AN ANALYTICAL AND EXPERIMENTAL STUDY OF THE DYNAMIC RESPONSE OF A SEMI-MONOCOQUE AIRCRAFT WING STRUCTURE

By

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LIST OF SYMBOLS

A	area
G	transformation matrix
h	height
I	moment of inertia
K	stiffness matrix
ℓ	length
M	bending moment, structural mass, mass matrix
m	grid point mass
P	external load vector
T	kinetic energy
U	displacement vector
$\dot{U}$	velocity vector
V	strain energy
λ	eigenvalue
σ	stress

CHAPTER I

INTRODUCTION

1.1 General

Extensive research has been performed in recent years to develop the finite element method and it is now accepted as being a general method applicable to a wide range of engineering problems. Finite element structural analysis programs designed for the highspeed electronic computer are now available and can be applied to any structure. Capabilities have been expanded from routine stress and deflection analysis to include related structural topics such as buckling and frequency response.

Numerous papers have been published on individual types of finite elements and computer techniques. The efficiency and accuracy of any finite element has been compared with other methods, other elements, or closed-form solutions of relatively simple problems. There is need to verify the efficiency and accuracy of the finite element method when it is applied to highly complex structures which require a large number of elements and/or combinations of different elements.

The general purpose of this study is to investigate the frequency response of a highly-complex structure, the F-84 aircraft wing, by the finite element method and to compare these results with those obtained experimentally. The specific objectives are:

1. To develop a finite element model that adequately describes the structure and that is easily modified to incorporate structural changes.

2. To develop suitable modeling techniques for a dynamic analysis that minimizes computer time and storage.

3. To perform an experimental dynamic test program to verify the accuracy of the analytical results.

1.2 Background

The main difficulty in verifying the finite element method when it is applied to complex structures is the availability of such structures for an experimental test program. In October, 1974 Dr. William J. Stronge completed a study (1) under the cognizance of the Vulnerability Assessment Sub Group of the Joint Technical Coordinating Group for Aircraft Survivability. This study was intended to develop a suitable finite element model for the RF-84 aircraft wing which could be easily modified to predict the effect of damage on the structural response and flight characteristics. In order to verify the accuracy of the finite element model, static tests were performed on six wing configurations (one undamaged and five damaged). Poor correlation between experimentally measured strains and theoretically predicted values were obtained and two subsequent finite element models were developed. These subsequent models slightly improved the comparisons for the damaged configurations but were less accurate for the undamaged wing. Consequently, six F-84 aircraft wings were made available to the School of Civil Engineering, Oklahoma State University, by the Joint

Technical Coordinating Group for Munitions Effectiveness for further study.

A later static study (2) was conducted on an F-84 aircraft wing to improve the comparison between experimental and analytical results. This second study eliminated many of the deficiencies reported in the first study and provided suitable modeling techniques for describing the static response of semi-monocoque wing structures.

1.3 Problem Approach

The main disadvantage of the finite element method compared with other methods such as the standard Rayleigh-Ritz procedure is the large number of degrees of freedom required to model a structure. This may be a minor disadvantage for a static analysis but it becomes extremely important in a dynamic solution. Computer cost associated with eigenvalue extraction can often become prohibitive because the number of calculations increase sharply with an increase in the number of degrees of freedom. Therefore, the first objective of this study was to develop a finite element model capable of predicting dynamic response of a test structure while controlling the number of degrees of freedom. The control of the number of degrees of freedom was achieved by using the minimum number of elements possible and by using elements with reduced degrees of freedom. In conjunction with controlling the degrees of freedom the elements were selected so that numerical techniques could be conveniently applied to reduce the size of the solution set without loss in accuracy. To verify this theoretical solution an experimental test program was conducted to determine natural frequencies and mode shapes of the test structure.

CHAPTER II

ANALYSIS

2.1 Introduction

An inherent problem with dynamic analysis for complex structures is the lack of reliable eigenvalue computer programs for large matrices (3). The goal of the effort reported herein was to develop suitable modeling techniques combined with existing computer programs for predicting natural frequencies and mode shapes of undamaged and damaged semi-monocoque structures. The general purpose finite element program (3) "NASTRAN" (Level 15.5) and the Oklahoma State University IBM 360/65 computer were used for the analysis.

The highly complex F-84 wing is a semi-monocoque structure swept back at 40 degrees. The two spars and seven ribs shown in Figure 1 comprise the principal structural frame of the wing. The spars and ribs are aluminum alloy forgings and have wide variations in cross sectional shape and size throughout the wing. Aluminum alloy stringers and skin, also of variable cross sections and thicknesses, complete the assembly. This structure was used to develop modeling techniques and for experimental verification.

2.2 Wing Geometry

The F-84 wing was introduced approximately 30 years ago. Consequently, there was little detailed information concerning the geometry

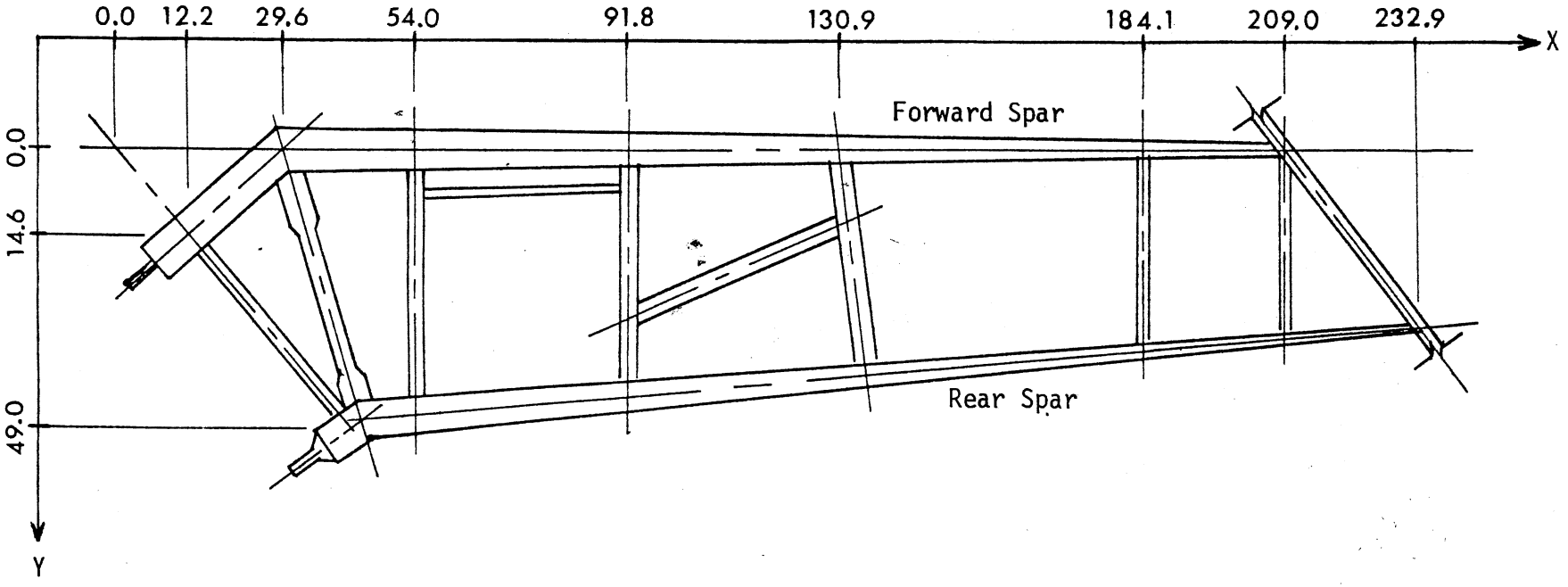


Figure 1. F-84 Structural Frame

of the wing. To provide structural details for subsequent mathematical modeling, one wing was completely dismantled.

