801E 01 -2.4463E 00 3.9705E 01 -1.7218E 01 1.4970E 01 -5.3305E-01
1.9989E 00 0.0

ROW 23
-1.0403E 02 -5.0080E 03 -5.9071E 03 -1.5248E 02 2.5446E 02 -3.1987E 02 -1.8649E 02 -8.8665E 02 -6.8243E 01 8.8085E 02
4.3993E 02 2.4369E 03 -9.4432E 02 3.2732E 02 7.5348E 01 1.4446E 02 -2.0772E 01 2.7787E 02 5.3556E 01 4.0617E 02
6.2319E 02 1.9046E 01 1.8472E 04 -5.6991E 02 -6.7285E 02 -1.9626E 01 -5.5130E 02 2.2349E 02 -2.0166E 02 1.4335E 01
1.1860E 00 0.0

ROW 24
-1.9939E 02 -9.5984E 03 -1.3359E 04 -3.8080E 02 4.7842E 02 -6.1157E 02 -3.5272E 02 -1.6870E 03 -9.8575E 01 1.7173E 03
8.5108E 02 4.7414E 03 -1.9622E 03 6.2541E 02 1.4871E 02 2.8360E 02 -2.6222E 01 5.2146E 02 1.1091E 02 7.9388E 02
1.2283E 03 4.6859E 01 -5.6991E 02 7.9106E 04 -1.3522E 03 -3.1555E 01 -1.0734E 03 4.3703E 02 -3.9344E 02 2.7050E 01
-3.8758E-01 0.0

ROW 25
-2.3250E 02 -1.1192E 04 -1.9159E 04 -6.0342E 02 5.4044E 02 -7.0946E 02 -4.0304E 02 -1.9450E 03 -5.8191E 01 2.0533E 03
1.0059E 03 5.6508E 03 -2.5561E 03 7.2568E 02 1.8072E 02 3.4276E 02 -6.2621E 00 5.8481E 02 1.4662E 02 9.5221E 02
1.4899E 03 7.2801E 01 -6.7285E 02 -1.3522E 03 6.7124E 03 -2.5071E 01 -1.2774E 03 5.2384E 02 -4.6940E 02 3.0569E 01
-3.6749E 00 0.0

ROW 26
-7.5185E 00 -3.0192E 02 3.3283E 02 2.5765E 01 2.2939E 01 -2.4685E 01 -1.5196E 01 -6.9099E 01 -1.7065E 01 5.3142E 01
2.9073E 01 1.5[illegible]0E 02 -1.0929E 01 2.4544E 01 4.0850E 00 7.6783E 00 -6.9978E 00 2.7936E 01 -1.9794E 00 2.4171E 01
3.4402E 01 -2.4463E 00 -1.9626E 01 -3.1555E 01 -2.5071E 01 1.9389E 03 -3.7218E 01 1.3924E 01 -1.3553E 01 1.4204E 00
-2.1032E 00 0.0

ROW 27
-1.9374E 02 -9.3262E 03 -1.1813E 04 -3.0844E 02 4.7329E 02 -5.9798E 02 -3.4531E 02 -1.6475E 03 -1.1459E 02 1.6529E 03
8.2302E 02 4.5726E 03 -1.8177E 03 6.0927E 02 1.4273E 02 2.7098E 02 -3.4500E 01 5.2369E 02 9.5090E 01 7.6415E 02
1.1799E 03 3.9705E 01 -5.5130E 02 -1.0734E 03 -1.2774E 03 -3.7218E 01 1.9186E 04 4.2256E 02 -3.8281E 02 2.7175E 01
8.7397E 00 0.0

MATRIX *MASS* 32 BY 32 ANTISYMMETRIC MATH MODEL FLIGHT CONDITION 45,2.5, 246,500 LBS.

ROW 28

7.8364E 01	3.7723E 03	5.0089E 03	1.3634E 02	-1.8994E 02	2.4129E 02	1.3915F 02	6.6480E 02	4.2649E 01	-6.7174E 02
-3.3370E 02	-1.8567E 03	7.5271E 02	-2.4615E 02	-5.8119E 01	-1.1047E 02	1.2238E 01	-2.0903E 02	-4.0539E 01	-3.1060E 02
-4.8024E 02	-1.7218E 01	2.2349E 02	4.3703E 02	5.2384E 02	1.3924E 01	4.2256E 02	6.0228E 03	1.5498E 02	-1.0850E 01
-9.7240E 00	0.0								

ROW 29

-7.0785E 01	-3.4075E 03	-4.4055E 03	-1.1581E 02	1.7274E 02	-2.1862E 02	-1.2595E 02	-6.0148E 02	-4.0475E 01	6.0527E 02
3.0108E 02	1.6742E 03	-6.7071E 02	2.2255E 02	5.2388E 01	9.9248E 01	-1.2096E 01	1.9161E 02	3.4536E 01	2.7998E 02
4.3298E 02	1.4970E 01	-2.0166E 02	-3.9344E 02	-4.6940E 02	-1.3553E 01	-3.8281E 02	1.5498E 02	1.3624E 05	9.9566E 00
8.8591E 00	0.0								

ROW 30

5.1178E 00	2.4636E 02	2.0962E 02	3.2317E 00	-1.3103E 01	1.5996E 01	9.3537F 00	4.4192E 01	4.6614E 00	-4.2242E 01
-2.1371E 01	-1.1750E 02	4.0295E 01	-1.6212E 01	-3.5842E 00	-6.7886E 00	1.6475E 00	-1.4850E 01	-1.7549E 00	-1.9480E 01
-2.9710E 01	-5.3305E-01	1.4335E 01	2.7050E 01	3.0569E 01	1.4204E 00	2.7175E 01	-1.0850E 01	9.9566E 00	2.1627E 03
1.6722E 01	0.0								

ROW 31

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0								

ROW 32

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0								

MATRIX *MASS* 32 BY 32 ANTISYMMETRIC MATH MODEL FLIGHT CONDITION 45.1.1, 254,000 LBS.

ROW 1

6.5803E 02	-8.3942E 02	-8.9860E 02	-2.1604E 01	4.3062E 01	-5.3677E 01	-3.1471E 01	-1.4917E 02	-1.2885E 01	1.4634E 02
7.3397E 01	4.0527E 02	-1.5145E 02	5.4950E 01	1.2435E 01	2.3914E 01	-4.0896E 00	4.7053E 01	8.6223E 00	6.7386E 01
1.0292E 02	2.7271E 00	-4.9206E 01	-9.4311E 01	-1.0997E 02	-3.5554E 00	-9.1635E 01	3.7065E 01	-3.3480E 01	2.4205E 00
0.0	0.0								

ROW 2

-8.3942E 02	1.0873E 08	1.8906E 06	-1.0400E 03	2.0729E 03	-2.5839E 03	-1.5149E 03	-7.1807E 03	-6.2027E 02	7.0443E 03
3.5332E 03	1.9509E 04	-7.2904E 03	2.6452E 03	5.9859E 02	1.1512E 03	-1.9687E 02	2.2650E 03	4.1506E 02	3.2438E 03
4.9543E 03	1.3128E 02	-2.3687E 03	-4.5399E 03	-5.2938E 03	-1.7115E 02	-4.4111E 03	1.7842E 03	-1.6117E 03	1.1652E 02
-1.1690E 01	0.0								

ROW 3

-8.9860E 02	1.8906E 06	1.8085E 08	-5.9569E 03	1.7033E 03	-2.6733E 03	-1.3668E 03	-7.0135E 03	1.0844E 03	9.1146E 03
4.2033E 03	2.4697E 04	-1.6066E 04	2.7250E 03	8.7127E 02	1.5998E 03	5.3095E 02	1.7802E 03	9.2373E 02	4.3015E 03
7.1209E 03	7.0155E 02	-2.7943E 03	-6.3196E 03	-9.0631E 03	1.5750E 02	-5.5878E 03	2.3694E 03	-2.0840E 03	9.9148E 01
4.3218E 01	0.0								

ROW 4

-2.1604E 01	-1.0400E 03	-5.9569E 03	7.9168E 05	2.9063E 01	-6.0879E 01	-2.7870E 01	-1.5463E 02	6.0873E 01	2.4978E 02
1.0911E 02	6.6590E 02	-5.5069E 02	6.3140E 01	2.5135E 01	4.6129E 01	2.8112E 01	2.4323E 01	3.5964E 01	1.1896E 02
2.0407E 02	2.7916E 01	-7.21[illegible]E 01	-1.8016E 02	-2.8547E 02	1.2189E 01	-1.4592E 02	6.4504E 01	-5.4789E 01	1.5289E 00
7.4272E 00	0.0								

ROW 5

4.3062E 01	2.0729E 03	1.7033E 03	2.9063E 01	2.7448E 05	1.3344E 02	7.8889E 01	3.7170E 02	4.0035E 01	-3.5418E 02
-1.7937E 02	-9.8398E 02	3.3518E 02	-1.3627E 02	-2.9740E 01	-5.7225E 01	1.3753E 01	-1.2085E 02	-1.7825E 01	-1.6279E 02
-2.4657E 02	-4.1323E 00	1.2035E 02	2.2628E 02	2.5562E 02	1.0848E 01	2.2385E 02	-8.9834E 01	8.1700E 01	-6.1973E 00
2.8029E 00	0.0								

ROW 6

-5.3677E 01	-2.5839E 03	-2.6733E 03	-6.0879[illegible]	1.3344E 02	1.1863E 06	-9.7072E 01	-4.5991E 02	-4.1182E 01	4.4927E 02
2.2565E 02	1.2452E 03	-4.5902E 02	1.6931E [illegible]	3.8184E 01	7.3197E 01	-1.3389E 01	1.4691E 02	2.4998E 01	2.0696E 02
3.1611E 02	7.9390E 00	-1.5129E 02	-2.8926E 02	-3.3557E 02	-1.1673E 01	-2.8283E 02	1.1412E 02	-1.0340E 02	7.5655E 00
-5.1444E-01	0.0								

ROW 7

-3.1471E 01	-1.5149E 03	-1.3668E 03	-2.7870E 01	7.8889E 01	-9.7072E 01	1.6875E 05	-2.7076E 02	-2.7287E 01	2.6046E 02
1.3149E 02	7.2258E 02	-2.5427E 02	9.9413E 01	2.1906E 01	4.2314E 01	-9.0856E 00	8.6349E 01	1.4497E 01	1.1969E 02
1.8152E 02	3.6265E 00	-8.8206E 01	-1.6683E 02	-1.9064E 02	-7.1861E 00	-1.6332E 02	6.5816E 01	-5.9570E 01	4.4239E 00
7.8467E-02	0.0								

ROW 8

-1.4917E 02	-7.1807E 03	-7.0135E 03	-1.5463E 02	3.7170E 02	-4.5991E 02	-2.7076E 02	8.1640E 05	-1.2090E 02	1.2423E 03
6.2533E 02	3.4440E 03	-1.2451E 03	4.7074E 02	1.0501E 02	2.0228E 02	-3.9580E 01	4.0708E 02	7.0357E 01	5.7148E 02
8.6968E 02	1.9915E 01	-4.1937E 02	-7.9795E 02	-9.1999E 02	-3.2677E 01	-7.7923E 02	3.1444E 02	-2.8448E 02	2.0901E 01
-1.7567E 00	0.0								

ROW 9

-1.2885E 01	-6.2027E 02	1.0844E 03	6.0873E 01	4.0035E 01	-4.1182E 01	-2.7287E 01	-1.2090E 02	3.5426E 05	8.3246E 01
4.7581E 01	2.3924E 02	1.8866E 01	4.2301E 01	5.5530E 00	1.1843E 01	-1.4780E 01	4.5150E 01	-1.3510E 00	3.6702E 01
4.7390E 01	-6.8612E 00	-3.2272E 01	-4.6612E 01	-2.7507E 01	-8.0717E 00	-5.4189E 01	2.0168E 01	-1.9140E 01	2.2045E 00
-3.6039E 00	0.0								

MATRIX *MASS* 32 BY 32 ANTISYMMETRIC MATH MODEL FLIGHT CONDITION 45.1.1, 254,000 LBS.

ROW 10
1.4634E 02 7.0443E 03 9.1146E 03 2.4978E 02 -3.5418E 02 4.4927E 02 2.6046E 02 1.2423E 03 8.3246E 01 2.0633E 06
-6.2196E 02 -3.4556E 03 1.3885E 03 -4.5964E 02 -1.0767E 02 -2.0588E 02 2.3814E 01 -3.8619E 02 -7.8812E 01 -5.7738E 02
-8.8985E 02 -3.0881E 01 4.1665E 02 8.1230E 02 9.7121E 02 2.5128E 01 7.8181E 02 -3.1772E 02 2.8628E 02 -1.9979E 01
-7.1139E-01 0.0

ROW 11
7.3397E 01 3.5332E 03 4.2033E 03 1.0911E 02 -1.7937E 02 2.2565E 02 1.3149E 02 6.2533E 02 4.7581E 01 -6.2196E 02
4.4585E 05 -1.7205E 03 6.6890E 02 -2.3089E 02 -5.3236E 01 -1.0204E 02 1.4419E 0· -1.9588E 02 -3.7908E 01 -2.8683E 02
-4.4027E 02 -1.3620E 01 2.0811E 02 4.0255E 02 4.7580E 02 1.3748E 01 3.8927E 02 -1.5783E 02 1.4240E 02 -1.0108E 01
7.3601E-01 0.0

ROW 12
4.0527E 02 1.9509E 04 2.4697E 04 6.6590E 02 -9.8398E 02 1.2452E 03 7.2258E 02 3.4440E 03 2.3924E 02 -3.4556E 03
-1.7205E 03 7.8249E 05 3.8045E 03 -1.2736E 03 -2.9717E 02 -5.6823E 02 6.9832E 01 -1.0746E 03 -2.1447E 02 -1.5952E 03
-2.4565E 03 -8.2775E 01 1.1726E 03 2.2426E 03 2.6729E 03 7.1828E 01 2.1628E 03 -8.7817E 02 7.9188E 02 -5.5573E 01
8.8514E 00 0.0

ROW 13
-1.5145E 02 -7.2904E 03 -1.6066E 04 -5.5069E 02 3.3518E 02 -4.5902E 02 -2.5427E 02 -1.2451E 03 1.8866E 01 1.3885E 03
6.6890E 02 3.8045E 03 2.2476E 05 4.6922E 02 1.2518E 02 2.3523E 02 2.0043E 01 3.5964E 02 1.1135E 02 6.4712E 02
1.0293E 03 6.5631E 01 -4.4668E 02 -9.2815E 02 -1.2091E 03 -5.1594E 00 -8.5979E 02 3.5604E 02 -3.1725E 02 1.9059E 01
-9.5556E 00 0.0

ROW 14
5.4950E 01 2.6452E 03 2.7250E 03 6.3140E 01 -1.3627E 02 1.6931E 02 9.9413E 01 4.7074E 02 4.2301E 01 -4.5964E 02
-2.3039E 02 -1.2736E 03 4.6922E 02 1.2410E 05 -3.8979E 01 -7.4984E 01 1.3633E 01 -1.4915E 02 -2.6517E 01 -2.1158E 02
-3.2270E 02 -8.0543E 00 1.5482E 02 2.9581E 02 3.4324E 02 1.1607E 01 2.8817E 02 -1.1642E 02 1.0576E 02 -7.6678E 00
1.1670E 00 0.0

ROW 15
1.2435E 01 5.9859E 02 8.7127E 02 2.5135E 01 -2.9740E 01 3.8184E 01 2.1906E 01 1.0501E 02 5.5530E 00 -1.0767E 02
-5.3236E 01 -2.9717E 02 1.2518E 02 -3.8979E 01 3.4911E 04 -1.7794E 01 1.4117E 00 -3.2578E 01 -6.8732E 00 -4.9838E 01
-7.7384E 01 -3.1188E 00 3.5639E 01 7.0341E 01 8.5483E 01 1.9315E 00 6.7510E 01 -2.7490E 01 2.4779E 01 -1.6952E 00
2.2714E 00 0.0

ROW 16
2.3914E 01 1.1512E 03 1.5998E 03 4.6129E 01 -5.7225E 01 7.3197E 01 4.2314E 01 2.0228E 02 1.1843E 01 -2.0588E 02
-1.0204E 02 -5.6823E 02 2.3523E 02 -7.4984E 01 -1.7794E 01 2.9976E 04 3.0967E 00 -6.1997E 01 -1.3707E 01 -9.5109E 01
-1.4698E 02 -5.6018E 00 6.8329E 01 1.3414E 02 1.6213E 02 3.6305E 00 1.2817E 02 -5.2252E 01 4.6943E 01 -3.2108E 00
3.0064E 00 0.0

ROW 17
-4.0896E 00 -1.9687E 02 5.3095E 02 2.8112E 01 1.3753E 01 -1.3389E 01 -9.0856E 00 -3.9580E 01 -1.47 0E 01 2.3814E 01
1.4419E 01 6.9832E 01 2.0043E 01 1.3633E 01 1.4117E 00 3.0967E 00 3.5046E 04 1.6013E 01 -1.68.3E 00 1.0337E 01
1.2292E 01 -3.1200E 00 -9.8220E 00 -1.2397E 01 -2.9535E 00 -3.2100E 00 -1.6313E 01 5.7859E 00 -5.7191E 00 7.7912E-01
3.4[illegible] 00 0.0

ROW 18
4.7053E 01 2.2650E 03 1.7802E 03 2.4323E 01 -1.2085E 02 1.4691E 02 8.6348E 01 4.0708E 02 4.5150E 01 -3.8619E 02
-1.9588E 02 -1.0746E 03 3.5964E 02 -1.4915E 02 -3.2578E 01 -6.1997E 01 1.6013E 01 3.9436E 05 -1.6273E 01 -1.7784E 02
-2.7017E 02 -4.1436E 00 1.3142E 02 2.4663E 02 2.7660E 02 1.3211E 01 2.4768E 02 -9.8864E 01 9.0624E 01 -7.0233E 00
-4.8691E 00 0.0

MATRIX *MASS* 32 BY 32 ANTISYMMETRIC MATH MODEL FLIGHT CONDITION 45,1,1, 254.000 LBS.

ROW 19
8.6227E 00 4.1506E 02 9.2373E 02 3.5964E 01 -1.7825E 01 2.4998E 01 1.4497E 01 7.0357E 01 -1.3510E 00 -7.8812E 00
-3.7908E 01 -2.1447E 02 1.1135E 02 -2.6517E 01 -6.8732E 00 -1.3707E 01 -1.6823E 00 -1.6273E 01 7.7442E 04 -3.6282E 01
-5.6493E 01 -3.7397E 00 2.5335E 01 5.2470E 01 6.9361E 01 -9.3671E-01 4.4984E 01 -1.9178E 01 1.6338E 01 -8.3015E-01
7.2740E 00 0.0

ROW 20
6.7386E 01 3.2438E 03 4.3015E 03 1.1896E 02 -1.6279E 02 2.0696E 02 1.1969E 02 5.7148E 02 3.6702E 01 -5.7738E 02
-2.8683E 02 -1.5952E 03 6.4711E 02 -2.1158E 02 -4.9838E 01 -9.5109E 01 1.0337E 01 -1.7784E 02 -3.6282E 01 4.8313E 04
-4.1181E 02 -1.4757E 01 1.9211E 02 3.7550E 02 4.5040E 02 1.1429E 01 3.6143E 02 -1.4691E 02 1.3243E 02 -9.2135E 00
-6.3758E-01 0.0

ROW 21
1.0292E 02 4.9543E 03 7.1209E 03 2.0407E 02 -2.4657E 02 3.1611E 02 1.8152E 02 8.6968E 02 4.7390E 01 -8.8985E 02
-4.4027E 02 -2.4565E 03 1.0293E 03 -3.2270E 02 -7.7384E 01 -1.4698E 02 1.2292E 01 -2.7017E 02 -5.6493E 01 -4.1182E 02
1.7401E 04 -2.5355E 01 2.9476E 02 5.8100E 02 7.0474E 02 1.6266E 01 5.5806E 02 -2.2715E 02 2.0479E 02 -1.4052E 01
3.3687E 00 0.0

ROW 22
2.7271E 00 1.3128E 02 7.0155E 02 2.7916E 01 -4.1323E 00 7.9390E 00 3.6265E 00 1.9915E 01 -6.8612E 00 -3.0881E 01
-1.3620E 01 -8.2775E 01 6.5631E 01 -8.0543E 00 -3.1188E 00 -5.6018E 00 -3.1200E 00 -4.1436E 00 -3.7397E 00 -1.4757E 01
-2.5355E 01 3.4437E 04 9.0103E 00 2.2168E 01 3.4440E 01 -1.1574E 00 1.8783E 01 -8.1450E 00 7.0817E 00 -2.5214E-01
1.9989E 00 0.0

ROW 23
-4.9206E 01 -2.3687E 03 -2.7943E 03 -7.2141E 01 1.2035E 02 -1.5129E 02 -8.8206E 01 -4.1937E 02 -3.2272E 01 4.1663E 02
2.0811E 02 1.1526E 03 -4.4668E 02 1.5482E 02 3.5639E 01 6.8329E 01 -9.8220E 00 1.3142E 02 2.5335E 01 1.9211E 02
2.9476E 02 9.0103E 00 1.8627E 04 -2.6956E 02 -3.1826E 02 -9.2804E 00 -2.6076E 02 1.0571E 02 -9.5330E 01 6.7799E 00
1.1860E 00 0.0

ROW 24
-9.4311E 01 -4.5399E 03 -6.3196E 03 -1.8016E 02 2.2628E 02 -2.8926E 02 -1.6683E 02 -7.9795E 02 -4.6612E 01 8.1230E 02
4.0256E 02 2.2426E 03 -9.2815E 02 2.9581E 02 7.0341E 01 1.3414E 02 -1.2397E 01 2.4663E 02 5.2470E 01 3.7550E 02
5.8100E 02 2.2168E 01 -2.6956E 02 7.9696E 04 -6.3959E 02 -1.4920E 01 -5.0768E 02 2.0671E 02 -1.8609E 02 1.2794E 01
-3.8758E-01 0.0

ROW 25
-1.0997E 02 -5.2938E 03 -9.0631E 03 -2.8547E 02 2.5562E 02 -3.3557E 02 -1.9064E 02 -9.1999E 02 -2.7507E 01 9.7121E 02
4.7580E 02 2.6729E 03 -1.2091E 03 3.4324E 02 8.5483E 01 1.6213E 02 -2.9535E 00 2.7660E 02 6.9361E 01 4.5040E 02
7.0474E 02 3.4440E 01 -3.1826E 02 -6.3959E 02 7.6014E 03 -1.1852E 01 -6.0418E 02 2.4778E 02 -2.2203E 02 1.4458E 01
-3.6749E 00 0.0

ROW 26
-3.5554E 00 -1.7115E 02 1.5750E 02 1.2189E 01 1.0848E 01 -1.1673E 01 -7.1861E 00 -3.2677E 01 -8.0717E 00 2.5128E 01
1.3748E 01 7.1828E 01 -5.1595E 00 1.1607E 01 1.9315E 00 3.6305E 00 -3.3100E 00 1.3211E 01 -9.3671E-01 1.1429E 01
1.6266E 01 -1.1574E 00 -9.2804E 00 -1.4920E 01 -1.1852E 01 1.9414E 03 -1.7599E 01 6.9840E 00 -6.4087E 00 6.7174E-01
-2.1032E 00 0.0

ROW 27
-9.1635E 01 -4.4111E 03 -5.5878E 03 -1.4592E 02 2.2385E 02 -2.8283E 02 -1.6332E 02 -7.7923E 02 -5.4189E 01 7.8181E 02
3.8927E 02 2.2628E 03 -8.5979E 02 2.8817E 02 6.7510E 01 1.2817E 02 -1.6313E 01 2.4768E 02 4.4984E 01 3.6143E 02
5.5806E 02 1.8783E 01 -2.6076E 02 -5.0768E 02 -6.0418E 02 -1.7599E 01 1.9736E 04 1.9986E 02 -1.8106E 02 1.2853E 01
8.7397E 00 0.0

MATRIX *MASS* 32 BY 32 ANTISYMMETRIC MATH MODEL FLIGHT CONDITION 45,1,1, 254,000 LBS.

ROW 28

3.7065E 01	1.7842E 03	2.3694E 03	6.4504E 01	-8.9834E 01	1.1412E 02	6.5816E 01	3.1444E 02	2.0168E 01	-3.1772E 02
-1.5783E 02	-8.7817E 02	3.5604E 02	-1.1642E 02	-2.7490E 01	-5.2252E 01	5.7859E 00	-9.8864E 01	-1.9178E 01	-1.4691E 02
-2.2715E 02	-8.1450E 00	1.0571E 02	2.0671E 02	2.4778E 02	6.5840E 00	1.9986E 02	6.1132E 03	7.3301E 01	-5.1318E 00
-9.7240E 00	0.0								

ROW 29

-3.3480E 01	-1.6117E 03	-2.0840E 03	-5.4789E 01	8.1700E 01	-1.0340E 02	-5.9570E 01	-2.8448E 02	-1.9140E 01	2.8628E 02
1.4240E 02	7.9188E 02	-3.1725E 02	1.0526E 02	2.4779E 01	4.6943E 01	-5.7191E 00	9.0624E 01	1.6338E 01	1.3243E 02
2.0479E 02	7.0817E 00	-9.5380E 01	-1.8609E 02	-2.2203E 02	-6.4087E 00	-1.8106E 02	7.3301E 01	1.3631E 05	4.7090E 00
8.8591E 00	0.0								

ROW 30

2.4205E 00	1.1652E 02	9.9148E 01	1.5289E 00	-6.1973E 00	7.5655E 00	4.4239E 00	2.0901E 01	2.2045E 00	-1.997[illegible]E 01
-1.0108E 01	-5.5573E 01	1.9059E 01	-7.6677E 00	-1.6952E 00	-3.2108E 00	7.7912E-01	-7.0233E 00	-8.3015E-01	-9.2135E 00
-1.4052E 01	-2.5214E-01	6.7799E 00	1.2794E 01	1.4458E 01	6.7174E-01	1.2853E 01	-5.1318E 00	4.7090E 00	2.1631E 03
1.6722E 01	0.0								

ROW 31

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0								

ROW 32

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0								

MATRIX * C1 * 32 BY 32 ANTISYMMETRIC MATH MODEL

ROW 1

2.1221E 07	1.0111E 09	5.7109E 09	9.0472E 08	2.4822E 08	-4.9743E 08	.6448E 07	1.4636E 08	8.3268E 08	9.5856E 08
-6.4370E 07	-1.1057E 08	1.3926E 08	1.4894E 08	1.0106E 08	9.3260E 07	6.0420E 07	7.1091E 07	-1.2725E 08	1.0752E 08
-7.8800E 07	-1.2564E 05	-6.4332E 07	-3.4664E 08	-6.3967E 07	-2.1731E 07	1.1292E 08	-4.5453E 07	-1.2034E 08	7.0672E 07
2.3304E 07	0.0								

ROW 2

2.0932E 09	2.4986E 13	1.0500E 12	-4.7533E 11	8.5168E 11	-1.7202E 12	-9.9915E 10	6.3800E 11	2.3334E 11	2.8943E 11
5.5953E 10	-3.8197E 11	1.0231E 11	-1.0742E 11	-2.1899E 10	1.0348E 10	-2.7921E 10	-7.5813E 10	1.0164E 11	1.1497E 11
3.8293E 10	5.4976E 10	-2.6870E 10	-3.7179E 11	1.6604E 10	3.6473E 09	6.2446E 09	-2.1456E 10	-2.1517E 11	2.4850E 10
1.1884E 10	0.0								

ROW 3

4.5777E 09	6.3712E 11	8.3800E 12	8.0190E 11	1.8507E 11	-4.4058E 11	-5.2469E 10	-8.0218E 09	6.7633E 11	8.3312E 11
-9.4905E 09	-2.0297E 11	1.5474E 11	1.6077E 11	8.0704E 10	9.2606E 10	6.1405E 10	3.4086E 10	-8.9336E 10	8.0019E 10
-6.3681E 10	-4.0327E 09	-4.4160E 10	-2.7280E 11	-4.6339E 10	-2.2159E 10	9.5565E 10	-4.4273E 10	-7.3016E 10	6.6052E 10
2.1503E 10	0.0								

ROW 4

9.2511E 08	-4.3951E 11	8.5321E 11	1.2643E 11	-3.3153E 10	-1.9814E 10	-2.6896E 09	-9.3943E 09	9.3763E 10	1.4098E 11
-4.5216E 10	-2.6425E 09	2.0396E 10	2.8314E 10	1.1354E 10	8.9057E 09	7.8584E 09	2.2033E 10	-3.6935E 09	8.6240E 09
-6.4236E 09	5.4132E 09	-5.5528E 09	-3.6445E 10	-5.7637E 09	-2.5657E 09	1.0282E 10	-6.2541E 09	-2.9274E 10	8.2962E 09
2.3467E 09	0.0								

ROW 5

5.0775E 07	7.3088E 11	4.2298E 10	-4.8712E 10	9.4768E 10	-4.6731E 10	-3.7786E 09	1.7617E 10	-5.7173E 09	-6.6401E 10
8.2576E 10	-2.8000E 10	-3.6736E 08	-1.6549E 10	-4.0361E 07	5.4391E 09	2.9510E 09	-3.0369E 10	-9.6714E 09	1.5757E 09
-1.5448E 08	-1.0441E 10	2.2415E 08	9.6009E 09	-7.2664E 07	-4.9665E 08	1.7816E 09	.8210E 08	3.3848E 10	1.6125E 08
4.1484E 08	0.0								

ROW 6

-4.0529E 08	-1.5071E 12	-3.0624E 11	-3.3434E 08	-4.8230E 10	1.3928E 11	9.1578E 09	-4.4730E 10	-6.2387E 10	-7.8628E 10
1.3223E 10	3.8178E 10	-1.9300E 10	8.2942E 09	6.5755E 07	-2.8956E 09	2.7962E 09	-3.7985E 09	-1.5955E 10	-1.6611E 10
-4.9049E 09	-9.0598E 09	4.2816E 09	5.2305E 10	-6.9441E 08	2.3852E 08	-2.2468E 09	4.9443E 09	3.7646E 10	-3.8534E 09
-1.1189E 09	0.0								

ROW 7

-1.5468E 07	-8.9729E 10	-3.6196E 10	-1.0279E 09	-3.4995E 09	1.0140E 10	1.5209E 09	-2.4177E 09	-8.1702E 09	-1.0052E 10
1.8017E 08	5.1719E 09	-2.6325E 09	1.5083E 09	-2.7396E 08	5.6968E 08	1.9497E 08	2.4319E 08	-2.4321E 09	-1.8071E 09
-7.3658E 08	-1.1606E 09	4.2676E 08	4.9011E 09	-2.0370E 07	-3.4838E 06	-9.3854E 07	6.0704E 08	6.4866E 09	-4.1540E 08
-9.1021E 07	0.0								

ROW 8

6.9798E 07	4.6386E 11	-2.4358E 10	-5.4119E 09	8.4908E 09	-3.7925E 10	-1.6090E 09	1.3842E 10	9.2747E 09	1.3637E 10
-5.8635E 09	-6.8888E 09	4.7430E 09	-5.9557E 09	-1.8633E 09	-1.9481E 09	4.2555E 08	5.1547E 09	6.0222E 09	5.9969E 09
2.0287E 09	1.9919E 09	-9.7816E 08	-1.2795E 10	7.5902E 08	3.1573E 08	-1.1693E 07	-9.9045E 08	-1.6105E 10	2.0499E 08
4.5128E 06	0.0								

ROW 9

8.7483E 08	4.5151E 11	6.9900E 11	7.9036E 10	1.7076E 10	-1.1562E 11	-1.3654E 10	2.3148E 10	2.1817E 11	2.9054E 11
-3.2294E 10	-7.8580E 10	6.0546E 10	1.5019E 10	-3.2283E 09	-1.0688E 09	-1.0262E 10	3.9001E 10	5.8703E 10	3.4361E 10
1.6259E 10	2.7886E 10	-6.8935E 09	-9.7676E 10	-1.8614E 09	-4.2439E 08	1.2572E 09	-1.4390E 10	-1.3596E 11	1.1012E 10
2.2628E 09	0.0								

MATRIX * C1 * 32 BY 32 ANTISYMMETRIC MATH MODEL

ROW 10

6.5080E 08 2.6196E 11 5.6777E 11 9.0648E 10 -4.0014E 10 -6.7171E 10 -4.2718E 09 7.2900E 09 1.9441E 11 5.1782E 08
-1.0789E 11 -2.5340E 10 3.9220E 10 5.8634E 10 2.8306E 09 -1.6731E 09 -1.2539E 10 5.2591E 10 4.4617E 10 2.3071E 10
7.0730E 09 2.9422E 10 -5.5802E 08 -7.8613E 10 -1.4145E 09 -7.8140E 08 1.3441E 09 -1.1575E 10 -1.0792E 11 8.5276E 09
1.6784E 09 0.0

ROW 11

6.2136E 07 9.3789E 10 7.9112E 10 -2.8091E 10 7.0397E 10 -1.5087E 10 -4.8122E 09 5.8282E 09 3.2629E 10 -3.3189E 10
9.2622E 10 -4.1258E 10 1.1601E 10 -2.8370E 10 -2.7497E 09 3.7384E 09 1.5729E 09 -2.2422E 10 5.2488E 09 1.2341E 10
5.3324E 09 -1.1254E 10 1.7791E 08 7.0423E 09 -1.9875E 08 -1.6777E 08 4.0970E 08 -1.2802E 09 -9.3634E 08 1.3426E 09
3.5477E 08 0.0

ROW 12

-8.6015E 07 -4.4235E 11 -3.1995E 11 -4.8275E 09 -3.4580E 10 6.3294E 10 7.8977E 09 -1.6108E 10 -8.0239E 10 -8.7546E 10
-1.5709E 10 5.6644E 10 -2.3994E 10 1.0711E 10 5.2031E 09 1.9399E 09 5.7132E 09 -7.3769E 09 -2.5927E 10 -1.8010E 10
-8.9414E 09 -8.1593E 09 2.1036E 09 3.9417E 10 -3.7081E 08 -5.5496E 08 -2.5051E 08 5.0775E 09 5.8496E 10 -3.3455E 09
-7.4665E 08 0.0

ROW 13

2.9137E 08 1.4642E 11 2.3228E 11 2.4866E 10 8.9825E 09 -3.6930E 10 -3.9662E 09 7.8679E 09 6.0372E 10 8.1019E 10
-6.6792E 09 -2.0484E 10 1.8118E 10 2.8355E 09 2.0011E 08 1.2135E 09 -1.5043E 09 9.7684E 09 1.5555E 10 1.1886E 10
5.2062E 09 7.5133E 09 -1.2571E 09 -2.9076E 10 -7.6114E 07 3.7260E 07 1.7606E 09 -3.4172E 09 -3.8111E 10 3.3106E 09
9.4756E 08 0.0

ROW 14

3.5547E 07 -1.3222E 11 7.3934E 10 1.6740E 10 -1.3306E 10 1.3456E 10 8.6775E 08 -1.0745E 10 1.1323E 10 5.0481E 10
-3.1348E 10 1.1995E 10 -6.0076E 08 4.0444E 10 5.7942E 09 3.3218E 09 -5.4186E 08 6.2029E 09 -7.4941E 08 -1.2231E 10
-2.3315E 09 9.0882E 09 2.1254E 09 1.5005E 09 -1.0273E 09 -5.9079E 08 -2.2755E 08 -6.4001E 08 1.6800E 10 1.3587E 09
3.4447E 08 0.0

ROW 15

4.3547E 07 -4.8352E 10 5.6041E 10 8.8230E 09 -2.6750E 08 3.1987E 09 5.9576E 08 -7.9764E 09 -2.7311E 09 -1.3147E 10
4.8079E 09 4.1833E 09 -8.6920E 08 6.9303E 09 9.5824E 09 9.5215E 09 1.0626E 10 -8.8827E 09 -6.2747E 09 -4.9628E 09
-1.6674E 09 -2.5747E 09 1.5404E 09 9.0946E 09 2.3676E 08 -4.7861E 08 1.4372E 09 1.8951E 08 2.1692E 10 1.6013E 09
5.2690E 08 0.0

ROW 16

2.4977E 07 -3.3389E 10 4.0380E 10 4.4761E 09 4.5885E 09 3.1086E 09 6.0849E 08 -1.5287E 09 -5.1413E 09 -2.1649E 10
1.1989E 10 2.9994E 09 -1.1682E 09 4.2275E 09 9.8573E 09 1.0174E 10 1.1440E 10 -1.1702E 10 -6.9376E 09 -4.3924E 09
-1.6050E 09 -4.1324E 09 1.7841E 09 1.1663E 10 3.7587E 08 -4.8776E 08 1.3494E 09 3.3035E 08 2.4937E 10 1.5130E 09
5.0292E 08 0.0

ROW 17

3.1988E 07 -6.2994E 10 2.7722E 10 5.2991E 09 1.1449E 09 5.7366E 09 9.9113E 08 -9.5027E 08 -1.0304E 10 -3.4173E 10
1.2705E 10 4.6502E 09 -2.4553E 09 3.6266E 08 1.0815E 10 1.1079E 10 1.3685E 10 -1.3673E 10 -9.1508E 09 -5.7846E 09
-2.0493E 09 -5.0497E 09 1.3038E 09 1.3585E 10 4.2442E 08 -4.6857E 08 1.4089E 09 6.5522E 08 2.6315E 10 1.4391E 09
4.8618E 08 0.0

ROW 18

1.3894E 08 -4.8338E 10 7.0253E 10 1.9452E 10 -2.2080E 10 -4.5284E 09 -2.9643E 07 -4.3534E 08 1.7231E 10 5.8604E 10
-3.5744E 10 1.4672E 09 3.4222E 09 7.2793E 09 -5.4310E 09 -7.3250E 09 -9.1386E 09 1.8826E 10 8.1906E 09 6.1145E 09
1.0651E 09 6.9288E 09 -7.6611E 08 -1.8404E 10 -5.1939E 08 1.8109E 08 5.4470E 08 -1.1577E 09 -2.8071E 10 -8.0109E 07
-3.5502E 07 0.0

MATRIX * C1 * 32 BY 32 ANTISYMMETRIC MATH MODEL

ROW 19
-2.0182E 08 1.3259E 11 -1.8476E 11 -1.7224E 10 -9.8009E 09 -1.1336E 10 -1.5536E 09 5.8871E 09 2.4360E 10 3.7608E 10
-1.0165E 10 -1.3965E 10 9.9939E 09 -5.0356E 09 -5.3671E 09 -5.5193E 09 -6.6754E 09 1.0331E 10 2.5384E 10 5.8705E 09
1.1430E 10 8.7268E 09 3.2977E 09 -9.5933E 09 2.3743E 09 7.9217E 08 -1.0723E 09 -1.6737E 09 -3.0588E 10 -3.6104E 08
-4.3885E 08 0.0

ROW 20
3.4376E 07 3.2232E 10 3.4986E 10 8.0493E 08 5.8154E 09 -6.5270E 09 -3.2039E 08 2.0501E 09 5.9832E 08 1.9662E 09
9.9368E 09 -2.5314E 09 1.4516E 09 -8.4303E 09 -5.1618E 07 1.0136E 09 2.7286E 08 4.3936E 07 8.7397E 08 1.3058E 10
-4.8767E 07 -6.9065E 09 1.2644E 09 -1.3578E 09 6.8558E 08 -8.6703E 07 1.0652E 09 -3.8857E 08 2.1490E 09 1.4169E 08
8.8930E 07 0.0

ROW 21
-9.6865E 07 1.6043E 10 -8.5262E 10 -9.0543E 09 -1.4426E 09 1.7161E 09 7.1745E 07 1.1289E 09 -2.3512E 09 -9.5559E 09
3.5866E 09 -2.2160E 09 1.0799E 09 -4.6699E 09 -1.3607E 09 -1.4178E 09 -9.6139E 08 6.6934E 07 6.4024E 09 -1.0126E 09
5.4976E 09 1.9917E 09 2.7801E 09 4.2856E 09 1.2420E 09 3.1293E 08 1.6510E 09 6.4995E 08 -2.9433E 08 -6.2008E 08
-1.0322E 08 0.0

ROW 22
-8.1587E 07 5.4777E 09 -6.6252E 10 -4.8536E 09 -6.0125E 09 4.8924E 09 3.4724E 08 -1.0732E 09 -8.0381E 09 -7.6208E 09
-7.2631E 09 4.8680E 09 -1.8655E 09 4.3833E 09 -3.3647E 08 -1.1978E 09 -8.4273E 08 7.6004E 08 1.5044E 09 -7.0752E 09
2.1911E 09 5.3105E 09 1.1070E 09 5.2092E 09 2.0847E 08 2.1402E 08 3.6223E 08 1.0365E 09 2.6308E 09 -6.4614E 08
-1.1397E 08 0.0

ROW 23
-8.4286E 07 -3.0469E 10 -6.2858E 10 -7.1682E 09 -1.2987E 09 6.7205E 09 6.3771E 08 -1.6032E 09 -8.0197E 09 -8.5463E 09
1.9969E 09 1.8844E 09 -1.4138E 09 1.5304E 08 -3.3481E 08 -4.2797E 08 -6.4305E 08 -4.6360E 08 1.7756E 09 -7.5881E 08
2.1316E 09 -4.8831E 08 2.9448E 09 5.8913E 09 8.8645E 08 2.5521E 08 5.1270E 08 3.3633E 08 7.6910E 09 -6.3668E 08
-1.1564E 08 0.0

ROW 24
-6.9662E 07 -1.5212E 11 -5.6384E 10 -5.6383E 09 2.8281E 07 1.5661E 10 2.0238E 09 -3.9409E 09 -5.7838E 09 -1.3084E 10
8.5296E 09 1.1641E 09 -1.7494E 09 1.6637E 09 -4.5200E 08 -1.9856E 08 -5.3747E 08 -2.2979E 09 -1.7839E 07 -2.9583E 09
1.0779E 09 1.4912E 08 1.5573E 09 7.5476E 09 5.5723E 08 3.1693E 08 -2.7864E 08 1.0674E 09 7.9835E 09 -2.7872E 08
-1.6358E 06 0.0

ROW 25
-5.9330E 07 3.8393E 09 -4.4727E 10 -5.6867E 09 -6.5186E 08 1.6552E 09 7.3022E 07 3.8420E 07 -5.1305E 09 -3.0143E 09
-9.6939E 08 9.5149E 08 -7.2927E 08 -1.5031E 09 -7.2155E 08 -6.5803E 08 -6.2032E 08 3.3250E 08 9.2912E 08 9.7039E 08
7.6625E 08 1.6642E 08 4.7998E 08 3.3469E 08 8.5532E 08 5.6082E 08 -1.2519E 09 5.5017E 08 -1.7083E 09 -4.9489E 08
-1.3243E 08 0.0

ROW 26
-7.6120E 06 -2.6252E 09 -1.3343E 10 -1.8714E 09 -2.2889E 08 1.1105E 09 1.0406E 08 -5.2467E 07 -2.6607E 09 -1.2987E 09
-7.7183E 08 5.5423E 08 -6.2901E 08 -8.8663E 08 -1.0831E 09 -1.0830E 09 -1.1330E 09 7.6199E 08 -1.3046E 08 5.1819E 08
-5.2135E 07 1.9379E 08 -9.7368E 07 -3.1269E 08 2.9043E 08 4.7602E 08 -1.2595E 09 2.8199E 08 -1.8486E 09 -2.9057E 08
-6.6520E 07 0.0

ROW 27
1.8215E 07 -6.6702E 09 1.5478E 10 2.3057E 09 -1.1797E 08 2.2293E 09 2.8877E 08 -6.3833E 08 -6.1081E 09 -9.2744E 09
1.1904E 09 2.7976E 09 -1.3291E 09 -5.8681E 08 1.9368E 09 1.8711E 09 2.5093E 09 -2.1602E 09 -1.5669E 09 -1.2516E 09
8.8171E 08 -5.6684E 08 7.6773E 08 3.1456E 09 -5.9595E 08 -1.1534E 09 6.3343E 09 1.0944E 09 4.9608E 09 -4.2830E 07
-1.0234E 08 0.0

MATRIX * C1 * 32 BY 32 ANTISYMMETRIC MATH MODEL

ROW 28
1.9444E 07 3.5497E 10 3.2537E 09 -2.0492E 09 1.7648E 09 -6.0582E 09 -6.4070E 08 1.5672E 09 2.5621E 09 2.1427E 10
-9.2517E 09 -1.4379E 09 1.2932E 09 -3.3247E 08 -2.1861E 09 -1.7392E 09 -2.5943E 09 5.0981E 09 3.1196E 09 5.7509E 09
4.2685E 08 3.8386E 09 -1.4797E 09 -1.2924E 10 3.7368E 08 5.5382E 08 -4.4124E 07 1.0560E 09 -2.3101E 10 -2.9078E 08
-2.1534E 08 0.0

ROW 29
-2.4113E 07 -2.2623E 10 -1.2897E 10 -5.4021E 09 6.5768E 09 5.2542E 09 2.0550E 09 -3.5739E 09 -4.0328E 09 -6.9745E 09
4.6833E 09 1.4456E 09 -2.4693E 09 8.4601E 09 -2.4602E 08 -8.0124E 07 -1.6567E 09 -1.4067E 09 -1.9029E 09 -1.4510E 09
-9.4973E 08 -2.5088E 09 2.4989E 09 7.0396E 09 1.4576E 08 -2.3461E 08 1.4439E 08 -1.0042E 07 1.8283E 10 -2.8045E 08
-2.1026E 08 0.0

ROW 30
-4.0941E 07 1.6071E 10 -3.8145E 10 -3.3815E 09 -2.4740E 09 2.4387E 09 1.9139E 08 -1.3776E 08 -2.4692E 09 -2.3680E 09
-7.7811E 08 4.7088E 08 -5.2577E 8 -2.2339E 09 -1.3096E 09 -1.4104E 09 -1.1888E 09 8.5465E 08 1.5028E 09 2.7091E 08
6.7345E 08 3.5113E 08 -2.0614E 08 1.4353E 09 -9.0018E 06 2.3344E 08 -9.0023E 08 -1.6737E 07 -3.8075E 09 -6.6784E 07
-4.0727E 08 0.0

ROW 31
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0

ROW 32
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0

MATRIX *DAMP* 32 BY 32 ANTISYMMETRIC MATH MODEL

ROW 1

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0								

ROW 2

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0								

ROW 3

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0								

ROW 4

0.0	0.0	0.0	1.8225E 05	2.7007E 04	-1.5450E 04	5.2513E 02	-1.0327E 04	-2.8733E 04	-1.7456E 04
-6.3955E 02	3.7155E 04	-2.1383E 04	-6.8986E 03	-5.0648E 03	-4.9723E 03	-4.4134E 03	1.7032E 03	3.2105E 03	-5.0818E 03
6.5686E 03	2.2791E 03	7.4299E 03	3.0920E 03	7.8715E 03	-7.8070E 02	-7.6728E 03	2.6063E 03	-2.6888E 03	4.2361E 02
0.0	0.0								

ROW 5

0.0	0.0	0.0	2.7007E 04	3.8576E 04	9.2382E 02	2.5085E 03	1.0529E 03	-1.1539E 04	-7.1121E 03
-4.1074E 01	3.4629E 04	5.0353E 03	1.2106E 03	-7.7372E 02	-3.0576E 02	-1.2387E 03	5.9787E 02	8.5291E 03	3.3104E 03
3.2672E 03	3.2624E 03	-4.2723E 03	2.3065E 03	-3.2147E 02	-1.6206E 02	-3.2157E 03	1.2145E 03	-8.8278E 02	5.3293E 01
0.0	0.0								

ROW 6

0.0	0.0	0.0	-1.5450E 04	9.2386E 02	1.5523E 05	3.2660E 03	6.6749E 03	-1.7744E 04	-1.7707E 04
-3.8744E 03	-2.2688E 04	3.1947E 04	7.3943E 03	3.7739E 03	1.3137E 03	-3.2968E 02	1.1652E 04	1.7839E 04	3.8546E 03
-1.4076E 03	1.4816E 02	-9.2647E 03	1.5600E 03	-2.3130E 03	3.0752E 02	1.1351E 03	-2.9790E 02	1.2972E 03	-4.2266E 01
0.0	0.0								

ROW 7

0.0	0.0	0.0	5.2514E 02	2.5085E 03	3.2660E 03	2.3934E 04	4.2284E 03	-2.4394E 03	-3.2745E 03
-7.5212E 02	1.8276E 04	1.1504E 04	6.9814E 02	-4.8175E 01	1.5355E 02	-1.6982E 02	-6.8207E 02	4.3878E 03	8.7147E 02
-7.8334E 02	3.1778E 02	-1.7122E 03	1.0530E 03	-1.1909E 01	2.4926E 02	6.0247E 02	-1.0993E 02	3.5432E 02	-1.9113E 01
0.0	0.0								

ROW 8

0.0	0.0	0.0	-1.0327E 04	1.0528E 03	6.6749E 03	4.2284E 03	1.2925E 05	3.0042E 03	-3.4766E 03
-2.1939E 03	3.2121E 04	2.7784E 04	-5.7640E 02	-5.0964E 02	-8.5793E 01	8.6922E 01	-3.8832E 03	3.7681E 03	-1.2890E 03
-5.7243E 03	-1.8841E 03	4.6796E 02	2.0582E 03	2.0594E 03	1.0857E 03	5.0232E 03	-1.4515E 03	1.9640E 03	-5.0677E 01
0.0	0.0								

ROW 9

0.0	0.0	0.0	-2.8733E 04	-1.1539E 04	-1.7744E 04	-2.4394E 03	3.0042E 03	1.2974E 05	5.8362E 04
1.0293E 04	7.6454E 04	-5.1321E 04	-1.0095E 04	-7.8034E 03	-1.0674E 03	1.8647E 03	-3.1714E 04	-4.1105E 04	5.4425E 03
-7.7249E 03	6.1352E 03	6.2738E 03	8.0021E 03	5.1716E 03	3.2072E 03	1.1358E 04	-2.7109E 03	3.2199E 03	-2.2984E 02
0.0	0.0								