The intersection of spar caps, rib flanges, and stringers were located and actual dimensions of skin thicknesses and stringer cross sections were recorded. Because the spars and ribs are nonprismatic, it was necessary to select a limited number of cross sections as representative of a region of these members. Typical cross sections were determined for spars between adjacent ribs and for ribs between stiffeners. Dimensions, cross sections, and other structural details are given in Reference (2).

2.3 Finite Element Model

2.3.1 Node Points

Because of the numerous assumptions and simplications which were required in this analysis and to control the problem size, it was decided to use the simplest model which would still describe the geometry of the wing with reasonable accuracy. Consequently, nodes in the model were located on the top and bottom surfaces of the wing at the intersection of two or more of the spar caps, rib flanges, or stringers. This resulted in a total of 178 nodes in the model of the undamaged wing and no extensive revision was required to describe the damaged condition. Node locations and identifying numbers are shown in Figure 2. (No attempt was made to model the wing tip, ailerons or flaps on the trailing edge, or the landing gear assembly.)

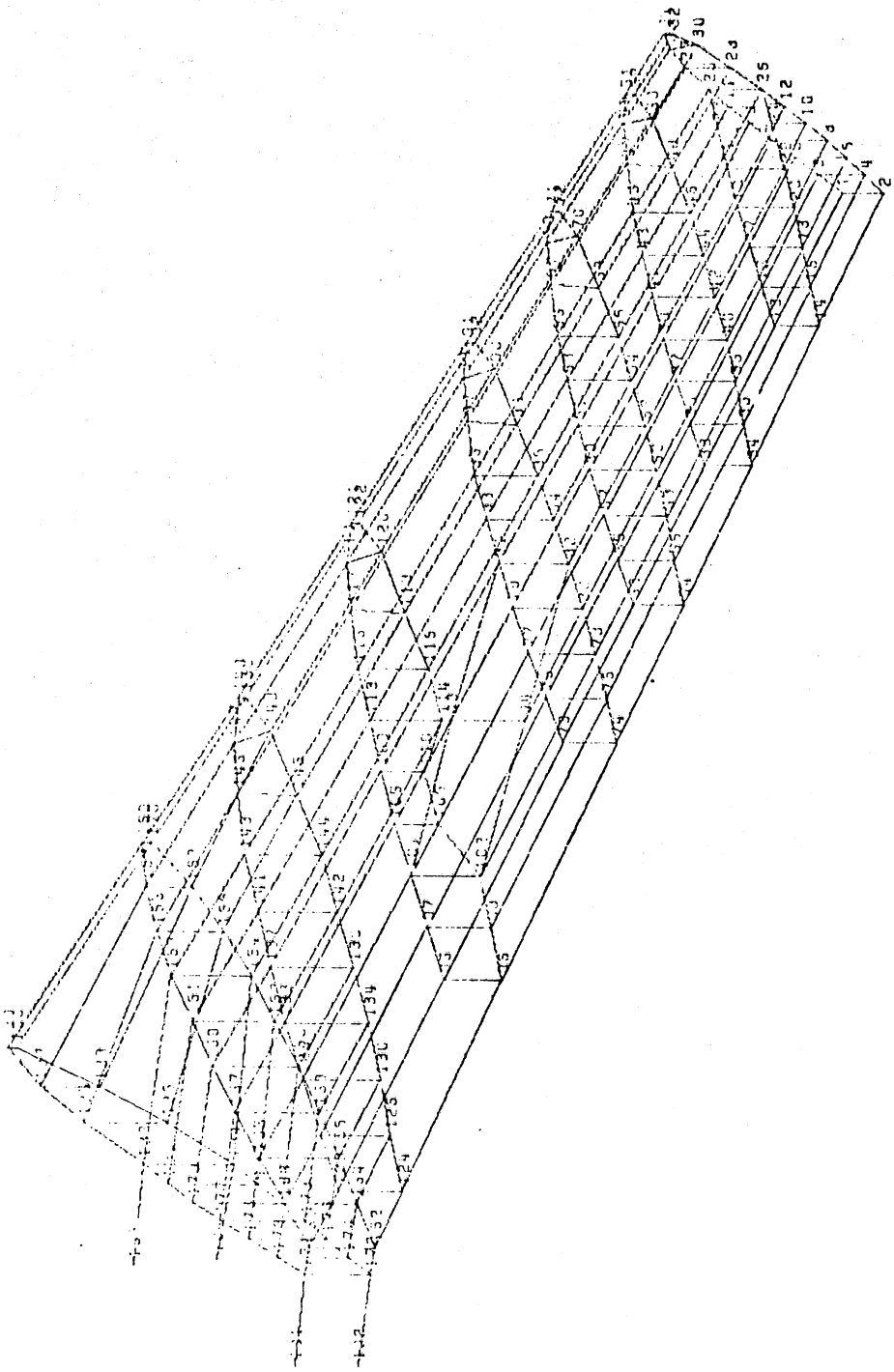


Figure 2. Node Locations

2.3.2 Elements

The elements used in the model were selected to perform only the assumed primary function of each structural member. The spars and ribs were assumed to resist bending about their major axes and to offer no resistance to bending about their minor axes or to torsion. Stringers were assumed to resist axial loads only and were assumed to have no bending or torsion resistance.

Although both normal (tension and compression) and shear stresses are developed in the skin, these two effects were separated in the model. The resistance of the skin to normal stresses was accounted for by increasing the axial load resistance of the spar caps, rib flanges, or stringers bordering the skin panels.

The assumptions allowed the behavior of the system to be approximated by simple rod (4) and constant shear panel (5) elements. The rod element is capable of resisting only axial and torsional loads. The shear panel is a two-dimensional element capable of resisting only shearing effects in its own plane. Because the NASTRAN constant shear flow panel elements are quadrilaterals, it was necessary to use triangular membrane elements (6) to describe a few isolated portions of the skin.

The rods representing spar caps, rib flanges, and stringers on the top and bottom surfaces are shown in Figures 3 and 4, respectively; shear panels representing top and bottom skin are shown in Figures 5 and 6, respectively; and vertical shear panels representing the webs of spars and ribs are shown in Figure 7. Appendix A contains additional details of the undamaged model.

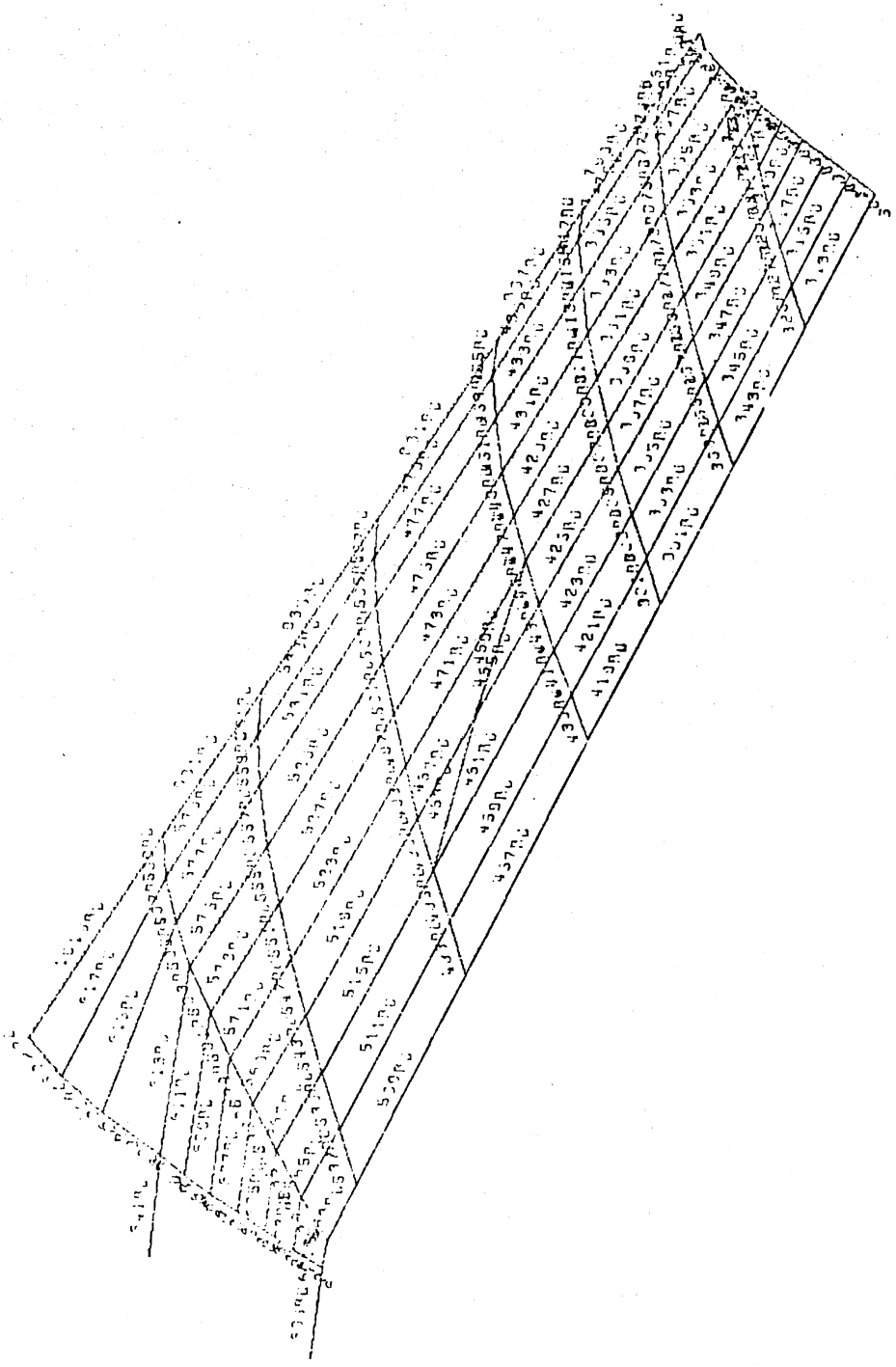


Figure 3. Rods Representing Spar Caps, Rib Flanges and Stringers on Top Surface

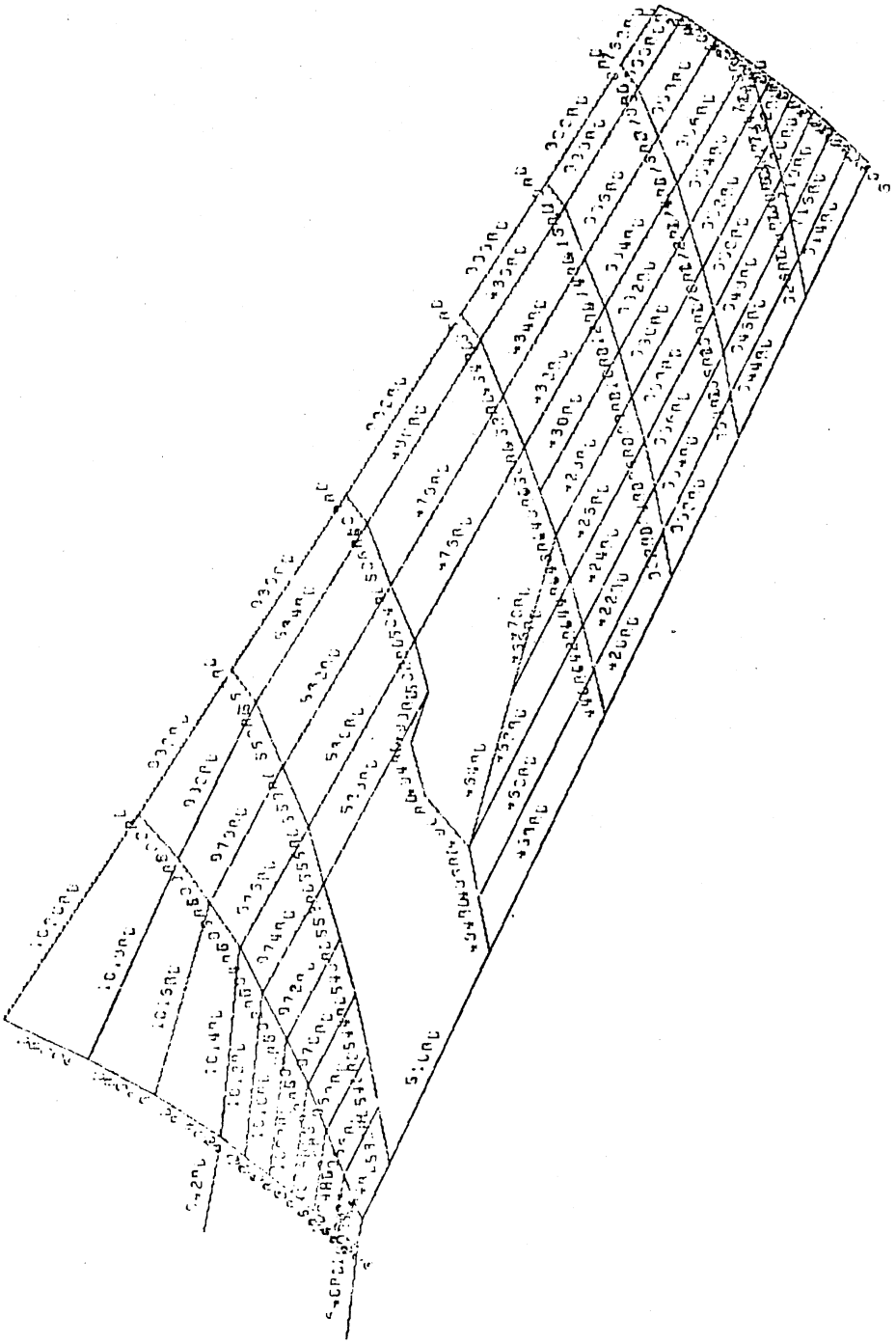


Figure 4. Rods Representing Spar Caps, Rib Flanges and Stringers on Bottom Surface