MATRIX *DAMP* 32 BY 32 ANTISYMMETRIC MATH MODEL

ROW 10

0.0	0.0	0.0	-1.7456E 04	-7.1121E 03	-1.7707E 04	-3.2745E 03	-3.4766E 02	5.8362E 04	4.3459E 05
1.2189E 04	7.5887E 04	-6.3855E 04	-5.6406E 03	-6.6804E 03	5.4407E 01	1.4367E 03	-2.7272E 04	-3.3206E 04	1.2409E 04
-5.7036E 02	1.1460E 04	-2.3007E 03	8.5606E 03	7.5790E 02	2.3574E 03	5.3423E 03	-7.1942E 02	1.3555E 03	-2.6193E 02
0.0	0.0								

ROW 11

0.0	0.0	0.0	-6.3950E 02	-4.1127E 01	-3.8744E 03	-7.5212E 02	-2.1938E 03	1.0293E 04	1.2189E 04
9.5777E 04	2.1636E 04	-1.7302E 04	-1.5193E 02	-1.3080E 03	4.0297E 02	2.7445E 02	-5.7676E 03	-4.7300E 03	4.7071E 03
1.9292E 03	4.1036E 03	-2.9153E 03	2.0174E 03	-1.2136E 03	2.8810E 02	-5.3301E 02	4.0795E 02	-2.6634E 02	-8.9343E 01
0.0	0.0								

ROW 12

0.0	0.0	0.0	3.7155E 04	3.4629E 04	-2.2688E 04	1.8275E 04	3.2121E 04	7.6454E 04	7.5887E 04
2.1636E 04	8.7403E 05	5.3124E 04	-2.9565E 04	-2.6760E 04	6.5550E 03	3.9032E 02	-1.3873E 05	-9.0078E 03	2.5119E 03
1.1278E 04	1.7322E 04	6.1089E 03	-1.6454E 03	-8.3218E 03	-1.6563E 03	-1.1448E 04	3.4829E 03	-8.7723E 03	-7.9495E 02
0.0	0.0								

ROW 13

0.0	0.0	0.0	-2.1383E 04	5.0353E 03	3.1947E 04	1.1504E 04	2.7784E 04	-5.1321E 04	-6.3855E 04
-1.7302E 04	5.3124E 04	2.9353E 05	2.8848E 03	3.6097E 03	3.6900E 02	-6.2787E 03	1.6337E 04	1.0308E 04	-1.5750E 04
-7.5343E 03	-1.3189E 04	7.0057E 02	-6.6041E 03	7.3327E 03	-4.0807E 03	-4.5149E 03	-2.4763E 02	-1.0855E 02	2.2793E 03
0.0	0.0								

ROW 14

0.0	0.0	0.0	-6.8986E 03	1.2106E 03	7.3944E 03	6.9814E 02	-5.7633E 02	-1.0095E 04	-5.6406E 03
-1.5169E 02	-2.9566E 04	2.8848E 03	5.0341E 04	3.1223E 03	9.6574E 02	-9.1882E 02	1.3778E 04	9.0608E 03	1.0440E 04
2.8364E 03	5.3559E 03	-1.3667E 04	4.2201E 03	-3.2200E 03	2.4163E 02	-1.7355E 03	9.6142E 02	7.2059E 02	9.9975E 01
0.0	0.0								

ROW 15

0.0	0.0	0.0	-5.0648E 03	-7.7373E 02	3.7739E 03	-4.8169E 01	-5.0966E 02	-7.8034E 03	-6.6805E 03
-1.3080E 03	-2.6760E 04	3.6096E 03	3.1223E 03	1.5151E 04	3.6958E 02	-8.2541E 01	9.4101E 03	3.8620E 03	1.3365E 03
1.8727E 03	-6.7124E 02	-2.5518E 03	-1.4044E 03	-2.1902E 03	-4.7968E 02	-2.0425E 03	6.0068E 02	-4.7094E 02	6.6100E 01
0.0	0.0								

ROW 16

0.0	0.0	0.0	-4.9723E 03	-3.0576E 02	1.3137E 03	1.5353E 02	-8.5788E 01	-1.0674E 03	5.4403E 01
4.0295E 02	6.5550E 03	3.6901E 02	9.6574E 02	3.6959E 02	1.2023E 04	5.2340E 02	-1.8302E 03	4.2149E 03	8.3902E 02
8.9559E 02	3.6789E 02	-1.9335E 03	-1.0048E 03	-2.1966E 03	-6.9781E 01	-6.1437E 02	1.9086E 02	-1.8572E 02	-1.3334E 02
0.0	0.0								

ROW 17

0.0	0.0	0.0	-4.4134E 03	-1.2387E 03	-3.2968E 02	-1.6982E 02	8.6920E 01	1.8647E 03	1.4367E 03
2.7445E 02	3.9032E 03	-6.2787E 03	-9.1882E 02	-8.2536E 01	5.2339E 02	1.4307E 04	-4.2089E 03	3.3000E 03	-2.0241E 03
-5.9682E 02	-1.6135E 03	1.8994E 03	-2.1070E 03	-1.5146E 03	2.0091E 02	8.5698E 02	-2.9626E 02	1.2763E 01	-2.7469E 02
0.0	0.0								

ROW 18

0.0	0.0	0.0	1.7032E 03	5.9789E 02	1.1652E 04	-6.8205E 02	-3.8833E 03	-3.1714E 04	-2.7272E 04
-5.7676E 03	-1.3873E 05	1.6837E 04	1.3778E 04	9.4101E 03	-1.8302E 03	-4.2089E 03	2.2194E 05	-9.9719E 03	1.2229E 04
1.2704E 04	2.3821E 03	-1.0951E 04	1.0464E 03	-2.5202E 03	-3.2879E 03	-1.3463E 04	4.0062E 03	-3.5733E 03	1.3803E 03
0.0	0.0								

MATRIX *DAMP* 32 BY 32

ANTISYMMETRIC MATH MODEL

ROW 19

0.0	0.0	0.0	3.2107E 03	8.5291E 03	1.7839E 04	4.3878E 03	3.7681E 03	-4.1105E 04	-3.3206E 04
-4.7300E 03	-9.0078E 03	1.0308E 04	9.0607E 03	3.8620E 03	4.2148E 03	3.3000E 03	-9.9719E 03	1.2686E 05	-8.7952E 03
-1.2134E 04	-1.4633E 04	-1.6691E 04	-1.1324E 04	-1.1441E 04	2.6422E 03	2.5628E 02	2.0876E 03	3.9408E 03	-1.2257E 03
0.0	0.0								

ROW 20

0.0	0.0	0.0	-5.0818E 03	3.3104E 03	3.8546E 03	8.7149E 02	-1.2890E 03	5.4425E 03	1.2409E 04
4.7071E 03	2.5119E 03	-1.5749E 04	1.0440E 04	1.3365E 03	8.3903E 02	-2.0240E 03	1.2229E 04	-8.7952E 03	5.5079E 04
7.8200E 03	2.1764E 04	-2.5647E 04	1.9911E 04	1.5010E 02	8.5095E 02	1.2474E 03	-2.0526E 02	3.0475E 03	8.4719E 01
0.0	0.0								

ROW 21

0.0	0.0	0.0	6.5686E 03	3.2672E 03	-1.4076E 03	-7.8334E 02	-5.7243E 03	-7.7249E 03	-5.7040E 02
1.9292E 03	1.1278E 04	-7.5341E 03	2.8364E 03	1.8727E 03	8.9557E 02	-5.9682E 02	1.2704E 04	-1.2134E 04	7.8200E 03
2.8397E 04	6.7508E 03	-2.5592E 03	-2.3381E 03	-6.1508E 03	-3.7280E 03	-1.3989E 04	3.4955E 03	-6.6249E 03	4.2200E 02
0.0	0.0								

ROW 22

0.0	0.0	0.0	2.2791E 03	3.2624E 03	1.4815E 02	3.1778E 02	-1.8842E 03	6.1352E 03	1.1460E 04
4.1037E 03	1.7322E 04	-1.3189E 04	5.3558E 03	-6.7124E 02	3.6790E 02	-1.6135E 03	2.3821E 03	-1.4633E 04	2.1764E 04
6.7508E 03	4.9716E 04	-2.0099E 04	2.5634E 04	8.1349E 03	-4.6803E 02	4.3945E 03	-2.6043E 03	3.7730E 03	-1.3750E 02
0.0	0.0								

ROW 23

0.0	0.0	0.0	7.4299E 03	-4.2723E 03	-9.2647E 03	-1.7122E 03	4.6794E 02	6.2738E 03	-2.3007E 03
-2.9153E 03	5.1089E 03	7.0056E 02	-1.3667E 04	-2.5518E 03	-1.9335E 03	1.8994E 03	-1.0951E 04	-1.6691E 04	-2.5647E 04
-2.5592E 03	-2.0099E 04	5.2047E 04	-2.3029E 04	-1.6619E 03	-6.8292E 02	-1.5343E 03	9.8871E-01	-7.1749E 03	-7.6454E 01
0.0	0.0								

ROW 24

0.0	0.0	0.0	3.0920E 03	2.3065E 03	1.5600E 03	1.0530E 03	2.0582E 03	8.0022E 03	8.5606E 03
2.0174E 03	-1.6452E 03	-6.6043E 03	4.2201E 03	-1.4045E 03	-1.0048E 03	-2.1070E 03	1.0463E 03	-1.1324E 04	1.9911E 04
-2.3380E 03	2.5634E 04	-2.3029E 04	1.0278E 05	2.1482E 04	-8.7942E 02	1.1247E 04	-5.4601E 03	8.1838E 03	-1.5328E 02
0.0	0.0								

ROW 25

0.0	0.0	0.0	7.8715E 03	-3.2146E 02	-2.3130E 03	-1.1917E 01	2.0594E 03	5.1718E 03	7.5805E 02
-1.2135E 03	-8.3217E 03	7.3324E 03	-3.2200E 03	-2.1902E 03	-2.1966E 03	-1.5146E 03	-2.5202E 03	-1.1441E 04	1.5014E 02
-6.1508E 03	8.1349E 03	-1.6619E 03	2.1482E 04	3.1316E 04	-4.1961E 03	2.6972E 03	-3.2505E 03	1.1715E 03	3.6219E 02
0.0	0.0								

ROW 26

0.0	0.0	0.0	-7.8073E 02	-1.6206E 02	3.0752E 02	2.4927E 02	1.0857E 03	3.2072E 03	2.3574E 03
2.8810E 02	-1.6564E 03	-4.0807E 03	2.4163E 02	-4.7968E 02	-6.9782E 01	2.0091E 02	-3.2879E 03	2.6422E 03	8.5095E 02
-3.7280E 03	-4.6803E 02	-6.8292E 02	-8.7942E 02	-4.1961E 03	6.3245E 03	9.4464E 03	-1.7702E 03	4.9937E 03	-4.6219E 02
0.0	0.0								

ROW 27

0.0	0.0	0.0	-7.6728E 03	-3.2157E 03	1.1351E 03	6.0247E 02	5.0232E 03	1.1358E 04	5.3423E 03
-5.3301E 02	-1.1448E 04	-4.5149E 03	-1.7355E 03	-2.0425E 03	-6.1437E 02	8.5698E 02	-1.3463E 04	2.5628E 02	1.2474E 03
-1.3989E 04	4.3945E 03	-1.5342E 03	1.1247E 04	2.6972E 03	9.4464E 03	5.1998E 04	-8.7934E 03	1.5656E 04	-1.5026E 03
0.0	0.0								

MATRIX *DAMP* 32 BY 32 ; ANTISYMMETRIC MATH MODEL

ROW 28

0.0	0.0	0.0	2.6063E 03	1.2145E 03	-2.9789E 02	-1.0992E 02	-1.4516E 03	-2.7109E 03	-7.1943E 02
4.0794E 02	3.4830E 03	-2.4761E 02	9.6142E 02	6.0069E 02	1.9086E 02	-2.9627E 02	4.0062E 03	2.0876E 03	-3.0527E 02
3.4955E 03	-2.6043E 03	9.8893E-01	-5.4601E 03	-3.2505E 03	-1.7702E 03	-8.7934E 03	9.5497E 03	-4.1301E 03	9.4009E 02
0.0	0.0								

ROW 29

0.0	0.0	0.0	-2.6888E 03	-8.8275E 02	1.2972E 03	3.5432E 02	1.9640E 03	3.2199E 03	1.3555E 03
-2.6635E 02	-8.7723E 03	-1.0855E 02	7.2062E 02	-4.7094E 02	-1.8571E 02	1.2769E 01	-3.5733E 03	3.9408E 03	3.0476E 03
-6.6249E 03	3.7730E 03	-7.3749E 03	8.1838E 03	1.1715E 03	4.9937E 03	1.5656E 04	-4.1301E 03	1.6338E 05	-4.5625E 02
0.0	0.0								

ROW 30

0.0	0.0	0.0	4.2361E 02	5.3293E 01	-4.2266E 01	-1.9113E 01	-5.0677E 01	-2.2984E 02	-2.6194E 02
-8.9344E 01	-7.9495E 02	2.2792E 03	9.9977E 01	6.6102E 01	-1.3333E 02	-2.7469E 02	1.3803E 03	-1.2257E 03	8.4719E 01
4.2200E 02	-1.3750E 02	-7.6458E 01	-1.5328E 02	3.6219E 02	-4.6219E 02	-1.5026E 03	4.4009E 02	-6.5624E 02	2.6265E 03
0.0	0.0								

ROW 31

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0								

ROW 32

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0								

MATRIX * C2 * 32 BY 32 ANTISYMMETRIC MATH MODEL

ROW 1

1.2385E 05	2.2334E 07	1.1059E 08	1.4085E 07	2.0718E 04	-3.4996E 06	-3.8725E 05	-1.6347E 05	1.2080E 07	7.5050E 06
2.5346E 06	-3.9621E 06	2.4424E 05	1.8248E 06	3.5571E 06	3.4148E 06	3.6210E 06	-2.3559E 06	1.2852E 06	-5.9302E 05
5.2093E 05	-1.9883E 05	-9.0378E 03	2.0181E 06	-1.3906E 06	-5.8827E 05	3.1455E 06	-1.8800E 06	3.6667E 06	4.2955E 06
7.5962E 05	0.0								

ROW 2

4.0496E 07	2.4964E 11	5.2426E 10	-1.0259E 10	1.8554E 10	-3.4751E 10	-2.3782E 09	1.3912E 10	2.9592E 09	7.9549E 09
2.6038E 09	-6.9190E 09	1.3590E 09	1.0821E 09	-1.4345E 08	5.5536E 08	-1.7045E 08	-2.5442E 09	1.9516E 09	1.1050E 09
1.5199E 09	1.6112E 09	2.4624E 08	-1.0669E 10	9.2069E 08	-6.8845E 07	1.0105E 09	-1.5256E 09	5.1624E 09	6.0451E 08
6.6642E 07	0.0								

ROW 3

6.5516E 07	6.8906E 09	8.3272E 10	1.1812E 10	2.7062E 08	-3.1456E 09	-3.1796E 08	-6.0802E 08	1.0617E 10	6.6249E 09
2.7783E 09	2.2238E 08	1.2957E 09	1.8046E 09	2.8825E 09	3.0358E 09	3.2403E 09	-2.3983E 09	1.2797E 09	-6.6399E 08
6.4852E 08	-1.1813E 08	1.8485E 08	1.9426E 09	-1.0715E 09	-5.1224E 08	2.5335E 09	-1.6225E 09	3.6165E 09	3.7418E 09
6.8272E 08	0.0								

ROW 4

8.8875E 06	-3.8076E 09	9.7952E 09	1.9276E 09	-7.9763E 08	6.3839E 08	2.3126E 07	-6.0869E 08	1.5089E 09	1.2020E 09
-2.9782E 08	1.3271E 08	1.6045E 08	3.7474E 08	3.8203E 08	3.4151E 08	3.7860E 08	1.7595E 07	2.9131E 08	-1.2933E 08
1.2244E 08	9.8881E 07	8.5881E 07	4.6756E 08	-1.5481E 08	-5.9465E 07	2.7280E 08	-2.3923E 08	1.9837E 08	4.7113E 08
8.8507E 07	0.0								

ROW 5

6.8791E 05	8.7537E 09	4.8886E 08	-7.6836E 08	1.3377E 09	-1.5611E 09	-9.3363E 07	8.5124E 08	-2.1502E 08	-6.9434E 08
1.2251E 09	-4.5247E 08	-3.0517E 07	-2.0813E 08	1.1622E 07	8.8250E 07	9.2659E 07	-5.1497E 08	-1.5814E 08	8.3588E 07
-1.2741E 07	-1.9449E 08	-8.1788E 07	-2.2615E 08	3.9535E 07	1.8736E 06	6.0708E 07	5.5569E 07	3.8145E 08	2.3500E 07
2.0922E 06	0.0								

ROW 6

-5.0501E 06	-9.1497E 09	-4.2103E 09	-3.0748E 07	-7.8763E 08	1.9856E 09	1.5689E 08	-8.4806E 08	-9.4123E 08	-1.1769E 09
-2.2159E 08	5.4634E 08	-2.4403E 08	-1.5406E 08	-8.0741E 07	-1.2535E 08	-4.0043E 07	1.3409E 08	-3.7919E 08	-4.6356E 07
-2.5653E 08	-1.6131E 08	-9.4607E 07	6.3172E 08	-4.0087E 07	1.8300E 07	-1.4519E 08	2.5196E 08	-6.1894E 08	-1.8318E 08
-3.3493E 07	0.0								

ROW 7

-4.5032E 05	-4.2774E 08	-3.6799E 08	-2.9843E 07	-4.3368E 07	1.1912E 08	8.8131E 06	-4.6918E 07	-1.2918E 08	-1.0412E 08
-6.2671E 07	5.5169E 07	-4.0024E 07	-3.3121E 06	-1.1460E 07	3.2441E 05	-2.6597E 06	2.4129E 07	-5.2407E 07	8.1907E 04
-3.4987E 07	-1.1165E 07	-1.6276E 07	1.5769E 06	4.1428E 05	1.8631E 06	-1.1096E 07	3.1687E 07	-5.0374E 07	-1.7968E 07
-3.5044E 06	0.0								

ROW 8

3.0314E 05	1.2117E 09	3.3189E 08	-1.7893E 07	6.2935E 07	-4.9703E 08	-3.9991E 07	2.1039E 08	1.1276E 08	4.1673E 08
-8.2390E 07	-1.0810E 08	5.6106E 07	3.7969E 07	-1.9532E 07	-2.0842E 07	-8.5980E 06	8.1114E 07	1.0081E 08	5.1240E 07
6.0368E 07	3.1200E 07	2.2781E 07	-2.1572E 08	2.5322E 07	1.5198E 06	2.2899E 07	-5.7110E 07	4.1880E 07	6.1146E 06
9.8277E 05	0.0								

ROW 9

9.7259E 06	1.7846E 09	1.0398E 10	1.6254E 09	-9.3968E 07	-5.7760E 08	-8.9227E 07	6.1755E 06	3.5769E 09	1.6833E 09
1.2991E 09	-1.2455E 09	9.2278E 08	4.5064E 08	1.8545E 08	1.3538E 08	3.6325E 07	-3.6789E 07	1.3097E 09	-3.0989E 08
8.5905E 08	2.5872E 08	4.8371E 08	1.1072E 09	-1.2783E 08	-5.7028E 07	2.0027E 08	-7.7582E 08	1.6251E 09	4.6526E 08
8.8874E 07	0.0								

MATRI* *C2* 32 BY 32 ANTISYMMETRIC MATH MODEL

ROW 10
8.8996E 06 -3.7447E 09 8.2626E 09 1.6503E 09 -7.2133E 08 1.4656E 08 3.0733E 07 -4.7538E 08 2.7202E 09 2.2073E 09
-4.5086E 08 -4.4400E 08 5.8335E 08 1.0814E 09 2.1484E 08 1.1969E 08 -2.5782E 07 3.3593E 08 9.9398E 08 -3.4702E 08
5.5141E 08 4.8942E 08 4.5285E 08 4.6248E 08 -8.4749E 07 -5.1731E 07 1.4854E 08 -5.9113E 08 1.2317E 09 3.8546E 08
7.3264E 07 0.0

ROW 11
1.0996E 06 3.3201E 09 1.0142E 09 -1.8861E 08 6.2373E 08 -5.7834E 08 -6.3469E 07 5.0925E 08 3.9679E 08 -6.6311E 08
1.5502E 09 -5.4511E 08 1.7820E 08 -4.0749E 08 1.2173E 06 4.5126E 07 5.7011E 07 -4.0573E 08 1.2047E 08 8.6977E 07
1.7663E 08 -3.2899E 08 3.4464E 07 6.1877E 08 -1.1948E 07 7.0587E 05 4.3670E 07 -7.6194E 07 3.6901E 08 5.0194E 07
9.2534E 06 0.0

ROW 12
-1.9228E 06 -3.3452E 09 -4.1992E 09 -3.0510E 08 -3.4879E 08 6.9979E 08 7.3446E 07 -3.0979E 08 -1.3159E 09 -4.0035E 08
-9.9121E 08 6.8386E 08 -4.3860E 08 2.6028E 07 1.0364E 07 8.3707E 04 4.5389E 07 1.4885E 08 -5.1288E 08 5.6663E 07
-3.6727E 08 -7.1760E 03 -1.8652E 08 -4.2231E 08 2.6817E 07 1.4779E 07 -7.5501E 07 3.0634E 08 -6.6801E 08 -1.1000E 08
-1.6587E 07 0.0

ROW 13
4.2353E 06 1.0766E 09 3.7205E 09 5.7016E 08 -5.1247E 06 -2.3439E 08 -2.9084E 07 3.5902E 07 1.0596E 09 5.4343E 08
3.8875E 08 -3.4591E 08 2.8762E 08 1.0574E 08 8.3950E 07 7.1651E 07 4.8107E 07 -2.1459E 07 3.4168E 08 -5.7235E 07
2.4492E 08 5.3312E 07 1.3314E 08 3.1132E 08 -3.1265E 07 -1.2634E 07 7.7067E 07 -2.0088E 08 4.0173E 08 1.3269E 08
1.2769E 07 0.0

ROW 14
8.2936E 05 -1.7419E 09 1.3902E 09 3.4110E 08 -2.3996E 08 1.6935E 08 2.1725E 07 -2.3587E 08 3.3071E 08 2.5739E 08
-4.2843E 08 1.1549E 08 2.7556E 07 4.6454E 08 1.2184E 08 8.6084E 07 6.5494E 07 3.3472E 07 3.7435E 07 -2.4647E 08
7.0434E 06 2.2632E 08 5.5873E 07 4.4086E 07 -1.4417E 07 -1.1081E 06 -1.2139E 07 -1.1349E 07 5.1487E 08 8.7986E 07
8.7664E 06 0.0

ROW 15
1.3272E 06 4.4812E 08 1.4613E 09 2.0604E 08 -6.4239E 06 -5.7248E 07 -6.3341E 06 -2.4513E 07 6.2653E 07 1.9509E 08
-1.0133E 08 5.5067E 07 1.4316E 07 8.2611E 07 1.9066E 08 2.0259E 08 2.2751E 08 -1.1156E 08 -6.9942E 07 1.3169E 07
-3.4085E 07 2.3933E 07 -1.7353E 07 -6.1739E 07 3.0892E 07 2.2404E 07 1.4415E 07 7.8165E 07 -1.3923E 08 1.2055E 08
5.5955E 06 0.0

ROW 16
1.2299E 06 7.1250E 08 1.2387E 09 1.4070E 08 6.4185E 07 -1.1026E 08 -7.1329E 06 2.0057E 07 1.8007E 07 1.3647E 08
-1.6450E 07 3.8268E 07 1.0089E 07 4.4863E 07 1.9385E 08 2.1018E 08 2.3836E 08 -1.4701E 08 -8.6667E 07 3.4830E 07
-3.8782E 07 -2.2701E 06 -1.8510E 07 -7.0608E 07 3.7956E 07 2.5235E 07 1.2091E 07 9.0594E 07 -1.5723E 08 1.1923E 08
5.0889E 06 0.0

ROW 17
1.2508E 06 5.6646E 08 1.1427E 09 1.4429E 08 2.7722E 07 -5.8787E 07 -5.9805E 06 1.3589E 07 -6.9959E 07 1.4295E 08
-6.9563E 07 7.6070E 07 -1.0146E 07 1.8960E 06 2.0805E 08 2.2856E 08 2.6741E 08 -1.4945E 08 -1.2366E 08 6.0415E 07
-6.4553E 07 -1.2737E 07 -4.0098E 07 -1.0624E 08 4.2549E 07 2.9907E 07 7.8252E 06 1.1790E 08 -3.1619E 08 1.2233E 08
4.1974E 06 0.0

ROW 18
3.9619E 05 -1.6445E 09 7.4910E 08 2.4753E 08 -2.8497E 08 2.8377E 08 2.3683E 07 -2.0631E 06 2.7126E 08 2.8103E 08
-2.9130E 06 6.0654E 06 3.0098E 07 1.2769E 08 -8.8707E 07 -1.2173E 08 -1.5496E 08 2.0531E 08 1.4720E 08 -5.3826E 07
6.1550E 07 8.5722E 07 6.2753E 07 5.2263E 07 -4.2637E 07 -2.6498E 07 2.8490E 07 -1.1688E 08 1.5036E 08 -3.6756E 07
1.8373E 06 0.0

MATRIX * CZ * 32 BY 32 ANTISYMMETRIC MATH MODEL

ROW 19
-1.9215E 06 -3.6176E 08 -1.8762E 09 -2.1216E 08 -4.6191E 07 -2.0976E 04 -8.1948E 06 2.6167E 07 3.6278E 08 2.1272E 08
1.1385E 08 -2.5455E 08 1.9691E 08 4.8738E 07 -1.0030E 08 -1.1350E 08 -1.6160E 08 1.3352E 08 3.8031E 08 -2.0702E 07
2.7575E 08 1.3742E 08 1.7525E 08 1.5637E 08 3.4784E 07 1.1267E 07 -6.5445E 06 -1.4792E 08 2.0514E 08 -6.5565E 07
-2.0683E 06 0.0

ROW 20
6.7302E 04 3.1370E 08 4.0724E 08 4.0917E 06 8.1234E 07 -5.7455E 07 -7.6627E 06 4.2377E 07 3.6028E 06 6.2326E 07
1.2017E 08 -3.5132E 07 1.7074E 06 -8.5403E 07 1.9075E 06 1.7878E 07 8.2148E 06 -9.6732E 06 4.7016E 06 1.3626E 08
2.5266E 06 -1.1991E 08 1.2758E 07 -3.2698E 07 1.5369E 07 -2.5977E 06 3.2457E 07 -1.1629E 07 -2.5106E 07 9.4008E 06
1.9882E 06 0.0

ROW 21
-8.5908E 05 -9.5600E 07 -9.3949E 08 -1.3595E 08 7.3492E 06 7.5849E 06 -1.2065E 05 2.8262E 07 -8.4344E 07 -3.4080E 07
8.9960E 06 -2.9373E 07 2.1419E 07 -3.2400E 07 -2.6393E 07 -2.6370E 07 -3.0477E 07 2.9059E 07 7.9999E 07 1.6968E 07
9.1789E 07 5.3247E 07 5.0248E 07 1.6380E 07 2.3544E 07 1.0673E 07 2.6430E 07 -7.0633E 06 -6.3255E 07 -4.4099E 07
-6.6305E 06 0.0

ROW 22
-8.3332E 05 -3.1792E 08 -8.0104E 08 -1.2465E 08 1.3915E 07 3.7541E 07 3.3317E 06 -1.9759E 07 -1.4053E 08 -3.0409E 07
-1.1612E 08 4.0760E 07 -1.9396E 07 3.5549E 07 -1.6818E 07 -1.7741E 07 -2.0256E 07 2.9346E 07 6.9145E 06 -4.2250E 07
2.0343E 07 1.1131E 08 1.4753E 07 -6.3157E 07 1.0000E 07 7.7273E 06 -2.4615E 06 2.2341E 07 -8.0526E 07 -3.5183E 07
-6.1707E 06 0.0

ROW 23
-7.4522E 05 -1.5427E 08 -8.1974E 08 -1.1712E 08 8.6131E 06 4.0110E 07 6.1033E 06 -2.5703E 06 -1.3340E 08 -1.0304E 08
-3.1937E 07 2.8209E 07 -1.3040E 07 -5.8705E 06 -1.5545E 07 -1.4940E 07 -1.9395E 07 1.2817E 07 3.2571E 06 1.2384E 07
2.3079E 07 1.6305E 07 2.5153E 07 -6.9691E 06 2.0661E 07 9.3734E 06 1.5113E 06 2.0711E 07 6.2763E 06 -3.5256E 07
-6.7051E 06 0.0

ROW 24
-3.3660E 05 1.5940E 09 -7.2408E 08 -4.9648E 07 -8.4011E 07 6.7023E 07 1.0022E 07 -1.7246E 07 -1.1560E 08 -2.2024E 08
-8.5573E 06 3.5193E 07 -1.0570E 07 -2.8487E 07 -1.2875E 07 -2.4982E 07 -1.5409E 07 1.0097E 07 -1.2689E 07 -2.8357E 07
1.0491E 07 -1.5833E 07 9.8276E 06 1.8869E 08 -7.7020E 06 8.0454E 06 -2.0471E 07 2.4959E 07 3.7127E 07 -3.3940E 07
-7.5272E 06 0.0

ROW 25
-4.3968E 05 -3.3259E 08 -4.9537E 08 -6.6379E 07 -4.9647E 06 2.0909E 07 2.1545E 06 4.3351E 06 -4.3568E 07 -3.2788E 07
-8.2239E 06 -4.4426E 06 3.6327E 06 -1.0117E 07 -2.3361E 07 -2.4475E 07 -2.8239E 07 1.9386E 07 -6.1065E 06 6.9394E 06
9.7387E 05 -4.8607E 06 4.7055E 06 -1.0681E 07 1.5451E 07 9.5006E 06 -3.0645E 07 1.5196E 07 1.1404E 06 -2.9876E 07
-8.4831E 06 0.0

ROW 26
-2.5796E 05 -1.0138E 08 -2.6187E 08 -3.7455E 07 -4.5915E 06 1.8828E 07 1.9337E 06 -6.8432E 05 -4.6006E 07 -4.0764E 07
-6.8197E 06 7.0439E 06 -9.4218E 06 -1.3249E 07 -2.4928E 07 -2.6207E 07 -2.8053E 07 1.5930E 07 -6.9759E 06 -1.6029E 05
-4.5566E 06 -4.4200E 06 -1.2141E 06 1.5427E 06 2.7745E 06 4.4320E 06 -2.3139E 07 6.7319E 05 4.1228E 05 -2.1429E 07
-3.6125E 06 0.0

ROW 27
-2.0232E 05 -2.0164E 08 -1.2541E 08 -1.0848E 07 1.0418E 06 7.4352E 06 1.7046E 06 -5.5831E 06 -6.7418E 07 9.9324E 06
-4.3983E 07 5.0360E 07 -3.4541E 07 8.2374E 06 2.8691E 07 3.3728E 07 3.9563E 07 -2.8318E 07 -2.2278E 07 1.3244E 07
-2.0060E 07 -3.3954E 06 -1.0686E 07 -4.4255E 07 3.9393E 06 -7.9697E 06 9.3617E 07 6.8310E 07 -4.8581E 07 3.9057E 07
1.1234E 07 0.0

MATRIX * CZ * 32 BY 32 ANTISYMMETRIC MATH MODEL

ROW 28

1.0290E 05	-2.4283E 07	1.2384E 08	3.6032E 07	-2.8342E 07	-1.3091E 07	-4.5730E 06	2.7282E 06	2.6364E 08	5.7280E 07
1.1456E 08	-1.1977E 08	6.6281E 07	1.5144E 07	-5.3859E 07	-6.3156E 07	-7.8417E 07	3.4328E 07	4.6415E 07	-3.5701E 07
-1.1167E 06	-3.5531E 07	1.0138E 07	1.0194E 08	-2.3132E 06	-4.8032E 05	-2.2716E 07	2.3950E 07	1.8783E 08	-1.3313E 07
-7.2716E 06	0.0								

ROW 29

-6.0059E 05	-1.0419E 09	-8.1580E 08	-5.8753E 07	-6.0953E 07	1.4549E 07	1.6475E 06	4.8042E 07	-1.3658E 08	-3.3856E 08
8.1425E 06	4.2485E 07	-5.0436E 07	-4.4000E 07	-1.1852E 07	-1.8073E 07	-4.7867E 06	-3.9030E 07	-2.3519E 07	-4.1758E 07
2.6946E 06	-1.0483E 07	-1.1601E 06	1.9133E 07	6.0090E 06	9.8628E 05	-2.7912E 06	9.2829E 06	3.4059E 08	-6.4264E 05
9.1225E 06	0.0								

ROW 30

-1.7301E 06	-4.0956E 08	-1.5634E 09	-2.0107E 08	1.3830E 05	5.5961E 07	5.1220E 06	2.3852E 06	-1.5277E 08	-1.1105E 08
-1.9479E 07	2.9523E 07	-4.8575E 07	-1.9797E 07	-5.4643E 07	-5.2650E 07	-6.0055E 07	2.1347E 07	4.2173E 07	-3.1842E 06
1.8817E 07	1.5827E 07	1.8373E 07	-3.6402E 06	1.3660E 07	8.3978E 06	-2.1466E 07	-4.5481E 05	2.3501E 07	3.6850E 06
1.7499E 07	0.0								

ROW 31

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0								

ROW 32

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0								

MATRIX *STIF* 32 BY 32 ANTISYMMETRIC MATH MODEL

ROW 1

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0								

ROW 2

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0								

ROW 3

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0								

ROW 4

0.0	0.0	0.0	5.8025E 07	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0								

ROW 5

0.0	0.0	0.0	0.0	2.9195E 07	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0								

ROW 6

0.0	0.0	0.0	0.0	0.0	1.6799E 08	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0								

ROW 7

0.0	0.0	0.0	0.0	0.0	0.0	2.8305E 07	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0								

ROW 8

0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6914E 08	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0								

ROW 9

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0421E 08	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0								

MATRIX *STIF* 52 BY 52 ANTISYMMETRIC MATH MODEL

ROW 10
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 6.9827E 08
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0

ROW 11
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
1.9154E 08 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0

ROW 12
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 4.2670E 08 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0

ROW 13
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 2.1433E 08 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0

ROW 14
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 1.4193E 08 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0

ROW 15
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 4.7678E 07 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0

ROW 16
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 4.1550E 07 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0

ROW 17
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 4.9940E 07 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0

ROW 18
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 6.6237E 08 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0

MATRIX *STIF* 32 BY 32 ANTISYMMETRIC MATH MODEL

ROW 19
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.7924E 08 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0

ROW 20
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.6597E 08
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0

ROW 21
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
8.0513E 07 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0

ROW 22
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 1.8748E 08 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0

ROW 23
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 1.0752E 08 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0

ROW 24
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 5.2551E 08 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0

ROW 25
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 6.4531E 07 0.0 0.0 0.0 0.0 0.0
0.0 0.0

ROW 26
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 1.9521E 07 0.0 0.0 0.0 0.0
0.0 0.0

ROW 27
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 2.0858E 08 0.0 0.0 0.0
0.0 0.0

MATRIX *STIF* 32 BY 32 ANTISYMMETRIC MATH MODEL

ROW 28
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 6.8982E 07 0.0 0.0
0.0 0.0

ROW 29
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.7196E 09 0.0
0.0 0.0

ROW 30
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2.8302E 07
0.0 0.0

ROW 31
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
-1.0000E 00 0.0

ROW 32
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 -1.0000E 00

MATRIX * C3 * 32 BY 32 ANTISYMMETRIC MATH MODEL

ROW 1

0.0 -5.0765E 04 1.6285E 05 2.8720E 04 2.3471E 03 2.7005E 03 8.3095E 02 -8.3489E 02 1.7235E 04 9.3383E 03
7.8704E 03 1.3666E 04 -1.6993E 04 9.1526E 03 2.0163E 04 2.1620E 04 2.2794E 04 -2.7180E 04 2.4973E 04 -5.6423E 03
1.4241E 04 1.0207E 04 1.0594E 04 1.6542E 04 -4.1698E 02 1.5858E 03 2.1525E 04 -8.0666E 03 3.0746E 04 5.2249E
3.6410E 04 2.4912E 03

ROW 2

0.0 0.0 5.8794E 07 -4.3878E 07 6.5936E 07 -1.7256E 08 -1.1475E 07 9.7138E 07 -1.2672E 07 6.1952E 07
4.4352E 06 -1.8743E 07 -2.3679E 06 1.8334E 07 5.6097E 05 4.0037E 06 -2.0555E 05 -1.5083E 07 1.1568E 07 4.5044E 06
1.3204E 07 1.5855E 07 3.8164E 06 -8.6348E 07 9.9259E 06 9.4759E 05 1.0509E 07 -1.1550E 07 4.9591E 07 8.7343E 06
6.7757E 06 -2.4952E 05

ROW 3

0.0 0.0 9.1801E 07 2.3549E 07 1.3371E 06 -9.0969E 04 -3.3027E 05 -5.6740E 06 1.4590E 07 7.1590E 06
9.6065E 06 1.5486E 07 -1.2800E 07 8.7584E 06 1.6075E 07 1.8263E 07 2.0228E 07 -1.9506E 07 2.1198E 07 -5.2643E 06
1.3413E 07 8.7664E 06 9.6542E 06 1.5597E 07 -1.3607E 05 1.6991E 06 1.7052E 07 -6.6385E 06 2.7674E 07 4.3994E 07
3.2275E 07 -1.7233E 06

ROW 4

0.0 0.0 1.2009E 07 4.0230E 06 -1.5734E 06 5.0604E 06 3.6992E 05 -4.5606E 06 2.4633E 06 3.1710E 05
-8.8034E 05 2.1678E 06 -1.4340E 06 1.1864E 06 2.0469E 06 2.1289E 06 2.4539E 06 -1.3165E 06 3.1577E 06 -7.3854E 05
1.9746E 06 1.8644E 06 1.6621E 06 3.0520E 06 -1.7362E 05 2.3839E 05 1.9333E 06 -1.1795E 06 1.4084E 06 5.4257E 06
4.0486E 06 -7.0516E 03

ROW 5

0.0 0.0 1.1071E 06 -1.8297E 06 2.6948E 06 -8.3261E 06 -6.0544E 05 6.2696E 06 -1.0549E 06 8.2888E 05
3.7816E 06 -1.2685E 06 -2.1352E 05 -2.2177E 05 7.7174E 04 2.6402E 05 2.4960E 05 -1.8257E 06 -6.8904E 05 1.5867E 05
-2.1142E 05 -1.2196E 06 -5.7322E 05 -1.6487E 06 3.6623E 05 7.2262E 04 2.2677E 05 5.7676E 05 3.1914E 06 2.3152E 05
2.3983E 05 3.5992E 04

ROW 6

0.0 0.0 -8.8365E 06 2.9496E 05 -2.0389E 06 4.6762E 06 4.0266E 05 -3.3470E 06 -4.8449E 05 -3.5213E 06
-7.0649E 05 4.5704E 05 2.7985E 05 -9.1694E 05 -6.4329E 05 -9.0233E 05 -5.3658E 05 1.0553E 06 -3.4813E 06 1.4034E 04
-2.2757E 06 -1.7691E 06 -1.2390E 06 2.4326E 06 -4.3702E 05 -1.4333E 05 -1.3140E 06 1.8017E 06 -3.1314E 06 -2.2139E 06
-1.6741E 06 2.0734E 04

ROW 7

0.0 0.0 -6.0911E 05 -3.5525E 04 -8.8894E 04 3.2672E 05 -1.1083E 05 -1.4584E 05 -1.0431E 05 -2.2460E 05
-1.5626E 05 3.5441E 04 -1.4234E 04 -3.4255E 04 -1.1411E 05 -9.7174E 03 -6.2929E 04 1.8793E 05 -3.1623E 05 1.5251E 04
-2.9259E 05 -1.8513E 05 -1.7216E 05 -5.9208E 04 -1.7247E 04 -1.3734E 04 -1.3325E 05 2.4275E 05 -2.1392E 05 -2.1679E 05
-1.6420E 05 1.9363E 04

ROW 8

0.0 0.0 3.5381E 05 -3.0187E 04 6.9024E 04 -5.1658E 05 1.9375E 04 -1.2022E 05 4.1767E 04 9.3454E 05
-3.6216E 05 4.4577E 04 1.1350E 05 2.6495E 05 -5.1192E 04 -7.3536E 04 8.7916E 04 4.8608E 05 5.3752E 05 1.4293E 05
4.1097E 05 4.1319E 05 2.8046E 05 -4.9473E 05 5.8001E 04 3.4347E 03 2.0553E 05 -4.6208E 05 -4.1859E 05 1.2898E 05
6.0061E 04 2.8516E 04

ROW 9

0.0 0.0 1.2921E 07 2.8327E 06 1.9521E 05 -8.4096E 05 -1.2041E 05 1.0963E 05 3.4428E 06 1.8316E 06
2.5628E 06 -1.4583E 05 1.7869E 05 1.5371E 06 1.6454E 06 1.7059E 06 1.6215E 06 -1.2965E 06 8.0848E 06 -1.2803E 06
7.5026E 06 4.6364E 06 4.5577E 06 4.8259E 06 1.1508E 05 3.3558E 05 3.1628E 06 -6.0508E 06 6.6767E 06 5.7811E 06
4.2077E 06 2.6850E 04

MATRIX * C3 * 32 BY 32 ANTISYMMETRIC MATH MODEL

ROW 10

0.0	0.0	9.3231E 06	3.4017E 06	-1.3777E 06	4.6452E 06	6.6629E 05	-4.4661E 06	3.8679E 06	-2.5102E 06
-1.7219E 06	1.1013E 06	-1.9577E 05	2.5951E 06	1.5403E 06	1.3533E 06	1.1995E 06	-2.9611E 05	6.1931E 06	-1.6462E 06
5.3165E 06	4.8997E 06	3.9135E 06	3.8314E 06	-7.8741E 04	2.2659E 05	2.1697E 06	-4.4933E 06	5.0955E 06	4.7103E 06
3.4444E 06	3.8827E 04								

ROW 11

0.0	0.0	1.4494E 06	-6.1807E 05	1.2597E 06	-4.3910E 06	-4.6420E 05	3.7651E 06	-1.5948E 05	3.5302E 05
2.9839E 06	-9.0880E 05	1.3385E 05	-5.4406E 05	1.4792E 05	2.5078E 05	2.5980E 05	-1.1164E 06	7.3233E 05	2.2736E 05
1.0879E 06	-8.8077E 05	3.2821E 05	1.5639E 06	1.5039E 05	9.6830E 04	4.9360E 05	-5.7749E 05	1.7174E 06	6.2674E 05
4.8188E 05	1.4028E 04								

ROW 12

0.0	0.0	-2.8890E 06	-3.8062E 05	-9.2786E 05	3.0034E 06	2.3065E 05	-2.1510E 06	-9.7212E 05	-1.0164E 06
-2.2230E 06	-3.0289E 05	-5.0514E 05	-3.0716E 05	-3.3302E 05	-4.5938E 05	-3.6169E 05	9.6516E 05	-3.0945E 06	2.8910E 05
-2.9977E 06	-1.3258E 06	-1.6685E 06	-1.4355E 06	-1.0227E 05	-7.9131E 04	-1.3572E 06	2.5275E 06	-2.8999E 06	-1.7440E 06
-1.0090E 06	3.4944E 05								

ROW 13

0.0	0.0	5.6294E 06	1.0825E 06	1.4398E 05	-4.1728E 05	-4.0600E 04	6.9481E 04	1.0824E 06	6.4065E 05
6.2094E 05	-6.9176E 04	-3.1323E 05	5.5537E 05	7.0804E 05	7.4436E 05	7.4845E 05	-6.1089E 05	2.4321E 06	-3.2513E 05
2.1695E 06	1.2857E 06	1.3353E 06	1.4061E 06	5.7987E 04	1.2417E 05	1.1594E 06	-1.6083E 06	2.0173E 06	2.1968E 06
1.0951E 06	8.6040E 04								

ROW 14

0.0	0.0	1.3382E 06	8.6967E 05	-5.3280E 05	2.1122E 06	1.4611E 05	-1.7549E 06	7.9392E 05	-5.3125E 05
-1.1482E 06	5.7001E 05	-1.6967E 05	6.2675E 05	5.4226E 05	4.8029E 05	5.1671E 05	-2.2468E 05	5.7979E 05	-8.3863E 05
4.2626E 05	1.2174E 06	4.9021E 05	7.4555E 05	1.0138E 04	1.4362E 05	3.3044E 04	-6.2720E 04	2.0955E 06	1.1904E 06
6.8758E 05	1.0489E 04								

ROW 15

0.0	0.0	2.0628E 06	5.1315E 05	9.4433E 03	1.3516E 05	-1.1542E 04	-2.8571E 05	2.6610E 05	3.5704E 05
-5.5441E 04	4.1150E 05	-2.8594E 05	3.5230E 05	7.4854E 05	8.4381E 05	9.4533E 05	-7.1790E 05	5.7495E 04	-8.0361E 04
-2.4040E 04	1.8023E 05	1.5460E 05	1.9900E 05	3.1894E 05	3.1864E 05	-3.0323E 04	6.7314E 05	2.9259E 05	1.6114E 06
8.0795E 05	-1.0029E 04								

ROW 16

0.0	0.0	1.9271E 06	3.8367E 05	1.1187E 05	-2.6280E 05	-6.8158E 02	4.5794E 04	1.7248E 05	3.8455E 05
1.9004E 05	2.7513E 05	-2.7634E 05	2.7062E 05	7.6458E 05	8.2267E 05	9.5275E 05	-8.2907E 05	-6.0855E 04	-3.1741E 04
-8.5067E 04	1.1674E 04	9.3710E 04	2.2401E 05	3.4976E 05	3.3509E 05	-8.4594E 04	7.7166E 05	3.3030E 05	1.5659E 06
7.8841E 05	5.2812E 03								

ROW 17

0.0	0.0	1.9512E 06	4.1428E 05	3.9923E 04	-1.1225E 04	-2.9996E 03	-1.7097E 04	1.0713E 05	4.2792E 05
8.4255E 04	3.4302E 05	-3.0496E 05	2.3158E 05	7.8927E 05	8.8365E 05	9.9916E 05	-8.2699E 05	-2.4599E 05	7.2202E 04
-2.8642E 05	-1.0888E 05	-1.2818E 04	1.0509E 05	3.7832E 05	3.6176E 05	-1.7730E 05	9.8083E 05	-2.5525E 05	1.5833E 06
7.7509E 05	-4.3614E 03								

ROW 18

0.0	0.0	4.1713E 05	4.9626E 05	-5.0728E 05	1.7123E 06	2.2151E 05	-1.2932E 06	4.4588E 05	-3.6134E 05
-7.9467E 05	4.0000E 05	4.3628E 04	1.2753E 05	-2.1829E 05	-3.3120E 05	-3.9614E 05	4.3927E 05	7.1982E 05	-1.9048E 05
4.9133E 05	6.1763E 05	3.5482E 05	2.5810E 05	-2.9434E 05	-2.2176E 05	4.3462E 05	-8.9190E 05	1.5356E 05	-3.2911E 05
-1.5541E 05	-5.1308E 04								

MATRIX * C3 * 32 BY 32

ROW 19

0.0	0.0	-2.7059E 06	-5.7031E 05	-2.6523E 04	-1.4985E 05	-2.3455E 03	1.8890E 05	1.3686E 05	1.4593E 05
-4.1211E 04	-7.0616E 05	8.5293E 05	1.2457E 03	-4.4196E 05	-5.3450E 05	-6.7874E 05	8.1010E 05	1.0414E 06	-1.8122E 04
1.3844E 06	8.8147E 05	8.1190E 05	3.6919E 05	1.1450E 05	5.5472E 03	2.2121E 05	-1.0639E 06	1.9510E 05	-9.2510E 05
-2.2315E 05	9.2354E 03								

ROW 20

0.0	0.0	1.3988E 05	3.1889E 04	9.1878E 04	-3.1339E 05	7.8290E 03	2.0384E 05	-3.7488E 04	2.2955E 05
4.0702E 05	2.9964E 04	-5.6403E 04	-9.9154E 04	5.0302E 04	3.9496E 04	7.4878E 04	-1.4364E 05	3.0630E 04	1.9179E 05
3.4366E 04	-4.0649E 05	1.7488E 04	9.4166E 04	4.1579E 04	-6.8772E 03	1.4200E 05	-3.8680E 04	2.6988E 05	1.2523E 05
7.3713E 04	4.5256E 04								

ROW 21

0.0	0.0	-1.1546E 06	-2.7210E 05	-1.0044E 03	-8.0732E 04	-4.2125E 03	1.2990E 05	-1.3936E 05	-2.5315E 04
-3.6895E 04	-1.6728E 05	2.0217E 05	-9.1304E 04	-1.5720E 05	-1.7124E 05	-1.9682E 05	2.0391E 05	-8.7371E 04	8.0974E 04
6.6193E 04	3.1113E 04	3.9812E 04	-5.3164E 04	6.0328E 04	-1.8918E 02	1.3896E 05	1.7757E 05	-3.9119E 05	-4.7038E 05
-1.6887E 05	-6.4330E 02								

ROW 22

0.0	0.0	-1.1093E 06	-1.8574E 05	-5.5135E 04	1.0031E 05	-1.0786E 04	3.3169E 04	-1.4202E 05	-2.1639E 05
-7.4063E 04	-8.0188E 04	1.0253E 05	-7.8939E 04	-1.2760E 05	-1.4025E 05	-1.4828E 05	1.4519E 05	-2.8392E 05	-4.6387E 04
-1.8113E 05	-2.0423E 04	-9.6581E 04	7.4109E 04	-7.3419E 03	-1.1716E 04	-3.9534E 04	2.9565E 05	-3.0678E 05	-4.1451E 05
-1.7863E 05	5.1978E 04								