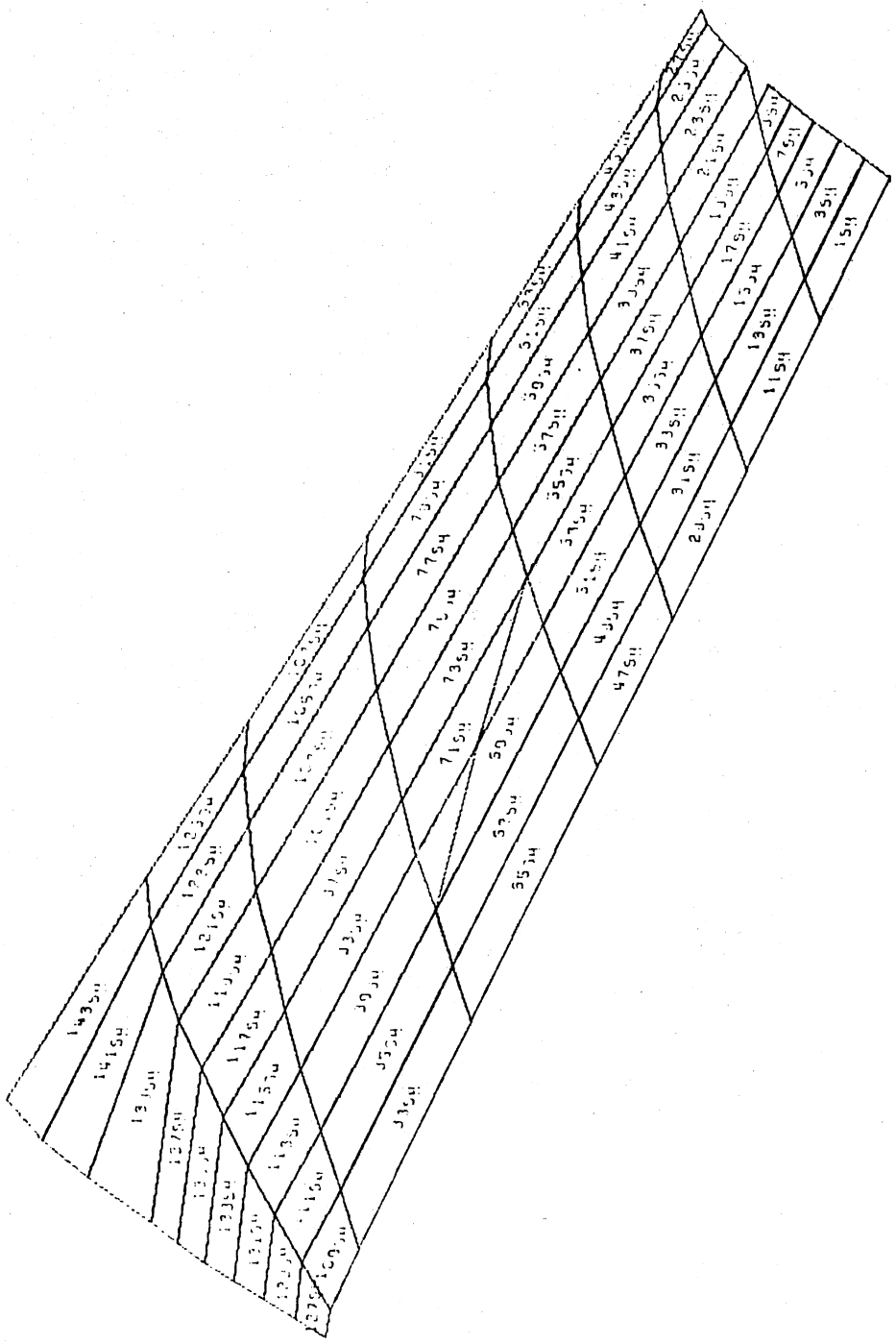


Figure 5. Shear Panels--Top Skin

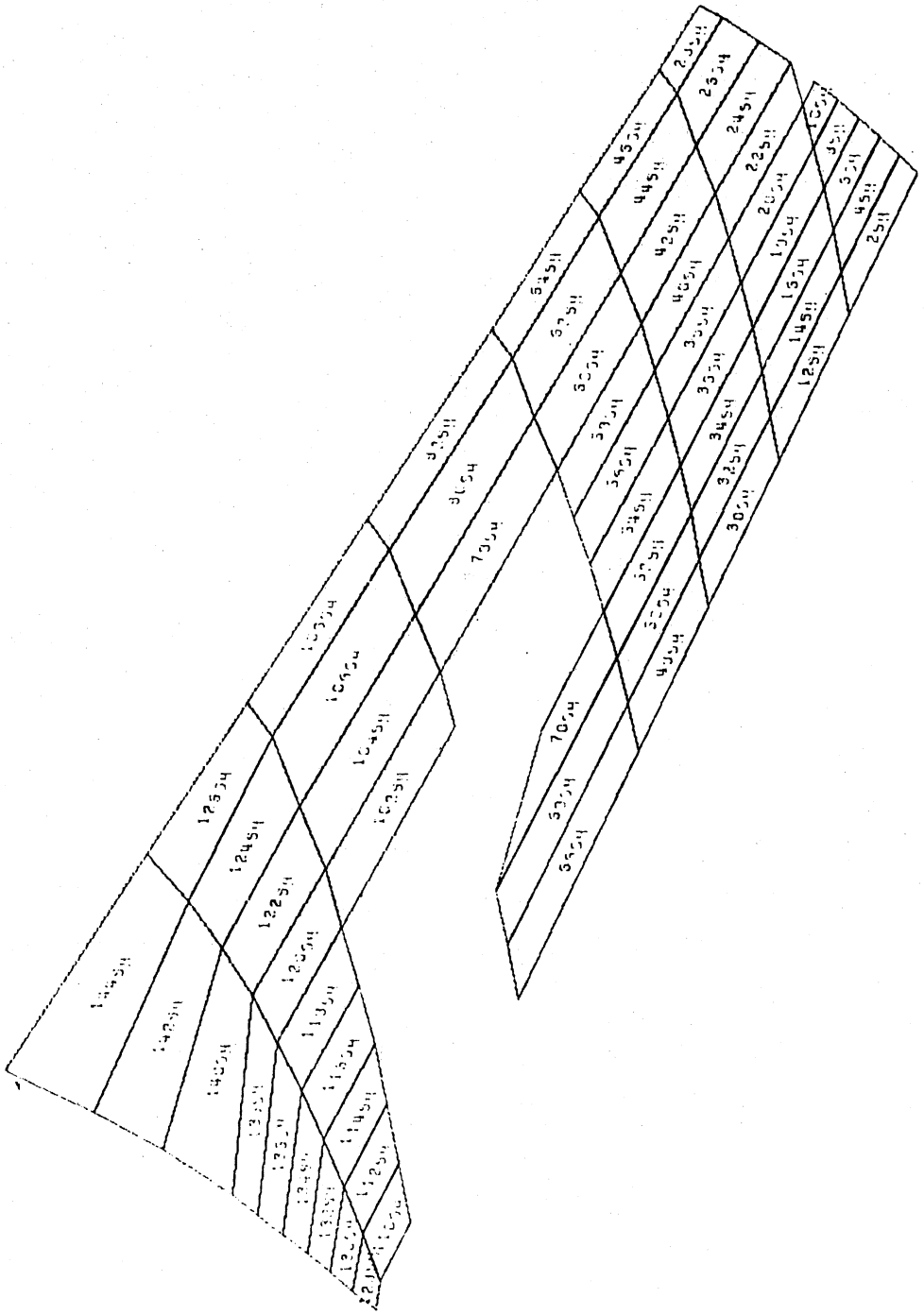


Figure 6. Shear Panels--Bottom Skin

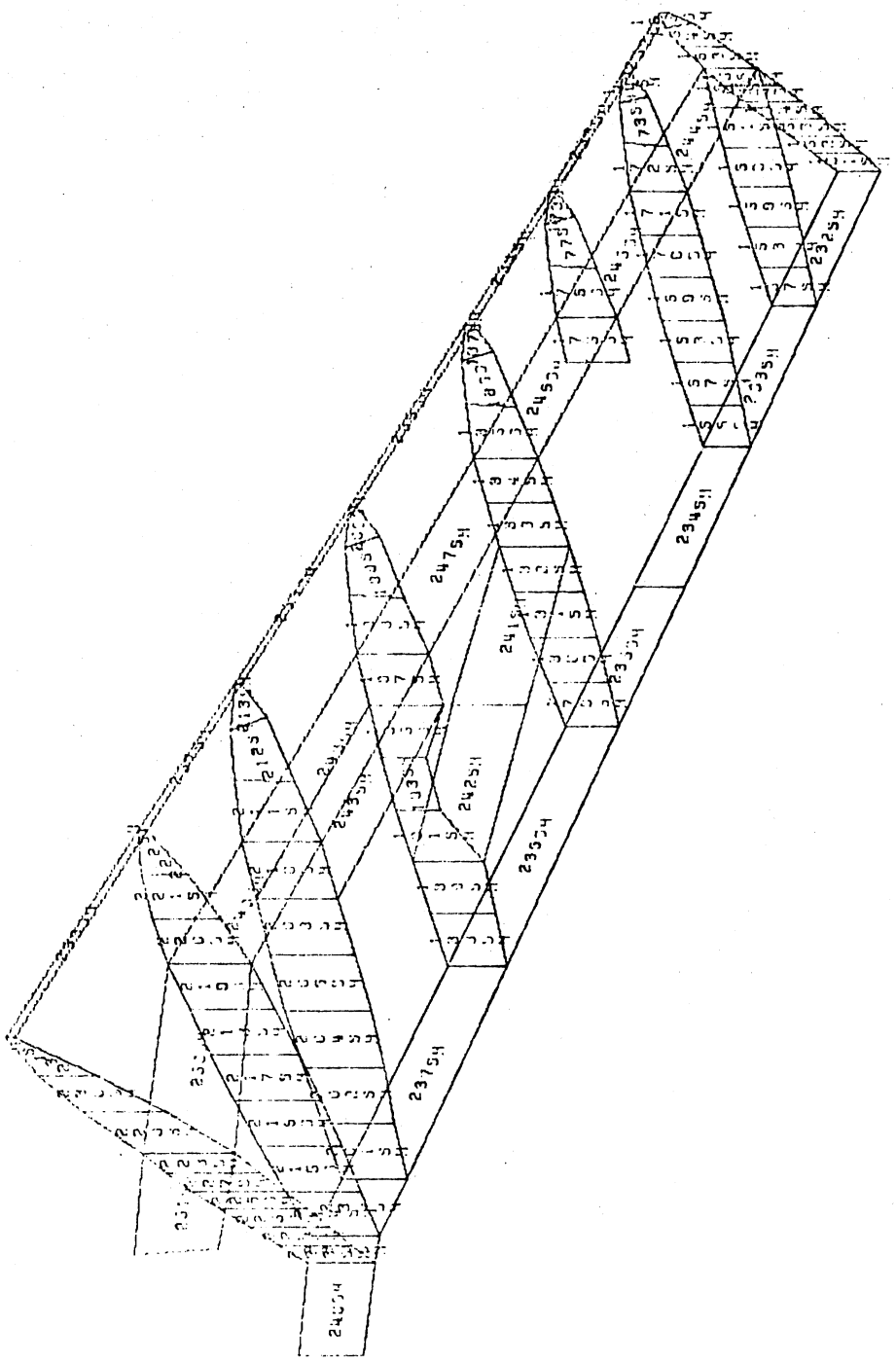


Figure 7. Vertical Shear Panels Representing the Webs of Spars and Ribs

2.3.3 Element Properties

The cross sectional areas of the rods and thicknesses of the shear panels discussed above must be assigned values so that the behavior of the assemblage is, as nearly as possible, identical to the real components they represent. The procedures described below were used to evaluate appropriate areas and thicknesses.

As stated previously, the spars and ribs were assumed to resist only bending moments about their major centroidal axes and shear forces in the plane of the web. A typical cross section of a spar or rib and the replacement system of rods and shear panels are shown in Figure 8.