ROW 23

0.0	0.0	-9.7987E 05	-2.2185E 05	-4.0860E 03	-1.3943E 04	2.7434E 02	3.7981E 04	-1.6451E 05	-6.2308E 04
-7.0219E 04	-1.0721E 05	9.5901E 04	-9.0516E 04	-1.2324E 05	-1.4164E 05	-1.4669E 05	1.3480E 05	-2.7771E 05	4.9476E 04
-1.6620E 05	-1.2879E 05	-1.0516E 05	-1.5281E 05	3.7111E 04	-4.4505E 03	-3.8845E 04	2.5786E 05	-7.5645E 04	-4.0806E 05
-2.0279E 05	-6.0765E 04								

ROW 24

0.0	0.0	-3.3529E 05	-5.4085E 05	4.6754E 05	-9.9117E 05	-2.6629E 04	4.3587E 05	-2.7131E 05	6.6520E 05
-5.5957E 05	-1.3930E 05	1.5090E 04	2.1067E 05	-1.3530E 05	-1.0793E 05	-1.8886E 05	1.7152E 05	-2.4031E 05	1.3003E 05
-2.0939E 05	2.4227E 05	-1.3975E 05	-1.6644E 06	1.3238E 05	-3.9555E 03	-4.7275E 04	1.7161E 05	-1.4654E 05	-3.6895E 05
-2.2427E 05	5.9954E 04								

ROW 25

0.0	0.0	-5.9314E 05	-7.5330E 04	-7.6000E 04	1.6966E 05	8.2141E 03	-6.5574E 04	-5.0530E 04	-1.4253E 05
-2.6656E 04	-6.8107E 04	7.2761E 04	-8.4108E 04	-1.1968E 05	-1.3809E 05	-1.4747E 05	1.4408E 05	-7.7982E 04	1.6094E 04
-4.0460E 04	-7.2511E 04	-3.9307E 04	7.4607E 04	-2.6654E 04	-1.4968E 04	-1.3715E 05	-3.8633E 04	-1.1802E 05	-2.9796E 05
-2.8694E 05	1.9598E 04								

ROW 26

0.0	0.0	-3.5521E 05	-7.4062E 04	-1.2984E 04	3.0296E 04	3.0454E 03	7.3124E 02	-6.3814E 04	-8.0188E 04
-3.5650E 04	-2.8419E 04	2.2102E 04	-5.9106E 04	-1.1998E 05	-1.3047E 05	-1.4368E 05	1.1314E 05	-9.1249E 04	1.7571E 04
-8.8377E 04	-7.4531E 04	-7.4067E 04	-7.5322E 04	-4.7559E 04	-4.2067E 04	-6.8809E 04	-4.0953E 04	-1.0354E 05	-2.7387E 05
-1.6425E 05	4.2228E 02								

ROW 27

0.0	0.0	-3.1139E 05	-2.8766E 04	-4.8054E 04	1.5513E 05	7.9090E 03	-9.1662E 04	-5.6965E 04	-5.1837E 04
-1.0798E 05	1.5321E 04	8.8162E 03	-1.0974E 04	4.4208E 04	4.5577E 04	5.9364E 04	-1.7067E 04	-2.1452E 05	1.7039E 04
-1.7331E 05	-7.7246E 04	-8.2568E 04	-3.5635E 04	4.9895E 04	3.4178E 04	-5.3981E 04	2.8490E 05	-1.4423E 05	3.4733E 03
3.1836E 05	1.3993E 04								

MATRIX * C3 * 32 BY 32 ANTISYMMETRIC MATH MODEL

ROW 28

0.0	0.0	5.0001E 04	-3.2843E 03	1.0693E 04	-8.104. 04	-3.0403E 03	5.2195E 04	1.6711E 05	-1.3331E 04
1.2023E 05	-1.4627E 05	1.4509E 05	1.6064E 04	-1.9001E 05	-2.190.E 05	-2.7512E 05	2.3053E 05	5.7338E 05	-7.5036E 04
5.2401E 05	2.7671E 05	2.6694E 05	2.0208E 05	-9.7749E 04	-4.9355E 04	-1.4962E 05	-8.6103E 05	3.9192E 05	-2.1140E 05
-3.3625E 05	-6.0222E 03								

ROW 29

0.0	0.0	-9.0106E 05	2.1294E 04	-4.0379E 05	9.1935E 05	8.5625E 04	-5.5757E 05	-1.5171E 05	-3.0287E 05
-2.4475E 05	2.8452E 04	9.1693E 04	-2.1172E 05	-1.7310E 05	-1.7812E 05	-1.6129E 05	3.7182E 05	-3.1526E 05	3.2249E 05
-3.1786E 05	-3.1392E 05	-1.7077E 05	1.7931E 05	-4.6531E 04	-2.0705E 04	-1.4783E 05	2.3850E 05	-2.0656E 06	-4.8712E 05
1.2115E 05	1.4697E 04								

ROW 30

0.0	0.0	-2.3753E 06	-5.2822E 05	-3.0520E 04	-1.0363E 04	4.8967E 01	1.2884E 05	-2.9656E 05	-2.0511E 05
-1.7091E 05	-3.0987E 05	3.2714E 05	-2.0804E 05	-4.4261E 05	-4.9047E 05	-5.5128E 05	5.[illegible]E 05	-3.5621E 05	9.3748E 04
-1.9031E 05	-1.5065E 05	-1.6466E 05	-2.9207E 05	-3.0236E 04	-5.6989E 04	-4.1990E 05	-4.5815E 04	-5.0780E 05	-1.1125E 06
1.6941E 05	-1.7694E 02								

ROW 31

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0								

ROW 32

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0								

MATRIX * D1 * 32 BY 32 ANTISYMMETRIC MATH MODEL

ROW 1
-3.3360E 00 -4.2796E 04 -6.5017E 03 -1.4681E 03 1.8547E 03 -6.3543E 02 -1.8255E 02 2.0454E 02 -2.0303E 02 1.6997E 03
3.9509E 02 5.5473E 01 -3.4260E 02 1.1738E 03 -9.8631E 01 1.1885E 02 -1.1849E 02 -4.3880E 01 2.1727E 01 2.0764E 02
-4.6996E 01 2.7112E 02 1.4331E 02 -2.1395E 03 2.1637E 02 5.6733E 00 5.9662E 01 4.5231E 01 8.1798E 02 1.5028E 02
1.1345E 02 0.0

ROW 2
1.0487E 03 -1.5062E 07 -1.0426E 06 -7.2670E 05 9.4146E 05 -1.1299E 06 -1.0331E 05 1.0730E 06 -3.8754E 05 1.0652E 06
2.0614E 04 -4.7928E 04 -1.1105E 05 9.3713E 05 -8.9007E 04 -3.3822E 04 -3.1167E 05 1.4397E 04 1.2261E 05 3.3062E 05
8.4930E 04 2.4700E 05 1.7428E 05 -1.3525E 06 9.3539E 04 -2.1620E 04 5.9677E 04 -2.2093E 05 1.2102E 06 -1.8633E 05
-6.0240E 04 0.0

ROW 3
-1.7013E 03 -3.4582E 07 -5.2021E 06 -1.2725E 06 1.5174E 06 -5.4443E 05 -1.4920E 05 1.8208E 05 -2.2991E 05 1.3818E 06
2.4953E 05 -9.8400E 04 -3.2264E 05 9.2837E 05 -7.7341E 04 8.8997E 04 -1.0289E 05 -3.2708E 04 1.7921E 04 1.6877E 05
-3.7333E 04 2.4688E 05 1.1836E 05 -1.8005E 06 1.8840E 05 1.3515E 04 4.7143E 04 4.7228E 04 5.9006E 05 1.3016E 05
1.1188E 05 0.0

ROW 4
-3.1324E 02 -4.6133E 06 -5.2622E 05 -1.6608E 05 2.1876E 05 -9.4128E 03 -1.1403E 04 -3.1208E 04 -2.8071E 04 1.8472E 05
6.2233E 04 -4.2631E 03 -3.8356E 04 1.4339E 05 -9.2870E 03 1.3412E 04 -1.8567E 04 -5.5703E 03 1.2184E 03 3.7425E 04
-1.0574E 04 2.7990E 04 2.0707E 04 -2.0954E 05 2.1719E 04 1.4760E 03 5.0798E 03 6.6686E 03 6.6180E 04 1.5073E 04
1.2485E 04 0.0

ROW 5
1.2734E 02 6.3489E 05 -1.5010E 05 2.0235E 04 -5.2922E 04 -1.0799E 05 -1.2916E 04 9.2427E 04 -1.5206E 03 -9.7350E 03
-6.3939E 04 -1.8510E 03 -1.5488E 00 -5.1463E 04 -1.3369E 03 -2.9844E 03 1.0343E 04 4.0340E 03 2.4850E 02 -2.4381E 04
8.4421E 03 6.0187E 03 -1.2744E 04 -3.5423E 04 3.0629E 03 4.2031E 02 2.2294E 03 -3.8525E 02 -8.8235E 03 1.9983E 03
1.5309E 03 0.0

ROW 6
7.1703E 01 2.6919E 06 -1.2441E 05 1.0977E 05 -1.6914E 05 -1.5817E 04 3.0627E 03 2.2755E 03 3.8922E 04 -1.4108E 05
-6.9174E 04 -4.4155E 03 2.3333E 04 -1.5703E 05 5.8076E 03 -8.0914E 03 3.2935E 04 2.6796E 03 -3.7830E 03 -5.2444E 04
8.1743E 03 -1.2294E 04 -2.8752E 04 1.0107E 05 -7.9078E 03 1.4812E 03 -3.3164E 03 8.1222E 03 -1.3142E 05 7.1934E 03
1.2282E 03 0.0

ROW 7
1.7045E 01 3.4198E 05 3.8305E 03 1.1794E 04 -1.9636E 04 -1.0252E 04 -1.0132E 03 4.6072E 03 3.9648E 03 -1.3157E 04
-1.2743E 04 -7.5903E 02 2.9034E 03 -2.0216E 04 7.4268E 02 -1.7416E 03 4.2884E 03 3.9060E 02 -1.1225E 02 -6.8047E 03
1.5113E 03 9.9375E 01 -3.9076E 03 5.7119E 03 -4.7870E 02 1.5194E 02 -8.3934E 01 4.1878E 02 -1.8494E 04 5.5171E 02
5.0457E 01 0.0

ROW 8
3.1308E 01 -4.4363E 05 3.0746E 04 -2.1037E 04 3.7477E 04 1.9676E 04 1.9791E 03 -1.5745E 04 -6.8623E 03 2.4551E 04
2.3293E 04 2.6458E 03 -3.9198E 03 3.7773E 04 5.4944E 02 3.1040E 03 -8.9324E 03 -3.7039E 03 1.5030E 03 1.4089E 04
-2.1986E 03 8.1969E 02 6.1938E 03 -5.0799E 03 -4.7125E 01 -6.3216E 02 6.9778E 02 -2.8266E 03 3.1087E 04 -1.7494E 03
-5.4145E 02 0.0

ROW 9
-2.9340E 02 -9.3694E 06 -2.6526E 05 -3.0568E 05 5.0979E 05 3.2557E 05 2.2730E 04 -1.5865E 05 -8.7659E 04 3.1456E 05
3.6468E 05 2.1419E 04 -7.4150E 04 5.0719E 05 -1.0222E 04 3.7500E 04 -1.0406E 05 -3.6929E 04 2.4855E 03 1.7085E 05
-4.2026E 04 -3.4140E 03 1.0039E 05 -1.3199E 05 1.3233E 04 -2.3499E 03 6.3856E 02 -3.7135E 03 4.4815E 05 -3.5599E 03
5.3019E 03 0.0

MATRIX * D1 * 32 BY 32 | ANTISYMMETRIC MATH MODEL

ROW, 10
-2.6123E 02 -6.9841E 06 -1.6493E 05 -2.4793E 05 4.1431E 05 2.4435E 05 2.1748E 04 -1.5269E 05 -6.5500E 04 2.6887E 05
2.5843E 05 1.0330E 04 -5.4354E 04 3.7445E 05 -7.9375E 03 2.7462E 04 -7.4683E 04 -2.2757E 04 2.8885E 03 1.3244E 05
-3.2204E 04 6.1750E 03 7.4522E 04 -1.2363E 05 1.0939E 04 -1.7269E 03 1.7732E 03 -3.8785E 03 2.9792E 05 -2.8542E 03
3.7689E 03 0.0

ROW 11
1.7715E 01 -1.0217E 06 -9.4162E 04 -1.8831E 04 2.7794E 04 1.4393E 04 -2.6384E 02 1.9046E 04 -7.9846E 03 6.8103E 03
3.8060E 04 2.8300E 03 -9.1936E 03 4.2421E 04 -1.5430E 03 3.9818E 03 -9.1441E 03 -7.1139E 03 -1.4662E 03 8.7762E 03
-2.9527E 03 -3.7911E 03 7.1466E 03 -9.4380E 03 1.6989E 03 2.2171E 02 -4.3066E 02 2.0874E 03 6.7220E 04 1.8006E 03
1.9052E 03 0.0

ROW 12
3.3324E 01 3.6390E 06 1.2138E 05 1.1214E 05 -1.9003E 05 -1.4581E 05 -1.0147E 04 5.5467E 04 3.3990E 04 -1.0380E 05
-1.5990E 05 -8.9685E 03 3.1094E 04 -2.0863E 05 2.2765E 03 -1.5649E 04 4.3541E 04 1.7482E 04 -2.4075E 03 -6.6440E 04
1.5153E 04 7.6918E 03 -4.3215E 04 2.0406E 04 -2.6384E 03 1.3848E 03 4.0975E 02 3.1982E 03 -2.1589E 05 1.2264E 03
-2.6355E 03 0.0

ROW 13
-1.2895E 02 -2.9976E 06 -1.7148E 05 -1.0079E 05 1.5395E 05 7.3571E 04 3.0723E 03 -3.6914E 04 -2.6122E 04 9.9460E 04
9.8895E 04 3.2100E 03 -2.3708E 04 1.4473E 05 -4.9401E 03 9.8040E 03 -2.9378E 04 -9.7979E 03 1.0327E 03 4.4396E 04
-1.1087E 04 2.6373E 03 2.7992E 04 -6.2231E 04 6.5403E 03 -4.6222E 02 2.3634E 02 -1.0045E 03 1.2937E 05 3.1844E 01
2.5140E 03 0.0

ROW 14
-4.5029E 01 -5.2264E 05 -7.2555E 04 -3.3307E 04 4.6775E 04 -2.3757E 04 -2.3940E 02 2.1192E 03 -6.6573E 03 4.4208E 04
-7.5890E 03 -4.7204E 03 -6.5112E 03 1.0605E 04 -2.0269E 03 1.5562E 03 -1.5841E 02 6.2122E 02 9.0810E 02 8.3550E 03
-1.3858E 03 1.1125E 04 3.2416E 02 -6.1871E 04 5.2346E 03 7.5420E 02 2.7527E 03 1.0252E 03 -2.4485E 04 4.0795E 03
2.9884E 03 0.0

ROW 15
-3.7820E 01 2.3602E 05 -1.3419E 05 -7.3456E 03 -1.3037E 04 -1.1417E 05 -1.3345E 04 4.6195E 04 -6.5907E 03 3.9682E 04
-8.2755E 04 -1.5597E 03 -3.0798E 03 -4.9291E 04 -3.2347E 03 -2.5756E 03 1.3442E 04 1.1538E 04 2.1941E 03 -1.3244E 04
5.4365E 03 2.0705E 04 -1.5408E 04 -9.6926E 04 7.9841E 03 1.7353E 03 5.2259E 03 2.1492E 03 -8.8862E 04 7.9705E 03
5.2322E 03 0.0

ROW 16
-3.0049E 01 4.1419E 05 -1.2945E 05 -1.2087E 03 -2.3608E 04 -1.2419E 05 -1.4285E 04 5.2626E 04 -6.1346E 03 3.6075E 04
-9.2655E 04 -1.3125E 03 -2.0705E 03 -5.9107E 04 -3.1545E 03 -3.1476E 03 1.5456E 04 1.2761E 04 2.0292E 03 -1.6447E 04
6.2356E 03 2.1056E 04 -1.7693E 04 -9.6728E 04 7.8455E 03 1.8441E 03 5.3905E 03 2.4261E 03 -9.7168E 04 8.1893E 03
5.2366E 03 0.0

ROW 17
-3.9080E 01 6.6591E 05 -1.3037E 05 6.6782E 03 -3.8673E 04 -1.4197E 05 -1.6915E 04 5.8714E 04 -4.8152E 03 3.1961E 04
-1.0955E 05 -9.4473E 02 -2.9556E 02 -7.5802E 04 -3.1823E 03 -4.2225E 03 1.9230E 04 1.5371E 04 2.2116E 03 -2.1407E 04
7.6327E 03 2.2770E 04 -2.1701E 04 -1.0148E 05 8.1672E 03 2.0611E 03 5.8589E 03 2.8774E 03 -1.1725E 05 8.9701E 03
5.5073E 03 0.0

ROW 18
-4.1916E 01 -1.1684E 06 2.1705E 04 -3.1878E 04 6.4997E 04 1.0554E 05 1.1247E 04 -5.5365E 04 -1.0663E 03 1.1730E 04
8.7225E 04 1.3089E 03 -5.1582E 03 7.8380E 04 7.1341E 02 4.6808E 03 -1.7128E 04 -1.0223E 04 -8.1428E 02 2.2316E 04
-7.1640E 03 -1.1486E 04 1.9469E 04 4.1435E 04 -2.7983E 03 -1.3912E 03 -3.4156E 03 -2.0862E 03 9.0443E 04 -4.6522E 03
-2.3602E 03 0.0

MATRIX * D1 * 32 BY 32 ANTISYMMETRIC MATH MODEL

ROW 19
1.0341E 02 -4.4206E 05 1.8901E 05 -1.1387E 04 4.8103E 04 1.0367E 05 1.3637E 04 -4.8104E 04 -8.9718E 03 1.6621E 04
6.8011E 04 6.3524E 03 -3.1913E 03 7.4131E 04 1.3130E 03 3.6176E 03 -2.0261E 04 -4.6743E 03 -1.8180E 03 3.1578E 04
-8.0845E 03 -1.1538E 04 1.9084E 04 5.1536E 04 -5.1739E 03 -1.3514E 03 -2.8775E 03 -4.9220E 03 6.4286E 04 -7.9373E 03
-4.2943E 03 0.0

ROW 20
1.3145E 01 -1.0266E 05 -2.8052E 04 -1.8890E 03 -6.3763E 02 -2.3543E 03 7.5381E 02 5.2153E 02 -8.7800E 02 6.3084E 03
-3.3206E 03 9.7594E 02 -1.1357E 03 1.9119E 03 1.1601E 01 9.8873E 01 4.0604E 02 4.1639E 02 1.3455E 02 -3.0303E 03
4.4168E 02 1.0643E 03 -5.6037E 01 -8.8838E 02 5.2744E 01 2.2428E 01 6.4656E 01 3.5553E 01 4.4765E 03 6.5652E 02
5.8589E 02 0.0

ROW 21
5.8703E 01 3.7977E 05 2.5783E 04 1.1442E 04 -1.5787E 04 1.5544E 02 7.0543E 02 7.6120E 02 3.2030E 03 -7.8908E 03
-8.7782E 03 -4.5364E 02 2.3525E 03 -1.2646E 04 1.2483E 02 -1.8270E 03 1.0188E 03 2.1716E 03 -1.5074E 03 -3.9998E 03
5.6166E 02 -1.4407E 03 -1.2027E 03 9.7995E 03 -6.6574E 02 -1.7100E 02 -1.0960E 03 -1.5384E 03 -1.7316E 04 -1.4146E 03
-1.0378E 03 0.0

ROW 22
4.7522E 01 5.1968E 05 1.8449E 04 1.4592E 04 -2.2615E 04 -1.0500E 04 -8.2092E 02 5.4510E 03 3.8154E 03 -1.0522E 04
-1.9211E 04 -1.0007E 03 3.1857E 03 -2.3467E 04 4.8434E 02 -1.8266E 03 4.0858E 03 3.0248E 03 -1.0687E 03 -6.9743E 03
1.4454E 03 -1.2112E 03 -3.6379E 03 9.0688E 03 -7.1626E 02 -1.7762E 01 -4.8515E 02 -5.9213E 02 -2.3368E 04 -4.3694E 02
-6.2710E 02 0.0

ROW 23
3.4895E 01 4.5055E 05 2.1245E 04 1.3794E 04 -2.1438E 04 -8.5670E 03 7.0398E 02 4.7910E 03 3.8522E 03 -1.3063E 04
-1.3789E 04 -1.1708E 03 3.1000E 03 -2.0082E 04 3.8165E 02 -2.0201E 03 3.3360E 03 1.7209E 03 -7.3393E 02 -6.6832E 03
1.3998E 03 -2.1125E 02 -3.5107E 03 8.1114E 03 -7.4413E 02 1.2861E 01 -5.0257E 02 -6.4403E 02 -2.2044E 04 -4.9247E 02
-6.0039E 02 0.0

ROW 24
6.6310E-01 1.4372E 05 1.2049E 04 6.5983E 03 -1.2512E 04 -1.2099E 04 1.0994E 03 1.2537E 04 3.8023E 03 -2.4018E 04
4.5304E 03 -4.2203E 03 3.4773E 03 -1.0628E 04 -1.1498E 03 -3.4371E 03 -7.0964E 02 -2.6914E 03 1.4998E 03 -2.8411E 03
2.7234E 03 2.4650E 03 -1.5400E 03 -6.6933E 03 6.2130E 02 3.3188E 01 -2.7349E 02 -2.7278E 03 -1.2179E 04 -2.2280E 03
-9.0123E 02 0.0

ROW 25
-1.6687E 00 1.1440E 05 3.3715E 04 4.9698E 03 -4.1518E 03 1.4704E 04 2.0014E 03 -6.7987E 03 4.3747E 02 -9.5803E 03
7.2271E 03 9.0698E 02 1.3256E 03 1.9173E 03 6.2128E 02 -5.8105E 00 -9.7706E 02 -9.1748E 02 -1.4592E 02 8.9547E 02
-6.2711E 02 -3.2684E 03 1.1283E 03 1.8498E 04 -1.8026E 03 -2.1130E 02 -6.2678E 02 -1.6345E 02 8.7458E 03 -1.0102E 03
-8.0311E 02 0.0

ROW 26
-3.9406E-01 4.1189E 04 1.7034E 04 3.2934E 03 -2.8077E 03 1.3609E 04 1.6945E 03 -5.2456E 03 1.3[illegible]E 03 -1.0354E 04
9.4709E 03 1.8366E 02 1.0186E 03 2.7911E 03 5.1436E 02 -4.2500E 00 -1.0510E 03 -1.5928E 03 -7.01[illegible]E 01 3.5878E 02
-3.1706E 02 -3.1176E 03 1.3436E 03 1.6547E 04 -1.4255E 03 -2.5017E 02 -6.6613E 02 -1.4678E 02 1.2116E 04 -9.2159E 02
-6.5929E 02 0.0

ROW 27
2.6205E 01 2.7426E 05 6.2938E 03 7.3490E 03 -1.1641E 04 -2.0237E 04 -2.0151E 03 7.5334E 03 1.5762E 03 7.0998E 03
-2.2495E 04 -8.1103E 02 1.2755E 03 -1.8296E 04 3.6647E 02 -5.9938E 02 4.7383E 03 3.5577E 03 -8.6588E 02 -5.1619E 03
1.1504E 03 3.3288E 03 -4.1321E 03 -1.4862E 04 1.3118E 03 2.8420E 02 3.4463E 02 -5.6969E 02 -3.5854E 04 8.8050E 02
2.3430E 02 0.0

MATRIX * D1 * 32 BY 32 ANTISYMMETRIC MATH MODEL

ROW 28
-4.9969E 01 -9.4534E 05 6.4374E 04 -2.2880E 04 5.2172E 04 8.6419E 04 9.0523E 03 -3.8133E 04 -6.4482E 03 4.1014E 03
7.5687E 04 3.8751E 03 -4.6952E 03 7.1113E 04 1.0124E 03 4.9503E 03 -1.6004E 04 -9.9064E 03 3.6469E 01 2.3173E 04
-6.3094E 03 -1.0659E 04 1.6719E 04 3.9472E 04 -3.3662E 03 -1.1156E 03 -2.1538E 03 -1.9429E 03 8.9774E 04 -3.9944E 03
-2.0465E 03 0.0

ROW 29
1.5223E 00 4.7059E 05 5.3028E 04 1.4388E 04 -1.8274E 04 -2.5453E 03 1.3151E 03 -4.3108E 03 8.2038E 03 -4.2934E 04
4.0643E 03 -1.0199E 03 3.8000E 03 -1.2564E 04 1.5199E 03 -6.7362E 02 2.7164E 03 -3.6023E 03 -1.8191E 03 -4.9334E 03
-6.3075E 02 -1.1135E 03 -3.2712E 03 1.3527E 04 -1.1615E 03 1.6708E 01 -8.2221E 02 1.2989E 03 -2.3428E 04 2.6367E 00
-8.1328E 02 0.0

ROW 30
4.9019E 01 5.0569E 05 1.2729E 05 2.2363E 04 -2.0302E 04 3.7653E 04 5.9779E 03 -1.4805E 04 5.0058E 03 -3.1114E 04
1.6923E 04 1.6587E 03 5.8566E 03 -9.1294E 02 2.5827E 03 -2.7125E 02 -1.6279E 03 -2.5522E 03 -1.2944E 03 1.9806E 03
-1.3024E 03 -9.3062E 03 2.0416E 03 5.3691E 04 -5.0762E 03 -7.3310E 02 -2.0235E 03 -9.7574E 02 1.4240E 04 -4.2221E 03
-3.0365E 03 0.0

ROW 31
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0

ROW 32
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0

MATRIX * D2 * 32 BY 32 ANTISYMMETRIC MATH MODEL

ROW 1
1.4815E 02 5.6168E 04 9.0305E 04 5.1522E 02 1.0778E 04 -2.3658E 04 -1.8647E 03 6.8243E 03 8.4494E 02 3.4922E 04
-1.9170E 04 -3.8027E 03 3.1987E 03 3.4534E 03 -1.0042E 03 -3.6391E 02 -2.1189E 03 7.8873E 03 -2.8605E 03 7.9790E 03
-1.9231E 03 5.0981E 03 -2.1452E 03 -3.1497E 04 1.0992E 03 -2.3626E 02 -2.1623E 02 -1.2863E 03 -2.6741E 04 -6.6183E 03
-4.9973E 03 0.0

ROW 2
6.0374E 04 3.5990E 08 -1.4246E 07 1.4542E 06 -2.6066E 06 3.0152E 06 -2.7676E 05 -1.0072E 07 1.3472E 06 -7.7162E 05
-1.5088E 06 5.5706E 05 8.1226E 05 -6.2827E 06 -1.6902E 05 6.2834E 05 1.7683E 06 3.4365E 06 8.5536E 05 1.0388E 06
1.7036E 05 -7.2377E 05 -1.5422E 06 9.4177E 06 -1.5042E 06 3.2747E 05 -8.4445E 05 1.0812E 06 -2.1734E 07 9.3132E 05
1.7217E 05 0.0

ROW 3
9.7950E 04 4.5062E 07 7.2544E 07 1.1825E 06 8.5049E 06 -1.9080E 07 -1.4916E 06 5.5423E 06 1.1913E 06 2.7966E 07
-1.4981E 07 -1.3384E 06 3.0933E 06 2.9158E 06 -7.9611E 05 -1.8543E 05 -1.5665E 06 6.1807E 06 -2.2695E 06 6.3007E 06
-1.4559E 06 3.9487E 06 -1.6806E 06 -2.4820E 07 8.4326E 05 -2.5438E 05 -1.3164E 05 -1.1655E 06 -2.0650E 07 -5.2552E 06
-4.0526E 06 0.0

ROW 4
1.2023E 04 -4.4039E 05 8.5907E 06 1.0094E 05 9.7287E 05 -2.8395E 06 -2.2440E 05 1.2139E 06 8.1331E 04 4.0806E 06
-2.4297E 06 -2.2588E 05 3.5440E 05 3.0674E 05 -1.0193E 05 -3.4905E 04 -1.9123E 05 8.3974E 05 -2.3341E 05 8.7563E 05
-1.4935E 05 6.6745E 05 -2.7088E 05 -3.8595E 06 1.6189E 05 -2.2883E 04 2.5220E 03 -1.6621E 05 -3.0242E 06 -6.6391E 05
-5.0840E 05 0.0

ROW 5
1.0214E 03 1.0224E 07 3.9961E 05 6.6470E 04 8.6403E 04 8.6159E 05 7.7065E 04 -8.8881E 05 1.3651E 05 -1.2179E 06
1.0535E 06 -4.4272E 04 4.3889E 04 7.1806E 04 1.1218E 04 -4.1124E 03 -4.3252E 03 -1.2498E 05 -1.1136E 05 -2.1899E 05
-4.3648E 04 -3.3207E 05 1.1788E 05 1.4793E 06 -9.8875E 04 -1.8048E 04 -5.1109E 04 2.9274E 04 9.7697E 05 -1.0395E 04
-1.1011E 04 0.0

ROW 6
-6.5034E 03 -1.5300E 07 -1.5396E 06 -8.9484E 04 -1.9695E 04 1.0555E 06 9.6445E 04 -1.1177E 05 -7.0338E 04 -2.0104E 06
1.4031E 06 3.7045E 04 -1.7187E 05 4.7462E 05 6.1687E 04 -1.4068E 04 -4.5073E 04 -5.6185E 05 -1.0762E 05 -5.5440E 05
-2.7895E 04 -4.2291E 05 2.9316E 05 1.6445E 06 -1.6181E 04 -3.1313E 04 3.1392E 04 1.8574E 04 3.5179E 06 1.5476E 05
1.4499E 05 0.0

ROW 7
-6.1542E 02 -1.4674E 06 -1.2114E 05 -2.3063E 01 -5.8651E 03 1.4850E 05 1.8772E 04 -3.5202E 04 9.3788E 02 -2.9475E 05
1.9808E 05 -2.4625E 02 -1.9382E 04 6.0870E 04 2.7990E 03 4.3707E 03 -8.4188E 03 -5.9527E 04 -2.0977E 04 -7.5391E 04
-6.3691E 03 -6.6387E 04 3.9206E 04 2.4796E 05 -5.3844E 03 -4.4578E 03 6.5563E 02 4.5212E 03 4.7516E 05 1.5486E 04
1.4653E 04 0.0

ROW 8
6.7740E 01 1.3137E 06 -2.3950E 05 2.0505E 04 -7.2672E 04 -1.9243E 05 -1.9165E 04 1.1762E 05 -1.6241E 04 4.6769E 05
-3.7251E 05 6.3567E 03 1.4236E 04 -1.3425E 05 -1.9038E 04 -6.4171E 03 3.3371E 04 1.3384E 05 5.9873E 04 1.2586E 05
2.0295E 04 1.1984E 05 -7.4861E 04 -4.4212E 05 1.3637E 04 1.3353E 04 2.6980E 03 1.4935E 03 -8.6169E 05 2.6549E 03
-2.2086E 03 0.0

ROW 9
1.2210E 04 3.2137E 07 5.9075E 06 -3.1876E 04 3.0806E 05 -4.5696E 06 -4.2378E 05 1.4399E 06 -1.2711E 05 8.2423E 06
-5.6539E 06 -5.1013E 04 4.7298E 05 -1.3082E 06 -1.6286E 05 4.0708E 03 1.5816E 05 1.8013E 06 4.9082E 05 2.0029E 06
1.4832E 05 1.7744E 06 -1.0128E 06 -7.0456E 06 1.9379E 05 1.0008E 05 2.0455E 04 -1.5731E 05 -1.1837E 07 -4.8072E 05
-4.3448E 05 0.0

MATRIX * D2 * 32 BY 32 ANTISYMMETRIC MATH MODEL

ROW 10
9.3966E 03 1.2777E 07 4.8083E 06 6.7609E 04 1.2706E 05 -3.7860E 06 -3.8709E 05 1.6540E 06 -9.7044E 04 6.3748E 06
-4.4875E 06 -2.6635E 03 3.4124E 05 -7.3592E 05 -1.2722E 05 -2.9586E 03 3.6148E 04 1.3499E 06 3.3822E 05 1.5565E 06
9.6870E 04 1.4053E 06 -7.4386E 05 -5.9026E 06 2.0623E 05 6.9607E 04 2.5470E 04 -1.4493E 05 -8.6127E 06 -4.2469E 05
-3.6628E 05 0.0

ROW 11
1.1620E 03 1.1712E 07 8.5347E 05 -3.2670E 04 1.1557E 05 -1.2285E 05 -1.5392E 04 -3.2211E 05 9.2795E 03 6.3266E 05
-2.7478E 05 -1.9460E 04 7.6987E 04 -2.0214E 05 -6.1282E 03 1.1991E 03 4.2829E 04 1.6856E 05 3.8898E 04 1.5841E 05
1.2110E 04 7.0680E 04 -7.8018E 04 -1.0838E 05 -3.0712E 04 5.0224E 03 -1.5142E 04 -8.4768E 03 -1.1922E 06 -4.1618E 04
-4.5267E 04 0.0

ROW 12
-3.4983E 03 -1.7282E 07 -1.9863E 06 4.4338E 04 -9.0931E 04 1.5757E 06 1.4401E 05 -3.1529E 05 7.5088E 04 -3.1647E 06
2.1298E 06 -3.0322E 04 -1.7886E 05 6.4618E 05 6.2273E 04 -1.4322E 04 -1.0600E 05 -6.8663E 05 -2.4822E 05 -8.0447E 05
-7.3619E 04 -[illegible]9212E 05 4.1742E 05 2.5592E 06 -5.1840E 04 -5.0255E 04 -1.5112E 04 3.6650E 04 5.0800E 06 1.1387E 05
1.1858E 05 0.0

ROW 13
5.3307E 03 9.1578E 06 2.8369E 06 1.5368E 04 2.5909E 05 -1.4846E 06 -1.3239E 05 4.4926E 05 -1.1380E 04 2.6339E 06
-1.7006E 06 -3.7410E 04 1.7017E 05 -2.7231E 05 -4.8969E 04 7.4187E 03 1.8939E 04 5.7253E 05 8.0399E 04 6.3967E 05
7.3430E 03 5.2177E 05 -2.8949E 05 -2.2499E 06 6.3402E 04 2.1908E 04 7.8896E 03 -5.0863E 04 -3.4344E 06 -2.1143E 05
-1.8053E 05 0.0

ROW 14
1.9385E 03 -2.9585E 06 1.5515E 06 1.2687E 05 -1.3294E 04 -4.4085E 05 -7.085[illegible]E 04 2.4576E 05 5.4461E 04 4.3861E 05
-3.4206E 05 -1.6423E 04 8.1482E 04 1.3072E 05 -1.0669E 04 -1.0936E 04 -5.1792E 04 1.2104E 05 -7.0767E 04 5.7219E 04
-2.5744E 04 5.3853E 04 -1.9380E 04 -4.2572E 05 2.2152E 04 -1.1953E 04 -1.8619E 04 -3.3868E 04 2.6961E 04 -1.4740E 05
-1.1079E 05 0.0

ROW 15
2.7073E 03 -2.9250E 06 2.2311E 06 1.4223E 05 1.9037E 05 5.2509E 04 2.0584E 04 -1.2346E 04 1.9053E 05 -5.5431E 05
5.0524E 05 -1.5177E 05 1.1858E 05 3.1648E 05 3.7683E 03 -2.3091E 04 -9.1531E 04 -7.8394E 04 -2.2195E 05 -1.7744E 05
-8.1570E 04 -2.0573E 05 1.1431E 05 4.6441E 05 -1.2347E 04 -3.6322E 04 -5.0624E 04 -3.2794E 04 1.[illegible]169E 06 -2.1215E 05
-1.5580E 05 0.0

ROW 16
2.5453E 03 -2.8707E 06 2.1218E 06 1.4573E 05 1.8559E 05 1.7555E 05 3.2525E 04 -7.8702E 04 2.0626E 05 -7.6200E 05
6.6143E 05 -1.5751E 05 1.1753E 05 3.3321E 05 7.3935E 03 -2.5262E 04 -9.3496E 04 -1.1787E 05 -2.3350E 05 -2.2115E 05
-8.3656E 04 -2.5026E 05 1.3540E 05 6.5775E 05 -2.0713E 04 -3.8991E 04 -5.5744E 04 -3.0762E 04 1.7451E 06 -2.0774E 05
-1.5168E 05 0.0

ROW 17
2.5882E 03 -4.1635E 06 2.1928E 06 1.4827E 05 2.1182E 05 2.7756E 05 5.4171E 04 -9.0800E 04 2.2809E 05 -1.0020E 06
8.4005E 05 -1.8512E 05 1.1623E 05 3.9284E 05 1.0965E 04 -2.9103E 04 -1.0599E 05 -1.7494E 05 -2.6764E 05 -2.8786E 05
-9.5412E 04 -3.0578E 05 1.6978E 05 8.4148E 05 -2.4147E 04 -4.4659E 04 -6.0870E 04 -3.1350E 04 2.1752E 06 -2.1776E 05
-1.5672E 05 0.0

ROW 18
2.2245E 02 1.2585E 06 -2.6172E 05 -8.9378E 04 -1.1921E 04 -6.9517E 05 -7.9647E 04 3.5127E 05 -1.5223E 05 1.3681E 06
-1.0194E 06 8.4585E 04 -3.6631E 04 -2.2331E 05 -2.1965E 04 1.8856E 04 4.2382E 04 2.4650E 05 1.5920E 05 3.5605E 05
4.5183E 04 3.4299E 05 -1.6682E 05 -1.3246E 06 5.3530E 04 2.9961E 04 4.9271E 04 -6.5228E 02 -2.0507E 06 5.3676E 04
3.4346E 04 0.0

MATRIX * D2 * 32 BY 32 ANTISYMMETRIC MATH MODEL

ROW 19

-3.1073E 03	-5.5211E 06	-2.3719E 06	-3.2476E 04	-4.0998E 05	-8.4269E 04	-2.8391E 04	6.5104E 04	-8.4946E 04	4.7872E 05
-5.6160E 05	1.0478E 05	-2.9023E 04	-4.9156E 05	4.9564E 03	1.6091E 04	1.2664E 05	1.0481E 05	2.4606E 05	1.4351E 05
1.1779E 05	2.0476E 05	-1.4561E 05	-3.7306E 05	1.0453E 04	3.5599E 04	2.8549E 04	2.6009E 04	-1.7839E 06	1.6720E 05
1.0802E 05	0.0								

ROW 20

1.9052E 02	3.8739E 05	2.7667E 05	-1.1774E 04	7.9018E 04	-7.9588E 03	-1.5310E 04	-8.6777E 03	1.2851E 04	1.3769E 04
4.4180E 04	-1.6745E 04	8.7342E 03	1.5210E 04	-3.1262E 03	1.3468E 03	-1.0134E 04	4.8663E 03	-6.8846E 03	4.8441E 04
-7.2815E 03	-1.6651E 03	1.7632E 03	-7.1541E 04	2.6943E 03	-1.0335E 03	2.9456E 02	-3.0544E 03	-7.3143E 04	-1.4817E 04
-1.1112E 04	0.0								

ROW 21

-1.2398E 03	-3.1622E 05	-6.0278E 05	1.4797E 04	-9.2479E 04	2.2640E 05	2.0940E 04	-7.6915E 04	-1.5153E 03	-3.2066E 05
1.9061E 05	2.1584E 04	-1.9156E 04	-3.2718E 04	1.3675E 04	6.2761E 03	2.1380E 04	-6.7022E 04	1.7807E 04	-7.9234E 04
1.3972E 04	-6.2147E 04	3.0160E 04	3.0350E 05	-4.4672E 03	9.9088E 01	1.4273E 04	1.7323E 04	2.5024E 05	5.2010E 04
3.6638E 04	0.0								

ROW 22

-1.1324E 03	-1.9032E 06	-4.2349E 05	2.2025E 04	-7.3339E 04	2.6868E 05	2.9091E 04	-8.0619E 04	9.9475E 03	-4.4911E 05
3.0892E 05	1.6591E 04	-2.1267E 04	4.5580E 04	1.2225E 04	7.0438E 02	5.3706E 02	-9.9382E 04	-6.5470E 03	-1.0366E 05
2.4866E 03	-7.9080E 04	4.6605E 04	3.5700E 05	-6.7677E 03	-3.2842E 03	6.1636E 03	1.2820E 04	4.9201E 05	3.7687E 04
2.9677E 04	0.0								

ROW 23

-9.4270E 02	-9.5614E 05	-4.6446E 05	1.5140E 04	-6.4922E 04	2.4427E 05	1.2268E 04	-8.2193E 04	5.0483E 03	-3.9534E 05
2.4892E 05	1.5023E 04	-1.9796E 04	1.3536E 04	1.1132E 04	3.8114E 03	7.6044E 03	-8.0695E 04	-4.5656E 03	-9.7238E 04
3.8434E 03	-8.7179E 04	4.3720E 04	3.7168E 05	-9.7100E 03	-2.8049E 03	4.7365E 03	1.3614E 04	4.7650E 05	3.8169E 04
2.9535E 04	0.0								

ROW 24

2.2300E 00	3.8592E 06	-6.0123E 05	2.7294E 03	-5.9435E 04	1.1679E 05	-7.4076E 03	-1.2080E 05	-2.4521E 04	-1.2389E 05
-1.7889E 04	3.5285E 04	-2.6937E 04	-5.7635E 04	1.3247E 04	2.0533E 04	3.8338E 04	3.9599E 03	-2.6609E 03	-9.8386E 04
-1.1378E 03	-8.2875E 04	2.0791E 04	4.3145E 05	-2.5445E 04	-4.0253E 02	2.4381E 02	2.6374E 04	3.3976E 05	5.0947E 04
3.2060E 04	0.0								

ROW 25

-5.3128E 02	-4.6006E 05	-3.9202E 05	-1.2916E 04	-4.3600E 04	5.7118E 04	3.2729E 03	-3.8033E 03	-1.3192E 04	-3.1527E 04
8.6454E 03	1.5014E 04	-1.7974E 04	-3.2448E 04	2.6801E 03	2.8231E 03	1.1850E 04	-1.7203E 04	2.8276E 04	4.6118E 03
1.3096E 04	1.2741E 04	-8.6706E 03	9.3946E 03	-5.0278E 02	4.8770E 03	2.4783E 03	6.5468E 03	-8.9608E 04	3.1783E 04
2.4535E 04	0.0								

ROW 26

-3.3898E 02	-9.5013E 03	-2.6741E 05	-1.8310E 04	-1.6961E 03	1.7968E 04	-1.1215E 02	-4.8571E 03	-2.2436E 04	3.5846E 04
-3.1833E 04	1.8833E 04	-1.8663E 04	-2.4292E 04	7.9863E 02	4.0994E 03	9.6232E 03	-1.2806E 03	2.3987E 04	1.6316E 04
7.8344E 03	1.9054E 04	-1.0072E 04	-3.2704E 04	2.8702E 02	4.6290E 03	4.0176E 03	5.2475E 03	-1.3013E 05	2.7881E 04
2.1243E 04	0.0								

ROW 27

-4.7344E 02	-1.1457E 06	-1.3267E 05	1.6674E 04	-3.1399E 04	1.3404E 05	1.5672E 04	-3.7331E 04	2.6976E 04	-3.6552E 05
2.3033E 05	-1.3211E 04	1.4679E 03	4.5386E 04	4.5116E 02	-1.0381E 04	-1.6515E 04	-6.6153E 04	-2.5009E 04	-9.2122E 04
-4.9192E 03	-7.8869E 04	4.3652E 04	2.9641E 05	-6.1807E 03	-6.9897E 03	4.2952E 03	7.1503E 03	5.2336E 03	-1.1281E 03
1.6952E 03	0.0								

MATRIX * D2 * 32 BY 32 ANTISYMMETRIC MATH MODEL

ROW 28

-1.0259E 01	4.2222E 06	-6.3754E 05	-7.9175E 04	-7.4007E 04	-4.3151E 05	-4.9334E 04	1.4656E 05	-9.3834E 04	1.0173E 06
-7.5984E 05	5.7418E 04	-1.5089E 04	-2.7069E 05	-1.9587E 04	8.8718E 03	5.5125E 04	1.9540E 05	1.5556E 05	2.7394E 05
5.3550E 04	2.6866E 05	-1.5661E 05	-8.5562E 05	1.7904E 04	2.9095E 04	1.7088E 04	9.6988E 03	-1.8114E 06	5.4178E 04
3.4875E 04	0.0								

ROW 29

-1.0570E 03	-2.9398E 06	-5.8971E 05	6.9891E 02	-7.8054E 04	2.3170E 05	1.7154E 04	-4.9233E 03	-4.9937E 04	5.5180E 04
1.9967E 04	1.2870E 04	-2.8270E 04	-5.9626E 04	-2.6520E 02	-6.2643E 03	1.0817E 04	-2.3508E 04	7.9737E 03	-9.6271E 04
1.5161E 04	-6.7863E 04	3.1973E 04	2.7393E 05	-3.0896E 03	-1.2203E 03	8.7102E 03	2.3615E 03	4.8735E 05	3.9170E 04
3.4655E 04	0.0								

ROW 30

-2.4297E 03	1.1149E 05	-1.7823E 06	-5.3207E 04	-1.9764E 05	3.0053E 05	1.9301E 04	-8.4186E 04	-6.9404E 04	-3.2338E 05
1.1216E 05	6.9185E 04	-7.7659E 04	-1.3779E 05	6.8924E 03	3.9090E 03	4.4404E 04	-7.8600E 04	1.0245E 05	-5.6281E 04
5.1777E 04	-5.6524E 03	-3.6568E 03	2.9237E 05	-1.3223E 04	1.4506E 04	1.1708E 04	2.2543E 04	-6.6588E 04	1.3883E 05
1.0271E 05	0.0								

ROW 31

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0								

ROW 32

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0								

MATRIX * B1 * 1 BY 32 ANTISYMMETRIC MATH MODEL

ROW 1

1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03
1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03
1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03
1.0000E-03	1.0000E-03								

MATRIX * B2 * 1 BY 32

ROW 1

3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03
3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03
3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03	3.5000E-03
3.5000E-03	3.5000E-03								

MATRIX * RO * 32 3Y 20 ANTISYMMETRIC MATH MODEL

ROW 1

8.3967E 03	-1.4427E 04	-1.7390E 04	-1.0158E 04	-5.1822E 03	-1.4740E 03	-2.8845E 04	-1.7492E 04	0.0	0.0
2.5509E 04	-5.8406E 02	3.2347E 03	-4.1121E 02	3.7355E 03	-5.9670E 01	-1.1677E 03	-7.0612E 02	1.3330E 05	0.0

ROW 2

1.5352E 07	4.9300E 07	8.2638E 07	1.1862E 08	1.4194E 08	1.0307E 08	1.3428E 06	1.1900E 07	0.0	0.0
1.4686E 07	1.9958E 06	4.7252E 06	4.8023E 06	6.1604E 06	4.1725E 06	5.4362E 04	4.8177E 05	2.1716E 07	0.0

ROW 3

-7.3808E 06	-2.0256E 07	-1.6256E 07	-8.7913E 06	-4.5173E 06	-1.2875E 06	-2.2781E 07	-1.4185E 07	0.0	0.0
-9.7771E 06	-8.2004E 05	-1.5606E 06	-3.5590E 05	-3.7726E 05	-5.2123E 04	-9.2223E 05	-5.7425E 05	1.0624E 08	0.0

ROW 4

-3.0720E 05	-1.9878E 06	-1.4546E 06	-2.0083E 06	-4.0900E 06	-5.0392E 06	-2.3231E 06	-9.5090E 05	0.0	0.0
3.2453E 05	-8.0472E 04	-1.0038E 05	-8.1302E 04	-3.5839E 05	-2.0400E 05	-9.4044E 04	-3.8495E 04	1.2642E 07	0.0

ROW 5

-1.9882E 05	-6.6182E 05	-1.4385E 06	6.4077E 05	5.4753E 06	8.3723E 06	-6.1081E 05	-1.3011E 06	0.0	0.0
-1.6982E 05	-2.6793E 04	-2.5095E 03	2.5940E 04	3.6386E 05	3.3893E 05	-2.4727E 04	-5.2671E 04	6.5487E 05	0.0

ROW 6

-3.0536E 05	-5.0924E 05	-3.2531E 06	-4.0779E 06	-2.7712E 06	-3.3670E 06	4.9695E 04	-1.7758E 06	0.0	0.0
-7.5737E 05	-2.0616E 04	-1.5955E 05	-1.6508E 05	-4.8693E 05	-1.3631E 05	2.0118E 03	-7.1890E 04	-5.0408E 06	0.0

ROW 7

7.7147E 04	2.1292E 05	-8.1657E 04	-8.2906E 04	-7.1045E 04	-2.5762E 05	-4.6084E 04	-2.9587E 05	0.0	0.0
8.0849E 04	8.6195E 03	-2.6959E 05	-3.3563E 03	7.6630E 04	-2.0429E 04	-1.8656E 03	-1.1978E 04	-4.7799E 05	0.0

ROW 8

3.5542E 05	7.8270E 05	1.5058E 06	1.1441E 06	-2.5409E 05	-3.6827E 05	2.0183E 05	6.8921E 05	0.0	0.0
5.3375E 05	3.1686E 04	-7.4956E 04	4.6317E 04	-5.3514E 05	-3.4909E 04	8.1706E 03	2.7901E 04	3.3099E 05	0.0

ROW 9

-2.1151E 06	-9.2399E 06	-1.2168E 06	-1.3152E 06	-4.0021E 05	1.2432E 06	1.0224E 06	7.4177E 06	0.0	0.0
4.1110E 05	-3.7406E 05	-8.3796E 04	-5.3242E 04	-3.8493E 04	4.8978E 04	4.1388E 04	3.0029E 05	1.2672E 07	0.0

ROW 10

-2.4944E 06	-9.7202E 06	-3.5220E 06	1.4233E 06	-3.1946E 05	-7.0429E 06	6.7292E 05	5.4627E 06	0.0	0.0
-3.3374E 05	-3.9350E 05	-3.0593E 04	5.7619E 04	-1.0592E 04	-2.8512E 05	2.7242E 04	2.2115E 05	1.0071E 07	0.0

ROW 11

-5.9056E 05	-2.1480E 06	-1.3145E 06	-1.8565E 06	1.5798E 06	6.0230E 06	5.5359E 04	5.8129E 05	0.0	0.0
-2.6707E 05	-8.6957E 04	-3.2180E 04	-7.5155E 04	3.5604E 05	2.4383E 05	2.2411E 03	2.3532E 04	1.2851E 06	0.0

ROW 12

8.7821E 05	3.6981E 06	4.1944E 05	3.9542E 05	-1.1255E 06	-3.4227E 06	-5.3506E 05	-3.3486E 06	0.0	0.0
1.3908E 06	1.4971E 05	5.4146E 04	1.6008E 04	-9.5751E 04	-1.3856E 05	-2.1661E 04	-1.3556E 05	-4.1081E 06	0.0

ROW 13

-6.5648E 05	-2.5519E 06	-4.0789E 05	-2.9512E 05	-2.1409E 05	4.9980E 05	-2.6144E 05	1.6201E 06	0.0	0.0
4.7798E 05	-1.0331E 05	-1.6964E 04	-1.1947E 04	3.4537E 03	2.0234E 04	-1.0584E 04	6.5585E 04	5.2049E 06	0.0

MATRIX * RO * 32 BY 20 ANTISYMMETRIC MATH MODEL

ROW 14
-6.2642E 05 -1.9659E 06 -1.1886E 06 1.7254E 05 7.3530E 05 -3.3241E 06 -2.2498E 05 -2.8090E 05 0.0 0.0
-4.3407E 05 -7.9586E 04 4.7897E 04 6.9849E 03 4.8906E 04 -1.3457E 05 -9.1079E 03 -1.1372E 04 1.9031E 06 0.0

ROW 15
2.3529E 05 1.2474E 06 -3.4029E 05 -1.6042E 05 -1.7232E 05 -2.9469E 05 -6.0086E 05 -1.8593E 06 0.0 0.0
-4.7513E 03 5.0500E 04 -6.5577E 04 -6.4941E 03 -1.4828E 04 -1.1930E 04 -2.4324E 04 -7.5268E 04 2.2155E 06 0.0

ROW 16
1.7242E 05 1.1983E 06 -4.6794E 05 -2.4647E 05 -7.4608E 04 2.4465E 05 -5.8418E 05 -2.0046E 06 0.0 0.0
-2.8105E 04 4.8510E 04 3.0270E 04 -9.9778E 03 -2.4090E 04 9.9042E 03 -2.3649E 04 -8.1154E 04 2.0054E 06 0.0

ROW 17
4.3024E 05 2.1177E 06 -2.4746E 05 -4.4217E 05 -4.3461E 05 1.6056E 05 -6.3756E 05 -2.3762E 06 0.0 0.0
9.1584E 04 8.5732E 04 -9.0286E 03 -1.7901E 04 1.4183E 04 6.5000E 03 -2.5810E 04 -9.6196E 04 1.9022E 06 0.0

ROW 18
-2.1707E 05 -1.7073E 06 1.1276E 05 5.3875E 05 -7.9058E 05 -2.0119E 06 7.9681E 04 1.6285E 06 0.0 0.0
-1.3733E 05 -6.9117E 04 1.5040E 05 2.1810E 04 -5.5256E 04 -8.1446E 04 3.2257E 03 6.5925E 04 5.1962E 05 0.0

ROW 19
8.9981E 03 -1.4386E 06 7.9346E 05 6.2347E 05 -3.4888E 03 1.8147E 05 1.0028E 06 2.6710E 06 0.0 0.0
-7.3152E 04 -5.8238E 04 3.6099E 04 2.5240E 04 -2.0823E 04 7.3466E 03 4.0596E 04 1.0813E 05 -2.7711E 06 0.0

ROW 20
-4.7462E 05 -1.1359E 06 -1.1547E 05 6.1908E 05 -7.6706E 05 8.1421E 05 -1.1654E 05 -9.9618E 04 0.0 0.0
-2.6717E 05 -4.5986E 04 4.7749E 04 2.5062E 04 -1.0607E 05 3.2962E 04 -4.7179E 03 -4.0328E 03 4.5707E 05 0.0

ROW 21
4.2190E 05 3.5654E 05 2.6059E 05 1.2100E 04 -3.4946E 03 1.5326E 05 -1.7786E 05 1.4317E 05 0.0 0.0
1.4654E 04 1.4434E 04 4.8807E 03 4.8986E 02 2.7674E 03 6.2044E 03 -7.2003E 03 5.7959E 03 -1.1966E 06 0.0

ROW 22
1.0081E 05 7.7002E 04 -1.9606E 04 -3.0383E 05 1.5460E 05 -6.5622E 04 -1.4470E 05 -1.4533E 05 0.0 0.0
-1.0586E 05 3.1173E 03 -1.4599E 04 -1.2300E 04 3.5030E 04 -2.5566E 03 -5.8578E 03 -5.8832E 03 -1.0003E 06 0.0

ROW 23
2.4627E 05 1.9219E 05 -6.1803E 04 2.5323E 05 3.7110E 03 3.8777E 04 -7.9209E 04 -1.2840E 05 0.0 0.0
-2.5596E 03 7.7803E 03 8.1695E 03 1.0252E 04 -1.8016E 04 1.5698E 03 -3.2066E 03 -5.1979E 03 -9.7846E 05 0.0

ROW 24
5.0131E 05 1.7597E 06 1.4634E 06 1.9323E 06 1.0864E 06 4.3196E 04 1.3703E 04 -5.5533E 04 0.0 0.0
2.8494E 05 7.1238E 04 5.4965E 04 7.8227E 04 4.1965E 03 1.7487E 03 5.5472E 02 -2.6530E 03 -8.2851E 05 0.0

ROW 25
-9.8563E 04 -1.5140E 05 -6.7976E 04 -1.1481E 05 -9.5340E 04 -8.0496E 04 2.0021E 05 2.3726E 05 0.0 0.0
-2.3387E 04 -6.1292E 03 -2.5005E 03 -4.6480E 03 -2.2100E 03 -3.2587E 03 8.1052E 03 9.6048E 03 -5.6872E 05 0.0

ROW 26
-6.0873E 04 -1.2448E 05 5.8705E 04 3.1932E 04 2.1454E 04 -2.6605E 04 8.3579E 04 1.8957E 05 0.0 0.0
-7.6189E 03 -5.0394E 03 2.0809E 03 1.2927E 03 1.8661E 03 -1.0770E 03 3.3835E 03 7.6742E 03 -3.5777E 05 0.0

MATRIX * RO * 32 BY 20 ANTISYMMETRIC MATH MODEL

ROW 27

1.1652E 05	4.6399E 05	-6.3307E 04	-7.3931E 04	-3.1387E 04	-1.6533E 05	-4.5187E 04	-3.9457E 05	0.0	0.0
-3.9967E 03	1.8784E 04	-2.2366E 03	-2.9930E 03	3.0701E 03	-6.6937E 03	-1.8293E 03	-1.5973E 04	-2.9952E 05	0.0

ROW 28

-6.1518E 05	-1.3921E 06	1.9349E 05	1.5177E 05	6.9960E 04	7.3028E 04	7.4336E 05	1.5833E 06	0.0	0.0
8.4923E 02	-5.6355E 04	6.0498E 03	6.1441E 03	-2.4219E 03	2.9564E 03	3.0093E 04	6.4095E 04	-1.4112E 03	0.0

ROW 29

5.8680E 05	1.8140E 06	6.5678E 05	-7.1004E 05	-1.3757E 06	-3.6084E 05	4.6219E 04	-1.3370E 05	0.0	0.0
2.8031E 05	7.3435E 04	-4.0696E 04	-2.8745E 04	-7.2403E 04	-1.4608E 04	1.8711E 03	-5.4125E 03	-1.0948E 06	0.0

ROW 30

-4.2763E 04	-3.0698E 04	3.8395E 05	2.3243E 05	1.2641E 05	4.1047E 04	5.6685E 05	7.6263E 05	0.0	0.0
-3.9003E 04	-1.2427E 03	1.2115E 04	9.4096E 03	4.4029E 03	1.6617E 03	2.2948E 04	3.0874E 04	-2.4165E 06	0.0

ROW 31

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 32

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

MATRIX * KI * 32 BY 20 ANTISYMMETRIC MATH MODEL

ROW 1
-3.7446E 03 -5.4581E 03 -1.3303E 03 5.0615E 02 9.1056E 02 5.2213E 02 4.3519E 01 -1.2013E 02 0.0 0.0
-6.8182E 03 0.0 -7.5234E 02 0.0 -1.1375E 03 0.0 0.0 0.0 -1.476E 03 0.0

ROW 2
6.2097E 04 -4.0559E 06 3.3302E 06 4.5858E 06 1.5010E 06 2.0467E 06 2.9643E 05 6.7490E 05 0.0 0.0
1.9922E 05 0.0 5.7019E 04 0.0 1.8069E 05 0.0 0.0 0.0 -3.2947E 05 0.0

ROW 3
-2.6603E 06 -3.8038E 06 -9.7920E 05 4.1662E 05 7.4246E 05 4.3785E 05 7.2240E 04 -9.0282E 04 0.0 0.0
5.7377E 05 0.0 1.3524E 05 0.0 -1.0357E 04 0.0 0.0 0.0 -1.0211E 06 0.0

ROW 4
-2.6311E 05 -7.1663E 05 -1.0784E 05 3.1968E 04 -1.6550E 02 -1.9337E 04 2.8100E 03 -7.7945E 03 0.0 0.0
-2.3384E 05 0.0 -5.7397E 03 0.0 1.2338E 04 0.0 0.0 0.0 -7.1641E 04 0.0

ROW 5
4.4635E 03 5.6190E 05 3.0813E 04 3.4188E 04 1.3291E 05 1.2502E 05 8.1990E 03 -9.0877E 03 0.0 0.0
-8.0758E 04 0.0 2.5043E 03 0.0 1.5524E 04 0.0 0.0 0.0 -2.2124E 04 0.0

ROW 6
1.0600E 05 1.1058E 06 -2.0695E 05 -2.6509E 05 -3.7655E 05 -1.0858E 05 -7.0208E 03 -3.8419E 04 0.0 0.0
5.5945E 04 0.0 9.2413E 02 0.0 1.0424E 05 0.0 0.0 0.0 -3.8600E 02 0.0

ROW 7
1.4957E 04 1.7019E 05 -2.6173E 04 -2.0444E 04 -1.6340E 04 -8.7784E 03 3.1770E 02 -4.5088E 02 0.0 0.0
-2.1202E 04 0.0 4.7412E 04 0.0 -2.0419E 04 0.0 0.0 0.0 -3.0492E 03 0.0

ROW 8
-1.8594E 04 -3.2554E 05 3.6278E 04 6.0513E 04 3.9086E 03 1.7752E 04 -1.3068E 03 9.8978E 03 0.0 0.0
-4.5730E 04 0.0 2.5545E 04 0.0 1.3349E 05 0.0 0.0 0.0 4.5451E 03 0.0

ROW 9
-3.7726E 05 -4.4178E 06 3.9607E 05 3.6632E 05 2.6935E 05 1.0902E 05 -1.6950E 04 1.1294E 05 0.0 0.0
-2.1879E 05 0.0 -7.4229E 03 0.0 2.0054E 03 0.0 0.0 0.0 6.8190E 04 0.0

ROW 10
-2.1994E 05 -3.2578E 06 5.6071E 05 2.8518E 05 -1.6399E 05 -2.3020E 04 -1.2382E 04 8.2009E 04 0.0 0.0
-1.2913E 05 0.0 -1.3907E 04 0.0 -4.5283E 04 0.0 0.0 0.0 6.5654E 04 0.0

ROW 11
-5.1625E 04 -3.9469E 05 -4.9186E 04 1.8485E 04 -1.0206E 05 1.1746E 05 -1.3852E 03 1.1230E 04 0.0 0.0
-5.4061E 04 0.0 -5.0776E 03 0.0 -4.9855E 04 0.0 0.0 0.0 1.0076E 04 0.0

ROW 12
2.1021E 05 1.9601E 06 -1.6838E 05 -1.5910E 05 -1.0036E 05 -8.8965E 04 1.0368E 04 -5.4562E 04 0.0 0.0
-4.1995E 05 0.0 -2.7822E 03 0.0 3.6745E 03 0.0 0.0 0.0 9.4100E 03 0.0

ROW 13
-1.9165E 05 -1.2160E 06 8.3235E 04 1.0441E 05 6.4343E 04 4.1879E 04 -5.2520E 03 3.3128E 04 0.0 0.0
-2.0113E 05 0.0 -3.4855E 03 0.0 -8.4899E 03 0.0 0.0 0.0 -4.7183E 04 0.0

MATRIX * K1 * SZ IN ZO

ANTISYMMETRIC MATH MODEL

ROW 14

2.0415E 06	9.3041E 04	-1.1075E 03	1.0587E 04	5.2400E 06	-4.7347E 06	7.6681E 02	-3.6347E 03	0.0	0.0
-0.6977E 03	0.0	-1.2311E 04	0.0	1.1091E 03	0.0	0.0	0.0	2.2096E 04	0.0

ROW 15

1.2269E 04	8.7246E 05	1.4670E 04	2.3595E 03	1.3325E 04	4.0319E 03	9.0854E 03	-2.9880E 04	0.0	0.0
-4.0948E 04	0.0	8.0394E 03	0.0	-7.1803E 01	0.0	0.0	0.0	2.7176E 04	0.0

ROW 16

2.1396E 04	9.6966E 05	1.0430E 04	-1.2050E 03	7.5493E 03	1.1455E 04	9.9255E 03	-3.3045E 04	0.0	0.0
-5.6373E 04	0.0	-8.9630E 03	0.0	4.9330E 03	0.0	0.0	0.0	3.3591E 04	0.0

ROW 17

2.2070E 04	1.1659E 05	1.1429E 04	-1.2575E 04	4.7928E 03	7.5488E 03	1.1686E 04	-4.0583E 04	0.0	0.0
-5.6453E 04	0.0	-3.2779E 03	0.0	-1.0060E 04	0.0	0.0	0.0	3.6959E 04	0.0

ROW 18

-5.0452E 04	-9.6299E 05	6.6798E 03	2.3020E 04	-7.6416E 02	-2.5507E 04	-9.9818E 03	3.1583E 04	0.0	0.0
7.9841E 04	0.0	-2.4572E 04	0.0	-7.8240E 03	0.0	0.0	0.0	-4.9111E 04	0.0

ROW 19

3.0468E 05	-7.4787E 05	1.7908E 05	9.0249E 04	1.6486E 04	5.6812E 03	-1.8422E 04	5.6323E 04	0.0	0.0
6.4512E 04	0.0	3.2106E 02	0.0	1.3208E 03	0.0	0.0	0.0	8.1891E 04	0.0

ROW 20

-2.6990E 04	-4.1564E 04	-3.5604E 04	8.7226E 03	-1.3908E 04	2.7002E 04	1.1272E 03	-1.7125E 03	0.0	0.0
-2.6323E 03	0.0	-1.2074E 03	0.0	3.4390E 03	0.0	0.0	0.0	-1.3110E 04	0.0

ROW 21

1.9495E 05	1.7112E 05	2.8259E 04	4.3733E 03	-7.2713E 03	-6.5619E 02	-1.0096E 04	1.9607E 04	0.0	0.0
1.8193E 04	0.0	5.5276E 02	0.0	5.4335E 02	0.0	0.0	0.0	-3.8903E 03	0.0

ROW 22

1.1526E 05	2.2947E 05	-7.2189E 03	-1.2644E 04	-1.1924E 04	-1.8322E 04	-6.0647E 03	7.2119E 03	0.0	0.0
6.4263E 03	0.0	2.0928E 03	0.0	-2.4697E 03	0.0	0.0	0.0	-8.1492E 03	0.0

ROW 23

9.4035E 04	2.0271E 05	-2.6981E 03	-4.8020E 03	-5.3871E 03	-9.2613E 02	-4.1792E 03	6.3875E 03	0.0	0.0
1.4678E 04	0.0	-3.4298E 01	0.0	2.1610E 03	0.0	0.0	0.0	-9.0138E 03	0.0

ROW 24

5.5719E 04	1.6841E 05	7.5854E 04	2.6080E 04	5.5873E 04	8.7936E 03	2.3652E 03	1.2638E 04	0.0	0.0
1.9297E 04	0.0	4.6101E 03	0.0	7.3915E 03	0.0	0.0	0.0	-1.8990E 04	0.0

ROW 25

-3.7683E 04	-1.0752E 05	-3.9340E 03	-4.5747E 03	-9.4314E 03	-2.5796E 03	-1.4800E 03	-5.4738E 02	0.0	0.0
1.1046E 04	0.0	-4.7010E 02	0.0	1.6947E 01	0.0	0.0	0.0	-1.4343E 04	0.0

ROW 26

-2.2863E 04	-1.2360E 05	-8.4960E 03	-4.7777E 03	-4.0125E 03	-2.2552E 03	-1.9837E 03	1.2766E 02	0.0	0.0
8.6607E 03	0.0	3.4913E 02	0.0	1.8052E 02	0.0	0.0	0.0	-1.8341E 04	0.0

MATRIX * R1 * 32 BY 20 ANTISYMMETRIC MATH MODEL

ROW 27

1.1009E 04	3.6354E 05	-3.5976E 02	-5.3239E 03	-4.5195E 03	-3.1128E 03	7.0681E 03	2.3357E 03	0.0	0.0
-3.1617E 03	0.0	-3.9970E 02	0.0	-1.9324E 02	0.0	0.0	0.0	2.5290E 04	0.0

ROW 28

-2.1677E 05	-8.9129E 05	3.5664E 04	3.3596E 04	1.3334E 04	5.2452E 03	2.1963E 03	1.0449E 04	0.0	0.0
2.0605E 04	0.0	2.7707E 02	0.0	1.3984E 02	0.0	0.0	0.0	-2.0475E 04	0.0

ROW 29

4.1517E 04	1.5985E 05	3.1696E 04	-3.5883E 04	-5.7282E 04	-2.5470E 03	-2.9985E 03	-4.2280E 03	0.0	0.0
1.1431E 04	0.0	6.0725E 03	0.0	-2.3126E 03	0.0	0.0	0.0	6.1324E 03	0.0

ROW 30

2.0053E 04	-1.8835E 05	2.4941E 04	-2.2711E 03	-1.3681E 04	-8.7270E 03	-4.5728E 03	3.6677E 03	0.0	0.0
5.1450E 04	0.0	1.4954E 03	0.0	1.6299E 03	0.0	0.0	0.0	1.4341 04	0.0

ROW 31

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 32

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

MATRIX * R2 * 32 BY 20 ANTISYMMETRIC MATRIX MODEL

ROW 1
1.0900E 05 3.8396E 05 2.9230E 05 1.3649E 05 5.5357E 04 1.2662E 04 9.3262E 02 2.7573E 03 0.0 0.0
1.0052E 05 0.0 1.6005E 04 0.0 2.7993E 04 0.0 0.0 0.0 3.1072E 04 0.0

ROW 2
4.0465E 07 2.5680E 08 -4.7549E 07 -5.9625E 07 1.5334E 07 -2.9654E 07 -2.4227E 06 -3.7672E 06 0.0 0.0
-4.4511E 07 0.0 -2.5247E 06 0.0 -5.6455E 06 0.0 0.0 0.0 1.4063E 06 0.0

ROW 3
7.7250E 07 2.9535E 08 2.3548E 08 1.0927E 08 4.4879E 07 9.9222E 06 -3.1603E 05 1.9490E 06 0.0 0.0
-8.3574E 07 0.0 -6.5573E 06 0.0 -1.4997E 06 0.0 0.0 0.0 1.9892E 07 0.0

ROW 4
1.2345E 07 5.1433E 07 3.0135E 07 1.4411E 07 7.3494E 06 2.7092E 06 1.5291E 05 1.1395E 05 0.0 0.0
-3.9368E 05 0.0 -2.2203E 05 0.0 -5.7542E 05 0.0 0.0 0.0 9.4874E 05 0.0

ROW 5
-7.6782E 06 -2.8709E 07 -2.8613E 07 -1.5588E 06 -2.5244E 06 -2.5675E 06 -2.7811E 05 2.6046E 05 0.0 0.0
-1.9631E 05 0.0 -7.3999E 04 0.0 -3.8206E 05 0.0 0.0 0.0 6.8036E 05 0.0

ROW 6
-1.3189E 07 -6.0349E 07 -4.9335E 06 -1.6370E 03 5.5724E 06 1.2862E 06 -2.0945E 05 5.3351E 05 0.0 0.0
2.3039E 06 0.0 1.7676E 05 0.0 -2.6717E 06 0.0 0.0 0.0 7.8199E 05 0.0

ROW 7
-1.9428E 06 -8.5749E 06 -2.3913E 05 -6.2017E 04 8.0766E 04 1.0928E 05 -4.1827E 04 8.6690E 04 0.0 0.0
9.2497E 05 0.0 -1.2289E 06 0.0 5.5754E 05 0.0 0.0 0.0 1.5047E 05 0.0

ROW 8
4.0227E 06 1.6576E 07 3.5779E 05 -6.8031E 05 3.7040E 05 -3.6382E 05 1.0650E 05 -1.5100E 05 0.0 0.0
1.2660E 06 0.0 -6.9776E 05 0.0 -3.6023E 06 0.0 0.0 0.0 -1.6640E 05 0.0

ROW 9
4.9484E 07 2.2204E 08 1.4687E 07 5.9500E 06 1.2059E 06 -4.2613E 04 1.1228E 06 -2.4449E 06 0.0 0.0
-2.1325E 06 0.0 -2.8148E 05 0.0 -3.1558E 05 0.0 0.0 0.0 -3.4184E 06 0.0

ROW 10
3.6166E 07 1.6843E 08 7.9418E 06 6.1318E 06 1.0796E 07 2.5089E 06 9.2692E 05 -1.6859E 06 0.0 0.0
-2.0944E 06 0.0 2.7219E 04 0.0 9.8300E 05 0.0 0.0 0.0 -3.1128E 06 0.0

ROW 11
3.3195E 06 1.6881E 07 1.3193E 06 -2.6479E 05 3.6520E 06 -2.5365E 06 2.0466E 04 -3.2778E 05 0.0 0.0
-3.9950E 05 0.0 8.0100E 04 0.0 1.3532E 06 0.0 0.0 0.0 -3.4201E 05 0.0

ROW 12
-2.1391E 07 -9.3348E 07 -2.2475E 06 -3.6373E 05 -2.2462E 05 1.2464E 06 -4.9800E 05 1.2045E 06 0.0 0.0
1.4847E 07 0.0 2.3897E 05 0.0 -2.7204E 04 0.0 0.0 0.0 1.8201E 05 0.0

ROW 13
1.4714E 07 6.2401E 07 7.7345E 06 3.2947E 06 1.5856E 06 6.5955E 03 3.7569E 05 -7.1833E 05 0.0 0.0
2.1122E 06 0.0 -8.3604E 04 0.0 1.2723E 05 0.0 0.0 0.0 6.3093E 05 0.0

MATRIX * R2 * 32 BY 20 ANTISYMMETRIC MATH MODEL

ROW 14
1.5735E 05 -1.7973E 06 5.4759E 06 2.6456E 06 -8.0508E 04 1.6333E 06 1.4139E 04 9.0917E 04 0.0 0.0
-6.5811E 05 0.0 2.8118E 05 0.0 -7.4533E 04 0.0 0.0 0.0 -7.8784E 05 0.0

ROW 15
-4.5174E 06 -3.2860E 07 5.9854E 06 3.3383E 06 1.4266E 06 4.4949E 05 -2.9468E 05 6.9906E 05 0.0 0.0
2.3557E 04 0.0 -2.8411E 05 0.0 -3.8524E 04 0.0 0.0 0.0 -8.5275E 05 0.0

ROW 16
-5.4420E 06 -3.7676E 07 5.5539E 06 3.0922E 06 1.4635E 06 2.3073E 05 -3.3435E 05 7.6780E 05 0.0 0.0
4.9563E 05 0.0 1.6911E 05 0.0 -1.6457E 05 0.0 0.0 0.0 -9.9815E 05 0.0

ROW 17
-6.4898E 06 -4.6478E 07 5.6428E 06 3.3708E 06 1.4831E 06 2.9636E 05 -4.0622E 05 9.3708E 05 0.0 0.0
6.9466E 05 0.0 2.0124E 04 0.0 2.3696E 05 0.0 0.0 0.0 -1.0624E 06 0.0

ROW 18
6.4782E 06 4.2910E 07 1.1625E 05 -2.6159E 05 -6.0522E 04 5.8072E 05 3.9518E 05 -7.2523E 05 0.0 0.0
-2.4142E 06 0.0 6.3803E 05 0.0 1.8896E 05 0.0 0.0 0.0 1.1959E 06 0.0

ROW 19
-3.5739E 06 3.9275E 07 -9.6397E 06 -4.8739E 06 -1.7929E 06 -6.0852E 05 6.4280E 05 -1.2510E 06 0.0 0.0
-1.1207E 05 0.0 3.7969E 04 0.0 -5.9263E 02 0.0 0.0 0.0 -2.2364E 06 0.0

ROW 20
6.5275E 05 1.0679E 06 1.3754E 06 -9.0833E 04 5.4098E 05 -6.6590E 05 -2.9484E 04 4.5757E 04 0.0 0.0
-3.3390E 05 0.0 1.6095E 04 0.0 -8.7744E 04 0.0 0.0 0.0 2.1022E 05 0.0

ROW 21
-9.3234E 06 -3.8044E 06 -2.9757E 06 -1.3580E 06 -4.6162E 05 -2.0364E 05 3.0885E 05 -5.0887E 05 0.0 0.0
1.3207E 05 0.0 1.7584E 04 0.0 4.8206E 03 0.0 0.0 0.0 1.2065E 05 0.0

ROW 22
-6.6361E 06 -8.6396E 06 -1.7766E 06 -7.9174E 05 -3.1951E 05 2.7147E 05 1.6251E 05 -2.1579E 05 0.0 0.0
3.6419E 05 0.0 -2.1255E 04 0.0 8.3729E 04 0.0 0.0 0.0 2.6792E 05 0.0

ROW 23
-5.4066E 06 -8.1245E 06 -1.8190E 06 -9.7835E 05 -4.3143E 05 -1.6622E 05 1.1173E 05 -1.7638E 05 0.0 0.0
1.2475E 05 0.0 3.2760E 04 0.0 -3.8196E 04 0.0 0.0 0.0 2.8522E 05 0.0

ROW 24
-2.9842E 06 -6.5086E 06 -3.0598E 06 -9.9009E 05 -1.4268E 06 -1.4448E 05 -1.5328E 04 -2.0740E 05 0.0 0.0
-7.6059E 04 0.0 -9.5219E 04 0.0 -1.9171E 05 0.0 0.0 0.0 4.6701E 05 0.0

ROW 25
2.1206E 06 2.5962E 06 -1.2221E 06 -6.4515E 05 -1.8748E 05 -2.5074E 04 3.3416E 04 1.4961E 04 0.0 0.0
6.1119E 04 0.0 2.9497E 04 0.0 1.0196E 04 0.0 0.0 0.0 4.0057E 05 0.0

ROW 26
1.2516E 06 3.2114E 05 -7.6893E 05 -4.1722E 05 -1.8412E 05 -3.4391E 04 5.1823E 04 5.3605E 03 0.0 0.0
-4.3469E 04 0.0 3.9045E 03 0.0 1.9264E 03 0.0 0.0 0.0 5.0567E 05 0.0

MATRIX * R2 * 32 BY 20 ANTISYMMETRIC MATH MODEL

ROW 27

-2.2958E 06	-1.1361E 07	-2.4156E 05	-6.8744E 04	-2.4014E 04	2.2075E 04	-1.9093E 05	-9.4288E 04	0.0	0.0
2.8682E 05	0.0	2.0015E 04	0.0	9.9268E 03	0.0	0.0	0.0	-6.3309E 05	0.0

ROW 28

1.4500E 07	3.5669E 07	-1.7608E 06	-1.1145E 06	-4.6452E 05	-1.5603E 05	1.0163E 04	-1.7129E 05	0.0	0.0
-6.2308E 05	0.0	-1.3875E 04	0.0	-7.6375E 03	0.0	0.0	0.0	4.5338E 05	0.0

ROW 29

-2.3554E 06	-7.5687E 05	-2.5865E 06	-2.2754E 05	7.6491E 05	-2.3910E 05	3.7899E 04	3.8291E 04	0.0	0.0
6.9541E 05	0.0	-1.3240E 05	0.0	7.7030E 04	0.0	0.0	0.0	-6.2394E 04	0.0

ROW 30

3.8139E 05	4.1327E 05	-5.6144E 06	-2.7194E 06	-1.1278E 06	-2.5929E 05	1.1092E 05	-6.3965E 04	0.0	0.0
2.0275E 04	0.0	2.9398E 04	0.0	-2.4413E 03	0.0	0.0	0.0	-2.5114E 05	0.0

ROW 31

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 32

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

MATRIX * R3 * 32 BY 20 ANTISYMMETRIC MATH MODEL

ROW 1

-2.5349E 05	-8.9575E 05	-6.9191E 05	-3.1190E 05	-1.2649E 05	-2.9801E 04	3.6601E 04	8.0321E 03	0.0	0.0
-3.7067E 05	0.0	-6.1012E 04	0.0	-9.9760E 04	0.0	0.0	0.0	-1.6802E 05	0.0

ROW 2

-1.8766E 08	-8.4160E 08	-9.2596E 07	4.0653E 06	-2.0521E 08	7.5923E 07	9.2211E 06	2.0061E 07	0.0	0.0
5.5757E 07	0.0	2.7004E 06	0.0	2.2577E 07	0.0	0.0	0.0	7.1038E 06	0.0

ROW 3

-1.9171E 08	-6.9179E 08	-5.5828E 08	-2.5318E 08	-1.0120E 08	-2.2224E 07	3.4388E 07	7.7363E 06	0.0	0.0
2.8027E 08	0.0	2.2024E 07	0.0	5.6044E 06	0.0	0.0	0.0	-1.1141E 08	0.0

ROW 4

-3.1255E 07	-1.2425E 08	-7.0013E 07	-2.8599E 07	-1.5141E 07	-8.2848E 06	3.9413E 06	1.9628E 06	0.0	0.0
4.6779E 05	0.0	8.5077E 05	0.0	2.0813E 06	0.0	0.0	0.0	-8.2135E 06	0.0

ROW 5

2.1406E 07	7.3941E 07	4.7556E 06	-4.7248E 06	2.5604E 06	9.7307E 06	8.1235E 05	-1.6819E 06	0.0	0.0
3.4238E 05	0.0	-1.8814E 05	0.0	1.3563E 06	0.0	0.0	0.0	-2.5857E 06	0.0

ROW 6

3.8522E 07	1.6235E 08	1.9425E 07	4.8693E 06	-1.6212E 07	-4.4061E 06	-1.0513E 06	-3.2624E 06	0.0	0.0
-3.4403E 06	0.0	-4.4711E 05	0.0	9.4293E 06	0.0	0.0	0.0	-2.3086E 06	0.0

ROW 7

5.3872E 06	2.2598E 07	8.0265E 05	5.6563E 05	-4.5975E 04	-4.2389E 05	-6.1295E 04	-5.1468E 05	0.0	0.0
-2.9841E 06	0.0	4.5029E 06	0.0	-2.0028E 06	0.0	0.0	0.0	-5.1206E 05	0.0

ROW 8

-1.1876E 07	-4.4705E 07	-2.6380E 06	2.0878E 06	-1.8872E 06	1.3121E 06	-2.2950E 05	8.4503E 05	0.0	0.0
-5.7561E 06	0.0	2.6064E 06	0.0	1.2914E 07	0.0	0.0	0.0	7.0473E 05	0.0

ROW 9

-1.3289E 08	-5.8103E 08	-4.1840E 07	-2.0989E 07	-3.9417E 06	4.0967E 05	1.7849E 06	1.4376E 07	0.0	0.0
4.4734E 06	0.0	9.1926E 05	0.0	1.3344E 06	0.0	0.0	0.0	1.1066E 07	0.0

ROW 10

-9.6931E 07	-4.4264E 08	-1.5074E 07	-1.1034E 07	-3.1152E 07	-9.4542E 06	1.4234E 06	1.0551E 07	0.0	0.0
5.2479E 06	0.0	1.1288E 05	0.0	-3.2437E 06	0.0	0.0	0.0	9.8992E 06	0.0

ROW 11

-7.6827E 06	-4.3318E 07	-6.2667E 06	-5.5506E 06	-1.8072E 07	1.0169E 07	4.9620E 05	1.5824E 06	0.0	0.0
2.1118E 06	0.0	-5.4301E 05	0.0	-4.9153E 06	0.0	0.0	0.0	1.2903E 06	0.0

ROW 12

5.7222E 07	2.4454E 08	8.4090E 06	6.4704E 06	4.0357E 06	-4.7409E 06	9.7037E 04	-6.3942E 06	0.0	0.0
-5.0680E 07	0.0	-7.2683E 05	0.0	2.0226E 04	0.0	0.0	0.0	-5.7803E 05	0.0

ROW 13

-3.9044E 07	-1.6151E 08	-1.9767E 07	-9.4219E 06	-4.8901E 06	3.4057E 05	5.6483E 05	4.2826E 06	0.0	0.0
-8.8025E 06	0.0	2.3499E 05	0.0	-4.0829E 05	0.0	0.0	0.0	-3.4760E 06	0.0

MATRIX * R3 * 32 BY 20 ANTISYMMETRIC MATH MODEL

ROW 14									
1.7614E 05	-5.0050E 06	-1.4794E 07	-6.9902E 06	4.7791E 06	-6.4112E 06	1.1343E 06	1.5502E 05	0.0	0.0
2.9033E 06	0.0	-1.0093E 06	0.0	3.4949E 05	0.0	0.0	0.0	2.1583E 06	0.0
ROW 15									
1.2278E 07	8.7122E 07	-1.4071E 07	-6.8369E 06	-2.7537E 06	-1.1097E 06	2.6639E 06	-2.6314E 06	0.0	0.0
3.3720E 05	0.0	1.0093E 06	0.0	1.1379E 05	0.0	0.0	0.0	1.8494E 06	0.0
ROW 16									
1.4803E 07	9.9616E 07	-1.3101E 07	-6.5290E 06	-3.3402E 06	-2.0853E 05	2.7886E 06	-2.9791E 06	0.0	0.0
-1.1487E 06	0.0	-6.6203E 05	0.0	5.5319E 05	0.0	0.0	0.0	2.4292E 06	0.0
ROW 17									
1.7521E 07	1.2317E 08	-1.2603E 07	-6.8571E 06	-3.1513E 06	-3.5463E 05	3.1044E 06	-3.7449E 06	0.0	0.0
-1.7841E 06	0.0	-1.0467E 05	0.0	-8.9919E 05	0.0	0.0	0.0	2.5465E 06	0.0
ROW 18									
-1.7217E 07	-1.1217E 08	3.3255E 05	2.0953E 06	1.1445E 06	-2.4856E 06	-1.9660E 06	3.3199E 06	0.0	0.0
7.7024E 06	0.0	-2.2443E 06	0.0	-6.2184E 05	0.0	0.0	0.0	-4.1905E 06	0.0
ROW 19									
7.7802E 06	-1.0914E 08	2.1126E 07	1.0046E 07	3.0969E 06	1.5351E 06	-3.2525E 06	5.4227E 06	0.0	0.0
3.4602E 05	0.0	-4.1080E 04	0.0	4.5395E 04	0.0	0.0	0.0	1.0266E 07	0.0
ROW 20									
-1.6696E 06	-2.9422E 06	-3.3707E 06	1.2007E 06	-2.7989E 06	3.0030E 06	1.7571E 05	-1.6697E 05	0.0	0.0
1.0800E 06	0.0	-3.6653E 04	0.0	2.8277E 05	0.0	0.0	0.0	-1.1926E 06	0.0
ROW 21									
2.4615E 07	8.2248E 06	7.4069E 06	3.0396E 06	8.0172E 05	6.3958E 05	-1.9438E 06	1.9734E 06	0.0	0.0
-2.6427E 05	0.0	-5.1567E 04	0.0	-2.2058E 04	0.0	0.0	0.0	1.0463E 05	0.0
ROW 22									
1.7728E 07	2.1963E 07	4.4288E 06	1.8833E 06	1.2276E 06	-1.2153E 06	-1.2060E 06	7.3993E 05	0.0	0.0
-8.9710E 05	0.0	8.4385E 04	0.0	-2.9451E 05	0.0	0.0	0.0	-6.6789E 05	0.0
ROW 23									
1.4580E 07	2.0219E 07	4.3682E 06	2.6685E 06	9.9406E 05	5.5599E 05	-9.5093E 05	5.4481E 05	0.0	0.0
-1.5358E 05	0.0	-1.1441E 05	0.0	1.2940E 05	0.0	0.0	0.0	-7.4153E 05	0.0
ROW 24									
6.5333E 06	1.4020E 07	6.7069E 06	8.3006E 05	3.3271E 06	-3.1701E 05	-4.2346E 05	4.6992E 05	0.0	0.0
-1.0423E 06	0.0	3.1055E 05	0.0	6.9521E 05	0.0	0.0	0.0	-1.3259E 06	0.0
ROW 25									
-5.4983E 06	-6.5993E 06	2.9694E 06	1.6704E 06	4.3356E 05	3.0803E 05	-2.8745E 05	-1.0576E 05	0.0	0.0
-1.0800E 05	0.0	-9.0442E 04	0.0	-3.7291E 04	0.0	0.0	0.0	-1.3094E 06	0.0
ROW 26									
-3.3122E 06	-8.1503E 06	1.8910E 06	9.4809E 05	4.2583E 05	5.7057E 04	-4.0396E 05	-9.1198E 04	0.0	0.0
7.3442E 04	0.0	-7.2611E 03	0.0	-5.1097E 03	0.0	0.0	0.0	-1.7697E 06	0.0

MATRIX * R3 * 32 BY 20 ANTISYMMETRIC MATH MODEL

ROW 27

6.2564E 06	2.8682E 07	7.0799E 05	4.9435E 05	2.7111E 05	-3.1083E 04	5.7498E 05	3.8094E 05	0.0	0.0
-7.0835E 05	0.0	-7.1268E 04	0.0	-3.9296E 04	0.0	0.0	0.0	2.4966E 06	0.0

ROW 28

-3.8819E 07	-9.3425E 07	3.3268E 06	1.5625E 06	5.9633E 05	2.6172E 05	8.9606E 04	9.8677E 05	0.0	0.0
1.5194E 06	0.0	7.0036E 04	0.0	5.8981E 04	0.0	0.0	0.0	-1.2963E 06	0.0

ROW 29

6.1528E 06	2.0334E 07	9.4997E 06	1.2071E 06	-2.6600E 06	1.0371E 06	-5.7185E 05	-2.9652E 05	0.0	0.0
-2.2396E 06	0.0	5.4636E 05	0.0	-3.2187E 05	0.0	0.0	0.0	4.8425E 05	0.0

ROW 30

-2.6843E 06	-1.2428E 07	1.3073E 07	6.0232E 06	2.4260E 06	5.4804E 05	-1.2824E 06	-1.7105E 03	0.0	0.0
-1.8256E 04	0.0	-5.1388E 04	0.0	1.3320E 04	0.0	0.0	0.0	2.0470E 06	0.0

ROW 31

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 32

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

MATRIX * R4 * 32 BY 20

ANTISYMMETRIC MATH MODEL

ROW 1
1.4970E 05 5.6535E 05 4.4442E 05 1.9757E 05 7.9896E 04 1.9449E 04 -1.6142E 03 4.4745E 03 0.0 0.0
3.2201E 05 0.0 5.5464E 04 0.0 8.7076E 04 0.0 0.0 0.0 7.8676E 04 0.0

ROW 2
1.4216E 08 5.8823E 08 8.2949E 07 -4.4855E 07 9.7512E 07 -1.1480E 08 -9.2910E 06 -1.9777E 07 0.0 0.0
-2.6882E 07 0.0 -4.2373E 06 0.0 -2.3693E 07 0.0 0.0 0.0 -2.6231E 07 0.0

ROW 3
1.3155E 08 4.4200E 08 3.6027E 08 1.6135E 08 6.3747E 07 1.4105E 07 -5.8658E 06 2.7723E 06 0.0 0.0
-2.3249E 08 0.0 -1.8697E 07 0.0 -4.8355E 06 0.0 0.0 0.0 3.5848E 07 0.0

ROW 4
2.0739E 07 8.0563E 07 4.4856E 07 1.7527E 07 1.3250E 07 9.1785E 06 -1.2765E 06 -1.0598E 06 0.0 0.0
-1.5235E 05 0.0 -7.0792E 05 0.0 -1.6790E 06 0.0 0.0 0.0 -5.9662E 05 0.0

ROW 5
-1.4509E 07 -4.9100E 07 -2.1707E 06 5.0824E 06 -7.0997E 06 -1.2953E 07 2.9443E 05 2.2914E 06 0.0 0.0
5.7696E 05 0.0 2.9824E 05 0.0 -1.4004E 06 0.0 0.0 0.0 1.8713E 06 0.0

ROW 6
-2.7094E 07 -1.1091E 08 -1.3028E 07 -1.4092E 06 1.7103E 07 5.9362E 06 1.3291E 06 3.6588E 06 0.0 0.0
2.0123E 06 0.0 4.5859E 05 0.0 -8.1118E 06 0.0 0.0 0.0 5.8258E 06 0.0

ROW 7
-3.8211E 06 -1.5575E 07 -4.7239E 05 -4.7013E 05 1.6893E 05 5.3479E 05 1.8049E 05 6.0056E 05 0.0 0.0
2.4717E 06 0.0 -4.0140E 06 0.0 1.7559E 06 0.0 0.0 0.0 8.3854E 05 0.0

ROW 8
8.0829E 06 3.0070E 07 1.6438E 06 -2.3349E 06 2.0900E 06 -1.2076E 06 -1.5907E 05 -1.1161E 06 0.0 0.0
4.9196E 06 0.0 -2.3802E 06 0.0 -1.1276E 07 0.0 0.0 0.0 -8.7781E 05 0.0

ROW 9
9.3139E 07 4.0271E 08 3.0626E 07 1.7275E 07 2.1177E 06 -1.0818E 06 -4.7394E 06 -1.6402E 07 0.0 0.0
-2.2411E 06 0.0 -6.9033E 05 0.0 -1.2031E 06 0.0 0.0 0.0 -2.0085E 07 0.0

ROW 10
6.9041E 07 3.0927E 08 5.2208E 06 3.9539E 06 2.8096E 07 1.1675E 07 -3.6161E 06 -1.2130E 07 0.0 0.0
-2.6752E 06 0.0 -2.2290E 05 0.0 2.8976E 06 0.0 0.0 0.0 -1.7023E 07 0.0

ROW 11
5.5332E 06 3.1407E 07 7.6105E 06 7.5707E 06 1.4385E 07 -1.2459E 07 -6.4665E 05 -1.6207E 06 0.0 0.0
-1.4418E 06 0.0 6.5492E 05 0.0 4.2238E 06 0.0 0.0 0.0 -2.3947E 06 0.0

ROW 12
-4.0006E 07 -1.6969E 08 -6.9589E 06 -6.7223E 06 -2.2288E 06 6.0690E 06 1.2890E 06 7.3484E 06 0.0 0.0
4.2906E 07 0.0 5.5365E 05 0.0 5.6302E 04 0.0 0.0 0.0 3.7473E 06 0.0

ROW 13
2.7167E 07 1.1090E 08 1.3291E 07 6.8842E 06 3.5909E 06 -7.7234E 05 -7.8268E 05 -4.6103E 06 0.0 0.0
8.2261E 06 0.0 -1.6475E 05 0.0 3.5167E 05 0.0 0.0 0.0 -5.1810E 05 0.0

MATRIX * K4 * 32 BY 20 ANTISYMMETRIC MATH MODEL

ROW 14
4.2436E 05 4.9781E 06 1.0904E 07 1.6859E 06 -4.9791E 06 7.6814E 06 -9.4271E 05 2.5577E 04 0.0 0.0
-2.0938E 06 0.0 8.6619E 05 0.0 -3.0351E 05 0.0 0.0 0.0 -3.9610E 06 0.0

ROW 15
-8.7079E 06 -6.1127E 07 8.8958E 06 3.8330E 06 1.6287E 06 9.0530E 05 -1.6965E 06 3.4414E 06 0.0 0.0
-4.7310E 05 0.0 -8.9364E 05 0.0 -9.2129E 04 0.0 0.0 0.0 -4.2448E 06 0.0

ROW 16
-1.0364E 07 -6.9520E 07 8.4173E 06 3.8195E 06 2.0483E 06 -2.0655E 05 -1.8008E 06 3.8453E 06 0.0 0.0
8.3718E 05 0.0 6.0261E 05 0.0 -4.8244E 05 0.0 0.0 0.0 -4.7068E 06 0.0

ROW 17
-1.2499E 07 -8.6532E 07 7.6534E 06 4.1231E 06 2.0013E 06 -6.0714E 04 -1.9757E 06 4.7434E 06 0.0 0.0
1.1468E 06 0.0 1.1068E 05 0.0 7.9619E 05 0.0 0.0 0.0 -4.7871E 06 0.0

ROW 18
1.1916E 07 7.7621E 07 -9.4419E 05 -2.2236E 06 6.2710E 04 3.2981E 06 1.5042E 06 -3.9573E 06 0.0 0.0
-6.3588E 06 0.0 1.9522E 06 0.0 5.7598E 05 0.0 0.0 0.0 4.3628E 06 0.0

ROW 19
-4.7263E 06 7.8475E 07 -1.3047E 07 -5.9437E 06 -1.3925E 06 -1.2307E 06 1.3528E 06 -6.6408E 06 0.0 0.0
-2.3960E 05 0.0 -8.8125E 03 0.0 -4.6103E 04 0.0 0.0 0.0 -8.7872E 06 0.0

ROW 20
1.7066E 06 2.6867E 06 2.0433E 06 -1.4365E 06 3.0713E 06 -3.5631E 06 4.0079E 03 2.2732E 05 0.0 0.0
-5.2339E 05 0.0 -2.9599E 03 0.0 -2.3033E 05 0.0 0.0 0.0 9.4947E 05 0.0

ROW 21
-1.7236E 07 -5.0708E 06 -4.9723E 06 -1.7780E 06 -3.8184E 05 -6.2733E 05 1.9478E 06 -2.1987E 06 0.0 0.0
7.2167E 04 0.0 4.0337E 04 0.0 1.8203E 04 0.0 0.0 0.0 1.7344E 05 0.0

ROW 22
-1.2256E 07 -1.4739E 07 -2.7048E 06 -9.8755E 05 -1.2397E 06 1.4486E 06 1.2959E 06 -8.2859E 05 0.0 0.0
7.1892E 05 0.0 -7.1308E 04 0.0 2.4539E 05 0.0 0.0 0.0 9.7198E 05 0.0

ROW 23
-1.0275E 07 -1.3319E 07 -2.7788E 06 -2.0720E 06 -5.5809E 05 -5.2589E 05 9.9174E 05 -6.0189E 05 0.0 0.0
3.0116E 04 0.0 8.9246E 04 0.0 -1.1115E 05 0.0 0.0 0.0 1.0578E 06 0.0

ROW 24
-4.5036E 06 -9.7813E 06 -5.5408E 06 -1.3299E 06 -3.0095E 06 4.6132E 05 4.3841E 05 -4.0748E 05 0.0 0.0
9.3093E 05 0.0 -3.2847E 05 0.0 -6.1615E 05 0.0 0.0 0.0 1.5362E 06 0.0

ROW 25
3.8064E 06 4.6476E 06 -1.7912E 06 -1.0210E 06 -1.2184E 05 -2.5788E 05 -9.6280E 03 -5.9128E 03 0.0 0.0
6.9693E 04 0.0 8.0508E 04 0.0 3.6217E 04 0.0 0.0 0.0 1.5948E 06 0.0

ROW 26
2.3203E 06 5.5704E 06 -1.2465E 06 -5.8561E 05 -2.6436E 05 -1.4427E 04 2.5219E 05 2.4856E 04 0.0 0.0
-3.3492E 04 0.0 4.0185E 03 0.0 4.5775E 03 0.0 0.0 0.0 2.0054E 06 0.0

MATRIX * R4 * 32 BY 20 ANTISYMMETRIC MATH MODEL

ROW 27

-4.4448E 06	-1.9424E 07	-4.4145E 05	-4.2729E 05	-1.6950E 05	5.5034E 04	-2.7476E 05	-4.2503E 05	0.0	0.0
4.7842E 05	0.0	6.3174E 04	0.0	3.6340E 04	0.0	0.0	0.0	-2.3231E 06	0.0

ROW 28

2.7274E 07	6.4837E 07	-1.8073E 06	-5.5252E 05	-2.2028E 05	-1.4498E 05	-1.1178E 06	-1.5444E 06	0.0	0.0
-1.0093E 06	0.0	-6.3992E 04	0.0	-5.5322E 04	0.0	0.0	0.0	1.5721E 06	0.0

ROW 29

-4.8665E 06	-1.5274E 07	-7.9271E 06	-1.5450E 05	3.3880E 06	-7.1872E 05	5.1734E 05	2.4570E 05	0.0	0.0
1.3349E 06	0.0	-4.7837E 05	0.0	3.3180E 05	0.0	0.0	0.0	2.4709E 05	0.0