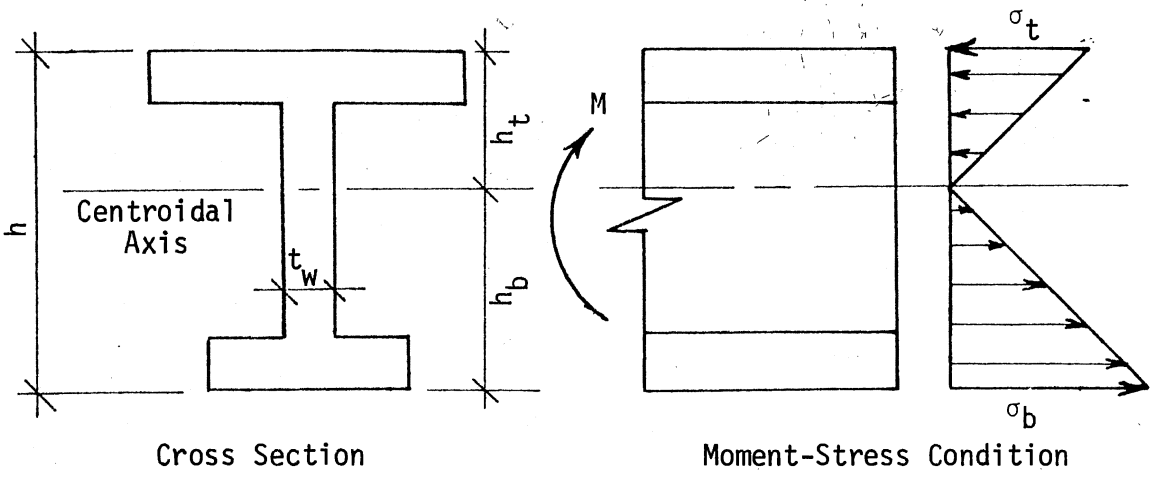
In the real member, the maximum stresses, bending moment, and member properties are related by

$$\sigma_t = \frac{Mh_t}{I} \quad \text{and} \quad \sigma_b = \frac{Mh_b}{I} \tag{2.1}$$

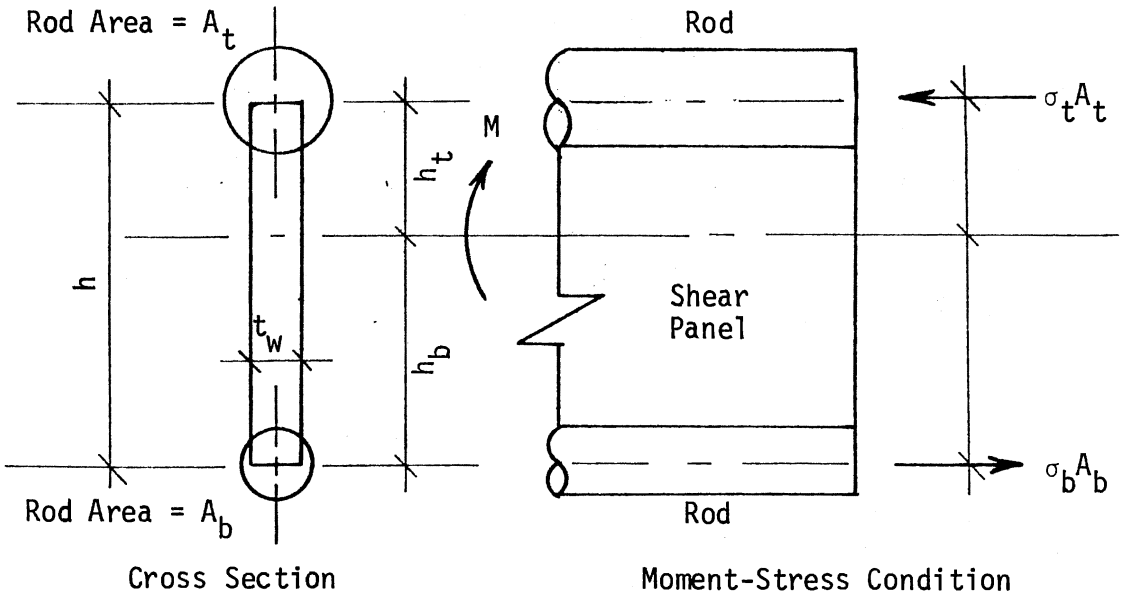
where I is the moment of inertia of the cross section about its centroidal axis.

The rods (assumed to be point areas) in the replacement system are positioned to maintain the same height, h, and their areas are proportioned to result in the same location of the centroidal axis and identical maximum stresses as the original cross section. The relationship between bending moment, stresses, areas, and distances in the replacement system is

$$M = \sigma_t A_t h_t + \sigma_b A_b h_b. \tag{2.2}$$



(a) Typical Cross Section



(b) Replacement System

Figure 8. Typical Cross Section of a Spar or Rib and Replacement System

The location of the centroid of the replacement cross section is defined by

$$A_t h_t = A_b h_b. \tag{2.3}$$

When Equations (2.1), (2.2) and (2.3) are combined, the appropriate rod areas are obtained as

$$A_t = \frac{I}{h_t h} \quad \text{and} \quad A_b = \frac{I}{h_b h}. \tag{2.4}$$

The shear panel which accounts for the shear resistance of the web of the member is assigned the thickness of the actual web.

In the actual spar, or rib, the web is also capable of transmitting tensile and compressive stresses perpendicular to the axis of the member. Although these effects are usually neglected in ordinary bending analysis, the capability of the web of a spar or rib to transmit in-plane stresses must be described to permit a valid solution to be obtained when the shear panel element is used for modeling these components. The resistance of the web to in-plane normal stresses is accounted for by additional rods perpendicular to the axis of the spar or rib and joining nodes on the top and bottom flanges. These rods are represented by the vertical rods (parallel to the Z-axis) shown in Figure 2. The areas of these rods are not explicitly defined by structural behavior and studies of bending members have indicated that the only requirement is that the rod area be finite. However, in a dynamic solution there is a need for a realistic relationship for the relative motion of a pair of nodes associated with these vertical rods. The assumption was made that the webs would undergo no deformation in a

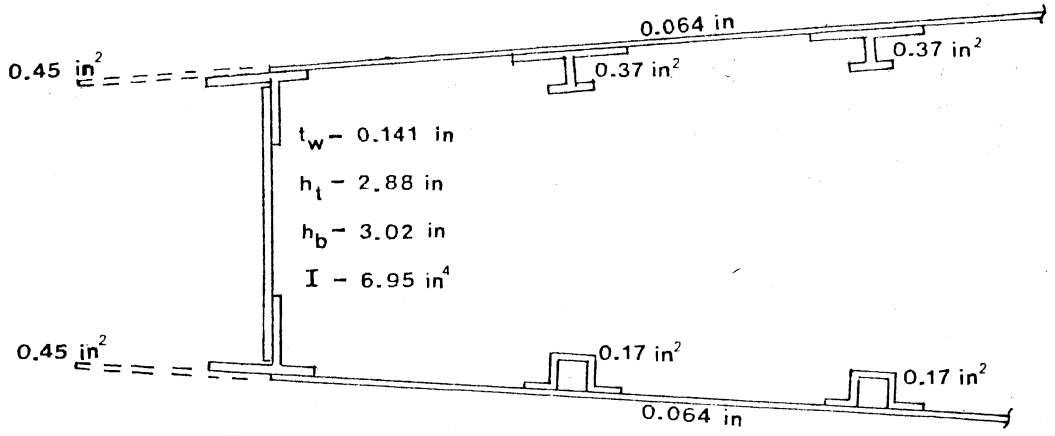
direction coinciding with the orientation of the rods. This implies the rods have infinite stiffness. Multi-point constraints, described in the next section, were used to constrain each set of nodes so that their vertical displacements were identical.