ROW 30

2.0251E 06	9.4135E 06	-8.3213E 06	-3.7166E 06	-1.4871E 05	-3.3701E 05	4.7921E 05	-3.9816E 05	0.0	0.0
-3.3098E 04	0.0	3.5636E 04	0.0	-1.4032E 04	0.0	0.0	0.0	-4.1068E 05	0.0

ROW 31

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 32

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

MATRIX * BG1* 1 BY 20

ROW 1

1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03
1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03	1.0000E-03

MATRIX * BG2* 1 BY 20

ROW 1

3.0000E-03	3.0000E-03	3.0000E-03	3.0000E-03	3.0000E-03	3.0000E-03	3.0000E-03	3.0000E-03	3.0000E-03	3.0000E-03
3.0000E-03	3.0000E-03	3.0000E-03	3.0000E-03	3.0000E-03	3.0000E-03	3.0000E-03	3.0000E-03	3.0000E-03	3.0000E-03

MATRIX * BG4* 1 BY 20

ROW 1

7.0000E-03	7.0000E-03	7.0000E-03	7.0000E-03	7.0000E-03	7.0000E-03	7.0000E-03	7.0000E-03	7.0000E-03	7.0000E-03
7.0000E-03	7.0000E-03	7.0000E-03	7.0000E-03	7.0000E-03	7.0000E-03	7.0000E-03	7.0000E-03	7.0000E-03	7.0000E-03

MATRIX * BG3* 1 BY 20

ROW 1

5.0000E-03	5.0000E-03	5.0000E-03	5.0000E-03	5.0000E-03	5.0000E-03	5.0000E-03	5.0000E-03	5.0000E-03	5.0000E-03
5.0000E-03	5.0000E-03	5.0000E-03	5.0000E-03	5.0000E-03	5.0000E-03	5.0000E-03	5.0000E-03	5.0000E-03	5.0000E-03

MATR1 *XGST* 1 BY 10 ANTISYMMETRIC MATH MODEL

ROW 1

4.5000E 02 6.0000E 02 7.3000E 02 8.7000E 02 1.0200E 03 1.1800E 03 1.5000E 03 1.6900E 03 1.8500E 03 -1.0630E 02

MATRIX *YGST* 1 BY 10

ROW 1

0.0 2.2100E 02 4.0600E 02 5.8800E 02 7.8800E 02 1.0050E 03 0.0 2.2100E 02 0.0 0.0

MATRIX *ZGST* 1 BY 10

ROW 1

0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 -1.5000E 02 0.0

MATRIX *PHI.* 57 BY 30 ANTISYMMETRIC MATH MODEL

ROW 1

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 2

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 3

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 4

0.0	0.0	0.0	-3.5122E 08	-1.0371E 08	7.4382E 07	-9.1627E 06	2.3388E 07	7.6767E 07	5.3166E 07
1.4302E 06	-2.6596E 07	-3.5090E 08	-3.6655E 07	-4.2697E 07	3.1577E 07	5.2530E 07	-4.4704E 08	2.9864E 07	4.8117E 07
2.1782E 07	1.4282E 08	5.7839E 07	-2.6819E 07	-1.9374E 08	2.8774E 07	2.7358E 06	4.7417E 06	-9.5652E 07	-6.0519E 06

ROW 5

0.0	0.0	0.0	-1.7263E 08	-4.7823E 07	6.0457E 07	1.6717E 06	2.7288E 07	-5.6030E 07	-8.6520E 07
-2.9302E 07	-2.2088E 08	2.7123E 08	8.0702E 06	3.9809E 06	-2.6161E 06	-8.0731E 06	-1.0850E 06	1.4614E 08	-7.1562E 07
-8.3152E 07	-5.9318E 07	-7.8144E 06	5.0041E 07	1.6899E 08	-6.2511E 07	-7.8716E 07	6.8459E 06	-4.0794E 07	1.1562E 07

ROW 6

0.0	0.0	0.0	-1.0644E 08	-2.9316E 07	4.0029E 07	1.5810E 06	1.8354E 07	-4.7534E 07	-6.9303E 07
-2.3218E 07	-1.7018E 08	2.7339E 08	7.5527E 06	4.7723E 06	-1.1312E 07	-2.1493E 07	8.7870E 07	-5.4348E 07	-1.4855E 07
5.8146E 06	-6.8142E 05	1.8122E 07	4.0774E 07	1.0574E 08	-3.7068E 07	-8.5882E 07	1.9639E 07	-4.9031E 07	3.7256E 06

ROW 7

0.0	0.0	0.0	3.9826E 07	-3.2421E 07	-3.2204E 06	-5.0179E 06	1.2029E 06	5.5764E 07	-1.1159E 08
3.4731E 07	-8.5753E 07	1.0001E 07	-6.9975E 07	-2.4462E 06	-1.6383E 07	1.1358E 07	-1.0334E 07	-5.4429E 07	-1.7711E 08
-1.5201E 07	-8.4915E 07	7.9208E 07	4.6685E 07	3.9845E 07	-7.7957E 06	3.5220E 07	-2.3431E 07	1.7641E 08	-2.3795E 05

ROW 8

0.0	0.0	0.0	1.8002E 07	-3.8251E 07	-5.4176E 06	2.9448E 06	5.8039E 06	-2.3840E 07	1.1172E 08
-2.7076E 07	2.1434E 07	-2.5805E 06	1.6105E 07	3.5339E 06	6.9905E 06	-1.0294E 07	2.2075E 07	1.0689E 07	6.3376E 07
-9.9175E 06	-1.8460E 07	3.0748E 07	5.3243E 06	2.7438E 06	-2.8031E 06	-2.9959E 06	-4.7146E 05	4.4888E 07	3.6890E 04

ROW 9

0.0	0.0	0.0	8.9720E 06	-1.9040E 07	8.5581E 06	1.0016E 06	2.6501E 06	-8.8442E 06	5.0567E 07
-4.7570E 07	2.3592E 07	-6.3320E 06	5.8727E 07	8.7760E 05	-6.7477E 06	-1.1571E 06	1.2458E 07	-2.2579E 06	2.2286E 06
-5.5867E 06	-2.0926E 07	1.6502E 07	4.1175E 07	3.4329E 06	-2.2711E 05	7.7834E 06	-4.4353E 06	-1.8114E 07	7.3065E 04

ROW 10

0.0	0.0	0.0	1.6375E 08	4.4805E 07	-2.8190E 07	-1.0602E 07	-3.6973E 07	-9.3499E 07	-4.3267E 07
-3.2512E 07	-4.8064E 08	1.5903E 08	4.0443E 07	-3.4669E 06	-8.0075E 06	-1.3967E 07	5.9506E 07	8.3138E 07	-2.1272E 07
-1.5929E 08	4.1906E 07	5.4923E 07	8.0905E 07	8.2379E 07	4.2199E 07	1.9380E 08	-6.6921E 07	-9.7444E 07	-6.1218E 06

MATRIX *PHI.* 57 BY 30 ANTISYMMETRIC MATH MODEL

ROW 11

0.0	0.0	0.0	2.3277E 07	5.5128E 05	-4.0524E 07	8.4048E 06	-8.0468E 07	-2.9221E 07	5.7271E 07
-1.0202E 06	-1.6372E 08	5.0226E 07	3.0083E 07	-6.2230E 07	7.9050E 06	1.2173E 07	-6.1548E 08	-2.6573E 07	6.2736E 07
3.3386E 07	6.6918E 06	8.4976E 06	-3.2704E 07	-2.7504E 07	-1.7462E 07	-7.4625E 07	2.4901E 07	1.9422E 08	1.6554E 06

ROW 12

0.0	0.0	0.0	9.9171E 06	1.5968E 06	-7.6957E 06	9.6749E 05	-1.3656E 07	-9.0411E 06	1.0387E 07
-2.7697E 07	-7.6300E 07	2.0302E 07	5.4203E 07	-4.0379E 07	-1.7127E 06	9.9813E 06	-4.3228E 08	-3.3533E 07	1.6938E 07
8.4607E 07	-1.5066E 08	-5.6461E 07	-2.2909E 07	1.3798E 07	2.6781E 06	2.9202E 06	1.5502E 06	-1.0639E 08	9.7742E 05

ROW 13

0.0	0.0	0.0	-3.9826E 07	3.2421E 07	3.2204E 06	5.0179E 06	-1.2029E 06	-5.5764E 07	1.1159E 08
-3.4731E 07	8.5753E 07	-1.0001E 07	6.9975E 07	2.4462E 06	1.6383E 07	-1.1358E 07	1.0334E 07	5.4429E 07	1.7711E 08
1.5201E 07	8.4915E 07	-7.9208E 07	-4.6685E 07	-3.9845E 07	7.7957E 06	-3.5220E 07	2.3431E 07	-1.7641E 08	2.3795E 05

ROW 14

0.0	0.0	0.0	-1.8002E 07	3.8251E 07	5.4176E 06	-2.9448E 06	-5.8039E 06	2.3840E 07	-1.1172E 08
2.7076E 07	-2.1434E 07	2.5805E 06	-1.6105E 07	-3.5339E 06	-6.9905E 06	1.0294E 07	-2.2075E 07	-1.0689E 07	-6.3376E 07
9.9175E 06	1.8460E 07	-3.0748E 07	-5.3243E 06	-2.7438E 06	2.8031E 06	2.9959E 06	4.7146E 05	-4.4888E 07	-3.6890E 04

ROW 15

0.0	0.0	0.0	-8.9720E 06	1.9040E 07	-8.5581E 06	-1.0016E 06	-2.6501E 06	8.8442E 06	-5.0367E 07
4.7570E 07	-2.3592E 07	6.3320E 06	-5.8727E 07	-8.7760E 05	6.7477E 06	1.1571E 08	-1.2458E 07	2.2579E 06	-2.2286E 06
5.5867E 06	2.0926E 07	-1.6502E 07	-4.1175E 07	-3.4329E 06	2.2711E 05	-7.7834E 06	4.4353E 06	1.0114E 07	-7.3065E 04

ROW 16

0.0	0.0	0.0	-1.6375E 08	-4.4805E 07	2.8190E 07	1.0602E 07	3.6973E 07	9.3499E 07	4.3267E 07
3.2512E 07	4.8064E 08	-1.5903E 08	-4.0443E 07	3.4669E 06	8.0075E 06	1.3967E 07	-5.9506E 07	-8.3138E 07	2.1272E 07
1.5929E 08	-4.1906E 07	-5.4923E 07	-8.0905E 07	-8.2379E 07	-4.2199E 07	-1.9880E 08	6.6921E 07	9.7444E 07	6.1218E 06

ROW 17

0.0	0.0	0.0	-2.3277E 07	-5.5128E 05	4.0524E 07	-8.4048E 06	8.0468E 07	2.9221E 07	-5.7271E 07
1.0202E 06	1.6372E 08	-5.0226E 07	-3.0083E 07	6.2230E 07	-7.9050E 06	-1.2173E 07	6.1548E 08	2.6573E 07	-6.2736E 07
-3.3386E 07	-6.6918E 06	-8.4976E 06	3.2704E 07	2.7504E 07	1.7462E 07	7.4625E 07	-2.4901E 07	-1.9422E 08	-1.6554E 06

ROW 18

0.0	0.0	0.0	-9.9171E 06	-1.5968E 06	7.6957E 06	-9.6749E 05	1.3656E 07	9.0411E 06	-1.0387E 07
2.7697E 07	7.6300E 07	-2.0302E 07	-5.4203E 07	4.0379E 07	1.7127E 06	-9.9813E 06	4.3228E 08	3.3533E 07	-1.6938E 07
-8.4607E 07	1.5066E 08	5.6461E 07	2.2909E 07	-1.3798E 07	-2.6781E 06	-2.9202E 06	-1.5502E 06	1.0639E 08	-9.7742E 05

ROW 19

0.0	0.0	0.0	-2.4111E 05	5.9964E 05	1.5704E 06	2.7578E 05	-7.0107E 05	-1.2340E 07	-1.0547E 07
-1.4794E 06	9.9164E 06	-1.0376E 07	6.6629E 05	1.2311E 07	1.3817E 07	1.7283E 07	-1.6531E 07	-3.3758E 07	1.0565E 06
-1.7420E 07	-7.0059E 06	-4.5134E 06	-9.8433E 05	-4.3098E 05	-2.9329E 06	1.4180E 07	-1.6969E 07	3.7990E 06	-1.0128E 07

ROW 20

0.0	0.0	0.0	2.4111E 05	-5.9964E 05	-1.5704E 06	-2.7578E 05	7.0107E 05	1.2340E 07	1.0547E 07
1.4794E 06	-9.9164E 06	1.0376E 07	-6.6629E 05	-1.2311E 07	-1.3817E 07	-1.7283E 07	1.6531E 07	3.3758E 07	-1.0565E 06
1.7420E 07	7.0059E 06	4.5134E 06	9.8433E 05	4.3098E 05	2.9329E 06	-1.4180E 07	1.6969E 07	-3.7990E 06	1.0128E 07

MATRIX *PHI.* 57 BY 30 | ANTISYMMETRIC MATH MODEL |

ROW 21

0.0	0.0	0.0	-2.9950E 06	1.1119E 05	3.3778E 06	4.5695E 05	-5.3165E 05	-2.1250E 07	-1.9643E 07
-3.4630E 06	1.2296E 07	-2.1137E 07	-1.5560E 07	-2.0818E 07	-1.0801E 07	-2.0773E 07	7.0058E 06	-2.0034E 07	2.4039E 06
-1.3327E 07	-5.4675E 06	-3.5316E 06	5.3612E 05	4.6499E 06	9.9761E 06	-8.7200E 06	1.1672E 07	5.1324E 06	5.2213E 06

ROW 22

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 23

0.0	-1.0000E 00	0.0	-2.9593E-02	6.6943E-02	1.0046E-01	1.3084E-02	-3.4039E-02	-1.6499E-01	-5.8839E-02
1.4498E-02	2.4137E-02	6.2557E-02	7.6210E-02	1.9312E-02	1.7555E-02	-5.9961E-03	4.4617E-02	1.6895E-01	4.2846E-02
7.7773E-03	-2.3870E-02	-5.6438E-02	-7.6179E-02	-1.0818E-01	4.0221E-02	3.2512E-02	7.3913E-03	2.6821E-02	-2.6838E-03

ROW 24

0.0	0.0	1.0000E 00	3.3462E-02	1.6645E-03	1.8583E-03	-2.4345E-03	-4.9951E-03	-1.5234E-02	-1.4819E-02
-4.2176E-03	-3.9804E-02	7.2097E-02	4.1028E-04	-2.8476E-03	-2.6045E-03	-5.4924E-03	-4.7850E-03	2.3710E-03	-8.6604E-03
-2.1191E-02	-4.6032E-03	2.8282E-03	1.4179E-02	2.9495E-02	-3.8102E-04	1.6533E-02	-6.5736E-03	6.6818E-03	-3.2085E-04

ROW 25

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 26

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 27

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 28

-2.5910E-03	2.8144E-02	1.7923E 00	-4.6582E-04	-2.3785E-02	-3.3485E-03	-1.8291E-02	-3.7674E-02	-3.1447E-02	-2.0636E-02
-4.4901E-03	-3.6023E-01	-9.5209E-02	1.2291E-02	1.1125E-02	-2.8248E-03	-4.0296E-04	5.9677E-02	-3.7438E-03	3.4321E-03
4.7178E-03	-3.3757E-03	-1.7704E-03	-1.7116E-03	-1.2701E-03	-4.1855E-04	-2.7194E-03	1.0362E-03	2.1630E-04	6.4368E-05

ROW 29

-2.5910E-03	-1.2473E-01	9.6176E-03	3.0906E-03	7.0739E-03	-8.1026E-03	-5.0061E-03	-2.3040E-02	-4.1805E-03	1.9707E-02
1.0361E-02	5.5292E-02	-1.1795E-02	8.3041E-03	1.5507E-03	3.0754E-03	-1.5714E-03	7.8512E-03	6.4149E-04	8.9422E-03
1.2951E-02	-3.2138E-04	-6.9769E-03	-1.2125E-02	-1.1939E-02	-9.7689E-04	-1.2518E-02	4.9188E-03	-4.5204E-03	3.9431E-04

ROW 30

2.5910E-03	3.4186E-02	2.0502E 00	2.1031E-01	4.4774E-02	-2.3481E-02	1.3345E-03	-1.1626E-02	-3.0495E-02	-1.8917E-02
-1.5897E-03	2.1645E-02	2.2072E-02	-2.9025E-03	-1.8016E-03	-6.0324E-03	-8.0390E-03	3.2350E-02	-5.7533E-02	1.1288E-02
1.6239E-02	1.0868E-02	5.4877E-03	-9.1425E-05	-9.0245E-03	4.3626E-03	6.1438E-03	-1.3515E-03	3.2527E-03	3.6870E-04

MATRIX *PHI.* 57 BY 30 ANTISYMMETRIC MATH MODEL

ROW 31

-1.1302E-04	-1.4546E 00	-1.6180E-01	7.9954E-03	1.9521E-02	7.6629E-02	1.3505E-03	-2.8391E-02	2.3589E-02	-6.7117E-02
6.4014E-02	-2.0675E-02	2.5067E-03	-1.1878E-02	-2.7425E-03	-1.7522E-03	3.2478E-03	-1.4208E-02	-7.1477E-03	-2.9370E-02
3.1037E-03	5.5729E-03	-7.6623E-03	-9.2206E-03	6.5209E-04	4.1154E-04	1.2526E-03	-3.4691E-04	-9.6211E-03	3.1141E-05

ROW 32

-1.1302E-04	-2.3794E 00	-2.8692E-01	1.2752E-01	-1.8663E-01	9.5549E-02	7.6530E-03	-1.2828E-02	-2.2637E-02	1.2660E-01
-1.0696E-01	5.2015E-02	-1.9066E-03	2.0119E-02	3.2044E-03	-2.0055E-03	9.6847E-05	3.2751E-02	7.6030E-03	3.8253E-02
9.5456E-04	-3.0907E-02	9.8462E-03	-1.2939E-04	7.0100E-03	6.8692E-04	7.0707E-03	-2.7456E-03	2.3391E-02	-2.6642E-04

ROW 33

-1.1302E-04	-2.7638E 00	-3.3894E-01	1.9829E-01	-3.1725E-01	1.6188E-01	1.5082E-02	-5.8487E-02	-4.8514E-02	2.9636E-01
-3.6404E-01	1.5242E-01	-3.4508E-02	2.5341E-01	7.6911E-03	-1.9698E-02	-1.8091E-02	5.8343E-02	-2.7241E-02	-1.6192E-01
-2.9960E-02	1.2403E-01	-1.2747E-02	2.2151E-02	-2.2059E-02	-2.4117E-03	-1.8812E-02	6.7115E-03	-3.9732E-02	5.5472E-04

ROW 34

-1.1302E-04	-2.3829E 00	-2.5445E-01	1.6173E-02	-4.4669E-02	-4.2551E-01	-3.4454E-02	4.0577E-01	-1.0582E-01	2.9043E-01
1.8889E-01	-2.8572E-02	6.5303E-03	1.5027E-02	-3.3639E-03	-2.8813E-03	2.3203E-03	-1.9918E-02	-6.4548E-04	-2.8891E-03
-3.7423E-03	6.5262E-03	3.4613E-03	1.8257E-02	-3.3722E-03	-6.1806E-04	-2.8076E-03	7.6365E-04	-1.4035E-02	1.6233E-04

ROW 35

1.1302E-04	1.4546E 00	1.6180E-01	-7.9954E-03	-1.9521E-02	-7.6629E-02	-1.3505E-03	2.8391E-02	-2.3589E-02	6.7117E-02
-6.4014E-02	2.0675E-02	-2.5067E-03	1.1878E-02	2.7425E-03	1.7522E-03	-3.2478E-03	1.4208E-02	7.1477E-03	2.9370E-02
-3.1037E-03	-5.5729E-03	7.6623E-03	9.2206E-03	-6.5209E-04	-4.1154E-04	-1.2526E-03	3.4691E-04	9.6211E-03	-3.1141E-05

ROW 36

1.1302E-04	2.3794E 00	2.8692E-01	-1.2752E-01	1.8663E-01	-9.5549E-02	-7.6530E-03	1.2828E-02	2.2637E-02	-1.2660E-01
1.0696E-01	-5.2015E-02	1.9066E-03	-2.0119E-02	-3.2044E-03	2.0055E-03	-9.6847E-05	-3.2751E-02	-7.6030E-03	-3.8253E-02
-9.5456E-04	3.0907E-02	-9.8462E-03	1.2939E-04	-7.0100E-03	-6.8692E-04	-7.0707E-03	2.7456E-03	-2.3391E-02	2.6642E-04

ROW 37

1.1302E-04	2.7638E 00	3.3894E-01	-1.9829E-01	3.1725E-01	-1.6188E-01	-1.5082E-02	5.8487E-02	4.8514E-02	-2.9636E-01
3.6404E-01	-1.5242E-01	3.4508E-02	-2.5341E-01	-7.6911E-03	1.9698E-02	1.8091E-02	-5.8343E-02	2.7241E-02	1.6192E-01
2.9960E-02	-1.2403E-01	1.2747E-02	-2.2151E-02	2.2059E-02	2.4117E-03	1.8812E-02	-6.7115E-03	3.9732E-02	-5.5472E-04

ROW 38

1.1302E-04	2.3829E 00	2.5445E-01	-1.6173E-02	4.4669E-02	4.2551E-01	3.4454E-02	-4.0577E-01	1.0582E-01	-2.9043E-01
-1.8889E-01	2.8572E-02	-6.5303E-03	-1.5027E-02	3.3639E-03	2.8813E-03	-2.3203E-03	1.9918E-02	6.4548E-04	2.8891E-03
3.7423E-03	-6.5262E-03	-3.4613E-03	-1.8257E-02	3.3722E-03	6.1806E-04	2.8076E-03	-7.6365E-04	1.4035E-02	-1.6233E-04

ROW 39

-1.1291E-04	-1.0627E 00	-3.8959E-02	-3.9974E-02	8.0222E-02	3.0346E-02	1.8124E-02	-1.8904E-02	-1.0752E-02	3.3543E-01
-7.9695E-02	-2.1971E-02	-4.0556E-04	-2.6837E-02	2.9807E-03	-3.4780E-03	3.9016E-03	1.7276E-02	-1.8974E-03	-6.6338E-03
5.8042E-04	-3.0755E-03	4.4230E-04	-7.1360E-04	1.1386E-03	6.9529E-05	1.2055E-03	-5.6486E-04	-1.0203E-02	6.2405E-05

ROW 40

-2.5885E-03	1.2560E-01	6.0568E-01	1.5587E-02	-8.6985E-04	-6.7482E-03	1.1534E-01	5.7664E-02	5.1752E-03	-2.0625E-02
-2.8632E-03	9.6981E-04	4.8525E-03	-2.2257E-03	7.2800E-03	-4.2014E-03	-2.6518E-03	-1.9632E-02	1.7066E-03	2.8834E-03
2.6924E-04	-1.6526E-03	-8.6480E-04	3.7671E-03	-3.9549E-04	3.6581E-05	-4.3440E-04	2.9932E-04	1.0499E-02	-6.5090E-05

MATRIX *PHI.* 57 BY 30 ANTISYMMETRIC MATH MODEL

ROW 41
-1.1291E-04 -1.8617E 00 -1.1403E-01 -2.1662E-02 3.7927E-02 -1.6440E-01 -6.3324E-03 9.2221E-04 4.2586E-02 -2.5520E-01
-9.9901E-02 -9.5508E-03 -8.2111E-04 -6.0849E-03 -2.2213E-04 8.5266E-04 4.9028E-04 -1.8779E-03 1.4256E-03 3.2459E-03
-6.7443E-04 3.2613E-03 -1.8538E-05 -3.5429E-03 -3.1387E-04 -9.7572E-05 -7.0695E-04 3.3010E-04 1.5486E-02 -9.6888E-05

ROW 42
-2.5885E-02 1.6260E-01 8.0318E-03 4.4097E-02 3.8376E-02 1.7365E-01 -3.4112E-02 1.8875E-01 1.9078E-02 -7.4085E-02
-4.6329E-02 2.9559E-03 4.0788E-03 8.7151E-03 -1.7670E-03 -7.7239E-03 9.1143E-03 9.0892E-03 1.8373E-03 7.1804E-04
-7.7575E-04 -2.1786E-03 -4.0967E-04 7.9063E-03 1.1749E-04 4.9232E-04 1.7124E-03 -5.3804E-04 -1.5358E-02 3.4947E-05

ROW 43
0.0 -5.4389E-01 -2.0348E-02 -3.9197E-02 5.8393E-02 -7.1887E-02 -8.7415E-03 1.3593E-02 -1.8834E-02 2.6544E-01
-1.3430E-01 -7.0106E-03 -1.9946E-03 -2.2238E-02 -4.9276E-03 3.9392E-03 6.4131E-03 4.1962E-02 6.4831E-03 2.9174E-02
-1.1283E-03 5.0065E-02 -7.8031E-03 -2.8021E-01 2.5303E-02 3.2502E-03 1.9058E-02 -7.8138E-03 -4.0147E-01 2.4015E-03

ROW 44
0.0 -5.6450E-01 -2.3107E-02 -8.5450E-02 6.2040E-02 -7.6890E-01 -5.1953E-02 6.3455E-01 -1.6641E-01 4.6440E-01
2.0245E-01 -2.8904E-02 -1.6366E-02 1.6382E-01 -3.2274E-03 -1.2431E-02 -1.2736E-02 -1.1554E-01 -3.0313E-02 -1.7820E-02
6.1191E-02 -2.4704E-01 -5.8916E-02 -6.0649E-02 6.4751E-02 1.8362E-02 8.5233E-02 -2.6542E-02 5.0194E-02 -2.6571E-03

ROW 45
0.0 5.6450E-01 2.3107E-02 8.5450E-02 -6.2040E-02 7.6890E-01 5.1953E-02 -6.3455E-01 1.6641E-01 -4.6440E-01
-2.0245E-01 2.8904E-02 1.6366E-02 -1.6382E-01 3.2274E-03 1.2431E-02 1.2736E-02 1.1554E-01 3.0313E-02 1.7820E-02
-8.1191E-02 2.4704E-01 5.8916E-02 6.0649E-02 -6.4751E-02 -1.8362E-02 -8.5233E-02 2.6542E-02 -5.0194E-02 2.6571E-03

ROW 46
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 47
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 48
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 49
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 50
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

MATRIX *PHI.* 57 BY 30 ANTISYMMETRIC MATH MODEL

ROW 51

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 52

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 53

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 54

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 55

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 56

-1.1750E-04	1.2763E-03	-8.8581E-01	1.3142E-02	1.8177E-02	-9.5440E-03	1.1973E-02	2.3959E-02	2.9681E-02	2.4471E-02
7.0537E-03	5.4359E-01	1.9751E-01	-3.0341E-02	-2.6923E-02	7.0979E-03	8.8625E-04	-1.6244E-01	1.2240E-02	-2.5809E-02
-2.1862E-02	2.4291E-03	2.5404E-02	-9.2429E-03	1.5331E-03	2.6808E-03	1.3130E-02	-4.7970E-03	-7.2246E-03	-3.9444E-04

ROW 57

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

MATRIX *PHFF* 24 BY 30 ANTISYMMETRIC MATH MODEL

ROW 1

1.0000E 00	-1.0862E 01	-2.4752E 02	-5.9059E 00	1.8423E 00	5.9576E 00	3.0884E 00	7.7049E 00	3.4721E 00	1.1544E-01
-6.8422E-01	-9.3780E 00	-8.9526E 00	1.6153E 00	7.0633E-01	-4.4955E-01	2.9960E-01	4.6341E 00	-9.8998E-01	2.6450E 00
2.5308E-01	7.9907E-01	7.1454E-01	6.7041E-01	-7.2492E-01	-1.4734E-01	-9.8033E-01	3.5512E-01	-1.7417E 00	1.9895E-02

ROW 2

1.0000E 00	-1.0862E 01	-2.9774E 02	-5.2104E 00	2.4753E 00	5.3763E 00	3.2926E 00	7.8497E 00	3.7381E 00	4.9744E-01
-5.3965E-01	-6.4043E 00	-9.7088E 00	1.8088E 00	1.0966E 00	-5.0958E-01	2.3168E-01	7.5414E 00	-1.1579E 00	2.7386E 00
9.7716E-01	1.2372E-01	1.0731E-01	2.9962E-01	-8.3296E-01	-2.2489E-01	-1.4700E 00	5.5355E-01	-1.2753E 00	3.4025E-02

ROW 3

1.0000E 00	-1.0862E 01	-3.2574E 02	-4.8234E 00	2.8433E 00	5.0571E 00	3.4248E 00	7.9768E 00	3.9392E 00	7.4992E-01
-4.4825E-01	-3.7248E 00	-9.6966E 00	1.8575E 00	1.2444E 00	-5.2488E-01	1.9565E-01	8.7241E 00	-1.2158E 00	2.7984E 00
1.3166E 00	-1.3268E-01	-2.7711E-01	2.1246E-01	-8.4369E-01	-2.6039E-01	-1.6690E 00	6.3325E-01	-9.9987E-01	4.0309E-02

ROW 4

1.0000E 00	-1.0862E 01	-3.5374E 02	-4.4373E 00	3.2279E 00	4.7431E 00	3.5773E 00	8.1554E 00	4.1989E 00	1.0455E 00
-3.4528E-01	8.7744E-02	-9.2017E 00	1.8379E 00	1.3144E 00	-5.2029E-01	1.6229E-01	9.4179E 00	-1.2350E 00	2.8515E 00
1.5827E 00	-2.7673E-01	-6.8360E-01	2.2865E-01	-8.0945E-01	-2.8712E-01	-1.7924E 00	6.8179E-01	-7.1872E-01	4.4881E-02

ROW 5

1.0000E 00	-1.0862E 01	-4.3774E 02	-3.2830E 00	4.4758E 00	3.8291E 00	4.1509E 00	8.9873E 00	5.3147E 00	2.1762E 00
2.7581E-02	1.8038E 01	-4.9336E 00	1.3700E 00	1.0759E 00	-3.9390E-01	8.1517E-02	8.6724E 00	-1.0759E 00	2.8770E 00
1.9455E 00	-1.9450E-01	-1.8498E 00	6.8769E-01	-5.1069E-01	-3.1572E-01	-1.7699E 00	6.6809E-01	8.5475E-02	4.9097E-02

ROW 6

1.0000E 00	-1.0862E 01	-5.3274E 02	-1.9849E 00	6.0980E 00	2.8504E 00	5.0638E 00	1.0609E 01	7.3494E 00	3.9952E 00
5.8440E-01	5.3291E 01	6.3727E 00	-1.7531E-01	-2.3174E-01	-2.3105E-04	5.2732E-02	1.2650E 00	-4.2576E-01	2.1583E 00
1.2952E 00	4.7036E-01	-2.2111E 00	1.2979E 00	-1.2185E-02	-2.2430E-01	-1.0354E 00	3.7853E-01	5.7184E-01	3.3666E-02

ROW 7

1.0000E 00	-1.0862E 01	-6.0374E 02	-1.0180E 00	7.4432E 00	2.1492E 00	5.9147E 00	1.2258E 01	9.3671E 00	5.6905E 00
1.0804E 00	8.9253E 01	1.8895E 01	-2.0304E 00	-1.8815E 00	4.5048E-01	8.2505E-02	-8.5381E 00	3.4603E-01	8.7372E-01
9.0111E-02	9.6668E-01	-1.3603E 00	1.2975E 00	2.8863E-01	-7.3130E-02	-1.4706E-01	4.1374E-02	4.6174E-01	1.0116E-02

ROW 8

1.0000E 00	-1.0862E 01	-6.9174E 02	1.7979E-01	9.1799E 00	1.2924E 00	7.0595E 00	1.4540E 01	1.2137E 01	7.9647E 00
1.7330E 00	1.3903E 02	3.6746E 01	-4.7438E 00	-4.2939E 00	1.0902E 00	1.5552E-01	-2.3033E 01	1.4449E 00	-1.3246E 00
-1.8209E 00	1.3029E 00	6.8327E-01	6.6059E-01	4.9020E-01	1.6154E-01	1.0495E 00	-3.9991E-01	-8.3480E-02	-2.4843E-02

ROW 9

0.0	1.0000E 00	0.0	3.2951E-02	-5.7515E-02	-7.5911E-02	-7.4040E-03	3.3994E-02	1.4718E-02	-7.9424E-02
-3.9947E-02	-2.3246E-02	7.7459E-03	-7.4686E-02	2.6158E-04	-9.1456E-03	1.5391E-02	1.1191E-03	-1.6805E-02	-7.5026E-02
3.0138E-03	-2.2119E-02	9.6259E-03	1.3622E-02	1.1055E-02	-1.9053E-03	1.0828E-02	-6.9552E-03	4.1170E-02	8.8112E-06

ROW 10

0.0	1.0000E 00	0.0	3.3076E-02	-5.7774E-02	-7.6378E-02	-7.5214E-03	3.4044E-02	1.4736E-02	-8.0438E-02
-4.0566E-02	-2.2942E-02	1.0001E-02	-7.8797E-02	-1.8785E-04	-9.5574E-03	1.6362E-02	-2.9976E-03	-1.8242E-02	-9.8450E-02
-2.6208E-04	-5.4457E-02	5.4009E-02	-3.1595E-02	-4.3153E-03	-1.6177E-03	6.0765E-04	-2.0879E-03	2.3469E-02	9.3829E-05

MATRIX *PHFF* 24 BY 30 ANTISYMMETRIC MATH MODEL

ROW 11
0.0 1.0000E 00 0.0 3.3146E-02 -5.7920E-02 -7.6640E-02 -7.5872E-03 3.4073E-02 1.4747E-02 -8.1009E-02
-4.0914E-02 -2.2759E-02 1.1274E-02 -8.1110E-02 -4.4135E-04 -9.7888E-03 1.6908E-02 -5.3174E-02 -1.9050E-02 -1.1162E-01
-2.1049E-03 -7.2640E-02 7.8966E-02 -5.7019E-02 -1.2958E-02 -1.4559E-03 -5.1386E-03 6.4877E-04 1.3516E-02 1.4162E-04

ROW 12
0.0 1.0000E 00 0.0 3.3213E-02 -5.8056E-02 -7.6888E-02 -7.6472E-03 3.4105E-02 1.4764E-02 -8.1543E-02
-4.1241E-02 -2.2472E-02 1.2525E-02 -8.3301E-02 -6.8862E-04 -1.0005E-02 1.7425E-02 -7.5578E-03 -1.9809E-02 -1.2406E-01
-3.8529E-03 -8.9803E-02 1.0254E-01 -8.1024E-02 -2.1116E-02 -1.3022E-03 -1.0559F-02 3.2305E-03 4.1149E-03 1.8658E-04

ROW 13
0.0 1.0000E 00 0.0 3.3399E-02 -5.8434E-02 -7.7581E-02 -7.8127E-03 3.4204E-02 1.4818E-02 -8.3034E-02
-4.2157E-02 -2.1495E-02 1.6108E-02 -8.9457E-02 -1.3940E-03 -1.0610E-02 1.8873E-02 -1.3916E-02 -2.1932E-02 -1.5896E-01
-8.7665E-03 -1.3792E-01 1.6864E-01 -1.4833E-01 -4.3991E-02 -8.6980E-04 -2.5748E-02 1.0466E-02 -2.2249E-02 3.1243E-04

ROW 14
0.0 1.0000E 00 0.0 3.3563E-02 -5.8752E-02 -7.8190E-02 -7.9377E-03 3.4346E-02 1.4929E-02 -8.4310E-02
-4.2957E-02 -1.9421E-02 1.9799E-02 -9.4986E-02 -2.1022E-03 -1.1124E-02 2.0159E-02 -2.0074E-02 -2.3772E-02 -1.8990E-01
-1.3200E-02 -1.8046E-01 2.2721E-01 -2.0788E-01 -6.4720E-02 -4.7714E-04 -3.9131E-02 1.6847E-02 -4.5613E-02 4.2216E-04

ROW 15
0.0 1.0000E 00 0.0 3.3648E-02 -5.8907E-02 -7.8503E-02 -7.9888E-03 3.4456E-02 1.5027E-02 -8.4944E-02
-4.3366E-02 -1.7567E-02 2.2048E-02 -9.7910E-02 -2.5238E-03 -1.1378E-02 2.0830E-02 -2.3611E-02 -2.4703E-02 -2.0600E-01
-1.5557E-02 -2.0251E-01 2.5766E-01 -2.3879E-01 -7.4713E-02 -2.6688E-04 -4.6042E-02 2.0145E-02 -5.7764E-02 4.7807E-04

ROW 16
0.0 1.0000E 00 0.0 3.3711E-02 -5.8990E-02 -7.8731E-02 -7.9869E-03 3.4643E-02 1.5219E-02 -8.5340E-02
-4.3653E-02 -1.3873E-02 2.4753E-02 -1.0027E-01 -3.0012E-03 -1.1531E-02 2.1347E-02 -2.7288E-02 -2.5333E-02 -2.1827E-01
-1.7499E-02 -2.1906E-01 2.8080E-01 -2.6210E-01 -8.2607E-02 -8.9209E-05 -5.1149E-02 2.2592E-02 -6.6998E-02 5.1717E-04

ROW 17
0.0 0.0 1.0000E 00 -1.3865E-02 -1.2341E-02 1.1665E-02 -3.7455E-03 -2.0760E-03 -4.3792E-03 -6.9118E-03
-2.4863E-03 -4.1440E-02 2.2596E-02 -4.8496E-03 -8.9842E-03 1.5151E-03 1.3769E-03 -6.5499E-02 3.9782E-03 -1.5454E-03
-1.5513E-02 1.5798E-02 1.0943E-02 9.8251E-03 3.1357E-03 1.6768E-03 1.1123E-02 -4.5288E-03 -8.8770E-03 -3.0982E-04

ROW 18
0.0 0.0 1.0000E 00 -1.3833E-02 -1.2913E-02 1.1473E-02 -4.4350E-03 -3.8243E-03 -6.3691E-03 -8.4121E-03
-3.1002E-03 -7.9941E-02 6.2644E-03 -2.6671E-03 -6.3568E-03 8.2523E-04 1.3188E-03 -4.9018E-02 2.6138E-03 -2.1056E-03
-1.3128E-02 1.0891E-02 1.3187E-02 4.7896E-03 1.0898E-03 1.3883E-03 8.2107E-03 -3.3057E-03 -9.6658E-03 -2.4873E-04

ROW 19
0.0 0.0 1.0000E 00 -1.3807E-02 -1.3418E-02 1.1312E-02 -5.0567E-03 -5.3889E-03 -8.1491E-03 -9.7318E-03
-3.4570E-03 -1.1438E-01 -8.3902E-03 -6.2555E-04 -3.9973E-03 2.1722E-04 1.2457F-03 -3.4189E-02 1.4250E-03 -2.0957E-03
-1.0923E-02 7.2070E-03 1.4227E-02 1.2723E-03 -4.0473E-04 1.1241E-03 5.8290E-03 -2.3180E-03 -9.9852E-03 -1.9595E-04

ROW 20
0.0 0.0 1.0000E 00 -1.3777E-02 -1.4043E-02 1.1120E-02 -5.8243E-03 -7.3400E-03 -1.0368E-02 -1.1357E-02
-3.8899E-03 -1.5731E-01 -2.6598E-02 1.9964E-03 -1.0479E-03 -5.3285E-04 1.1362E-03 -1.5628E-02 -2.9688E-05 -1.6425E-03
-8.1127E-03 3.2246E-03 1.4687E-02 -2.2604E-03 -1.9782E-03 7.8929E-04 3.0528E-03 -1.1784E-03 -1.0050E-02 -1.3177E-04

MATRIX *PHFF* 24 BY 30 ANTISYMMETRIC MATH MODEL

ROW 21

0.0	0.0	1.0000E 00	-1.3707E-02	-1.5737E-02	1.0637E-02	-7.9251E-03	-1.2714E-02	-1.6477E-02	-1.5730E-02
-5.0194E-03	-2.7549E-01	-7.7308E-02	9.6245E-03	7.1139E-03	-2.5558E-03	7.3748E-04	3.5864E-02	-3.8889E-03	1.9543E-03
-5.1310E-05	-4.4918E-03	1.1502E-02	-7.4474E-03	-4.7667E-03	-1.6088E-04	-3.5622E-03	1.4690E-03	-8.4535E-03	3.6328E-05

ROW 22

0.0	0.0	1.0000E 00	-1.3630E-02	-1.8336E-02	1.0001E-02	-1.1203E-02	-2.1194E-02	-2.6104E-02	-2.2348E-02
-6.6344E-03	-4.6173E-01	-1.5763E-01	2.2732E-02	2.0090E-02	-5.6331E-03	-1.4837E-04	1.1807E-01	-9.5868E-03	1.3836E-02
1.3517E-02	-8.0652E-03	-5.2941E-03	-3.6190E-03	-5.0804E-03	-1.7340E-03	-1.1270E-02	4.3479E-03	-1.2410E-03	2.7857E-04

ROW 23

0.0	0.0	1.0000E 00	-1.3612E-02	-1.9429E-02	9.7856E-03	-1.2608E-02	-2.4874E-02	-3.0277E-02	-2.5085E-02
-7.2551E-03	-5.4246E-01	-1.9272E-01	2.8935E-02	2.5769E-02	-6.9137E-03	-6.5614E-04	1.5421E-01	-1.1872E-02	2.1974E-02
1.9813E-02	-5.4853E-03	-1.8236E-02	3.8115E-03	-3.2543E-03	-2.4522E-03	-1.3305E-02	4.9738E-03	4.1432E-03	3.7266E-04

ROW 24

0.0	0.0	1.0000E 00	-1.3611E-02	-1.9910E-02	9.7117E-03	-1.3238E-02	-2.6541E-02	-3.2166E-02	-2.6272E-02
-7.5043E-03	-5.7898E-01	-2.0870E-01	3.1950E-02	2.8361E-02	-7.4719E-03	-9.3531E-04	1.7076E-01	-1.2832E-02	2.6849E-02
2.2828E-02	-2.6700E-03	-2.6352E-02	9.4771E-03	-1.6449E-03	-2.7916E-03	-1.3704E-02	5.0088E-03	7.4806E-03	4.1088E-04

MATRIX *PHAF* 48 BY 30 ANTISYMMETRIC MATH MODEL

ROW 1
1.0000E 00 4.8138E 01 -2.4752E 02 -3.9618E 00 -1.5511E 00 1.4788E 00 2.6516E 00 9.7105E 00 4.3404E 00 -4.5706E 00
-3.0411E 00 -1.0750E 01 -8.4956E 00 -2.7911E 00 7.2177E-01 -9.8914E-01 1.2077E 00 4.7001E 00 -1.9815E 00 -1.7815E 00
4.3089E-01 -5.0591E-01 1.2825E 00 1.4741E 00 -7.2657E-02 -2.5975E-01 -3.4147E-01 -5.5237E-02 6.8734E-01 2.0415E-02

ROW 2
1.0000E 00 4.8138E 01 -1.6874E 02 -4.4232E 00 -2.3341E 00 2.2872E 00 2.3799E 00 9.5252E 00 3.7875E 00 -5.3025E 00
-3.2996E 00 -1.4171E 01 -5.7762E 00 -3.0814E 00 1.1359E-01 -9.3339E-01 1.2128E 00 4.3724E-01 -1.4381E 00 -2.0908E 00
-1.1011E 00 3.2145E-01 1.9935E 00 2.3666E 00 6.4179E-01 -1.9061E-02 1.0731E 00 -5.6294E-01 5.1316E-01 -2.9305E-02

ROW 3
1.0000E 00 4.8138E 01 -5.8739E 01 -3.0465E 00 -2.8259E 00 3.0239E 00 2.0647E 00 9.1649E 00 2.4665E 00 -6.7732E 00
-3.7617E 00 -1.9118E 01 5.1787E-01 -3.2331E 00 -4.4759E-01 -1.0417E 00 9.1222E-01 -2.8013E 00 -4.1910E-01 -2.9552E 00
-3.7943E 00 4.0911E-01 2.5486E 00 3.8876E 00 2.9488E 00 3.8735E-01 3.8653E 00 -1.5199E 00 1.3336E 00 -1.3142E-01

ROW 4
1.0000E 00 4.8138E 01 5.3261E 01 7.2644E-01 -2.6311E 00 3.2341E 00 1.7948E 00 8.6099E 00 7.3028E-01 -8.4681E 00
-4.2447E 00 -2.3640E 01 8.7294E 00 -3.1758E 00 -7.5470E-01 -1.3374E 00 2.8997E-01 -3.2672E 00 -7.0011E-02 -3.9649E 00
-6.2454E 00 -1.7112E-01 2.8420E 00 5.4998E 00 6.3253E 00 3.6636E-01 5.8317E 00 -2.2903E 00 2.1702E 00 -1.7368E-01

ROW 5
1.0000E 00 4.8138E 01 1.6426E 02 6.7646E 00 -1.7749E 00 2.8274E 00 1.5505E 00 7.8017E 00 -1.0636E 00 -9.9465E 00
-4.6099E 00 -2.6795E 01 1.7200E 01 -3.0162E 00 -9.1058E-01 -1.7857E 00 -5.8877E-01 -1.4665E 00 -1.4121E 00 -4.6234E 00
-7.4441E 00 -7.2292E-01 3.0697E 00 6.8297E 00 9.8057E 00 -3.1020E-01 5.5797E 00 -2.4379E 00 2.0433E 00 -7.7715E-02

ROW 6
1.0000E 00 4.8138E 01 2.7126E 02 1.4678E 01 -3.5566E-01 1.8013E 00 1.3167E 00 6.7387E 00 -2.5684E 00 -1.0839E 01
-4.7535E 00 -2.7982E 01 2.4295E 01 -2.8646E 00 -1.0398E 00 -2.3449E 00 -1.6181E 00 1.7164E 00 -4.8174E 00 -4.5780E 00
-7.1317E 00 -7.3279E-01 3.3974E 00 7.6931E 00 1.2341E 01 -1.1191E 00 3.8886E 00 -2.0799E 00 1.2459E 00 1.1251E-01

ROW 7
1.0000E 00 4.8138E 01 3.7326E 02 2.4242E 01 1.5614E 00 1.4956E-01 1.0814E 00 5.4205E 00 -3.5102E 00 -1.0861E 01
-4.6003E 00 -2.6823E 01 2.8738E 01 -2.7967E 00 -1.2158E 00 -2.9452E 00 -2.6574E 00 5.3959E 00 -1.0240E 01 -3.6706E 00
-5.5463E 00 3.6694E-02 3.9126E 00 8.0683E 00 1.3230E 01 -1.4180E 00 2.3669E 00 -1.6118E 00 5.6024E-01 2.9727E-01

ROW 8
1.0000E 00 -9.8621E 00 3.7326E 02 2.2808E 01 6.1272E 00 7.5534E 00 2.1727E 00 3.1061E 00 -2.4386E 01 -2.4386E 01
-5.4737E 00 -2.1850E 01 3.3241E 01 4.8331E-01 9.4202E-01 -1.3440E 00 -2.0842E 00 1.0145E 01 5.2286E-01 -2.8468E 00
3.4114E-01 -3.5331E-01 1.5795E 00 3.2851E 00 7.3725E 00 -2.5287E 00 -4.2703E 00 4.9521E-01 -2.1784E 00 4.1943E-01

ROW 9
1.0000E 00 -6.0009E 00 4.4326E 02 3.0545E 01 7.4371E 00 5.5475E 00 1.9276E 00 2.1847E 00 -2.3277E 01 -2.2944E 01
-5.1236E 00 -2.0011E 01 3.4305E 01 2.7466E-01 6.6304E-01 -1.8350E 00 -2.7764E 00 1.2355E 01 -4.7886E 00 -1.8276E 00
1.5515E 00 5.5680E-01 2.1176E 00 3.5291E 00 7.3125E 00 -2.2852E 00 -4.3854E 00 6.1880E-01 -2.2106E 00 5.0608E-01

ROW 10
1.0000E 00 -2.1397E 00 5.1326E 02 3.9087E 01 8.9678E 00 3.2461E 00 1.6719E 00 1.1319E 00 -2.1825E 01 -2.1010E 01
-4.6184E 00 -1.7059E 01 3.3827E 01 5.0331E-02 3.9066E-01 -2.2527E 00 -3.3530E 00 1.4308E 01 -1.0379E 01 -5.3126E-01
2.9761E 00 1.6214E 00 2.5857E 00 3.4549E 00 6.3769E 00 -1.7520E 00 -3.9661E 00 6.3952E-01 -1.9693E 00 5.5089E-01

MATRIX *PHAF* 48 BY 30 ANTISYMMETRIC MATH MODEL

ROW 11

1.0000E 00	1.7215E 00	5.8326E 02	4.8428E 01	1.0717E 01	6.4296E-01	1.4040E 00	-5.5713E-02	-1.9992E 01	-1.8538E 01
-3.9286E 00	-1.2912E 01	3.1526E 01	-1.8649E-01	1.3465E-01	-2.5532E 00	-3.7501E 00	1.5742E 01	-1.5806E 01	9.4751E-01
4.4416E 00	2.7198E 00	2.9081E 00	3.0323E 00	4.5906E 00	-9.6625E-01	-2.9536E 00	5.2347E-01	-1.4316E 00	5.4193E-01

ROW 12

1.0000E 00	5.5827E 00	6.5326E 02	5.8579E 01	1.2688E 01	-2.2740E 00	1.1222E 00	-1.3844E 00	-1.7730E 01	-1.5468E 01
-3.0503E 00	-7.4420E 00	2.7016E 01	-4.3981E-01	-1.0529E-01	-2.6923E 00	-3.8976E 00	1.6319E 01	-2.0439E 01	2.4650E 00
5.7281E 00	3.6951E 00	3.0022E 00	2.2550E 00	2.0703E 00	-4.2715E-03	-1.3701E 00	2.5580E-01	-6.1604E-01	4.7014E-01

ROW 13

1.0000E 00	9.1129E 00	7.1726E 02	6.8575E 01	1.4685E 01	-5.2252E 00	8.5086E-01	-2.7292E 00	-1.5255E 01	-1.2093E 01
-2.0605E 00	-1.1456E 00	2.0526E 01	-7.0189E-01	-3.3002E-01	-2.6484E 00	-3.7560E 00	1.5720E 01	-2.3200E 01	3.6936E 00
6.5056E 00	4.3036E 00	2.8196E 00	1.2749E 00	-6.2931E-01	9.1073E-01	4.2538E-01	-9.8734E-02	2.9119E-01	3.4817E-01

ROW 14

1.0000E 00	1.3195E 01	7.9126E 02	8.1170E 01	1.7281E 01	-9.0626E 00	5.1504E-01	-4.4870E 00	-1.1769E 01	-7.3011E 00
-6.1354E-01	8.3539E 00	8.5189E 00	-1.1202E 00	-6.9533E-01	-2.3282E 00	-3.1027E 00	1.2486E 01	-2.2205E 01	4.3567E 00
6.2676E 00	4.1946E 00	2.1180E 00	-3.7987E-02	-3.4830E 00	1.6837E 00	2.3712E 00	-5.2160E-01	1.2554E 00	1.4230E-01

ROW 15

1.0000E 00	1.6725E 01	8.5526E 02	9.3239E 01	1.9875E 01	-1.2837E 01	2.0447E-01	-6.2858E 00	-8.3942E 00	-2.3814E 00
9.8876E-01	2.0076E 01	-9.6017E 00	-1.9747E 00	-1.5816E 00	-1.9429E 00	-2.0292E 00	4.9635E 00	-1.2352E 01	2.9242E 00
4.0079E 00	2.7873E 00	1.2154E 00	-4.3979E-01	-3.3288E 00	1.5175E 00	2.1785E 00	-3.6140E-01	1.2001E 00	-2.5513E-02

ROW 16

1.0000E 00	2.1138E 01	9.3526E 02	1.0919E 02	2.3398E 01	-1.7852E 01	-1.9074E-01	-8.7705E 00	-4.2913E 00	4.0[illegible]5E 00
3.2207E 00	3.7929E 01	-3.9454E 01	-3.7493E 00	-3.5932E 00	-1.7498E 00	-6.2057E-01	-8.6562E 00	8.6383E 00	-8.827[illegible]E-01
-3.6737E-01	2.6664E-01	3.8002E-01	4.4744E-01	2.8095E-01	8.0628E-01	-4.8081E-01	7.2630E-01	1.3827E-01	-1.3775E-01

ROW 17

0.0	1.0000E 00	0.0	3.2951E-02	-5.7515E-02	-7.5911E-02	-7.4040E-03	3.3994E-02	1.4718E-02	-7.9424E-02
-3.9947E-02	-2.3246E-02	7.7459E-03	-7.4686E-02	2.6158E-04	-9.1456E-03	1.5391E-02	1.1191E-03	-1.6805E-02	-7.5026E-02
3.0138E-03	-2.2118E-02	9.6259E-03	1.3622E-02	1.1055E-02	-1.9053E-03	1.0828E-02	-6.9552E-03	4.1170E-02	8.8112E-06

ROW 18

0.0	1.0000E 00	0.0	3.1916E-02	-6.0541E-02	-8.3873E-02	-9.2574E-03	3.3898E-02	6.2888E-02	-3.5025E-02
-3.1739E-02	-2.2685E-02	-1.5164E-02	-7.5354E-02	-5.7786E-03	-1.1544E-02	1.2728E-02	-1.3693E-02	-6.8266E-02	-6.4969E-02
1.1676E-03	-6.7586E-03	2.5565E-02	3.4744E-02	4.6065E-02	-1.8642E-02	-1.1280E-02	-5.7851E-03	1.3632E-02	1.2072E-03

ROW 19

0.0	1.0000E 00	0.0	3.0424E-02	-6.4757E-02	-9.4898E-02	-1.1815E-02	3.3854E-02	1.3014E-01	2.6929E-02
-2.0302E-02	-2.2570E-02	-4.6984E-02	-7.6060E-02	-1.4515E-02	-1.5252E-02	8.5513E-03	-3.4052E-02	-1.3718E-01	-5.0355E-02
-2.4331E-03	1.4186E-02	4.6584E-02	6.2359E-02	8.9511E-02	-3.7116E-02	-3.4422E-02	-5.0447E-03	-1.9081E-02	2.6067E-03

ROW 20

0.0	1.0000E 00	0.0	2.8732E-02	-6.9208E-02	-1.0623E-01	-1.4400E-02	3.4231E-02	2.0111E-01	9.1911E-02
-8.4824E-03	-2.5760E-02	-7.8696E-02	-7.6365E-02	-2.4284E-02	-1.9943E-02	3.3480E-03	-5.5566E-02	-2.0[illegible]87E-01	-3.5064E-02
-1.3316E-02	3.3907E-02	6.6650E-02	9.0501E-02	1.2752E-01	-4.3438E-02	-3.0533E-02	-9.8232E-03	-3.4[illegible]42E-02	2.7638E-03

MATRIX *PHAF* 48 BY 30 ANTISYMMETRIC MATH MODEL

ROW 21
0.0 1.0000E 00 0.0 2.6924E-02 -7.3044E-02 -1.1514E-01 -1.6310E-02 3.5780E-02 2.6317E-01 1.4776E-01
1.2163E-03 -3.9136E-02 -9.7832E-02 -7.3624E-02 -3.3251E-02 -2.5368E-02 -3.0727E-03 -7.2517E-02 -2.2650E-01 -2.1519E-02
-4.1422E-02 4.0284E-02 7.1844E-02 1.0275E-01 1.2587E-01 -1.1468E-02 4.6013E-02 -2.6347E-02 3.0891E-03 -2.9225E-04

ROW 22
0.0 1.0000E 00 0.0 2.5621E-02 -7.5765E-02 -1.2121E-01 -1.7568E-02 3.7303E-02 3.0772E-01 1.8746E-01
7.9068E-03 -5.3506E-02 -1.0450E-01 -6.9651E-02 -3.8220E-02 -2.8323E-02 -7.0466E-03 -8.3229E-02 -2.3001E-01 -1.3836E-02
-6.7728E-02 3.7594E-02 6.9063E-02 1.0572E-01 1.1797E-01 1.4608E-02 1.0861E-01 -3.9440E-02 3.7324E-02 -2.8664E-03

ROW 23
0.0 1.0000E 00 0.0 2.4715E-02 -7.8720E-02 -1.2765E-01 -1.8815E-02 3.9905E-02 3.5993E-01 2.3319E-01
1.5059E-02 -8.5745E-02 -7.7631E-02 -5.0552E-02 -3.7198E-02 -2.7606E-02 -9.8832E-03 -8.1886E-02 -1.8557E-01 -1.4205E-02
-1.0151E-01 6.7239E-03 4.0226E-02 8.2469E-02 1.0099E-01 1.9151E-02 1.1443E-01 -3.6328E-02 4.7218E-02 -2.1061E-03

ROW 24
0.0 0.0 1.0000E 00 1.0325E-01 2.1429E-02 -1.9486E-02 -2.3936E-03 -1.4417E-02 -6.3054E-03 4.3765E-03
3.0722E-03 2.3251E-02 2.9539E-02 2.8188E-04 -1.9140E-03 -5.8063E-03 -9.8817E-03 3.6828E-02 -6.1889E-02 1.2995E-02
2.0590E-02 1.1019E-02 5.6253E-03 1.0424E-03 -1.9878E-04 2.6728E-04 -1.1281E-02 4.2883E-03 -4.7993E-03 1.5888E-03

ROW 25
0.0 9.9848E-01 -5.5076E-02 2.1460E-02 -8.0451E-02 -1.3032E-01 -1.9240E-02 4.1729E-02 3.8572E-01 2.5539E-01
1.8353E-02 -1.0440E-01 -5.6401E-02 -4.9634E-02 -3.7346E-02 -2.9129E-02 -1.4034E-02 -7.1782E-02 -1.6881E-01 -1.2574E-02
-1.1143E-01 -6.9633E-03 2.6274E-02 6.9555E-02 9.2382E-02 1.9479E-02 1.0190E-01 -2.9167E-02 4.5571E-02 -4.6238E-04

ROW 26
0.0 9.9848E-01 -5.5076E-02 2.3933E-02 -8.1063E-02 -1.3411E-01 -1.9803E-02 4.2758E-02 4.1077E-01 2.7741E-01
2.1731E-02 -1.2152E-01 -3.3275E-02 -4.2788E-02 -3.7789E-02 -3.1238E-02 -1.9103E-02 -5.8774E-02 -1.5470E-01 -1.0083E-02
-1.1837E-01 -1.9888E-02 1.2233E-02 5.5441E-02 8.2382E-02 1.9166E-02 8.3799E-02 -1.9969E-02 4.1078E-02 1.6292E-03

ROW 27
0.0 9.9848E-01 -5.5076E-02 2.6635E-02 -8.1694E-02 -1.3817E-01 -2.0403E-02 4.38[illegible]-02 4.3747E-01 3.0090E-01
2.5337E-02 -1.3991E-01 -7.9658E-03 -3.5402E-02 -3.8386E-02 -3.3700E-02 -2.4842E-02 -4.4085E-02 -1.3917E-01 -7.2658E-03
-1.2488E-01 -3.3699E-02 -3.0639E-03 3.9660E-02 7.0997E-02 1.8581E-02 6.1819E-02 -9.1229E-03 3.5399E-02 4.0724E-03

ROW 28
0.0 9.9848E-01 -5.5076E-02 3.0047E-02 -8.2431E-02 -1.4315E-01 -2.1135E-02 4.5160E-02 4.7009E-01 3.2962E-01
2.9745E-02 -1.6256E-01 2.3843E-02 -2.6315E-02 -3.9338E-02 -3.7057E-02 -3.2367E-02 -2.4938E-02 -1.2007E-01 -3.5274E-03
-1.3157E-01 -5.0406E-02 -2.1983E-02 1.9631E-02 5.6270E-02 1.7720E-02 3.1820E-02 5.4120E-03 2.7202E-02 7.3244E-03

ROW 29
0.0 9.9848E-01 -5.5076E-02 3.3520E-02 -8.3107E-02 -1.4803E-01 -2.1848E-02 4.6424E-02 5.0187E-01 3.5760E-01
3.4039E-02 -1.8476E-01 5.5688E-02 -1.7440E-02 -4.0516E-02 -4.0714E-02 -4.0241E-02 -5.0015E-03 -1.0195E-01 5.4307E-04
-1.3680E-01 -6.6294E-02 -4.0457E-02 -4.4590E-04 4.1073E-02 1.7005E-02 1.6064E-04 2.0663E-02 1.8309E-02 1.0723E-02

ROW 30
0.0 9.9848E-01 -5.5076E-02 3.8353E-02 -8.4041E-02 -1.5482E-01 -2.2839E-02 4.8168E-02 5.4602E-01 3.9650E-01
4.0018E-02 -2.1554E-01 9.9920E-02 -5.0837E-03 -4.2223E-02 -4.5873E-02 -5.1301E-02 2.2872E-02 -7.6369E-02 6.2869E-03
-1.4368E-01 -8.8369E-02 -6.6309E-02 -2.8767E-02 1.9360E-02 1.6054E-02 -4.4780E-02 4.2286E-02 5.6170E-03 1.5525E-02

MATRIX *PHAF* 48 BY 30 ANTISYMMETRIC MATH MODEL

ROW 31
0.0 9.9848E-01 -5.5076E-02 3.8123E-02 -8.4959E-02 -1.5665E-01 -2.3190E-02 4.9161E-02 5.6199E-01 4.1010E-01
4.1892E-02 -2.2943E-01 1.1824E-01 -3.4137E-03 -5.2082E-02 -5.7653E-02 -6.6929E-02 4.1577E-02 -4.8606E-02 7.1206E-03
-1.3610E-01 -9.0966E-02 -7.0790E-02 -3.4376E-02 2.0947E-02 2.1872E-02 -9.4198E-02 6.7443E-02 -8.6356E-03 2.0874E-02

ROW 32
0.0 9.9848E-01 -5.5076E-02 3.7624E-02 -8.5161E-02 -1.5658E-01 -2.3206E-02 4.9332E-02 5.6288E-01 4.1069E-01
4.1884E-02 -2.3217E-01 1.2234E-01 -2.9586E-03 -5.2060E-02 -5.7967E-02 -6.7566E-02 4.4029E-02 -5.0349E-02 7.7945E-03
-1.3542E-01 -9.1129E-02 -7.1340E-02 -3.5300E-02 1.9898E-02 2.1931E-02 -9.5932E-02 6.8256E-02 -9.1890E-03 2.1088E-02

ROW 33
0.0 0.0 1.0000E 00 -1.3865E-02 -1.2341E-02 1.1665E-02 -3.7455E-03 -2.0760E-03 -4.3792E-03 -6.9118E-03
-2.6863E-03 -4.1440E-02 2.2596E-02 -4.8496E-03 -8.9842E-03 1.5151E-03 1.3769E-03 -6.5499E-02 3.9782E-03 -1.5454E-03
-1.5513E-02 1.5798E-02 1.0943E-02 9.8251E-03 3.1357E-03 1.6768E-03 1.1123E-02 -4.5288E-03 -8.8770E-03 -3.0982E-04

ROW 34
0.0 0.0 1.0000E 00 1.9467E-03 -7.6046E-03 8.8341E-03 -3.1743E-03 -2.6693E-03 -9.4103E-03 -1.1377E-02
-3.7854E-03 -4.4854E-02 4.5353E-02 -2.6115E-03 -6.5344E-03 -5.1783E-05 -1.1771E-03 -4.3256E-02 9.0091E-03 -5.9892E-03
-2.2610E-02 5.7522E-03 7.0655E-03 1.2638E-02 1.4573E-02 3.9689E-03 2.3223E-02 -7.9523E-03 3.3356E-03 -8.7032E-04

ROW 35
0.0 0.0 1.0000E 00 2.3054E-02 -1.3622E-03 4.4390E-03 -2.5966E-03 -3.9897E-03 -1.4196E-02 -1.4833E-02
-4.4464E-03 -4.3964E-02 6.7264E-02 -2.8916E-04 -3.7880E-03 -1.8603E-03 -4.2087E-03 -1.6227E-02 7.9083E-03 -9.1305E-03
-2.4857E-02 -3.2139E-03 3.5530E-03 1.4632E-02 2.6616E-02 2.5552E-03 2.4567E-02 -8.6563E-03 9.5440E-03 -8.2566E-04

ROW 36
0.0 0.0 1.0000E 00 4.4249E-02 4.8013E-03 -8.1624E-04 -2.2665E-03 -6.0371E-03 -1.6310E-02 -1.4805E-02
-3.9804E-03 -3.5492E-02 7.7106E-02 1.1352E-03 -1.8729E-03 -3.3758E-03 -6.8228E-03 7.0733E-03 -3.3677E-03 -8.1733E-03
-1.7392E-02 -6.0429E-03 2.0771E-03 1.3710E-02 3.2479E-02 -3.4241E-03 8.2065E-03 -4.4151E-03 3.7155E-03 2.0232E-04

ROW 37
0.0 0.0 1.0000E 00 6.4328E-02 1.0547E-02 -6.5667E-03 -2.1678E-03 -8.5718E-03 -1.5552E-02 -1.1313E-02
-2.4509E-03 -2.0492E-02 7.3352E-02 1.5731E-03 -1.1444E-03 -4.6850E-03 -8.9157E-03 2.4207E-02 -2.1547E-02 -3.1504E-03
-3.8476E-03 -3.1098E-03 2.3159E-03 1.0063E-02 2.8762E-02 -7.8862E-03 -1.1363E-02 1.5338E-03 -5.4177E-03 1.4558E-03

ROW 38
0.0 0.0 1.0000E 00 8.3929E-02 1.6060E-02 -1.2833E-02 -2.2279E-03 -1.1400E-02 -1.2015E-02 -4.6908E-03
-3.5593E-05 -4.8190E-04 5.6722E-02 1.0964E-03 -1.4368E-03 -5.7229E-03 -1.0175E-02 3.4173E-02 -4.2942E-02 4.5334E-03
9.7080E-03 3.6256E-03 4.1166E-03 6.0503E-03 1.7219E-02 -6.0032E-03 -1.7513E-02 4.5317E-03 -8.1459E-03 1.9395E-03

ROW 39
0.0 0.0 1.0000E 00 1.0325E-01 2.1429E-02 -1.9486E-02 -2.3936E-03 -1.4417E-02 -6.3054E-03 4.3765E-03
3.0722E-03 2.3251E-02 2.9539E-02 2.8188E-04 -1.9140E-03 -5.8063E-03 -9.8817E-03 3.6828E-02 -6.1889E-02 1.2995E-02
2.0590E-02 1.1019E-02 5.6253E-03 1.0424E-03 -1.9878E-04 2.6728E-04 -1.1281E-02 4.2883E-03 -4.7993E-03 1.5888E-03

ROW 40
0.0 -1.0000E 00 0.0 -2.4715E-02 7.8720E-02 1.2765E-01 1.8815E-02 -3.9905E-02 -3.5993E-01 -2.3319E-01
-1.5059E-02 8.5745E-02 7.7631E-02 5.6552E-02 3.7198E-02 2.7606E-02 9.8832E-03 8.1886E-02 1.8557E-01 1.4205E-02
1.0151E-01 -6.7239E-03 -4.0226E-02 -8.2469E-02 -1.0099E-01 -1.9151E-02 -1.1443E-01 3.6328E-02 -4.7218E-02 2.1061E-03

MATRIX *FHAF* 48 BY 30 ANTISYMMETRIC MATH MODEL

ROW 41

0.0	5.5076E-02	9.9848E-01	1.1613E-01	2.0269E-02	-3.0712E-02	-3.5681E-03	-1.4075E-02	1.8180E-02	2.3977E-02
6.1057E-03	3.4009E-02	4.7555E-03	-3.1010E-03	-3.9629E-03	-6.5848E-03	-9.1957E-03	3.0251E-02	-7.8663E-02	1.6700E-02
1.9168E-02	1.4340E-02	7.3509E-03	1.3012E-03	-7.0864E-03	5.5933E-03	1.9622E-03	1.1252E-03	1.4010E-03	9.6813E-04

ROW 42

0.0	5.5076E-02	9.9848E-01	1.2752E-01	2.3390E-02	-3.4951E-02	-3.7299E-03	-1.5964E-02	2.3321E-02	3.1293E-02
8.4787E-03	5.0360E-02	-1.9011E-02	-3.2906E-03	-3.7846E-03	-5.2323E-03	-7.1090E-03	2.4864E-02	-7.9812E-02	2.0060E-02
2.1070E-02	1.5751E-02	5.8318E-03	-3.4831E-03	-1.9536E-02	9.5290E-03	1.0133E-02	-6.1233E-04	5.5338E-03	2.8307E-04

ROW 43

0.0	5.5076E-02	9.9848E-01	1.3900E-01	2.6526E-02	-3.9340E-02	-3.9162E-03	-1.7930E-02	2.9101E-02	3.9392E-02
1.1101E-02	6.8252E-02	-4.7535E-02	-3.4730E-03	-3.5166E-03	-3.2338E-03	-4.0519E-03	1.5253E-02	-7.3537E-02	2.1796E-02
2.0221E-02	1.5218E-02	3.1688E-03	-8.5961E-03	-3.1169E-02	1.2716E-02	1.8725E-02	-2.7408E-03	9.3755E-03	-5.6138E-04

ROW 44

0.0	5.5076E-02	9.9848E-01	1.5062E-01	2.9700E-02	-4.3906E-02	-4.1282E-03	-1.9996E-02	3.5517E-02	4.8321E-02
1.4008E-02	8.8184E-02	-8.2350E-02	-3.7946E-03	-3.3765E-03	-6.4370E-04	1.3661E-05	1.4972E-04	-5.6484E-02	2.0967E-02
1.5803E-02	1.2113E-02	-6.8651E-04	-1.3482E-02	-4.0083E-02	1.4407E-02	2.6069E-02	-4.8449E-03	1.3284E-02	-1.4938E-03

ROW 45

0.0	5.5076E-02	9.9848E-01	1.6153E-01	3.2691E-02	-4.8302E-02	-4.3473E-03	-2.2035E-02	4.1924E-02	5.7309E-02
1.6994E-02	1.0928E-01	-1.2269E-01	-4.5007E-03	-3.7831E-03	2.1179E-03	4.6542E-03	-2.0684E-02	-2.5916E-02	1.6492E-02
7.4324E-03	6.1334E-03	-5.2824E-03	-1.6388E-02	-4.3018E-02	1.3633E-02	2.9110E-02	-6.0365E-03	1.4594E-02	-2.3081E-03

ROW 46

0.0	5.5076E-02	9.9848E-01	1.8024E-01	3.7891E-02	-5.6087E-02	-4.7672E-03	-2.5871E-02	5.3330E-02	7.3910E-02
2.2799E-02	1.5355E-01	-2.1726E-01	-7.6101E-03	-7.1188E-03	7.0095E-03	1.4341E-02	-7.7682E-02	7.5327E-02	-3.8920E-03
-1.9820E-02	-1.3305E-02	-1.5030E-02	-1.7003E-02	-2.6824E-02	4.2379E-03	1.8038E-02	-4.1349E-03	8.7320E-03	-3.1964E-03

ROW 47

0.0	5.5076E-02	9.9848E-01	1.9488E-01	4.2598E-02	-6.1289E-02	-4.9261E-03	-2.9929E-02	5.2477E-02	7.9603E-02
2.7003E-02	2.0883E-01	-3.4296E-01	-1.8588E-02	-2.0292E-02	4.9562E-03	1.8863E-02	-1.5544E-01	2.3203E-01	-4.1200E-02
-5.1513E-02	-3.1630E-02	-1.3640E-02	4.5726E-03	3.3415E-02	-1.0644E-02	-2.6012E-02	9.4831E-03	-1.1506E-02	-1.8947E-03

ROW 48

0.0	5.5076E-02	9.9848E-01	2.0244E-01	4.5069E-02	-6.3634E-02	-4.9387E-03	-3.1884E-02	5.0216E-02	8.0447E-02
2.8555E-02	2.3418E-01	-3.9690E-01	-2.5103E-02	-2.9184E-02	2.0372E-04	1.6400E-02	-1.8198E-01	2.6723E-01	-5.2860E-02
-5.7252E-02	-3.1392E-02	-7.7488E-03	1.6582E-02	5.5070E-02	-7.4590E-03	-3.9555E-02	1.7136E-02	-1.4849E-02	-9.5260E-04

MATRIX *PHVT* 30 BY 30 ANTISYMMETRIC MATH MODEL

ROW 1
1.0000E 00 7.1734E 01 7.9303E 02 8.4309E 01 1.2566E 01 -1.8378E 01 -8.4156E-01 -1.8054E 00 2.0361E 01 1.6207E 01
1.8357E 00 -3.4569E 00 1.3264E 01 -1.4549E 00 -3.1949E 00 -4.9701E 00 -6.0248E 00 1.3432E 01 -2.6285E 01 4.7041E 00
-2.2161E 00 -1.0288E 00 -1.8267E 00 -1.8017E 00 -2.4873E 00 2.6417E 00 -1.5184E-01 1.9254E 00 1.6268E 00 1.0323E 00

ROW 2
1.0000E 00 9.6736E 01 8.0461E 02 8.7630E 01 1.1011E 01 -2.2927E 01 -1.4664E 00 -9.6044E-01 3.4679E 01 2.7127E 01
3.1598E 00 -6.9026E 00 1.3196E 01 -1.4594E 00 -4.0372E 00 -5.7215E 00 -6.8172E 00 1.2913E 01 -2.7015E 01 4.8129E 00
-6.0399E 00 -3.5201E 00 -3.8299E 00 -2.9655E 00 -2.6570E 00 2.7904E 00 -7.3251E-01 2.5824E 00 1.7894E 00 1.2788E 00

ROW 3
1.0000E 00 1.4854E 02 8.2861E 02 9.4882E 01 7.7861E 00 -3.2746E 01 -2.8126E 00 8.4596E-01 6.6707E 01 5.1927E 01
6.2824E 00 -1.5341E 01 1.5210E 01 4.1779E-02 -3.8449E 00 -5.3592E 00 -6.5639E 00 1.1317E 01 -2.7329E 01 5.0374E 00
-1.4169E 01 -9.5757E 00 -9.0564E 00 -6.7965E 00 -4.7829E 00 1.2274E 00 -1.9517E-01 1.9948E 00 1.5675E 00 1.2363E 00

ROW 4
1.0000E 00 1.9754E 02 8.5131E 02 1.0233E 02 4.7241E 00 -4.2663E 01 -4.1699E 00 2.6473E 00 1.0086E 02 7.8941E 01
9.8590E 00 -2.5486E 01 2.0761E 01 4.0605E 00 -2.7272E-01 -1.6477E 00 -2.9826E 00 8.8144E 00 -2.5070E 01 5.0919E 00
-2.1143E 01 -1.5812E 01 -1.4826E 01 -1.1868E 01 -8.8791E 00 -2.7644E 00 2.6401E 00 -1.3296E 00 5.0486E-01 3.7965E-01

ROW 5
1.0000E 00 2.4484E 02 8.7322E 02 1.1019E 02 1.7456E 00 -5.2991E 01 -5.5818E 00 4.5039E 00 1.3855E 02 1.0938E 02
1.4080E 01 -3.8014E 01 3.0835E 01 1.1363E 01 7.7783E 00 6.5285E 00 5.0582E 00 4.8931E 00 -1.8553E 01 4.6291E 00
-2.4804E 01 -2.0450E 01 -1.9437E 01 -1.6669E 01 -1.3605E 01 -8.4143E 00 6.9619E 00 -6.6675E 00 -1.4915E 00 -1.4505E 00

ROW 6
1.0000E 00 2.9495E 02 8.9643E 02 1.1938E 02 -1.4532E 00 -6.4935E 01 -7.2148E 00 6.6367E 00 1.8494E 02 1.4763E 02
1.9616E 01 -5.5148E 01 4.8351E 01 2.4304E 01 2.3394E 01 2.2298E 01 2.0715E 01 -1.8522E 00 -3.5423E 00 2.8520E 00
-2.0361E 01 -1.9613E 01 -1.9207E 01 -1.7962E 01 -1.6123E 01 -1.3826E 01 1.0954E 01 -1.2235E 01 -4.3283E 00 -4.3128E 00

ROW 7
1.0000E 00 3.3852E 02 9.1661E 02 1.2817E 02 -4.2905E 00 -7.6314E 01 -8.7730E 00 8.6642E 00 2.3189E 02 1.8703E 02
2.9535E 01 -7.4116E 01 7.1030E 01 4.1387E 01 4.5217E 01 4.4320E 01 4.2729E 01 -1.1050E 01 2.0594E 01 -7.6940E-01
-2.2439E 00 -7.4365E 00 -8.2309E 00 -9.6993E 00 -1.0216E 01 -1.2252E 01 8.6618E 00 -1.0800E 01 -6.3267E 00 -7.3928E 00

ROW 8
1.0000E 00 3.7237E 02 9.3229E 02 1.3549E 02 -6.5344E 00 -8.5771E 01 -1.0071E 01 1.0349E 01 2.7260E 02 2.2162E 02
3.0856E 01 -9.1515E 01 9.3690E 01 5.8812E 01 6.8177E 01 6.7515E 01 6.6020E 01 -2.0848E 01 4.8544E 01 -5.4967E 00
2.5741E 01 1.4205E 01 1.2045E 01 7.6901E 00 4.7370E 00 -8.8436E-01 -2.2919E 00 1.3071E 00 -6.1232E 00 -9.9277E 00

ROW 9
1.0000E 00 4.0019E 02 9.4518E 02 1.4179E 02 -8.4009E 00 -9.3909E 01 -1.1189E 01 1.1797E 01 3.0857E 02 2.5241E 02
3.5668E 01 -1.0738E 02 1.1535E 02 7.5756E 01 9.0908E 01 9.0505E 01 8.9173E 01 -3.0717E 01 7.7915E 01 -1.0785E 01
5.9403E 01 4.1770E 01 3.8251E 01 3.1190E 01 2.6053E 01 1.8329E 01 -2.0032E 01 2.2166E 01 -3.7209E 00 -1.1623E 01

ROW 10
1.0000E 00 4.2523E 02 9.5678E 02 1.4763E 02 -1.0092E 01 -1.0146E 02 -1.2227E 01 1.3135E 01 3.4248E 02 2.8157E 02
4.0270E 01 -1.2260E 02 1.3668E 02 9.2667E 01 1.1382E 02 1.1370E 02 1.1258E 02 -4.0806E 01 1.0860E 02 -1.0494E 01
9.7131E 01 7.3558E 01 6.8678E 01 5.9039E 01 5.1877E 01 4.3333E 01 -4.2621E 01 4.9390E 01 5.9090E-01 -1.2269E 01

MATRIX *PHVT* 30 BY 30 ANTISYMMETRIC MATH MODEL

ROW 11

0.0	9.0738E-01	4.2031E-01	1.1851E-01	-5.6400E-02	-1.6303E-01	-2.2402E-02	3.0375E-02	5.0710E-01	3.8477E-01
4.6038E-02	-1.1618E-01	-1.3822E-02	-8.0622E-03	-4.0620E-02	-3.7207E-02	-3.8056E-02	-1.6290E-02	-3.2045E-02	3.7226E-03
-1.3616E-01	-8.4264E-02	-6.5600E-02	-3.3382E-02	4.4943E-03	1.6163E-02	-3.1062E-02	3.5391E-02	9.0600E-03	1.2205E-02

ROW 12

0.0	9.0738E-01	4.2031E-01	1.2250E-01	-5.6436E-02	-1.6720E-01	-2.2950E-02	3.0959E-02	5.3211E-01	4.0778E-01
5.0050E-02	-1.3184E-01	8.7200E-03	7.6344E-03	-2.0632E-02	-1.7437E-02	-1.9067E-02	-2.1431E-02	-2.0842E-02	4.1162E-03
-1.4102E-01	-9.6154E-02	-7.9376E-02	-5.0649E-02	-1.6378E-02	-4.9927E-03	-1.1346E-02	1.3282E-02	2.9990E-03	6.0984E-03

ROW 13

0.0	9.0738E-01	4.2031E-01	1.3210E-01	-5.6570E-02	-1.7738E-01	-2.4296E-02	3.2418E-02	5.9377E-01	4.6459E-01
5.9979E-02	-1.6598E-01	6.5644E-02	4.7822E-02	3.1223E-02	3.3989E-02	3.1805E-02	-3.5824E-02	1.3754E-02	3.2576E-03
-1.4079E-01	-1.1444E-01	-1.0256E-01	-8.3187E-02	-5.8649E-02	-5.1146E-02	3.1988E-02	-3.6627E-02	-1.0548E-02	-6.4616E-03

ROW 14

0.0	9.0738E-01	4.2031E-01	1.4413E-01	-5.6874E-02	-1.9053E-01	-2.6054E-02	3.4402E-02	6.7501E-01	5.3957E-01
7.3141E-02	-2.1218E-01	1.4429E-01	1.0447E-01	1.0594E-01	1.0838E-01	1.0579E-01	-5.8860E-02	7.6407E-02	-2.4207E-03
-1.0983E-01	-1.1073E-01	-1.0580E-01	-1.0033E-01	-8.9935E-02	-9.5433E-02	7.2407E-02	-8.6543E-02	-2.8129E-02	-2.3568E-02

ROW 15

0.0	9.0738E-01	4.2031E-01	1.5785E-01	-5.7444E-02	-2.0618E-01	-2.8181E-02	3.6919E-02	7.7447E-01	6.3162E-01
8.9411E-02	-2.7068E-01	2.4650E-01	1.8025E-01	2.0856E-01	2.1103E-01	2.0856E-01	-9.4371E-02	1.8329E-01	-1.7406E-02
-1.6592E-02	-5.5292E-02	-5.9718E-02	-7.3730E-02	-8.2843E-02	-1.1509E-01	8.9349E-02	-1.1458E-01	-4.4906E-02	-4.0757E-02

ROW 16

0.0	9.0738E-01	4.2031E-01	1.7522E-01	-5.8478E-02	-2.2698E-01	-3.1053E-02	4.0452E-02	9.1058E-01	7.5805E-01
1.1198E-01	-3.5322E-01	3.9493E-01	2.9433E-01	3.6713E-01	3.7047E-01	3.6919E-01	-1.5534E-01	3.7998E-01	-5.1474E-02
2.0975E-01	1.1454E-01	9.6300E-02	5.3399E-02	1.6063E-02	-5.8444E-02	3.7486E-02	-6.7017E-02	-4.9299E-02	-5.3073E-02

ROW 17

0.0	9.0738E-01	4.2031E-01	1.9078E-01	-5.9709E-02	-2.4663E-01	-3.3817E-02	4.3950E-02	1.0437E 00	8.8237E-01
1.3447E-01	-4.3636E-01	5.4984E-01	4.1901E-01	5.4541E-01	5.5068E-01	5.5195E-01	-2.3109E-01	6.3831E-01	-1.0298E-01
5.7371E-01	4.2196E-01	3.8991E-01	3.1995E-01	2.5907E-01	1.5805E-01	-1.5956E-01	1.6043E-01	-1.9269E-02	-6.0908E-02

ROW 18

0.0	9.0738E-01	4.2031E-01	2.0132E-01	-6.0582E-02	-2.6026E-01	-3.5746E-02	4.6343E-02	1.1377E 00	9.7077E-01
1.5073E-01	-4.9544E-01	6.6354E-01	5.1540E-01	6.3639E-01	6.9308E-01	6.9797E-01	-2.9587E-01	8.6598E-01	-1.5213E-01
9.4115E-01	7.5379E-01	7.1261E-01	6.2818E-01	5.5811E-01	4.7280E-01	-4.4163E-01	5.0767E-01	4.4297E-02	-5.8030E-02

ROW 19

0.0	9.0738E-01	4.2031E-01	2.0923E-01	-6.1132E-02	-2.7029E-01	-3.7162E-02	4.8000E-02	1.2068E 00	1.0360E 00
1.6286E-01	-5.3806E-01	7.4679E-01	5.8879E-01	7.9481E-01	8.0433E-01	8.1091E-01	-3.4788E-01	1.0496E 00	-1.9290E-01
1.2567E 00	1.0475E 00	1.0001E 00	9.0841E-01	8.3567E-01	7.8770E-01	-7.1789E-01	8.5723E-01	1.2135E-01	-3.9682E-02

ROW 20

0.0	9.0738E-01	4.2031E-01	2.1373E-01	-6.1351E-02	-2.7583E-01	-3.7935E-02	4.8813E-02	1.2445E 00	1.0719E 00
1.6963E-01	-5.6038E-01	7.9095E-01	6.3033E-01	8.5684E-01	8.6781E-01	8.7606E-01	-3.7958E-01	1.1603E 00	-2.1787E-01
1.4544E 00	1.2352E 00	1.1844E 00	1.0896E 00	1.0147E 00	1.0020E 00	-8.9517E-01	1.0860E 00	1.9309E-01	5.3288E-03

MATRIX *PHVT* 30 BY 30 ANTISYMMETRIC MATH MODEL

ROW 21
0.0 -4.2031E-01 9.0738E-01 1.4111E-01 7.2921E-02 2.3196E-02 6.5174E-03 -4.5462E-02 -2.0935E-01 -1.2097E-01
1.3344E-03 2.3679E-01 -2.3874E-01 -4.3310E-03 1.3545E-02 2.7732E-02 3.6755E-02 -7.9373E-0_ 1.0237E-01 -6.3387E-03
4.9981E-02 2.9756E-02 1.7873E-02 -1.5009E-03 -3.2775E-02 -3.7991E-03 3.6956E-02 -2.3510E-02 5.0710E-03 -1.0113E-02

ROW 22
0.0 -4.2031E-01 9.0738E-01 1.4156E-01 7.3003E-02 2.2873E-02 6.4815E-03 -4.5525E-02 -2.0794E-01 -1.1947E-01
1.6883E-03 2.3734E-01 -2.4029E-01 -3.2801E-03 1.5122E-02 2.9598E-02 3.8799E-02 -8.1809E-02 1.0694E-01 -6.8211E-03
5.2397E-02 3.1353E-02 1.8473E-02 -3.0927E-03 -4.0911E-02 -8.3389E-03 6.0888E-02 -5.1608E-02 3.7318E-02 5.1835E-02

ROW 23
0.0 -4.2031E-01 9.0738E-01 1.4230E-01 7.3147E-02 2.2325E-02 6.4193E-03 -4.5654E-02 -2.0545E-01 -1.1678E-01
2.3598E-03 2.3849E-01 -2.4329E-01 -8.1310E-04 1.9002E-02 3.4112E-02 4.3733E-02 -8.7465E-02 1.1870E-01 -8.3672E-03
6.1283E-02 3.7989E-02 2.2053E-02 -3.5343E-03 -5.5341E-02 -1.7642E-02 1.1013E-01 -1.1061E-01 1.0367E-01 1.8059E-01

ROW 24
0.0 -4.2031E-01 9.0738E-01 1.4280E-01 7.3261E-02 2.1919E-02 6.3697E-03 -4.5789E-02 -2.0334E-01 -1.1435E-01
3.0254E-03 2.3971E-01 -2.4606E-01 2.7024E-03 2.4821E-02 4.0720E-02 5.0921E-02 -9.4946E-02 1.3686E-01 -1.1467E-02
7.9539E-02 5.2567E-02 3.4907E-02 2.1064E-03 -6.6329E-02 -2.7328E-02 1.6447E-01 -1.7805E-01 1.7774E-01 3.2664E-01

ROW 25
0.0 -4.2031E-01 9.0738E-01 1.4266E-01 7.3315E-02 2.1955E-02 6.3665E-03 -4.5950E-02 -2.0297E-01 -1.1336E-01
3.4966E-03 2.4145E-01 -2.4890E-01 7.4863E-03 3.3351E-02 5.0289E-02 6.1347E-02 -1.0525E-01 1.6489E-01 -1.7457E-02
1.1613E-01 8.3529E-02 6.2673E-02 2.1743E-02 -6.6563E-02 -3.2432E-02 2.1997E-01 -2.5058E-01 2.6154E-01 4.9364E-01

ROW 26
0.0 -4.2031E-01 9.0738E-01 1.4274E-01 7.3336E-02 2.1614E-02 6.3056E-03 -4.6063E-02 -1.9967E-01 -1.0954E-01
4.5617E-03 2.4164E-01 -2.4864E-01 1.6431E-02 4.8326E-02 6.6603E-02 7.6802E-02 -1.1998E-01 2.0881E-01 -2.6364E-02
1.7136E-01 1.3009E-01 1.0491E-01 5.3050E-02 -6.0611E-02 -3.4957E-02 2.8462E-01 -3.3662E-01 3.6466E-01 6.9910E-01

ROW 27
0.0 -4.2031E-01 9.0738E-01 1.4307E-01 7.3315E-02 2.0939E-02 6.1975E-03 -4.6076E-02 -1.9405E-01 -1.0362E-01
5.9494E-03 2.3981E-01 -2.4440E-01 2.7226E-02 6.5806E-02 8.5275E-02 9.8530E-02 -1.3450E-01 2.5331E-01 -3.5854E-02
2.3353E-01 1.8414E-01 1.5520E-01 9.4177E-02 -3.9892E-02 -1.9836E-02 3.2095E-01 -3.8646E-01 4.5079E-01 8.6391E-01

ROW 28
0.0 -4.2031E-01 9.0738E-01 1.4329E-01 7.3322E-02 2.0567E-02 6.1395E-03 -4.6101E-02 -1.9057E-01 -1.0033E-01
6.7450E-03 2.3890E-01 -2.4197E-01 3.3787E-02 7.6600E-02 9.6795E-02 1.1073E-01 -1.4337E-01 2.8157E-01 -4.2260E-02
2.7987E-01 2.2739E-01 1.9667E-01 1.3190E-01 -1.1313E-02 1.2849E-02 3.1816E-01 -3.8313E-01 5.0253E-01 9.5079E-01

ROW 29
0.0 -4.2031E-01 9.0738E-01 1.4389E-01 7.3318E-02 1.9818E-02 6.0341E-03 -4.6040E-02 -1.8578E-01 -9.9213E-02
7.7918E-03 2.3683E-01 -2.3662E-01 4.0760E-02 8.7436E-02 1.0811E-01 1.2251E-01 -1.5049E-01 3.0490E-01 -4.7500E-02
3.2001E-01 2.6541E-01 2.3358E-01 1.6696E-01 1.9429E-02 5.0424E-02 2.9884E-01 -3.5769E-01 5.3498E-01 9.4695E-01

ROW 30
0.0 -4.2031E-01 9.0738E-01 1.4492E-01 7.3307E-02 1.8591E-02 5.8636E-03 -4.5920E-02 -1.7745E-01 -8.7122E-02
9.4009E-03 2.5211E-01 -2.2792E-01 5.1027E-02 1.0317E-01 1.2444E-01 1.3944E-01 -1.6008E-01 3.3685E-01 -5.4698E-02
3.7656E-01 3.1955E-01 2.8637E-01 2.1801E-01 6.6525E-02 1.0919E-01 2.6158E-01 -3.0845E-01 5.7398E-01 1.0456E 00

MATRIX *PHIC* 96 BY 30 ANTISYMMETRIC MATH MODEL

ROW 1

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 2

0.0	5.7436E 00	-5.4647E 01	9.4692E-01	3.4408E-01	-1.0735E 00	1.6215E-01	3.0870E-01	3.2394E-01	-7.8471E-02
-6.2644E-02	2.1310E 00	-1.1903E 00	-1.6395E-01	4.9246E-01	-1.3533E-01	1.3153E-02	3.5857E 00	-3.1092E-01	-3.4647E-01
8.6605E-01	-9.9035E-01	-5.4269E-01	-4.5867E-01	-1.0786E-01	-1.0257E-01	-5.4565E-01	2.0744E-01	7.2156E-01	1.6981E-02

ROW 3

-5.2577E-01	-1.4442E 00	2.8099E 01	4.3987E 00	7.3422E-01	-3.7908E 00	-1.2009E 00	-4.0922E 00	-1.5467E 00	1.1626E 00
8.9081E-01	8.9959E 00	2.4535E 00	2.2679E-01	5.3807E-01	1.4563E-01	-4.1983E-01	4.3305E 00	3.0227E-01	-6.5678E-01
1.2951E 00	-1.8737E 00	-1.4766E 00	-1.3418E 00	5.1289E-02	-4.7823E-02	-5.2890E-01	2.6518E-01	1.5450E 00	1.5153E-02

ROW 4

-5.2577E-01	1.1166E 01	-9.1875E 01	7.4385E 00	1.7558E 00	-6.2558E 00	-9.5087E-01	-3.5456E 00	-1.3739E 00	6.4155E-01
4.6231E-01	1.0823E 01	7.7251E-01	2.2245E-01	1.5200E 00	-1.5591E-01	-4.6528E-01	1.2531E 01	1.5246E-01	-1.1348E 00
2.0726E 00	-3.8159E 00	-1.9748E 00	-1.4488E 00	3.1605E-01	-2.5218E-02	-4.3717E-01	2.5868E-01	3.0016E 00	7.8910E-03

ROW 5

-5.2577E-01	1.2797E 01	-1.0740E 02	7.8879E 00	1.9032E 00	-6.5831E 00	-9.2515E-01	-3.4894E 00	-1.3845E 00	5.6429E-01
3.9260E-01	1.0882E 01	6.1347E-01	2.3731E-01	1.6337E 00	-1.9396E-01	-4.7214E-01	1.3549E 01	1.6071E-01	-1.1869E 00
2.1075E 00	-4.0212E 00	-2.0011E 00	-1.4146E 00	3.6835E-01	-1.0994E-02	-3.6732E-01	2.3675E-01	3.1431E 00	5.1042E-03

ROW 6

-5.2577E-01	2.3775E 01	-2.1185E 02	1.1202E 01	2.9727E 00	-8.8406E 00	-7.8988E-01	-3.2353E 00	-1.6392E 00	6.7855E-02
-1.5355E-01	1.0267E 01	-1.2233E-01	3.8045E-01	2.2761E 00	-4.3630E-01	-5.0000E-01	1.9742E 01	3.3788E-01	-1.5302E 00
1.9993E 00	-4.9452E 00	-1.9973E 00	-9.6670E-01	7.3828E-01	1.2223E-01	2.8762E-01	1.9198E-02	3.5738E 00	-1.8118E-02

ROW 7

-5.2577E-01	3.2994E 01	-2.9954E 02	1.4340E 01	3.9633E 00	-1.0824E 01	-7.2633E-01	-3.2366E 00	-2.0920E 00	-2.1703E-01
-7.1355E-01	8.4109E 00	-2.9429E-01	5.0311E-01	2.5963E 00	-6.1200E-01	-4.6966E-01	2.3561E 01	5.8783E-01	-1.8598E 00
1.4967E 00	-4.8964E 00	-1.7994E 00	-3.8201E-01	9.7711E-01	2.5321E-01	9.1630E-01	-1.9868E-01	2.9291E 00	-3.6425E-02

ROW 8

-5.6328E-01	3.5347E 01	-3.2092E 02	1.5716E 01	4.3394E 00	-1.1672E 01	-8.2522E-01	-3.6400E 00	-2.4691E 00	-1.6382E-01
-8.6451E-01	7.7479E 00	1.0317E-01	5.7280E-01	2.6083E 00	-6.3530E-01	-4.6959E-01	2.4238E 01	7.6003E-01	-1.9956E 00
1.1953E 00	-4.6138E 00	-1.7203E 00	-1.7522E-01	1.0405E 00	3.0829E-01	1.1601E 00	-2.8195E-01	2.3711E 00	-4.2226E-02

ROW 9

-5.6328E-01	4.5146E 01	-4.1415E 02	1.9461E 01	5.4902E 00	-1.3940E 01	-8.0984E-01	-4.0586E 00	-3.2673E 00	-9.2261E-02
-1.5734E 00	3.9705E 00	5.1849E-01	6.6624E-01	2.5313E 00	-7.5151E-01	-3.3192E-01	2.5234E 01	1.0732E 00	-2.3359E 00
2.3873E-01	-3.2665E 00	-1.2798E 00	6.0339E-01	1.0444E 00	4.0666E-01	1.6135E 00	-4.5282E-01	3.3426E-01	-4.9259E-02

ROW 10

-5.6328E-01	5.4945E 01	-5.0739E 02	2.3501E 01	6.6945E 00	-1.6393E 01	-8.0352E-01	-4.9413E 00	-4.3268E 00	3.3934E-01
-2.3132E 00	-1.2979E 00	1.4133E 00	8.4722E-01	2.0219E 00	-7.6995E-01	-1.2708E-01	2.2641E 01	1.3412E 00	-2.3872E 00
-9.1271E-01	-1.1397E 00	-5.7695E-01	1.5364E 00	8.0703E-01	4.2156E-01	1.7153E 00	-5.1892E-01	-1.6951E 00	-4.5779E-02

MATRIX *PHWG* 96 BY 30 ANTISYMMETRIC MATH MODEL

ROW 11
-5.6328E-01 6.4745E 01 -6.0062E 02 2.7792E 01 7.9289E 00 -1.9096E 01 -7.8022E-01 -6.3987E 00 -5.6465E 00 1.1955E 00
-2.6799E 00 -8.0765E 00 2.7811E 00 1.2099E 00 9.8363E-01 -6.6009E-01 1.3916E-01 1.5353E 01 1.4738E 00 -1.9424E 00
-2.0774E 00 1.5099E 00 3.8697E-01 2.5501E 00 2.9773E-01 3.1375E-01 1.3096E 00 -4.2848E-01 -2.9562E 00 -3.0224E-02

ROW 12
-5.6328E-01 7.4544E 01 -6.9385E 02 3.2264E 01 9.1611E 00 -2.2144E 01 -7.0212E-01 -8.5369E 00 -7.2118E 00 2.5272E 00
-3.9074E 00 -1.6289E 01 4.5734E 00 1.9172E 00 -6.6906E-01 -3.8826E-01 4.4518E-01 2.2376E 00 1.3660E 00 -6.8342E-01
-2.9967E 00 4.1374E 00 1.6077E 00 3.5094E 00 -4.5783E-01 4.7266E-02 2.7973E-01 -1.4272E-01 -2.2019E 00 -4.5061E-03

ROW 13
-5.6328E-01 8.7504E 01 -8.1716E 02 3.8384E 01 1.0786E 01 -2.6623E 01 -5.2156E-01 -1.2171E 01 -9.5693E 00 4.8377E 00
-5.3583E 00 -2.9091E 01 7.4185E 00 3.8728E 00 -3.8732E 00 6.0731E-02 1.0068E 00 -2.4967E 01 5.2494E-01 1.6253E 00
-2.7441E 00 5.3258E 00 2.5101E 00 3.9764E 00 -1.3024E 00 -3.3944E-01 -1.2705E 00 3.2257E-01 1.7737E-01 3.1989E-02

ROW 14
-5.6328E-01 1.0046E 02 -9.4047E 02 4.4667E 01 1.2400E 01 -3.1299E 01 -3.1331E-01 -1.6024E 01 -1.2124E 01 7.6041E 00
-7.4302E 00 -4.3484E 01 1.0478E 01 7.6189E 00 -7.9421E 00 2.7192E-01 1.9374E 00 -6.2935E 01 -1.5391E 00 3.1966E 00
7.1355E-01 4.1348E-01 6.0790E-01 2.4782E 00 -1.0124E 00 -3.2865E-01 -1.4381E 00 4.3462E-01 -9.4779E-01 5.0988E-02