Shear panels replacing the skin of the wing were assigned the actual thickness of the skin. The cross section area representing the tensile or compressive stress-carrying capability of the skin was added directly to the areas of the rods surrounding each shear panel.

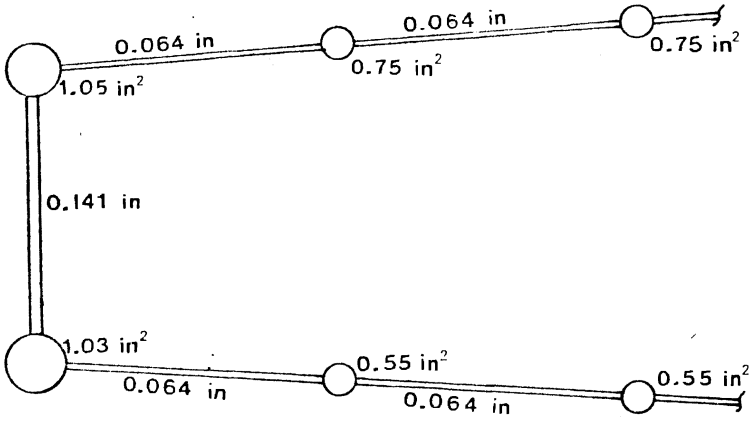
Rods replacing stringers were assigned areas equal to the actual areas of the stringers. A partial cross section of the wing through the rear spar and the replacement system is shown in Figure 9.

2.3.4 Constraints

The arrangement of structural elements described above was selected to represent the primary response of the wing. However, because the rod/shear-panel model of the spars and ribs does not reflect the lateral bending or torsional stiffness of these members, some nodes have either unrestrained degrees of freedom (see nodes 106 and 110, Figure 2) or have inadequate restraint (lower flanges of ribs and spars around wheel well, Figure 4). These deficiencies, which may lead either to unrealistic calculated frequencies and mode shapes or to mathematical singularities in the solution process, were corrected by two types of constraints provided for in the NASTRAN program. Multi-point constraints, which enforce fixed relative displacements among specified groups of nodes, were used to insure that the bottom flanges of the rear spar and the ribs surrounding the wheel remained relatively straight and elastic spring elements were attached to nodes along the



(a) Partial Cross Section Through Rear Spar



(b) Replacement System

Figure 9. Partial Cross Section of Wing and Replacement System

lower flanges of the rib through the wheel well (nodes 102, 106, 110, and 114, Figure 2) to simulate the lateral bending stiffness of this flange.

All stringers were modeled as rod elements that are only capable of resisting axial and torsional loads. For nearly all the stringers this is a realistic idealization because the stringers are connected to relatively large members (e.g., spars and ribs) capable of resisting loads perpendicular to their orientations. However, five nodes on the top surface and the bottom surface, in the area shown in Figure 10, have no associated rib or spar. Without the presence of a structural component with bending stiffness, these nodes have virtually no stiffness in a direction perpendicular to the midplane of the wing. Without this stiffness, frequencies would be calculated which are far below the fundamental frequency of the wing and have no physical meaning. In order to provide the required stiffness, the displacements of these nodes were described in terms of the displacements of the surrounding nodes.

Consider Figure 2.11, where node n is unrestrained in the u direction. The simplest approximation for the displacements of node n in terms of the displacements of the surrounding nodes is given in Equation (2.5).

$$\sum_i \frac{1}{\ell_i} u_i - u_n \sum_i \frac{1}{\ell_i} = 0. \tag{2.5}$$

For each of the the nodes mentioned above Equation (2.5) was applied so that the displacements of these nodes were considered as dependent

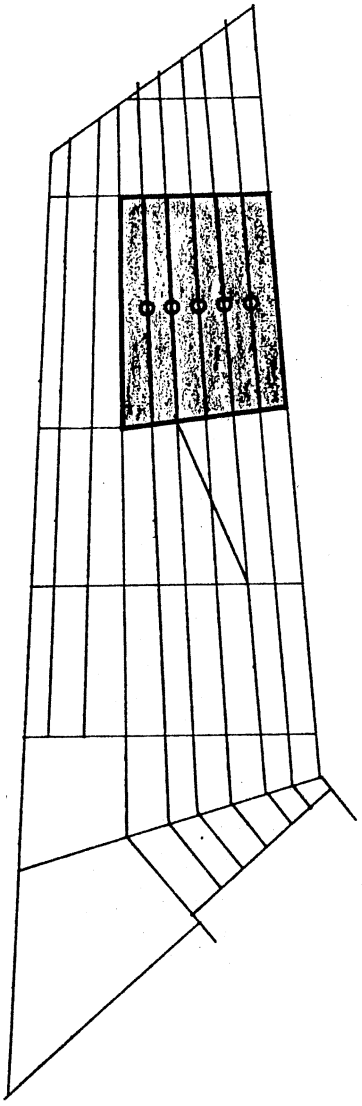


Figure 10. Area Without Stiffness

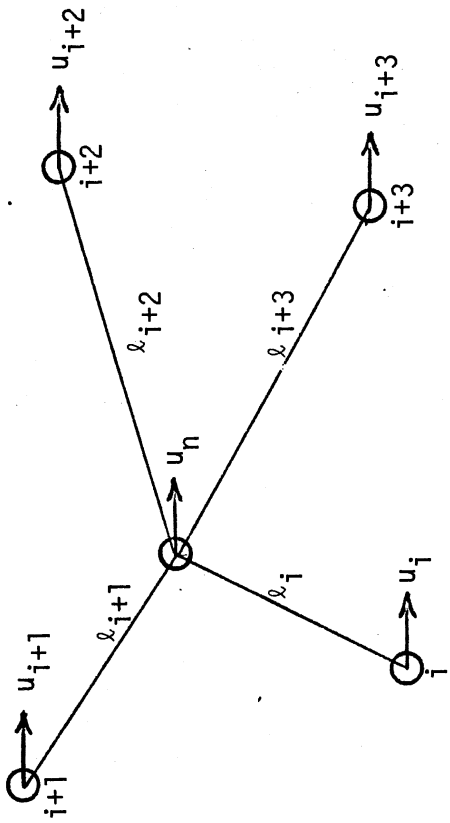


Figure 11. Unrestrained Node Example

variables and then incorporated (7) into the solution set in terms of the independent surrounding node point displacements.

2.3.5 Revision of Model for Damage

One of the goals of this study was to develop a finite element model that could be easily modified to incorporate structural change. Stronge (1) attempted modeling an RF-84 wing which had been structurally modified by damage. One of these damaged conditions, Figures 12 and 13, was selected for modeling in this study.