ROW 15
-5.6328E-01 1.1216E 02 -1.0516E 03 5.0378E 01 1.3839E 01 -3.5586E 01 -1.1764E-01 -1.9427E 01 -1.4506E 01 1.0360E 01
-9.6749E 00 -5.7068E 01 1.3249E 01 1.2064E 01 -1.2113E 01 2.7523E-01 2.9933E 00 -1.0258E 02 -4.1225E 00 4.0005E 00
9.9464E 00 -7.9871E 00 -2.9415E 00 -8.6523E-02 3.8556E-02 -3.0405E-02 -5.6217E-01 2.6415E-01 -4.5937E 00 5.4474E-02

ROW 16
-5.6328E-01 1.2386E 02 -1.1630E 03 5.6103E 01 1.5282E 01 -3.9900E 01 7.9286E-02 -2.2860E 01 -1.6906E 01 1.3141E 01
-1.1924E 01 -7.0865E 01 1.6059E 01 1.6570E 01 -1.6363E 01 2.7320E-01 4.0791E 00 -1.4305E 02 -6.7770E 00 4.8223E 00
1.1319E 01 -1.6716E 01 -6.6424E 00 -2.7658E 00 1.1379E 00 2.8365E-01 3.6111E-01 8.3821E-02 -8.4371E 00 5.7976E-02

ROW 17
1.6600E 00 2.5554E 01 -2.4752E 02 -4.7058E 00 -2.5242E-01 3.1929E 00 2.8187E 00 8.9429E 00 4.0081E 00 -2.7772E 00
-2.1391E 00 -1.0225E 01 -8.6705E 00 -1.1047E 00 7.1586E-01 -7.8263E-01 8.6013E-01 4.6749E 00 -1.6020E 00 -8.7434E-02
3.6251E-01 -6.4808E-03 1.0651E 00 1.1665E 00 -3.2229E-01 -2.1673E-01 -5.8597E-01 1.0181E-01 -2.4227E-01 2.0216E-02

ROW 18
1.6600E 00 2.5554E 01 -2.4752E 02 -4.7058E 00 -2.5242E-01 3.1929E 00 2.8187E 00 8.9429E 00 4.0081E 00 -2.7772E 00
-2.1391E 00 -1.0225E 01 -8.6705E 00 -1.1047E 00 7.1586E-01 -7.8263E-01 8.6013E-01 4.6749E 00 -1.6020E 00 -8.7434E-02
3.6251E-01 -6.4808E-03 1.0651E 00 1.1665E 00 -3.2229E-01 -2.1673E-01 -5.8597E-01 1.0181E-01 -2.4227E-01 2.0216E-02

ROW 19
8.4950E-01 2.2707E 01 -2.3925E 02 -3.5631E 00 8.5858E-02 2.2988E 00 2.4957E 00 7.6911E 00 3.5464E 00 -2.2381E 00
-1.7791E 00 -7.5084E 00 -8.0126E 00 -8.7233E-01 8.6868E-01 -7.1786E-01 7.0612E-01 5.8701E 00 -1.4929E 00 -1.0422E-01
7.6069E-01 -4.8524E-01 5.9737E-01 7.1989E-01 -3.5362E-01 -2.3459E-01 -8.0927E-01 2.1078E-01 9.2376E-02 2.6158E-02

ROW 20
8.4950E-01 2.2707E 01 -2.3925E 02 -3.5631E 00 8.5858E-02 2.2988E 00 2.4957E 00 7.6911E 00 3.5464E 00 -2.2381E 00
-1.7791E 00 -7.5084E 00 -8.0126E 00 -8.7233E-01 8.6868E-01 -7.1786E-01 7.0612E-01 5.8701E 00 -1.4929E 00 -1.0422E-01
7.6069E-01 -4.8524E-01 5.9737E-01 7.1989E-01 -3.5362E-01 -2.3459E-01 -8.0927E-01 2.1078E-01 9.2376E-02 2.6158E-02

MATRIX *PHWG* 96 BY 30 ANTISYMMETRIC MATH MODEL

ROW 21
8.4950E-01 2.2707E 01 -2.3925E 02 -3.5631E 00 8.5860E-02 2.2988E 00 2.4957E 00 7.6911E 00 3.5464E 00 -2.2381E 00
-1.7791E 00 -7.5084E 00 -8.0126E 00 -8.7233E-01 8.6868E-01 -7.1786E-01 7.0612E-01 5.8701E 00 -1.4929E 00 -1.0421E-01
7.6069E-01 -4.8524E-01 5.9737E-01 7.1989E-01 -3.5362E-01 -2.3459E-01 -8.0927E-01 2.1078E-01 9.2376E-02 2.6158E-02

ROW 22
8.4950E-01 2.2707E 01 -2.3925E 02 -3.5631E 00 8.5860E-02 2.2988E 00 2.4957E 00 7.6911E 00 3.5464E 00 -2.2381E 00
-1.7791E 00 -7.5084E 00 -8.0126E 00 -8.7233E-01 8.6868E-01 -7.1786E-01 7.0612E-01 5.8701E 00 -1.4929E 00 -1.0421E-01
7.6069E-01 -4.8524E-01 5.9737E-01 7.1989E-01 -3.5362E-01 -2.3459E-01 -8.0927E-01 2.1078E-01 9.2376E-02 2.6158E-02

ROW 23
8.4950E-01 2.2707E 01 -2.3925E 02 -3.5631E 00 8.5863E-02 2.2988E 00 2.4957E 00 7.6911E 00 3.5464E 00 -2.2381E 00
-1.7791E 00 -7.5084E 00 -8.0126E 00 -8.7233E-01 8.6868E-01 -7.1786E-01 7.0612E-01 5.8701E 00 -1.4929E 00 -1.0421E-01
7.6069E-01 -4.8524E-01 5.9736E-01 7.1989E-01 -3.5363E-01 -2.3459E-01 -8.0927E-01 2.1078E-01 9.2376E-02 2.6158E-02

ROW 24
8.2511E-01 2.4162E 01 -2.5242E 02 -2.9175E 00 2.6322E-01 1.8119E 00 2.4607E 00 7.5384E 00 3.4492E 00 -2.2455E 00
-1.8093E 00 -7.1244E 00 -8.0177E 00 -8.4893E-01 9.8405E-01 -7.4454E-01 6.8438E-01 6.9191E 00 -1.4651E 00 -1.8738E-01
8.2694E-01 -7.0398E-01 5.1620E-01 7.0206E-01 -3.0952E-01 -2.2302E-01 -7.6743E-01 2.0167E-01 2.2343E-01 2.4501E-02

ROW 25
8.2511E-01 2.4162E 01 -2.5242E 02 -2.9175E 00 2.6322E-01 1.8119E 00 2.4607E 00 7.5384E 00 3.4492E 00 -2.2455E 00
-1.8093E 00 -7.1244E 00 -8.0177E 00 -8.4893E-01 9.8405E-01 -7.4454E-01 6.8438E-01 6.9191E 00 -1.4651E 00 -1.8738E-01
8.2694E-01 -7.0398E-01 5.1620E-01 7.0206E-01 -3.0952E-01 -2.2302E-01 -7.6743E-01 2.0167E-01 2.2343E-01 2.4501E-02

ROW 26
8.2511E-01 2.4162E 01 -2.5242E 02 -2.9175E 00 2.6322E-01 1.8119E 00 2.4607E 00 7.5384E 00 3.4492E 00 -2.2455E 00
-1.8093E 00 -7.1244E 00 -8.0177E 00 -8.4893E-01 9.8405E-01 -7.4454E-01 6.8438E-01 6.9191E 00 -1.4651E 00 -1.8738E-01
8.2694E-01 -7.0398E-01 5.1620E-01 7.0206E-01 -3.0952E-01 -2.2302E-01 -7.6743E-01 2.0167E-01 2.2343E-01 2.4501E-02

ROW 27
8.2511E-01 2.4162E 01 -2.5242E 02 -2.9175E 00 2.6322E-01 1.8119E 00 2.4607E 00 7.5384E 00 3.4492E 00 -2.2455E 00
-1.8093E 00 -7.1244E 00 -8.0177E 00 -8.4893E-01 9.8405E-01 -7.4454E-01 6.8438E-01 6.9191E 00 -1.4651E 00 -1.8738E-01
8.2694E-01 -7.0398E-01 5.1620E-01 7.0206E-01 -3.0952E-01 -2.2302E-01 -7.6743E-01 2.0167E-01 2.2343E-01 2.4501E-02

ROW 28
8.2511E-01 2.4162E 01 -2.5242E 02 -2.9175E 00 2.6322E-01 1.8119E 00 2.4607E 00 7.5384E 00 3.4492E 00 -2.2455E 00
-1.8093E 00 -7.1244E 00 -8.0177E 00 -8.4893E-01 9.8405E-01 -7.4454E-01 6.8438E-01 6.9191E 00 -1.4651E 00 -1.8738E-01
8.2694E-01 -7.0398E-01 5.1620E-01 7.0206E-01 -3.0952E-01 -2.2302E-01 -7.6743E-01 2.0167E-01 2.2343E-01 2.4501E-02

ROW 29
8.2511E-01 2.4162E 01 -2.5242E 02 -2.9175E 00 2.6322E-01 1.8119E 00 2.4607E 00 7.5384E 00 3.4492E 00 -2.2455E 00
-1.8093E 00 -7.1244E 00 -8.0177E 00 -8.4893E-01 9.8405E-01 -7.4454E-01 6.8439E-01 6.9191E 00 -1.4651E 00 -1.8739E-01
8.2694E-01 -7.0397E-01 5.1620E-01 7.0207E-01 -3.0952E-01 -2.2302E-01 -7.6743E-01 2.0167E-01 2.2342E-01 2.4501E-02

ROW 30
8.2511E-01 2.4162E 01 -2.5242E 02 -2.9175E 00 2.6322E-01 1.8119E 00 2.4607E 00 7.5384E 00 3.4492E 00 2.2455E 00
-1.8093E 00 -7.1244E 00 -8.0177E 00 -8.4893E-01 9.8405E-01 -7.4454E-01 6.8439E-01 6.9191E 00 -1.4651E 00 -1.8739E-01
8.2694E-01 -7.0397E-01 5.1621E-01 7.0207E-01 -3.0952E-01 -2.2302E-01 -7.6743E-01 2.0167E-01 2.2343E-01 2.4501E-02

MATRIX *PHWG* 96 BY 30 ANTISYMMETRIC MATH MODEL

ROW 31
8.2511E-01 2.4162E 01 -2.5242E 02 -2.9175E 00 2.6322E-01 1.8119E 00 2.4607E 00 7.5384E 00 3.4492E 00 -2.2456E 00
-1.8093E 00 -7.1244E 00 -8.0177E 00 -8.4894E-01 9.8405E-01 -7.4454E-01 6.8439E-01 6.9190E 00 -1.4651E 00 -1.8739E-01
8.2694E-01 -7.0398E-01 5.1620E-01 7.0206E-01 -3.0952E-01 -2.2302E-01 -7.6744E-01 2.0167E-01 2.2343E-01 2.4501E-02

ROW 32
8.2511E-01 2.4162E 01 -2.5242E 02 -2.9175E 00 2.6322E-01 1.8119E 00 2.4607E 00 7.5384E 00 3.4492E 00 -2.2456E 00
-1.8093E 00 -7.1244E 00 -8.0177E 00 -8.4894E-01 9.8404E-01 -7.4454E-01 6.8439E-01 6.9190E 00 -1.4651E 00 -1.8739E-01
8.2695E-01 -7.0398E-01 5.1619E-01 7.0206E-01 -3.0952E-01 -2.2302E-01 -7.6743E-01 2.0167E-01 2.2342E-01 2.4501E-02

ROW 33
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 34
0.0 5.4647E 01 5.7436E 00 1.7210E 00 -3.2139E 00 -4.0813E 00 -4.2612E-01 1.8457E 00 7.7913E-01 -4.3800E 00
-2.1984E 00 -1.5083E 00 5.5307E-01 -4.1092E 00 -3.7307E-02 -4.9108E-01 8.4897E-01 -3.1504E-01 -8.9549E-01 -4.1088E 00
7.5594E-02 -1.1180E 00 5.9888E-01 8.0085E-01 6.2214E-01 -9.4485E-02 6.5561E-01 -4.0609E-01 2.1988E 00 -1.2979E-03

ROW 35
4.3619E-02 1.0299E 02 1.2047E 00 2.8148E 00 -5.9241E 00 -7.4124E 00 -6.5529E-01 3.8639E 00 1.3305E 00 -8.0610E 00
-4.3457E 00 -2.8350E 00 6.5070E-01 -7.4413E 00 -5.9469E-02 -8.5943E-01 1.6043E 00 -5.4380E-01 -1.4063E 00 -6.6845E 00
2.5587E-01 -1.4270E 00 5.7052E-01 1.4183E 00 8.4223E-01 -1.3263E-01 9.4117E-01 -5.8580E-01 2.9843E 00 -8.5095E-04

ROW 36
4.3619E-02 2.0481E 02 1.4694E 01 4.7531E 00 -1.1049E 01 -1.4817E 01 -1.3003E 00 7.4113E 00 9.2405E-01 -1.3364E 01
-9.5896E 00 -2.8764E 00 1.4723E 00 -1.3004E 01 -1.7150E-01 -1.2017E 00 2.9309E 00 -1.3319E 00 -1.1324E 00 -8.1706E 00
9.1830E-01 -6.6323E-02 -1.3070E 00 1.6915E 00 3.8484E-01 -2.9523E-02 7.2562E-01 -4.1461E-01 9.4506E-01 2.7819E-03

ROW 37
4.3619E-02 2.1799E 02 1.6440E 01 4.9161E 00 -1.1623E 01 -1.5744E 01 -1.3663E 00 7.8503E 00 7.6660E-01 -1.3746E 01
-1.0313E 01 -2.7261E 00 1.5509E 00 -1.3524E 01 -1.7906E-01 -1.2109E 00 3.0604E 00 -1.4470E 00 -1.0050E 00 -8.0039E 00
1.0084E 00 2.0231E-01 -1.6176E 00 1.6864E 00 7.6842E-01 -7.9960E-03 6.3930E-01 -3.5638E-01 5.7026E-01 2.8756E-03

ROW 38
4.3619E-02 3.0664E 02 2.8185E 01 5.3736E 00 -1.4682E 01 -2.1565E 01 -1.6489E 00 1.0470E 01 -8.8458E-01 -1.3573E 01
-1.5219E 01 -8.8947E-01 1.8308E 00 -1.5276E 01 -1.3756E-01 -1.0575E 00 3.4992E 00 -1.3357E 00 2.3999E-01 -4.8365E 00
1.4529E 00 1.8361E 00 -3.3903E 00 1.7020E 00 -6.0472E-01 1.3346E-01 -1.0025E-01 1.2019E-01 -1.1233E 00 -2.9209E-03

ROW 39
4.3619E-02 3.8107E 02 3.8045E 01 4.7003E 00 -1.5702E 01 -2.5503E 01 -1.6054E 00 1.1895E 01 -2.9996E 00 -8.2028E 00
-1.9136E 01 1.5500E 00 1.6261E 00 -1.3749E 01 7.3660E-02 -6.5308E-01 3.0784E 00 -1.2385E-01 1.5337E 00 2.0115E-01
1.3814E 00 2.0447E 00 -3.5427E 00 1.9159E 00 -1.0828E 00 1.8709E-01 -6.2341E-01 4.3446E-01 -5.9890E-01 -1.5073E-02

ROW 40
4.3619E-02 4.0775E 02 4.1654E 01 4.0914E 00 -1.5491E 01 -2.6725E 01 -1.5296E 00 1.2171E 01 -3.9448E 00 -4.1527E 00
-2.0694E 01 2.5568E 00 1.4256E 00 -1.2426E 01 1.9100E-01 -4.4778E-01 2.7199E 00 7.3548E-01 1.9891E 00 2.4561E 00
1.2091E 00 1.7128E 00 -3.1075E 00 1.5465E 00 -1.0523E 00 1.8659E-01 -6.6210E-01 4.5841E-01 -8.2859E-01 -1.4583E-02

MATRIX *PHWG* 96 BY 30 **ANTISYMMETRIC MATH MODEL**

ROW 41
4.3619E-02 4.8459E 02 5.7050E 01 1.3271E 00 -1.3090E 01 -2.9096E 01 -1.1163E 00 1.2153E 01 -6.7775E 00 1.0666E 01
-2.4117E 01 5.5199E 00 4.6884E-01 -5.8298E 00 6.2520E-01 1.8763E-01 1.0592E 00 3.5884E 00 2.8991E 00 8.5137E 00
2.7580E-01 -1.2549E-01 -5.2597E-01 1.4020E 00 -6.6961E-01 7.9463E-02 -5.7854E-01 3.5168E-01 2.7007E-01 -1.3313E-02

ROW 42
4.3619E-02 5.6142E 02 6.2446E 01 -3.0858E 00 -7.5340E 00 -2.9575E 01 -5.2122E-01 1.0958E 01 -9.1041E 00 2.5804E 01
-2.4706E 01 7.9795E 00 -9.6748E-01 4.5842E 00 1.0585E 00 6.7627E-01 -1.2535E 00 5.4834E 00 2.7587E 00 1.1335E 01
-1.1979E 00 -2.1509E 00 2.9573E 00 3.5587E 00 -2.5168E-01 -1.5883E-01 -4.8345E-01 1.3389E-01 3.7133E 00 -1.2019E-02

ROW 43
4.3619E-02 6.3826E 02 7.2843E 01 -9.4217E 00 1.9232E 00 -2.8372E 01 -2.7244E-02 8.7199E 00 -9.7746E 00 3.5205E 01
-2.1734E 01 8.8439E 00 -2.6026E 00 1.6463E 01 1.2742E 00 7.0796E-01 -3.4519E 00 4.9642E 00 1.1605E 00 7.8028E 00
-2.2232E 00 -3.0492E 00 5.0788E 00 6.6642E 00 -1.3190E-04 -3.3977E-01 -2.8044E-01 -1.1328E-01 4.9387E 00 -5.7013E-04

ROW 44
4.3619E-02 7.1509E 02 8.3239E 01 -1.7902E 01 1.5958E 01 -2.7201E 01 -4.9986E-02 5.9258E 00 -7.2947E 00 2.8812E 01
-1.6007E 01 7.0080E 00 -3.9589E 00 2.5208E 01 1.2138E 00 7.0353E-02 -4.4945E 00 2.4171E 00 -1.6011E 00 -3.2219E 00
-1.7503E 00 -1.8502E 00 2.9680E 00 6.7175E 00 2.5799E-01 -1.0825E-01 5.8515E-01 -3.8221E-01 2.2954E 00 -1.1670E-02

ROW 45
4.3619E-02 8.1671E 02 9.6988E 01 -3.2223E 01 4.1244E 01 -2.8513E 01 -1.0420E 00 2.3573E 00 4.7460E-01 -5.2937E 00
3.8871E-01 -2.0647E 00 -3.6744E 00 2.2011E 01 2.9909E-01 -6.7307E-01 -3.3587E 00 -5.3228E 00 -4.6661E 00 -1.8877E 01
2.7981E-02 4.5805E 00 -3.4130E 00 1.5567E 00 -3.7223E-01 2.8187E-01 5.9088E-01 -1.1347E-01 -3.1322E 00 -1.5883E-02

ROW 46
4.3619E-02 9.1833E 02 1.1074E 02 -4.9218E 01 7.2029E 01 -3.6877E 01 -2.9537E 00 4.9510E 00 8.7367E 00 -4.8863E 01
4.1282E 01 -2.0075E 01 7.3586E-01 -7.7650E 00 -1.2368E 00 7.7403E-01 -3.7378E-02 -1.2640E 01 -2.9344E 00 -1.4764E 01
-3.6841E-01 1.1929E 01 -3.8001E 00 4.7939E-02 -2.7055E 00 -2.6512E-01 -2.7289E 00 1.0597E 00 -9.0276E 00 1.0283E-01

ROW 47
4.3619E-02 1.0100E 03 1.2315E 02 -6.5819E 01 1.0243E 02 -5.2051E 01 -4.9417E 00 1.5341E 01 1.4642E 01 -8.7501E 01
9.9167E 01 -4.2451E 01 7.8270E 00 -5.6909E 01 -2.3569E 00 4.3654E 00 3.9586E 00 -1.6834E 01 3.9727E 00 2.0271E 01
2.6787E 00 -7.0383E 00 1.6273E 00 -9.3420E-01 6.6101E-02 -3.0333E-01 -1.0746E 00 3.1764E-01 -2.2346E 00 6.1797E-02

ROW 48
4.3619E-02 1.1017E 03 1.3555E 02 -8.3156E 01 1.3482E 02 -6.8926E 01 -6.3643E 00 2.7046E 01 2.1248E 01 -1.3100E 02
1.6606E 02 -6.8954E 01 1.6714E 01 -1.2309E 02 -3.3465E 00 9.6039E 00 8.8510E 00 -2.6032E 01 1.4558E 01 8.8602E 01
1.7057E 01 -7.3121E 01 6.9555E 00 -1.3258E 01 1.3738E 01 1.6939E 00 1.2415E 01 -4.3866E 00 2.6199E 01 -3.8470E-01

ROW 49
0.0 9.9452E-01 1.0453E-01 3.1776E-02 -5.8647E-02 -7.4891E-02 -7.8779E-03 3.3590E-02 1.5102E-02 -7.9341E-02
-4.0202E-02 -2.9144E-02 1.0174E-02 -7.5934E-02 -6.6490E-04 -9.2358E-03 1.5560E-02 -5.2526E-03 -1.7419E-02 -7.8112E-02
9.6266E-04 -2.2373E-02 1.2736E-02 1.3799E-02 1.2521E-02 -1.8823E-03 1.2973E-02 -8.0356E-03 4.1965E-02 -1.6149E-05

ROW 50
0.0 9.9452E-01 1.0453E-01 3.0411E-02 -5.8175E-02 -7.3043E-02 -7.5091E-03 3.3592E-02 1.2335E-02 -8.0452E-02
-3.9624E-02 -2.4062E-02 9.3480E-03 -7.2483E-02 -7.0702E-04 -8.3398E-03 1.5231E-02 -6.6953E-03 -1.4054E-02 -6.8105E-02
2.2019E-03 -1.6292E-02 6.6798E-03 1.6125E-02 8.9245E-03 -1.3940E-03 9.9487E-03 -6.1004E-03 3.6118E-02 -3.9568E-05

MATRIX *PHWG* 96 BY 30 **ANTISYMMETRIC MATH MODEL**

ROW 51
0.0 8.4326E-01 1.1171E-01 2.0988E-02 -4.4622E-02 -6.2114E-02 -6.0759E-03 2.9545E-02 3.1685E-03 -5.8205E-02
-1.5464E-02 -1.0241E-02 8.0622E-03 -5.5319E-02 -1.0524E-03 -4.9058E-03 1.2542E-02 -8.0143E-03 -4.0925E-03 -3.4257E-02
4.1893E-03 1.7140E-03 -7.5418E-03 6.6705E-03 9.6652E-04 6.5695E-05 2.6872E-03 -1.4267E-03 -2.5052E-04 1.8599E-05

ROW 52
0.0 8.4326E-01 1.1171E-01 1.1124E-02 -3.7533E-02 -5.9699E-02 -4.3916E-03 2.8364E-02 -9.3374E-03 -2.7120E-02
-4.6111E-02 8.5429E-03 5.2780E-03 -3.5044E-02 -5.6980E-04 -8.4923E-04 8.7154E-03 -4.6649E-03 7.5848E-03 8.0901E-03
5.8592E-03 1.6993E-02 -1.9856E-02 -2.7378E-04 -7.1886E-03 1.3537E-03 -5.2110E-03 3.5431E-03 -2.4392E-02 1.2947E-05

ROW 53
0.0 8.4326E-01 1.1171E-01 9.7256E-03 -3.5932E-02 -5.8977E-02 -4.0578E-03 2.7807E-02 -1.0813E-02 -2.1639E-02
-4.6437E-02 1.0682E-02 4.7665E-03 -3.1402E-02 -3.9501E-04 -3.2648E-04 7.8527E-03 -3.6472E-03 8.7213E-03 1.3244E-02
5.6625E-03 1.7344E-02 -1.9851E-02 -3.6424E-04 -7.6954E-03 1.3985E-03 -5.8246E-03 3.9005E-03 -2.3514E-02 -1.0373E-06

ROW 54
0.0 8.4326E-01 1.1171E-01 -1.6051E-03 -2.0898E-02 -5.0631E-02 -1.0912E-03 2.1044E-02 -2.0441E-02 2.9416E-02
-4.6013E-02 2.3729E-02 2.0955E-04 3.1751E-04 1.3755E-03 3.2389E-03 -2.2820E-04 6.9851E-03 1.4196E-02 4.6256E-02
2.0329E-03 1.0743E-02 -1.0912E-02 1.4784E-03 -7.7944E-03 1.0868E-03 -7.3570E-03 4.5773E-03 -4.3205E-03 -1.1541E-04

ROW 55
0.0 8.4326E-01 1.1171E-01 -1.4203E-02 -8.7246E-04 -3.7541E-02 2.1071E-03 1.0454E-02 -2.7181E-02 9.6688E-02
-4.2597E-02 3.0658E-02 -4.9972E-03 3.4838E-02 3.4304E-03 5.7787E-03 -9.4707E-03 2.1269E-02 1.4310E-02 6.5904E-02
-3.9294E-03 -7.7054E-03 8.9226E-03 2.0705E-03 -2.0382E-03 7.0775E-05 -3.5176E-03 1.9931E-03 1.1610E-02 -1.2152E-04

ROW 56
0.0 8.1880E-01 1.1079E-01 -2.1563E-02 1.1474E-02 -3.4373E-02 2.9033E-03 5.8642E-03 -2.9953E-02 1.4138E-01
-4.7427E-02 3.1224E-02 -7.2369E-03 4.7246E-02 3.9815E-03 6.6125E-03 -1.2804E-02 2.9846E-02 1.3186E-02 7.0760E-02
-6.6459E-03 -1.5114E-02 1.8402E-02 -1.3163E-02 3.0452E-03 -2.5224E-04 5.3870E-04 -3.0697E-04 -9.5694E-03 5.7579E-05

ROW 57
0.0 8.1880E-01 1.1079E-01 -3.7786E-02 4.1109E-02 -1.5540E-02 5.7153E-03 -6.4584E-03 -2.9137E-02 1.6848E-01
-2.3359E-02 3.0581E-02 -1.3041E-02 9.2765E-02 4.9971E-03 6.5109E-03 -2.2100E-02 2.8329E-02 5.1401E-03 5.3203E-02
-1.3813E-02 -2.2674E-02 3.5118E-02 1.1057E-02 4.7343E-03 -2.0022E-03 1.0577E-03 -1.8753E-03 3.0454E-02 -1.3388E-05

ROW 58
0.0 8.1880E-01 1.1079E-01 -5.6736E-02 7.8441E-02 5.1261E-03 6.4669E-03 -1.8781E-02 -1.9436E-02 1.4528E-01
1.2269E-02 1.9882E-02 -1.7078E-02 1.2515E-01 3.8172E-03 3.3282E-03 -2.5817E-02 9.1501E-03 -6.9465E-03 1.0577E-03
-1.5022E-02 -1.8025E-02 3.5038E-02 3.2762E-02 3.7424E-03 -2.7515E-03 1.0737E-03 -2.6006E-03 3.3951E-02 6.6620E-05

ROW 59
0.0 8.1880E-01 1.1079E-01 -7.8707E-02 1.2434E-01 1.7685E-02 3.3030E-03 -2.8060E-02 6.8228E-03 3.5660E-02
4.9874E-02 -3.5053E-03 -1.6893E-02 1.1964E-01 6.2000E-04 -3.0643E-03 -1.9089E-02 -1.9927E-02 -2.4661E-02 -7.8722E-02
-4.7321E-03 7.3352E-04 4.7715E-03 2.6291E-02 1.8629E-03 -4.5221E-04 4.2189E-03 -2.6347E-03 -1.2739E-02 1.3075E-04

ROW 60
0.0 8.1880E-01 1.1079E-01 -1.0231E-01 1.7570E-01 -2.5939E-04 -4.6409E-03 -2.9845E-02 4.9274E-02 -1.9649E-01
6.6327E-02 -3.7074E-02 -1.1058E-02 5.6149E-02 -1.2931E-03 -1.0520E-02 -1.5036E-03 -2.7325E-02 -3.1985E-02 -1.5259E-01
1.6185E-02 2.4968E-02 -5.3808E-02 -3.6893E-02 5.1364E-03 6.1780E-03 1.6276E-02 -3.3846E-03 -2.5987E-02 -5.9518E-04

MATRIX *PHW6* 96 BY 30 ANTISYMMETRIC MATH MODEL

ROW 61									
0.0	8.1889E-01	1.1079E-01	-1.2797E-01	2.3036E-01	-2.8321E-02	-1.1657E-02	-1.8361E-02	7.2063E-02	-3.4097E-01
2.1603E-01	-1.1147E-01	1.9307E-02	-1.2766E-01	-1.2372E-02	9.9569E-04	2.0133E-02	-8.3590E-02	-1.0909E-02	-7.1204E-02
9.7854E-03	6.9623E-02	-3.9472E-02	-4.0182E-02	-1.4407E-02	-4.0414E-04	-1.6135E-02	7.3173E-03	-5.8897E-02	5.5858E-04
ROW 62									
0.0	8.1880E-01	1.1079E-01	-1.4366E-01	2.5977E-01	-1.2568E-01	-1.9981E-02	8.6298E-02	4.8733E-02	-3.1645E-01
4.6531E-01	-1.7543E-01	5.2696E-02	-3.4705E-01	-9.3759E-03	2.3367E-02	3.0002E-02	-6.5328E-03	4.3053E-02	1.5128E-01
-2.4494E-02	4.3934E-02	4.7163E-02	4.3435E-02	-2.3510E-02	-8.9896E-03	-3.6331E-02	1.0528E-02	-3.5451E-02	1.3730E-03
ROW 63									
0.0	8.1880E-01	1.1079E-01	-1.5254E-01	2.8286E-01	-1.4519E-01	-1.4861E-02	9.9800E-02	5.6714E-02	-3.7294E-01
5.6828E-01	-2.2359E-01	7.3719E-02	-5.3430E-01	-9.7209E-03	4.1271E-02	4.0974E-02	-6.6526E-02	8.1933E-02	4.9314E-01
8.7094E-02	-4.1825E-01	4.8825E-02	-6.9033E-02	8.1937E-02	1.0179E-02	7.6343E-02	-2.7272E-02	1.7501E-01	-2.4751E-03
ROW 64									
0.0	8.1880E-01	1.1079E-01	-1.5553E-01	2.9136E-01	-1.5251E-01	-1.1803E-02	1.0619E-01	5.9779E-02	-3.9368E-01
6.0724E-01	-2.4100E-01	8.1246E-02	-6.1135E-01	-8.3203E-03	4.8797E-02	4.4535E-02	-8.7032E-02	9.9249E-02	6.5478E-01
1.4442E-01	-6.5724E-01	4.6998E-02	-1.2601E-01	1.3791E-01	2.0883E-02	1.3798E-01	-4.7884E-02	2.8543E-01	-4.5915E-03
ROW 65									
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ROW 66									
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ROW 67									
0.0	5.2727E-01	1.8124E-02	1.8525E-02	-3.2684E-02	-3.0017E-02	-2.7294E-03	1.5214E-02	7.7831E-03	-6.1324E-02
-7.6403E-03	-9.7165E-03	4.1069E-03	-3.2614E-02	4.3474E-04	-4.3998E-03	6.6062E-03	-4.4321E-03	-7.5938E-03	-3.5309E-02
1.4668E-03	-1.3213E-02	4.2637E-03	3.1634E-02	2.2332E-03	-1.0876E-03	2.8077E-03	-2.2027E-03	5.5728E-02	-2.2870E-04
ROW 68									
0.0	5.2727E-01	1.8124E-02	2.3792E-02	-3.9116E-02	-4.3718E-03	3.7506E-04	7.7282E-03	1.0780E-02	-1.1414E-01
2.9465E-02	-5.5119E-03	3.3564E-03	-1.6933E-02	1.7548E-03	-4.1825E-03	2.6720E-03	-1.3718E-02	-7.5502E-03	-3.3212E-02
7.2655E-04	-2.4284E-02	7.2967E-03	9.7101E-02	-4.4459E-03	-1.8709E-03	-2.7767E-03	2.1712E-04	1.5629E-01	-8.3993E-04
ROW 69									
0.0	5.2727E-01	1.8124E-02	2.4603E-02	-4.0109E-02	-4.2205E-04	8.2739E-04	6.6011E-03	1.1234E-02	-1.2215E-01
3.4998E-02	-4.8863E-03	3.2664E-03	-1.4736E-02	1.9355E-03	-4.1639E-03	2.1412E-03	-1.5176E-02	-7.5313E-03	-3.2998E-02
6.8096E-04	-2.5793E-02	7.5410E-03	1.0685E-01	-5.4948E-03	-1.9674E-03	-3.6234E-03	5.9711E-04	1.7033E-01	-9.2700E-04
ROW 70									
0.0	5.2727E-01	1.8124E-02	3.1103E-02	-4.8069E-02	3.1226E-02	4.4518E-03	-2.4300E-03	1.4871E-02	-1.8633E-01
7.9644E-02	1.2609E-04	2.5451E-03	2.8649E-03	3.3841E-03	-4.0151E-03	-2.1123E-03	-2.6862E-02	-7.3804E-03	-3.1285E-02
3.1563E-04	-3.7889E-02	9.4987E-03	1.8498E-01	-1.3894E-02	-2.7405E-03	-1.0408E-02	3.6419E-03	2.8286E-01	-1.6247E-03

MATRIX *PRWG* 96 BY 30 ANTISYMMETRIC MATH MODEL

ROW 71
0.0 5.2727E-01 1.8124E-02 3.8248E-02 -5.6917E-02 6.5791E-02 7.9846E-03 -1.1850E-02 1.8698E-02 -2.5494E-01
1.7614E-01 5.3472E-03 2.2146E-03 1.8216E-02 4.6036E-03 -4.0664E-03 -5.4780E-03 -4.0012E-02 -6.8505E-03 -3.0737E-02
1.1177E-03 -4.7778E-02 7.7336E-03 2.6481E-01 -2.3496E-02 -3.1599E-03 -1.7656E-02 7.1399E-03 3.8211E-01 -2.2749E-03

ROW 72
0.0 5.6450E-01 2.3107E-02 4.0374E-02 -6.0223E-02 7.9448E-02 9.6800E-03 -1.5756E-02 1.9004E-02 -2.7846E-01
1.4443E-01 9.0735E-03 1.7218E-03 2.7226E-02 5.3293E-03 -3.7816E-03 -7.5728E-03 -4.4379E-02 -6.0275E-03 -2.7235E-02
1.1415E-03 -5.2900E-02 7.8894E-03 2.9931E-01 -2.7545E-02 -3.3622E-03 -2.0798E-02 8.6496E-03 4.2547E-01 -2.5584E-03

ROW 73
0.0 5.6450E-01 2.3107E-02 4.5623E-02 -6.2522E-02 1.3653E-01 1.1591E-02 -3.7726E-02 1.8951E-02 -2.3794E-01
1.6680E-01 5.2895E-03 4.3524E-03 1.2537E-02 3.8862E-03 -4.7348E-03 -3.7553E-03 -4.4272E-02 -7.3127E-03 -3.5747E-02
3.4677E-03 -5.5749E-02 3.7897E-03 3.1851E-01 -2.9283E-02 -2.3444E-03 -1.8030E-02 7.3325E-03 2.5212E-01 -1.4999E-03

ROW 74
0.0 5.6450E-01 2.3107E-02 5.2344E-02 -6.5589E-02 2.0922E-01 1.3751E-02 -6.5865E-02 1.8322E-02 -1.3109E-01
1.9569E-01 7.1092E-04 8.1384E-03 -1.0774E-02 2.0426E-03 -5.8177E-03 2.0415E-03 -4.0763E-02 -7.6678E-03 -4.3413E-02
7.2272E-03 -5.8504E-02 -3.6667E-03 3.3503E-01 -3.0880E-02 -5.7111E-04 -1.3392E-02 5.4215E-03 1.0212E-02 -6.8530E-05

ROW 75
0.0 5.6450E-01 2.3107E-02 6.1175E-02 -6.9703E-02 3.0438E-01 1.6723E-02 -1.0383E-01 1.6571E-02 -9.9217E-02
2.2601E-01 -4.2036E-03 1.3173E-02 -4.3396E-02 2.1144E-04 -6.6448E-03 9.3279E-03 -2.8722E-02 -6.1815E-03 -4.5752E-02
1.1332E-02 -6.3982E-02 -1.1549E-02 3.5044E-01 -3.1542E-02 1.9375E-03 -5.8843E-03 2.3689E-03 -3.0918E-01 1.7916E-03

ROW 76
0.0 5.6450E-01 2.3107E-02 7.3909E-02 -7.5496E-02 4.4235E-01 2.1724E-02 -1.6106E-01 1.2867E-02 2.7982E-02
2.6543E-01 -9.3934E-03 1.9813E-02 -8.6283E-02 -1.2934E-03 -6.9709E-03 1.7722E-02 -1.3942E-03 -2.3776E-03 -4.0468E-02
1.3902E-02 -7.5008E-02 -1.5759E-02 3.7241E-01 -3.0897E-02 5.1579E-03 5.8695E-03 -2.7159E-03 -7.6720E-01 4.3535E-03

ROW 77
0.0 5.6450E-01 2.3107E-02 7.8199E-02 -6.7898E-02 5.7428E-01 3.5412E-02 -3.4948E-01 7.6176E-02 -1.7735E-01
9.5390E-02 -1.6062E-03 2.2428E-02 -1.6111E-01 1.2220E-03 4.4499E-03 1.8705E-02 3.6900E-02 2.0055E-02 6.5972E-02
6.9344E-03 -6.8892E-02 9.8946E-03 2.1459E-01 -1.5571E-02 1.7133E-03 1.8550E-03 -1.6902E-03 -4.3575E-01 2.6977E-03

ROW 78
0.0 5.6450E-01 2.3107E-02 8.2005E-02 -5.2248E-02 7.5681E-01 5.4453E-02 -6.1800E-01 1.6778E-01 -4.8092E-01
-1.6071E-01 1.0574E-02 2.2325E-02 -2.2765E-01 4.2218E-03 1.7366E-02 1.6883E-02 8.0711E-02 4.2725E-02 1.6979E-01
-9.1234E-03 -3.0545E-02 4.2516E-02 -8.4944E-05 7.4149E-04 -4.0258E-03 -8.8248E-03 1.5116E-03 3.6322E-02 2.4381E-04

ROW 79
0.0 5.6450E-01 2.3107E-02 8.3614E-02 -5.6578E-02 7.6279E-01 5.3794E-02 -6.2619E-01 1.6757E-01 -4.7477E-01
-1.7899E-01 1.8686E-02 1.9883E-02 -2.0473E-01 4.2907E-03 1.5815E-02 1.4925E-02 9.7953E-02 3.8846E-02 1.1589E-01
-3.7122E-02 7.3547E-02 5.0488E-02 2.1671E-02 -2.3567E-02 -9.5546E-03 -3.7580E-02 1.0861E-02 1.1410E-02 1.1135E-03

ROW 80
0.0 5.6450E-01 2.3107E-02 8.6582E-02 -6.5410E-02 7.7268E-01 5.0817E-02 -6.3971E-01 1.6570E-01 -4.5800E-01
-2.1693E-01 3.5210E-02 1.4195E-02 -1.3857E-01 2.5713E-03 1.0342E-02 1.1385E-02 1.2640E-01 2.5048E-02 -4.2700E-02
-1.0839E-01 3.5411E-01 6.4117E-02 8.4701E-02 -9.0164E-02 -2.3797E-02 -1.1464E-01 3.6219E-02 -8.8208E-02 3.6096E-03

MATRIX *PHWG* 96 BY 30 ANTISYMMETRIC MATH MODEL

ROW 81
0.0 -1.0453E-01 9.9452E-01 -1.7233E-02 -6.2619E-03 1.9536E-02 -2.9511E-03 -5.6180E-03 -5.8936E-03 1.4281E-03
1.5041E-03 -3.8783E-02 2.1662E-02 2.9837E-03 -8.9624E-03 2.4628E-03 -2.3937E-04 -6.5257E-02 5.7130E-03 6.3054E-03
-1.5743E-02 1.8023E-02 9.3766E-03 8.3473E-03 1.9630E-03 1.8668E-03 9.9304E-03 -3.7770E-03 -1.3132E-02 -3.0904E-04

ROW 82
0.0 -1.0453E-01 9.9452E-01 -1.7233E-02 -6.2619E-03 1.9536E-02 -2.9511E-03 -5.6180E-03 -5.8936E-03 1.4281E-03
1.5041E-03 -3.8783E-02 2.1662E-02 2.9837E-03 -8.9624E-03 2.4628E-03 -2.3937E-04 -6.5257E-02 5.7130E-03 6.3054E-03
-1.5743E-02 1.8023E-02 9.3766E-03 8.3473E-03 1.9630E-03 1.8668E-03 9.9304E-03 -3.7770E-03 -1.3132E-02 -3.0904E-04

ROW 83
0.0 -1.0443E-01 9.9358E-01 -2.1464E-02 -7.4389E-03 1.9949E-02 -2.4914E-03 -5.2065E-03 -3.5509E-03 3.2294E-03
2.5923E-03 -2.6442E-02 1.7627E-02 1.2768E-03 -8.7050E-03 2.5109E-03 1.7320E-04 -6.8200E-02 3.2292E-03 4.8801E-03
-1.0783E-02 1.7800E-02 6.7466E-03 4.2583E-03 -5.3769E-04 6.9084E-04 3.7993E-03 -1.5841E-03 -1.3547E-02 -9.3106E-05

ROW 84
0.0 -1.0443E-01 9.9358E-01 -2.8380E-02 -9.3344E-03 2.0877E-02 -1.6921E-03 -3.7241E-03 4.5105E-04 4.9233E-03
4.3700E-03 -4.9923E-03 1.0588E-02 -8.7077E-04 -7.3995E-03 2.4470E-03 4.4736E-04 -6.5726E-02 -3.5992E-04 3.3673E-03
-2.6761E-03 1.3599E-02 1.9334E-03 -1.8874E-03 -3.2768E-03 -8.4892E-04 -4.1594E-03 1.2886E-03 -9.5429E-03 1.6932E-04

ROW 85
0.0 -1.0443E-01 9.9358E-01 -2.9126E-02 -9.5351E-03 2.1004E-02 -1.5992E-03 -3.4651E-03 9.0637E-04 4.9579E-03
4.5604E-03 -2.5086E-03 9.7674E-03 -1.0273E-03 -7.1502E-03 2.4223E-03 4.2923E-04 -6.4571E-02 -6.9325E-04 3.3012E-03
-1.7935E-03 1.2677E-02 1.4454E-03 -2.4933E-03 -3.4109E-03 -9.6982E-04 -4.7700E-03 1.5145E-03 -8.5484E-03 1.8693E-04

ROW 86
0.0 -1.0443E-01 9.9358E-01 -3.3820E-02 -1.0777E-02 2.1984E-02 -9.7522E-04 -1.2190E-03 3.9205E-03 4.1812E-03
5.8232E-03 1.4183E-02 4.2329E-03 -1.5272E-03 -4.9025E-03 2.1589E-03 1.1337E-05 -5.1708E-02 -2.4522E-03 3.3926E-03
3.7151E-03 4.2309E-03 -1.3758E-03 -5.7852E-03 -3.3279E-03 -1.4685E-03 -7.1679E-03 2.4436E-03 1.3033E-03 2.3276E-04

ROW 87
0.0 -1.0443E-01 9.9358E-01 -3.7191E-02 -1.1641E-02 2.2979E-02 -4.6634E-04 1.3515E-03 6.3229E-03 2.0314E-03
6.8848E-03 2.7840E-02 -3.2723E-04 -1.1244E-03 -2.2322E-03 1.8021E-03 -7.6413E-04 -3.3740E-02 -3.1925E-03 4.1616E-03
7.5382E-03 -5.7117E-03 -2.9917E-03 -7.2260E-03 -1.9969E-03 -1.4369E-03 -6.7324E-03 2.3731E-03 1.4005E-02 1.6679E-04

ROW 88
0.0 -1.0443E-01 9.9358E-01 -3.8334E-02 -1.1927E-02 2.3406E-02 -2.7659E-04 2.4938E-03 7.2063E-03 8.1958E-04
7.3212E-03 3.2944E-02 -2.0383E-03 -7.6404E-04 -1.0259E-03 1.6344E-03 -1.1653E-03 -2.5151E-02 -3.2942E-03 4.5908E-03
8.7643E-03 -1.0092E-02 -3.3852E-03 -7.3859E-03 -1.0496E-03 -1.3226E-03 -6.0048E-03 2.1500E-03 1.9965E-02 1.1684E-04

ROW 89
0.0 -1.0443E-01 9.9358E-01 -4.1502E-02 -1.2578E-02 2.5037E-02 -7.8435E-05 6.6679E-03 9.8549E-03 -2.5066E-03
7.7498E-03 4.7891E-02 -6.9041E-03 -1.3253E-03 2.8845E-03 7.8400E-04 -1.8092E-03 6.0592E-03 -3.2524E-03 2.4206E-03
1.1467E-02 -1.8656E-02 -6.0508E-03 -9.1843E-03 1.1140E-03 -6.8791E-04 -3.3171E-03 1.3801E-03 2.2714E-02 2.5578E-05

ROW 90
0.0 -1.0443E-01 9.9358E-01 -4.4515E-02 -1.3047E-02 2.7368E-02 -1.0301E-04 1.2332E-02 1.2717E-02 -6.7990E-03
8.0043E-03 6.4385E-02 -1.2150E-02 -2.6950E-03 8.1349E-03 -4.4332E-04 -2.5312E-03 5.1109E-02 -2.2963E-03 -1.6792E-03
1.2748E-02 -2.6227E-02 -8.9210E-03 -1.0569E-02 4.0027E-03 4.4130E-04 1.4304E-03 -6.5526E-05 1.9193E-02 -1.0273E-04

MATRIX *PHWG* 96 BY 30 ANTISYMMETRIC MATH MODEL

ROW 91

0.0	-1.0443E-01	9.9358E-01	-4.6926E-02	-1.3206E-02	3.0416E-02	-4.5911E-04	1.8925E-02	1.5389E-02	-1.1545E-02
8.3769E-03	7.9986E-02	-1.6919E-02	-5.3174E-03	1.4153E-02	-1.9591E-03	-3.1064E-03	1.0627E-01	-3.4595E-04	-8.3528E-03
1.1624E-02	-2.9329E-02	-1.1623E-02	-1.0810E-02	6.8207E-03	1.9231E-03	7.4378E-03	-1.9357E-03	5.5273E-03	-2.2609E-04

ROW 92

0.0	-1.0443E-01	9.9358E-01	-4.8335E-02	-1.2975E-02	3.4923E-02	-1.3222E-03	2.7040E-02	1.7985E-02	-1.7042E-02
9.4772E-03	9.5075E-02	-2.1213E-02	-1.0354E-02	2.1384E-02	-3.9571E-03	-3.3294E-03	1.7714E-01	2.9520E-03	-1.9565E-02
7.1115E-03	-2.5082E-02	-1.4496E-02	-9.2493E-03	9.2065E-03	3.8760E-03	1.4879E-02	-4.2711E-03	-2.5879E-02	-3.1377E-04

ROW 93

0.0	-1.0443E-01	9.9358E-01	-5.0145E-02	-1.3132E-02	3.7095E-02	-1.5855E-03	3.0972E-02	1.9921E-02	-2.0341E-02
1.3897E-02	1.1064E-01	-2.4282E-02	-2.2085E-02	2.9488E-02	-2.9891E-03	-5.8925E-03	2.6302E-01	1.1213E-02	-1.6751E-02
-1.3209E-02	1.0593E-02	2.0344E-03	3.0207E-03	3.3374E-03	1.9508E-03	8.5867E-03	-2.8030E-03	-8.8974E-03	-2.5094E-04

ROW 94

0.0	-1.0443E-01	9.9358E-01	-5.0886E-02	-1.2804E-02	3.8051E-02	-1.7376E-03	3.0129E-02	2.1117E-02	-2.4395E-02
2.0011E-02	1.2000E-01	-2.4449E-02	-3.9193E-02	3.6600E-02	-6.4296E-05	-9.1953E-03	3.4735E-01	2.2504E-02	-7.1916E-03
-4.4841E-02	7.2559E-02	3.0539E-02	2.2040E-02	-9.0402E-03	-2.5519E-03	-7.5042E-03	1.4614E-03	3.1084E-02	-2.9856E-05

ROW 95

0.0	-1.0443E-01	9.9358E-01	-5.1084E-02	-1.2876E-02	3.8454E-02	-1.7551E-03	3.0582E-02	2.1381E-02	-2.4771E-02
2.0071E-02	1.2228E-01	-2.4967E-02	-4.0084E-02	3.7751E-02	4.0097E-06	-9.6196E-03	3.5928E-01	2.3523E-02	-7.2686E-03
-4.7542E-02	7.7106E-02	3.2661E-02	2.3632E-02	-9.6910E-03	-2.7632E-03	-8.1198E-03	1.5838E-03	3.3812E-02	-3.1327E-05

ROW 96

0.0	-1.0443E-01	9.9358E-01	-5.1126E-02	-1.2891E-02	3.8540E-02	-1.7598E-03	3.0678E-02	2.1436E-02	-2.4855E-02
2.0098E-02	1.2280E-01	-2.5082E-02	-4.0294E-02	3.8023E-02	2.5915E-05	-9.7266E-03	3.6214E-01	2.3776E-02	-7.2921E-03
-4.8244E-02	7.8321E-02	3.3213E-02	2.4056E-02	-9.8780E-03	-2.8245E-03	-8.3091E-03	1.6251E-03	3.4550E-02	-3.0982E-05

MATRIX *PHHT* 48 BY 30 ANTISYMMETRIC MATH MODEL

ROW 1

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 2

0.0	0.0	-2.8223E 01	-5.4325E 00	-1.3325E 00	1.4836E 00	1.0277E-01	9.1982E-01	-6.0524E-01	-1.6057E 00
-6.9583E-01	-6.2423E 00	9.8494E 00	5.1851E-01	4.9096E-01	-2.2928E-01	-6.3559E-01	4.4448E 00	-6.6140E 00	1.1721E 00
1.2401E 00	7.4992E-01	2.7435E-01	-1.8229E-01	-9.0906E-01	3.3394E-01	5.8660E-01	-1.6240E-01	3.1082E-01	8.5838E-02

ROW 3

0.0	0.0	-5.9551E 01	-1.1463E 01	-2.8115E 00	3.1305E 00	2.1685E-01	1.9409E 00	-1.2771E 00	-3.3882E 00
-1.4682E 00	-1.3172E 01	2.0781E 01	1.0941E 00	1.0357E 00	-4.8379E-01	-1.3411E 00	9.3787E 00	-1.3956E 01	2.4731E 00
2.6166E 00	1.5824E 00	5.7888E-01	-3.8464E-01	-1.9182E 00	7.0463E-01	1.2378E 00	-3.4267E-01	6.5585E-01	1.8112E-01

ROW 4

0.0	0.0	-9.4910E 01	-1.8269E 01	-4.4809E 00	4.9893E 00	3.4561E-01	3.0933E 00	-2.0354E 00	-5.4000E 00
-2.3400E 00	-2.0992E 01	3.3119E 01	1.7437E 00	1.6507E 00	-7.7105E-01	-2.1374E 00	1.4947E 01	-2.2242E 01	3.9416E 00
4.1703E 00	2.5219E 00	9.2260E-01	-6.1303E-01	-3.0571E 00	1.1230E 00	1.9727E 00	-5.4613E-01	1.0453E 00	2.8867E-01

ROW 5

-4.8897E-01	-6.6672E 00	-5.2339E 02	-6.5773E 01	-1.4811E 01	1.1569E 01	2.4805E-01	6.5757E 00	2.6972E 00	-4.2010E 00
-3.0136E 00	-3.3429E 01	4.1581E 01	2.8929E 00	2.5241E 00	8.0786E-03	-1.4782E 00	1.4203E 01	-1.8687E 01	2.9498E 00
2.4571E 00	1.2951E 00	3.2140E-01	-5.1641E-01	-1.7293E 00	5.3589E-01	9.7906E-01	-3.2668E-01	5.5878E-01	3.6397E-01

ROW 6

-4.8857E-01	-6.6672E 00	-5.8434E 02	-7.7322E 01	-1.7644E 01	1.4723E 01	4.6653E-01	8.5312E 00	1.4105E 00	-7.6147E 00
-4.4929E 00	-4.6700E 01	6.2518E 01	3.9952E 00	3.5676E 00	-4.7936E-01	-2.8294E 00	2.3653E 01	-3.2748E 01	5.4416E 00
5.0934E 00	2.8894E 00	9.0464E-01	-9.0395E-01	-3.6619E 00	1.2458E 00	2.2262E 00	-6.7194E-01	1.2196E 00	5.4646E-01

ROW 7

-4.8877E-01	-6.6672E 00	-6.4539E 02	-8.9256E 01	-2.0571E 01	1.7982E 01	6.9230E-01	1.0552E 01	8.0897E-02	-1.1142E 01
-6.0215E 00	-6.0413E 01	8.4153E 01	5.1343E 00	4.6459E 00	-9.8305E-01	-4.2257E 00	3.3417E 01	-4.7278E 01	8.0164E 00
7.2176E 00	4.5368E 00	1.5073E 00	-1.3044E 00	-5.6590E 00	1.9794E 00	3.5148E 00	-1.0287E 00	1.9024E 00	7.3503E-01

ROW 8

-4.8867E-01	-6.6672E 00	-7.0339E 02	-1.0042E 02	-2.3309E 01	2.1031E 01	9.0350E-01	1.2442E 01	-1.1629E 00	-1.4442E 01
-7.4515E 00	-7.3242E 01	1.0439E 02	6.1999E 00	5.6547E 00	-1.4542E 00	-5.5319E 00	4.2552E 01	-6.0871E 01	1.0425E 01
1.0366E 01	6.0779E 00	2.0711E 00	-1.6790E 00	-7.5272E 00	2.6657E 00	4.7203E 00	-1.3624E 00	2.5412E 00	9.1143E-01

ROW 9

1.0000E 00	1.3633E 01	8.2106E 02	8.6505E 01	1.8515E 01	-1.0546E 01	4.0132E-01	-5.3176E 00	-1.0869E 01	-5.6049E 00
1.1837E-02	1.3189E 01	2.0265E 00	-1.3327E 00	-8.2274E-01	-2.0439E 00	-2.5963E 00	1.0248E 01	-2.0257E 01	4.3296E 00
5.9389E 00	3.9818E 00	1.7684E 00	-5.5551E-01	-4.5006E 00	1.8566E 00	3.1941E 00	-7.6769E-01	1.6054E 00	1.4486E-02

ROW 10

1.0000E 00	1.3633E 01	8.2106E 02	8.6505E 01	1.8515E 01	-1.0546E 01	4.0132E-01	-5.3176E 00	-1.0869E 01	-5.6049E 00
1.1837E-02	1.3189E 01	2.0265E 00	-1.3327E 00	-8.2274E-01	-2.0439E 00	-2.5963E 00	1.0248E 01	-2.0257E 01	4.3296E 00
5.9389E 00	3.9818E 00	1.7684E 00	-5.5551E-01	-4.5006E 00	1.8566E 00	3.1841E 00	-7.6769E-01	1.6054E 00	1.4486E-02

MATRIX *PHHT* 48 BY 30 ANTISYMMETRIC MATH MODEL

ROW 11
1.0000E 00 1.3638E 01 8.2106E 02 8.6505E 01 1.8515E 01 -1.0546E 01 4.0132E-01 -5.3176E 00 -1.0869E 01 -5.6049E 00
1.1837E-02 1.3185E 01 2.0265E 00 -1.3327E 00 -8.2274E-01 -2.0439E 00 -2.5963E 00 1.0248E 01 -2.0257E 01 4.3296E 00
5.9389E 00 3.9818E 00 1.7684E 00 -5.5551E-01 -4.5006E 00 1.8566E 00 3.1841E 00 -7.6769E-01 1.6054E 00 1.4486E-02

ROW 12
1.0000E 00 1.3638E 01 8.2106E 02 8.6505E 01 1.8515E 01 -1.0546E 01 4.0132E-01 -5.3176E 00 -1.0869E 01 -5.6049E 00
1.1837E-02 1.3185E 01 2.0265E 00 -1.3327E 00 -8.2274E-01 -2.0439E 00 -2.5963E 00 1.0248E 01 -2.0257E 01 4.3296E 00
5.9389E 00 3.9818E 00 1.7684E 00 -5.5551E-01 -4.5006E 00 1.8566E 00 3.1841E 00 -7.6769E-01 1.6054E 00 1.4486E-02

ROW 13
8.7235E-01 1.1897E 01 6.6986E 02 6.6532E 01 1.3961E 01 -6.7609E 00 5.1905E-01 -3.1266E 00 -1.0476E 01 -7.5293E 00
-1.1336E 00 1.2393E 00 1.7959E 01 -3.1016E-01 8.9278E-02 -2.1599E 00 -3.3098E 00 1.6247E 01 -2.8545E 01 5.7039E 00
7.2196E 00 4.7064E 00 1.9937E 00 -7.8429E-01 -5.4207E 00 2.1686E 00 3.7421E 00 -9.3669E-01 1.9115E 00 1.5376E-01

ROW 14
8.7235E-01 1.1897E 01 6.6985E 02 6.6532E 01 1.3961E 01 -6.7609E 00 5.1906E-01 -3.1266E 00 -1.0476E 01 -7.5294E 00
-1.1336E 00 1.2392E 00 1.7959E 01 -3.1015E-01 8.9281E-02 -2.1599E 00 -3.3098E 00 1.6247E 01 -2.8545E 01 5.7039E 00
7.2196E 00 4.7064E 00 1.9937E 00 -7.8429E-01 -5.4207E 00 2.1686E 00 3.7421E 00 -9.3669E-01 1.9115E 00 1.5376E-01

ROW 15
8.7235E-01 1.1897E 01 6.6985E 02 6.6532E 01 1.3961E 01 -6.7609E 00 5.1906E-01 -3.1266E 00 -1.0476E 01 -7.5294E 00
-1.1336E 00 1.2392E 00 1.7959E 01 -3.1015E-01 8.9282E-02 -2.1599E 00 -3.3098E 00 1.6247E 01 -2.8545E 01 5.7039E 00
7.2196E 00 4.7064E 00 1.9937E 00 -7.8429E-01 -5.4207E 00 2.1686E 00 3.7421E 00 -9.3669E-01 1.9115E 00 1.5376E-01

ROW 16
8.7235E-01 1.1897E 01 6.6985E 02 6.6531E 01 1.3961E 01 -6.7609E 00 5.1906E-01 -3.1266E 00 -1.0476E 01 -7.5294E 00
-1.1337E 00 1.2392E 00 1.7959E 01 -3.1015E-01 8.9284E-02 -2.1599E 00 -3.3098E 00 1.6247E 01 -2.8545E 01 5.7039E 00
7.2196E 00 4.7064E 00 1.9937E 00 -7.8430E-01 -5.4207E 00 2.1686E 00 3.7421E 00 -9.3669E-01 1.9115E 00 1.5376E-01

ROW 17
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

ROW 18
0.0 2.8223E 01 0.0 1.3801E 00 -2.3350E 00 -4.5281E 00 -6.6440E-01 1.3471E 00 1.6064E 01 1.1805E 01
1.2399E 00 -6.2716E 00 2.9210E 00 -1.3292E-01 -1.6436E 00 -1.7790E 00 -2.0593E 00 1.1233E 00 -6.1729E-01 1.2464E-01
-3.7271E 00 -2.5452E 00 -1.9757E 00 -9.5792E-01 6.5504E-01 6.6054E-01 -3.0444E 00 2.0694E 00 -3.1131E-01 7.2106E-01

ROW 19
0.0 5.9551E 01 0.0 2.9190E 00 -4.9443E 00 -9.6001E 00 -1.4099E 00 2.8628E 00 3.4254E 01 2.5215E 01
2.6592E 00 -1.3521E 01 6.4648E 00 -2.9983E-01 -3.8259E 00 -4.1553E 00 -4.8476E 00 2.8508E 00 -3.2186E-01 2.3246E-01
-7.3678E 00 -5.1783E 00 -4.0478E 00 -1.9999E 00 1.4030E 00 1.5147E 00 -7.0931E 00 4.7807E 00 -7.7390E-01 1.8377E 00

ROW 20
0.0 9.4910E 01 0.0 4.6655E 00 -7.9130E 00 -1.5387E 01 -2.2622E 00 4.6012E 00 5.5271E 01 4.0767E 01
4.3197E 00 -2.2097E 01 1.0878E 01 -5.1487E-01 -6.7835E 00 -7.3926E 00 -8.6897E 00 5.4684E 00 1.3940E 00 3.0952E-01
-1.0706E 01 -7.8131E 00 -6.1603E 00 -3.1121E 00 2.2449E 00 2.5627E 00 -1.2034E 01 8.5010E 00 -1.4376E 00 3.4773E 00

MATRIX *PHHT* 48 BY 30

ANTISYMMETRIC MATH MODEL

ROW 21

0.0	1.2911E 02	0.0	6.3805E 00	-1.0849E 01	-2.1153E 01	-3.1164E 00	6.3586E 00	7.6948E 01	5.6965E 01
6.0890E 00	-3.1495E 01	1.6341E 01	-8.0079E-01	-1.1113E 01	-1.2175E 01	-1.4479E 01	1.0032E 01	7.4907E 00	2.2299E-01
-1.0693E 1	-8.5936E 00	-6.9092E 00	-3.6584E 00	2.7929E 00	4.0384E 00	-2.1688E 01	7.3361E 00	-1.8229E 00	4.5548E 00

ROW 22

0.0	1.8145E 02	0.0	9.0441E 00	-1.5439E 01	-3.0231E 01	-4.4684E 00	9.1621E 00	1.1214E 02	8.3488E 01
9.0420E 00	-4.7539E 01	2.6512E 01	-1.3573E 00	-1.9993E 01	-2.2030E 01	-2.6526E 01	2.0160E 01	2.3829E 01	-1.7517E-01
-4.9682E 00	-6.4537E 00	-5.5431E 00	-3.3498E 00	2.8766E 00	5.1169E 00	-2.8906E 01	7.0686E 00	-2.3276E 00	5.9874E 00

ROW 23

0.0	2.3554E 02	0.0	1.1866E 01	-2.0356E 01	-4.0071E 01	-5.9463E 00	1.2266E 01	1.5220E 02	1.1407E 02
1.2545E 01	-6.7194E 01	4.0459E 01	-2.1603E 00	-3.3550E 01	-3.7147E 01	-4.5191E 01	3.6857E 01	5.5153E 01	-1.1759E 00
1.4523E 01	4.3748E 00	2.5160E 00	2.2310E-01	5.7221E-01	1.4831E 00	-5.4345E 00	1.2137E 01	-2.0689E 00	5.2932E 00

ROW 24

0.0	2.8613E 02	0.0	1.4566E 01	-2.5105E 01	-4.9672E 01	-7.3987E 00	1.5349E 01	1.9289E 02	1.4545E 02
1.6220E 0.	-8.8326E 01	5.6679E 01	-3.1256E 00	-5.0419E 01	-5.6012E 01	-6.8620E 01	5.8580E 01	9.9317E 01	-2.7688E 00
4.9005E 01	2.5462E 01	1.8654E 01	7.9757E 00	-5.0163E 00	-9.1269E 00	6.2783E 01	2.1855E 01	-1.0363E-01	-9.7461E-02

ROW 25

0.0	1.0000E 00	0.0	4.8799E-02	-8.2484E-02	-1.5979E-01	-2.3426E-02	4.7438E-02	5.6403E-01	4.1387E-01
4.3315E-02	-2.1808E-01	9.9173E-02	-4.4323E-03	-5.3121E-02	-5.7292E-02	-6.5789E-02	3.2953E-02	-3.5753E-02	4.8407E-03
-1.3873E-01	-9.2569E-02	-7.1434E-02	-3.4072E-02	2.2756E-02	2.1252E-02	-9.5487E-02	6.7863E-02	-9.2563E-03	2.0738E-02

ROW 26

0.0	1.0000E 00	0.0	4.9003E-02	-8.2990E-02	-1.6111E-01	-2.3659E-02	4.8030E-02	5.7445E-01	4.2277E-01
4.4564E-02	-2.2644E-01	1.0791E-01	-4.9930E-03	-6.3467E-02	-6.8903E-02	-8.0308E-02	4.6814E-02	-7.6205E-03	3.9773E-03
-1.2506E-01	-8.7587E-02	-6.8411E-02	-3.3733E-02	2.3606E-02	2.5416E-02	-1.1926E-01	7.9152E-02	-1.2803E-02	3.0349E-02

ROW 27

0.0	1.0000E 00	0.0	4.9246E-02	-8.3597E-02	-1.6270E-01	-2.3938E-02	4.8740E-02	5.8695E-01	4.3346E-01
4.6064E-02	-2.3651E-01	1.1347E-01	-5.6722E-03	-7.6038E-02	-8.3014E-02	-9.7964E-02	6.3735E-02	2.7111E-02	2.8794E-03
-1.0674E-01	-8.0100E-02	-6.3555E-02	-3.2630E-02	2.4020E-02	2.8830E-02	-1.3726E-01	9.4465E-02	-1.6699E-02	4.0846E-02

ROW 28

0.0	1.0000E 00	0.0	4.9537E-02	-8.4321E-02	-1.6460E-01	-2.4272E-02	4.9588E-02	6.0191E-01	4.4625E-01
4.7863E-02	-2.4859E-01	1.3125E-01	-6.4965E-03	-9.1363E-02	-1.0022E-01	-1.1951E-01	8.4504E-02	7.045 E-02	1.4522E-03
-8.1293E-02	-6.8352E-02	-5.5466E-02	-3.0016E-02	2.3378E-02	2.9792E-02	-1.3763E-01	1.1735E-01	-2.0709E-02	5.1655E-02

ROW 29

0.0	8.7235E-01	0.0	4.3976E-02	-7.5457E-02	-1.4858E-01	-2.2051E-02	4.5497E-02	5.6476E-01	4.2322E-01
4.6563E-02	-2.4940E-01	1.4977E-01	-7.9748E-03	-1.2328E-01	-1.3643E-01	-1.6581E-01	1.3417E-01	1.9434E-01	-3.6219E-03
2.9408E-02	-3.9276E-03	-7.3017E-03	-8.9118E-03	1.1081E-02	3.5876E-02	-2.3919E-01	-3.4723E-02	-9.6005E-03	2.7383E-02

ROW 30

0.0	8.7235E-01	0.0	4.4897E-02	-7.7756E-02	-1.5462E-01	-2.3116E-02	4.8215E-02	6.1308E-01	4.64 2E-01
5.2450E-02	-2.8937E-01	1.9381E-01	-1.0877E-02	-1.7861E-01	-1.9870E-01	-2.4414E-01	2.1196E-01	3.7058E-01	-1.0521E-02
1.8207E-01	8.9103E-02	6.3624E-02	2.4630E-02	-1.2420E-02	-7.9910E-03	4.9320E-02	2.9273E-02	-5.1520E-03	1.4777E-02

MATRIX *PHHT* 48 BY 30 ANTISYMMETRIC MATH MODEL

ROW 31

0.0	8.7235E-01	0.0	4.6110E-02	-8.0793E-02	-1.6263E-01	-2.4529E-02	5.1835E-02	6.7787E-01	5.2064E-01
6.0423E-02	-3.4398E-01	2.5585E-01	-1.5029E-02	-2.5911E-01	-2.8943E-01	-3.5863E-01	3.2791E-01	6.4632E-01	-2.2267E-02
4.6371E-01	2.7409E-01	2.0776E-01	9.7141E-02	-6.7551E-02	-1.2078E-01	7.7564E-01	1.2177E-01	1.9027E-02	-5.1853E-02

ROW 32

0.0	8.7235E-01	0.0	4.6814E-02	-8.2563E-02	-1.6732E-01	-2.5359E-02	5.3972E-02	7.1657E-01	5.5417E-01
6.5270E-02	-3.7764E-01	2.9599E-01	-1.7776E-02	-3.1366E-01	-3.5104E-01	-4.3672E-01	4.0907E-01	8.5138E-01	-3.1834E-02
7.1053E-01	4.4607E-01	3.4386E-01	1.6850E-01	-1.2447E-01	-2.4153E-01	1.5411E 00	1.7231E-01	5.2736E-02	-1.4388E-01

ROW 33

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROW 34

0.0	0.0	0.0	-2.6671E-04	6.6561E-04	1.7496E-03	3.0809E-04	-7.8643E-04	-1.3972E-02	-1.1995E-02
-1.6997E-03	1.1531E-02	-1.2644E-02	8.3145E-04	1.5800E-02	1.7777E-02	2.2352E-02	-2.2112E-02	-4.9510E-02	1.8824E-03
-3.9861E-02	-2.2740E-02	-1.6887E-02	-7.1928E-03	3.7726E-03	-1.1370E-02	1.1783E-01	1.2106E-01	-8.2836E-03	1.8328E-02

ROW 35

0.0	0.0	0.0	-4.5112E-04	1.1258E-03	2.9592E-03	5.2109E-04	-1.3301E-03	-2.3630E-02	-2.0286E-02
-2.8744E-03	1.9500E-02	-2.1377E-02	1.4056E-03	2.6707E-02	3.0048E-02	3.7780E-02	-3.7371E-02	-8.3647E-02	3.1785E-03
-6.7278E-02	-3.8368E-02	-2.8491E-02	-1.2136E-02	6.3740E-03	-1.8886E-02	1.9607E-01	2.0184E-01	-1.3810E-02	3.0544E-02

ROW 36

0.0	0.0	0.0	-6.5917E-04	1.6447E-03	4.3222E-03	7.6099E-04	-1.9421E-03	-3.4485E-02	-2.9597E-02
-4.1916E-03	2.8417E-02	-3.1079E-02	2.0412E-03	3.8733E-02	4.3574E-02	5.4773E-02	-5.4097E-02	-1.2062E-01	4.5516E-03
-9.5697E-02	-5.4240E-02	-4.0210E-02	-1.7056E-02	8.9501E-03	-2.4241E-02	2.5325E-01	2.6130E-01	-1.7639E-02	3.8773E-02

ROW 37

0.0	4.8887E-01	0.0	2.3550E-02	-3.9557E-02	-7.6087E-02	-1.1094E-02	2.2271E-02	2.5920E-01	1.8805E-01
1.9125E-02	-9.2492E-02	3.2130E-02	-1.0633E-03	-4.3813E-03	-3.6599E-03	-1.3885E-03	-1.5338E-02	-9.3679E-02	5.6713E-03
-1.4680E-01	-9.5680E-02	-7.3636E-02	-3.4874E-02	2.2413E-02	-1.6926E-02	2.6573E-01	4.1269E-01	-3.5605E-02	8.2326E-02

ROW 38

0.0	4.8887E-01	0.0	2.3471E-02	-3.9355E-02	-7.5547E-02	-1.0997E-02	2.2020E-02	2.5450E-01	1.8393E-01
1.8513E-02	-8.8110E-02	2.6371E-02	-6.5330E-04	4.0975E-03	5.9468E-03	1.0868E-02	-2.8594E-02	-1.2999E-01	7.5397E-03
-1.9795E-01	-1.3255E-01	-1.0299E-01	-5.0388E-02	3.4542E-02	-3.2608E-03	2.1669E-01	5.0958E-01	-5.0751E-02	1.2034E-01

ROW 39

0.0	4.8887E-01	0.0	2.3375E-02	-3.9108E-02	-7.4875E-02	-1.0876E-02	2.1700E-02	2.4841E-01	1.7852E-01
1.7692E-02	-8.2094E-02	1.7925E-02	-3.7432E-05	1.7134E-02	2.0745E-02	2.9821E-02	-4.9536E-02	-1.8978E-01	1.0765E-02
-2.8903E-01	-1.9974E-01	-1.5684E-01	-7.9373E-02	5.7890E-02	3.2158E-02	4.0920E-02	6.3068E-01	-7.6102E-02	1.8531E-01

ROW 40

0.0	4.8887E-01	0.0	2.3291E-02	-3.8889E-02	-7.4274E-02	-1.0767E-02	2.1408E-02	2.4269E-01	1.7339E-01
1.6895E-02	-7.6126E-02	9.0379E-03	6.2377E-04	3.1392E-02	3.6952E-02	5.0637E-02	-7.2917E-02	-2.5855E-01	1.4596E-02
-3.9943E-01	-2.8245E-01	-2.2340E-01	-1.1566E-01	8.7735E-02	8.6358E-02	-2.6413E-01	7.1916E-01	-1.0447E-01	2.5951E-01

MATRIX *PHHT* 48 BY 30

ANTISYMMETRIC MATH MODEL

ROW 41

0.0	0.0	1.0000E 00	1.9249E-01	4.7212E-02	-5.2569E-02	-3.6414E-03	-3.2592E-02	2.1445E-02	5.6896E-02
2.4655E-02	2.2118E-01	-3.4896E-01	-1.8372E-02	-1.7393E-02	8.1240E-03	2.2521E-02	-1.5749E-01	2.3435E-01	-4.1529E-02
-4.3939E-02	-2.6572E-02	-9.7208E-03	6.4590E-03	3.2210E-02	-1.1832E-02	-2.0785E-02	5.7542E-03	-1.1013E-02	-3.0415E-03

ROW 42

0.0	0.0	1.0000E 00	1.9249E-01	4.7212E-02	-5.2569E-02	-3.6414E-03	-3.2592E-02	2.1445E-02	5.6896E-02
2.4655E-02	2.2118E-01	-3.4896E-01	-1.8372E-02	-1.7393E-02	8.1240E-03	2.2521E-02	-1.5749E-01	2.3435E-01	-4.1529E-02
-4.3939E-02	-2.6572E-02	-9.7208E-03	6.4590E-03	3.2210E-02	-1.1832E-02	-2.0785E-02	5.7542E-03	-1.1013E-02	-3.0415E-03

ROW 43

0.0	0.0	1.0000E 00	1.9249E-01	4.7212E-02	-5.2569E-02	-3.6414E-03	-3.2592E-02	2.1445E-02	5.6896E-02
2.4655E-02	2.2118E-01	-3.4896E-01	-1.8372E-02	-1.7393E-02	8.1240E-03	2.2521E-02	-1.5749E-01	2.3435E-01	-4.1529E-02
-4.3939E-02	-2.6572E-02	-9.7208E-03	6.4590E-03	3.2210E-02	-1.1832E-02	-2.0785E-02	5.7542E-03	-1.1013E-02	-3.0415E-03

ROW 44

0.0	0.0	1.0000E 00	1.9249E-01	4.7212E-02	-5.2569E-02	-3.6414E-03	-3.2592E-02	2.1445E-02	5.6896E-02
2.4655E-02	2.2118E-01	-3.4896E-01	-1.8372E-02	-1.7393E-02	8.1240E-03	2.2521E-02	-1.5749E-01	2.3435E-01	-4.1529E-02
-4.3939E-02	-2.6572E-02	-9.7208E-03	6.4590E-03	3.2210E-02	-1.1832E-02	-2.0785E-02	5.7542E-03	-1.1013E-02	-3.0415E-03

ROW 45

0.0	0.0	1.0000E 00	1.9249E-01	4.7212E-02	-5.2569E-02	-3.6414E-03	-3.2592E-02	2.1445E-02	5.6896E-02
2.4655E-02	2.2118E-01	-3.4896E-01	-1.8372E-02	-1.7393E-02	8.1240E-03	2.2521E-02	-1.5749E-01	2.3435E-01	-4.1529E-02
-4.3939E-02	-2.6572E-02	-9.7208E-03	6.4590E-03	3.2210E-02	-1.1832E-02	-2.0785E-02	5.7542E-03	-1.1013E-02	-3.0415E-03

ROW 46

0.0	0.0	1.0000E 00	1.9249E-01	4.7212E-02	-5.2569E-02	-3.6414E-03	-3.2592E-02	2.1445E-02	5.6896E-02
2.4655E-02	2.2118E-01	-3.4896E-01	-1.8372E-02	-1.7393E-02	8.1240E-03	2.2521E-02	-1.5749E-01	2.3435E-01	-4.1529E-02
-4.3939E-02	-2.6572E-02	-9.7208E-03	6.4590E-03	3.2210E-02	-1.1832E-02	-2.0785E-02	5.7542E-03	-1.1013E-02	-3.0415E-03

ROW 47

0.0	0.0	1.0000E 00	1.9249E-01	4.7212E-02	-5.2569E-02	-3.6414E-03	-3.2592E-02	2.1445E-02	5.6896E-02
2.4655E-02	2.2118E-01	-3.4896E-01	-1.8372E-02	-1.7393E-02	8.1240E-03	2.2521E-02	-1.5749E-01	2.3435E-01	-4.1529E-02
-4.3939E-02	-2.6572E-02	-9.7208E-03	6.4590E-03	3.2210E-02	-1.1832E-02	-2.0785E-02	5.7542E-03	-1.1013E-02	-3.0415E-03

ROW 48

0.0	0.0	1.0000E 00	1.9249E-01	4.7212E-02	-5.2569E-02	-3.6414E-03	-3.2592E-02	2.1445E-02	5.6896E-02
2.4655E-02	2.2118E-01	-3.4896E-01	-1.8372E-02	-1.7393E-02	8.1240E-03	2.2521E-02	-1.5749E-01	2.3435E-01	-4.1529E-02
-4.3939E-02	-2.6572E-02	-9.7208E-03	6.4590E-03	3.2210E-02	-1.1832E-02	-2.0785E-02	5.7542E-03	-1.1013E-02	-3.0415E-03

MATRIX *PHIN* 12 BY 30 ANTISYMMETRIC MATH MODEL

ROW 1
-1.4358E-02 -9.3786E 01 -3.9838E 02 9.3562E 00 8.6235E 00 6.5897E-01 1.1699E 00 -2.8316E 00 1.2093E 00 4.3607E-02
5.1742E 00 1.4077E 00 -4.6574E 00 4.0850E 00 2.4952E 00 -7.4046E-01 -8.9713E-01 2.2344E 01 -8.4201E-01 -2.4646E 00
9.7445E-01 -4.5367E 00 -4.3975E-02 -2.7197E-01 9.9309E-01 6.0514E-02 7.1409E-01 -2.6341E-01 2.2407E 00 -1.5086E-02

ROW 2
-1.9027E-03 2.5267E 01 -4.1144E 02 1.4965E 01 -2.2751E-01 -3.0242E 00 8.1386E 00 5.2212E 00 3.7956E 00 -4.4209E 01
1.4848E 01 1.2760E 00 -5.8674E 00 6.8372E 00 7.6137E 00 -3.8263E 00 -2.9313E 00 9.6590E 00 -5.1726E-01 -4.3525E-01
1.1836E-01 -1.7477E 00 5.4559E-01 -6.2702E 00 1.3235E 00 9.6758E-02 1.0326E 00 -4.2770E-01 -6.4779E 00 3.4274E-02

ROW 3
9.9905E-01 2.5915E-02 -2.7531E 01 -1.1270E 01 -2.2293E 00 8.0771E 00 2.4975E 00 8.2783E 00 4.2408E 00 -1.7622E 00
-1.0069E 00 -1.0252E 01 -6.6800E 00 -1.0241E 00 -6.5787E-01 -2.5672E-01 8.3000E-01 -7.9511E 00 -1.6385E 00 9.7041E-01
9.0396E-03 1.0199E 00 1.3963E 00 6.7861E-01 -8.4231E-01 -3.5818E-01 -1.2879E 00 3.2552E-01 -1.1523E 00 4.4043E-02

ROW 4
9.9905E-01 -4.8477E 01 -2.3376E 02 -6.0159E 00 3.3572E-01 2.6045E 00 -4.4515E 01 -2.2256E 01 -1.9974E 00 7.9603E 00
1.1050E 00 -3.7430E-01 -1.8728E 00 8.5901E-01 -2.8097E 00 1.6215E 00 1.0235E 00 7.5768E 00 -6.5867E-01 -1.1128E 00
-1.0391E-01 6.3783E-01 3.3377E 01 -1.4539E 00 1.5264E-01 -1.4119E-02 1.6766E-01 -1.1552E-01 -4.0523E 00 2.5122E-02

ROW 5
4.1189E-02 3.9913E 02 -9.4755E 01 7.5942E 00 -1.3399E 01 -2.8072E 01 -1.2120E 00 1.1903E 01 -3.7561E 00 -4.3826E 00
-2.0112E 01 3.1985E 00 -1.1380E-01 -1.1736E 01 1.0721E 00 -7.3371E-01 2.5677E 00 8.5676E 00 1.8129E 00 1.7420E 00
1.6201E 00 2.3234E-01 -3.3061E 00 1.5432E 00 -7.6827E-01 2.1870E-01 -4.5226E-01 3.9364E-01 -9.6066E-02 -2.0704E-02

ROW 6
4.3578E-02 4.1016E 02 1.5036E 01 1.5428E 01 -3.0962E 01 -1.1712E 01 -6.9949E 00 7.2961E 00 4.1496E 00 -1.2946E 02
3.0758E 01 8.4799E 00 1.5653E-01 1.0358E 01 -1.1504E 00 1.3423E 00 -1.5058E 00 -6.6678E 00 7.3230E-01 2.5503E 00
-2.2401E-01 1.1870E 00 -1.7071E-01 2.7542E-01 -4.3944E-01 -2.6835E-02 -4.6528E-01 2.1801E-01 3.9378E 00 -2.4085E-02

ROW 7
0.0 9.7348E-01 -2.2834E-01 1.7296E-02 -1.9189E-02 7.7872E-03 7.5089E-03 -4.6358E-03 -1.5614E-02 -3.8267E-02
3.7495E-02 1.8338E-02 -4.0563E-03 5.1592E-02 6.2800E-03 2.6057E-03 -1.3634E-02 7.9274E-03 8.1591E-03 3.9173E-02
-7.4601E-03 -3.6629E-02 1.9666E-02 1.5152E-01 -1.1945E-02 -1.5514E-03 -8.6762E-03 3.6580E-03 2.1249E-01 -1.3557E-03

ROW 8
0.0 9.9813E-01 6.1090E-02 5.1170E-02 -3.1670E-03 3.3115E-03 1.0085E 00 6.6256E-01 1.1288E-01 -3.4086E-01
-6.7485E-02 -4.2288E-01 -8.7933E-02 9.4688E-02 -5.4910E-01 3.2609E-01 1.7122E-01 9.0835E-01 -3.4960E-02 -7.6086E-02
8.6829E-03 6.5068E-03 -1.8474E-03 1.4614E-02 -2.3177E-03 -7.5560E-04 -3.4377E-04 -9.3369E-04 -4.7436E-02 2.9513E-04

ROW 9
0.0 4.5595E-03 -4.3380E-02 4.5502E-02 -5.6207E-02 8.4996E-02 6.3578E-03 -1.6319E-02 3.2583E-02 -3.0969E-01
1.4602E-01 -1.0111E-02 5.5023E-03 -4.1530E-03 2.1566E-03 -6.8515E-03 9.6473E-04 -5.3481E-02 -1.2413E-02 -6.2389E-02
4.6897E-03 -3.5168E-02 -3.8593E-03 2.5462E-01 -2.4466E-02 -2.6346E-03 -1.7481E-02 7.3168E-03 3.5679E-01 -2.1455E-03

ROW 10
0.0 4.5595E-03 -4.3380E-02 7.0167E-02 -9.0313E-02 6.5098E-02 1.4544E-01 1.0147E-01 7.2267E-02 -9.4276E-01
3.2844E-01 -1.5488E-02 -3.3558E-02 1.9860E-01 -2.5695E-03 1.0327E-02 -1.8462E-02 -8.6031E-02 -3.5823E-03 5.4520E-02
-2.5091E-02 5.9366E-02 3.4460E-02 -2.9070E-01 2.9702E-02 7.2261E-04 2.0894E-02 -1.0712E-02 -3.7580E-01 2.3975E-03

MATRIX *PHIN* 12 BY 30 ANTISYMMETRIC MATH MODEL

ROW 11

0.0	2.2875E-01	9.7261E-01	-3.4567E-02	-1.9320E-02	2.7501E-02	2.3246E-03	1.0250E-03	2.1887E-03	-1.2471E-02
2.0823E-02	4.1280E-02	-3.5726E-03	1.7175E-02	1.1027E-03	2.6391E-03	-5.9865E-03	-2.3872E-02	-6.4448E-04	1.8517E-02
6.6810E-03	-2.3456E-02	3.2701E-03	4.4995E-02	-5.2752E-03	-1.9414E-03	-9.3836E-03	3.5520E-03	9.5212E-02	-3.4883E-04

ROW 12

0.0	-6.0949E-02	9.9719E-01	-2.5934E-02	1.1003E-02	2.6781E-02	3.5222E-01	2.2070E-01	-4.4733E-02	1.2387E-01
-9.1968E-02	-9.6027E-02	-2.9289E-02	-1.4640E-01	2.5371E-01	-1.7107E-01	-5.0288E-02	-5.5575E-01	-1.8109E-03	2.7099E-04
-1.3006E-02	5.6703E-02	4.8039E-03	3.9030E-02	-1.4345E-02	-1.4503E-03	-9.2855E-03	7.8178E-03	-5.4342E-03	4.9192E-05

MATRIX *PHON* 12 BY 30 ANTISYMMETRIC MATH MODEL

ROW 1
-1.3719E-02 -1.5354E 02 -7.0525E 02 2.9364E 01 2.3038E 00 -7.8362E 00 7.8222E-01 -4.5219E 00 -1.5137E 00 -8.2824E 00
1.0026E 00 -1.8788E 01 5.3951E-01 -6.8798E 00 -3.7967E-01 -7.2498E-01 2.1289E 00 4.6967E 00 7.9037E-01 3.7746E-01
-1.3516E 00 3.4489E 00 6.0328E-01 1.0142E 00 -6.0575E-01 -4.8277E-02 -3.7552E-01 1.1627E-01 -2.3282E 00 1.3250E-02

ROW 2
-1.9027E-03 4.4162E 01 -7.2058E 02 3.4443E 01 -1.0495E 00 2.0639E 01 -2.3640E-01 9.5950E 00 -5.5363E 00 2.0144E 01
8.2324E 00 -2.1276E 01 -9.7041E-01 -9.3687E 00 3.0758E-01 3.7493E 00 -3.3696E 00 -2.4867E 00 -1.0098E-01 -1.3701E 00
-9.6831E-01 4.5074E 00 4.8372E-02 -4.1879E 00 -2.7107E-01 -1.0286E-01 -5.2587E-01 1.9089E-01 5.4597E 00 -2.9066E-02

ROW 3
9.9905E-01 -2.2074E 01 1.8274E 02 -2.0601E 01 -4.9478E 00 1.3982E 01 2.4281E 00 1.1039E 01 6.9149E 00 -3.2795E 00
7.0885E-01 3.3002E 00 -9.2004E 00 -1.7821E 00 1.1900E 00 -3.9601E-01 3.1423E-01 4.4529E 00 -1.9802E 00 2.3053E-01
2.3692E 00 -2.9142E 00 -4.8015E-01 -1.3988E 00 2.5000E-03 -2.1084E-01 -7.9153E-01 2.4702E-01 1.4259E 00 2.2776E-02

ROW 4
9.9905E-01 -6.2757E 01 -3.0999E 00 -1.7019E 01 -1.4811E 01 -6.7021E 01 1.3166E 01 -7.2849E 01 -7.3630E 00 2.8593E 01
1.7881E 01 -1.1408E 00 -1.5742E 00 -3.3636E 00 6.8199E-01 2.9811E 00 -3.5177E 00 -3.5080E 00 -7.0912E-01 -2.7713E-01
2.9940E-01 8.4082E-01 1.5811E-01 -3.0514E 00 -4.5344E-02 -1.9001E-01 -6.6091E-01 2.0766E-01 5.9275E 00 -1.3488E-02

ROW 5
4.1406E-02 7.0245E 02 -1.4599E 02 -9.1295E 00 1.7575E 01 -3.1251E 01 2.0653E-01 4.7440E 00 -8.1861E 00 2.7608E 01
-1.6530E 01 1.1574E 00 -3.9918E 00 2.4277E 01 1.1529E 00 -1.6613E-01 -4.0294E 00 4.1024E 00 -1.4250E 00 -3.2696E 00
-2.2916E 00 -8.0641E-01 3.3264E 00 7.4130E 00 7.1057E-02 -1.3001E-01 4.9206E-01 -3.6414E-01 1.6457E 00 -7.9004E-03

ROW 6
4.3578E-02 7.1853E 02 4.4009E 01 8.3606E 00 -1.4638E 01 6.3450E 01 2.4440E 00 -3.5593E-01 -1.6436E 01 9.8493E 01
3.8557E 01 3.6861E 00 3.1691E-01 2.3485E 00 8.5731E-02 -3.2909E-01 -1.8922E-01 7.2477E-01 -5.5022E-01 -1.2527E 00
2.6030E-01 -1.2587E 00 7.1548E-03 1.3674E 00 1.2114E-01 3.7658E-02 2.7285E-01 -1.2740E-01 -5.9767E 00 3.7394E-02

ROW 7
0.0 9.7690E-01 -2.1328E-01 -2.5452E-02 1.0142E-01 2.2556E-01 8.4041E-03 -1.1810E-01 3.9860E-02 -1.3371E-01
1.9108E-01 -6.3996E-02 8.6066E-03 1.1083E-03 -8.4317E-03 -1.0734E-02 9.3530E-03 -7.7883E-02 -2.7277E-02 -1.3513E-01
1.7892E-02 -1.2682E-02 -4.6060E-02 1.7330E-01 -1.5405E-02 6.3849E-03 1.1222E-02 -2.7637E-03 -4.1214E-01 1.9621E-03

ROW 8
0.0 9.9813E-01 6.1090E-02 3.7641E-02 1.6414E-01 9.2818E-01 -1.0406E-01 7.5004E-01 1.0891E-01 -1.8722E-01
4.3094E-02 -9.9018E-02 4.6399E-02 2.5692E-01 -1.3467E-01 -4.1145E-01 5.3268E-01 2.6235E-02 9.3244E-03 1.6047E-01
-9.2839E-04 6.7517E-02 4.0718E-02 -1.9469E-01 -5.6732E-03 -1.2748E-02 -4.3929E-02 1.3571E-02 4.0071E-01 -1.0831E-03

ROW 9
0.0 4.5595E-03 -4.3380E-02 1.1873E-01 -1.6141E-01 3.6548E-01 2.0558E-02 -1.1619E-01 -1.7155E-02 1.3389E-01
1.8182E-01 1.3145E-02 2.2599E-02 -1.0290E-01 -3.3910E-04 1.7415E-04 1.5484E-02 1.4255E-02 1.6070E-02 5.2611E-02
2.3560E-03 -7.6027E-02 1.7322E-02 3.2837E-01 -2.8414E-02 7.7670E-04 -4.3291E-03 -3.3479E-04 -6.0246E-01 3.9311E-03

ROW 10
0.0 4.5595E-03 -4.3380E-02 1.5034E-01 -1.8160E-01 5.8403E-01 1.5242E-02 -1.8875E-02 -8.7984E-02 6.4605E-01
4.3837E-01 -3.6360E-02 2.2732E-02 -1.6443E-01 -3.5640E-03 2.0157E-02 -9.1382E-04 -3.4890E-02 -7.4718E-03 -5.4408E-02
2.2402E-02 7.9111E-02 -5.8863E-02 -3.8167E-01 2.8268E-02 2.3734E-03 5.6444E-03 1.8878E-03 4.8359E-01 -3.3910E-03

MATRIX *PHON* 12 BY 30 ANTISYMMETRIC MATH MODEI

ROW 11

0.0	2.1367E-01	9.7603E-01	-5.9353E-02	1.9935E-02	1.1153E-01	1.3917E-03	-1.0646E-02	3.2153E-02	-6.2255E-02
7.3295E-02	7.8954E-02	-1.9495E-02	-1.0540E-02	1.9734E-02	-7.7252E-03	-4.0839E-04	1.6081E-01	-5.9280E-03	-6.5385E-02
1.3420E-02	-3.0625E-02	-3.0533E-02	4.7677E-02	4.5945E-03	6.1987E-03	1.9393E-02	-5.4152E-03	-1.6382E-01	3.1957E-04

ROW 12

0.0	-6.0949E-02	9.9719E-01	4.5886E-02	5.9844E-02	7.3955E-01	-1.3075E-01	1.0521E 00	1.1717E-01	-2.7338E-01
-4.0050E-01	-6.9049E-02	-1.1804E-01	-1.1447E-01	4.3111E-02	2.0878E-01	-2.5601E-01	-2.7454E-01	-2.7466E-02	5.0637E-04
1.5957E-02	-1.7009E-02	6.5114E-03	-2.2800E-02	-1.7274E-03	-4.5079E-03	-1.4748E-02	4.3147E-03	9.8383E-02	-5.4495E-06

APPENDIX C

MAGNETIC TAPE DATA

1.0 Introduction

Appendix C presents a description of the data tapes containing the B-52E CCV Flight Test Data for parameter estimation applications.

2.0 Tape Description

The magnetic tapes being transmitted are seven track, 800 BPI, unlabelled formatted tapes with a record length of 120 and block size of 4800.

The measured data from the eight flight test conditions studied are written on two tapes; one containing five transient input conditions and one containing three frequency sweep sinusoidal input conditions. For each flight condition the data appear on tape as follows:

FLIGHT CONDITION RECORD (2I5, 20A4)

WORD 1	WORD 2	WORDS 3 THROUGH 22
NSEQ	NODR	LBL (20)

Each word in the test data records is a four-byte integer.

NSEQ - Sequence number of the flight-test condition as it appears on the tape

NODR - Number of data records for the flight test condition

LBL (20) - Alphanumeric description of the flight test condition (80 characters)

TEST DATA RECORDS (REPEATED NODR TIMES) (10E12.6)

WORD 1	WORD 2 THROUGH 58
TIME	RESP (57)

Each word in the test data records is a four-byte real (floating point) variable.

TIME - Time in seconds measured from the beginning of the test

RESP (57) - Recorded measurements for the 57 responses shown on page 453.

The flight condition record and corresponding test data records will be repeated for each of the flight conditions included on the tape.

PRECEDING PAGE BLANK-NOT FILMED

3.0 Data Dropouts

The recorded flight test data are relatively free of data dropouts. However, the data from two of the flight conditions, 44.1.5 and 44.3.17, contain dropouts. The locations and definitions of the dropouts are:

Condition 44.1.5 Response No. 40 - lateral acceleration inboard nacelle
Data points 2710 through 2720
Time (seconds from start of data) 54.18 through 54.38
Value 1.0×10^{35}

Condition 44.3.17 Response Nos. 55, 56 and 57 - α, β and velocity
Data points 548 through 583
Time (seconds from start of data) 10.94 through 11.64
Value - 1.0055×10^{42}

TABLE 29. RECORDED FLIGHT TEST MEASUREMENTS

NO.	ITEM	LOCATION	UNITS
1	Vertical Bending Moment	BS760	In.-LBS
2	Vertical Bending Moment	BS1222	
3	Vertical Bending Moment	BS1412	
4	Lateral Bending Moment	BS760	
5	Lateral Bending Moment	BS1222	
6	Lateral Bending Moment	BS1412	
7	Vertical Bending Moment	LWS222	
8	Vertical Bending Moment	LWS820	
9	Vertical Bending Moment	LWS974	
10	Chordwise Bending Moment	LWS222	
11	Chordwise Bending Moment	LWS820	
12	Chordwise Bending Moment	LWS974	
13	Vertical Bending Moment	RWS222	
14	Vertical Bending Moment	RWS820	
15	Vertical Bending Moment	RWS974	
16	Chordwise Bending Moment	RWS222	
17	Chordwise Bending Moment	RWS820	
18	Chordwise Bending Moment	RWS974	
19	Vertical Bending Moment	LHTBL56	
20	Vertical Bending Moment	RHTBL56	
21	Vertical Bending Moment	FS135	In.-LBS
22	Pitch Rate	BS860	Deg/Sec
23	Roll Rate	BS860	Deg/Sec
24	Yaw Rate	BS860	Deg/Sec
25	Vertical Acceleration	BS172	g's
26	Vertical Acceleration	BS860	
27	Vertical Acceleration	BS1655	
28	Lateral Acceleration	BS172	
29	Lateral Acceleration	BS860	
30	Lateral Acceleration	BS1655	
31	Vertical Acceleration	LWBL565	
32	Vertical Acceleration	LBWL925	
33	Vertical Acceleration	LWS1359	
34	Vertical Acceleration	Left Ext. Tank, Nose	
35	Vertical Acceleration	RWBL565	
36	Vertical Acceleration	RWBL925	
37	Vertical Acceleration	RWS1359	
38	Vertical Acceleration	Right Ext. Tank, Nose	
39	Vertical Acceleration	Left Inboard Nacelle	
40	Lateral Acceleration	Left Inboard Nacelle	
41	Vertical Acceleration	Left Outboard Nacelle	
42	Lateral Acceleration	Left Outboard Nacelle	g's
43	Angular Acceleration, Y-Axis	LWS540	Rad/Sec^2
44	Angular Acceleration, Y-Axis	LWS1359	Rad/Sec^2
45	Angular Acceleration, Y-Axis	RWS1359	Rad/Sec^2
46	Delta Inboard Aileron	-	Deg
47	Delta Rudder	-	Deg

TABLE 29. RECORDED FLIGHT TEST MEASUREMENTS (Concluded)

NO.	ITEM	LOCATION	UNITS
48	Delta Elevator	-	Deg
49	Delta Vertical Canard	-	
50	Delta Left Horizontal Canard	-	
51	Delta Right Horizontal Canard	-	
52	Delta Outboard Aileron	-	
53	Delta Outboard Flaperon	-	
54	Delta Inboard Flaperon	-	
55	Angle of Attack	Gust Boom	
56	Angle of Side Slip	Gust Boom	Deg
57	Forward Velocity	Gust Boom	FT/Sec

MEASUREMENT SIGN CONVENTION

Vertical Bending Moments	Fuselage, + Tail Up Wing, + Tip Up Horizontal Tail, + Tip Up
Lateral Bending Moment	Fuselage, + Tail Right Fin, + Tip Right
Chordwise Bending Moment	Wing, + T. Aft
Pitch Rate	+ Nose Up
Roll Rate	+ Left Wing Up
Yaw Rate	+ Nose Right
Vertical Acceleration	+ Up
Lateral Acceleration	+ Right*
Angular Acceleration, Y-Axis	+ Leading Edge Up
Control Surface Deflection	+ Trailing Edge Down or Left
Angle of Attack	+ Nose Up
Angle of Side Slip	+ Nose Left

*Lateral acceleration at BS 1655 is left

REFERENCES

1. AFFDL-TR-74-91, Vols. I-IV, "A Method for Predicting the Stability Characteristics of Control Configured Vehicles," November 1974.

2. NASA TN D-7647, "Parameter Estimation Techniques and Applications in Aircraft Flight Testing," H. Rediess, et al., April 1974.

3. Boeing Document D3-9350-2, "B-52 CCV Dynamic Response Flight Test Data," March 1974.

4. AFFDL-TR-74-92, Vol. V, "B-52 CCV Control System Flight Test Validation," December 1974.

5. AFFDL-TR-74-92, Vol. IV, "B-52 CCV Control System Synthesis," AFFDL, January 1975.

6. AFFDL-TR-74-92, Vol. III, "B-52 CCV System Design and Aircraft Modification," October 1974.

7. Mehra, R. H., Sepner, D. E., and Tyler, J. S., "Maximum Likelihood Identification of Aircraft Stability and Control Derivatives," Journal of Aircraft, Vol. II, No. 2, February 1974.

☆ U. S. GOVERNMENT PRINTING OFFICE: 1976 — 657-630/625