The damaged condition was imposed on the model by relocating rod 529 (Figure 3) and by removing shear panels 97, 101, and 103 (Figure 5). In addition, the forward spar was revised as shown in Figure 14. The following multi-point constraints were imposed on the nodes in the vicinity of the damage, Figure 14(a), to insure variations in deformation which are consistent with elementary beam theory.

$$u_{163} + u_{164} - 2u_{135} = 0 \tag{2.6}$$

$$u_{85} + u_{86} - 2u_{107} = 0 \tag{2.7}$$

$$v_{163} + v_{164} - 2v_{135} = 0 \tag{2.8}$$

$$v_{85} + v_{86} - 2v_{107} = 0 \tag{2.9}$$

$$v_{143} + v_{144} - 2v_{139} = 0 \tag{2.10}$$

$$v_{115} + v_{116} - 2v_{111} = 0. \tag{2.11}$$

2.4 Mass Distribution

As mentioned earlier, the F-84 aircraft was introduced approximately 30 years ago and little detailed information concerning the weight and mass distribution was available. Reference (8) reported

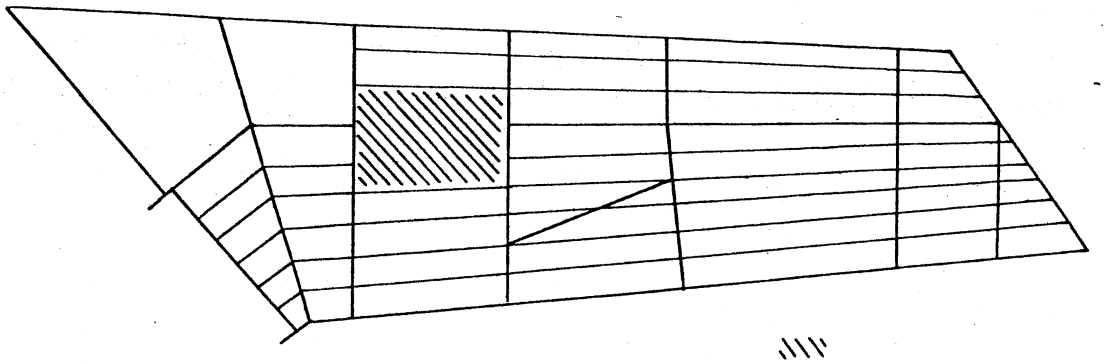


Figure 12. Top View of Damaged Area

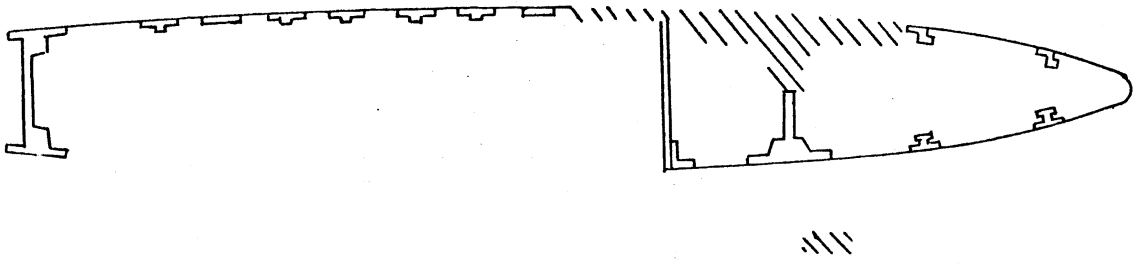
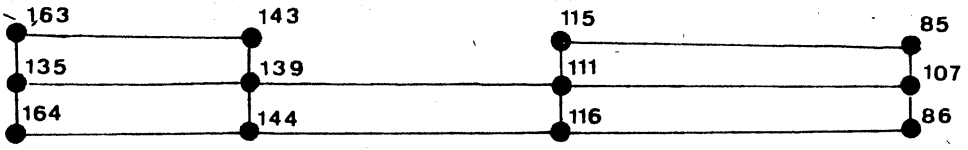
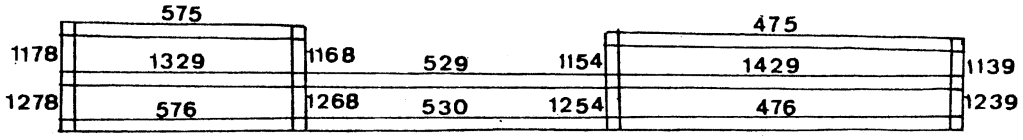


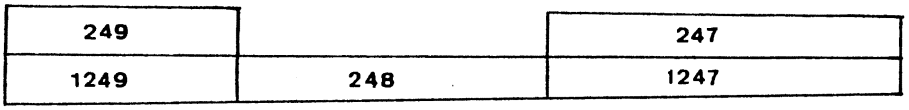
Figure 13. Cross-Sectional View of Damaged Area



(a) Nodes



(b) Rods



(c) Shear Panels

Figure 14. Replacement System for Damaged Forward Spar

the structural and landing gear assembly weights to be 1050 lbs and 406 lbs, respectively. This information was not adequate to permit determination of the true mass distribution and it was therefore necessary to estimate the mass distribution based on calculated structural volumes and the total weight of the wing.

2.4.1 Mass Distribution Excluding Landing Gear

The total structural weight of the wing, based on measured structural members, Reference (2), was 624 lbs. Hence, a difference of 426 lbs existed between the actual structural weight and calculated weight. This large difference was mainly due to discontinuities and irregularities found throughout the wing structure which were neglected in the modeling process.

The total weight of the wing was measured in the laboratory and it was determined that an additional 752 lbs of parasitic material such as fuel tanks and hydraulic lines must be included in the mass distribution.

Over one-half of the total mass of the wing was not accounted for and had to be distributed in a rational manner. With such a large percentage of mass requiring distribution, the concentrated mass concept--the simplest mathematical representation--was adopted. It was further assumed that the excess mass, both structural and nonstructural, could be distributed in proportion to the density of the load-carrying members. This was further justified by inspection of the wing during disassembly described in section 2.2.

Based on the above assumption, the concentrated mass at each grid point was calculated by the following equation:

$$m = m_c \frac{M_t}{M_c} \tag{2.12}$$

where

m = mass at a grid point;

m_c = calculated structural mass at a grid point;

M_c = total calculated structural mass; and

M_t = actual mass of the structure excluding the landing gear assembly.

To facilitate this procedure a computer program (8) was developed which utilized existing NASTRAN input data and generated the required NASTRAN mass data.

As a check on the mass distribution, the centroid of the wing was determined and compared with the centroid of the generated mass distribution. The centroids were within 3.5 in. of each other which was considered acceptable.

2.4.2 Landing Gear Assembly

Figure 15 shows the general location of the landing gear assembly. The landing gear does not contribute to the structural stiffness of the wing; however, its mass, approximately 18 percent of the total mass of the wing, does interact with the surrounding structural members. The mass of the landing gear assembly was treated separately from the distribution of the structural nodes. It was assumed that the landing gear assembly could be represented by a lumped mass, equal to one-half of the total mass, at the center of the wheel and the remaining one-half uniformly distributed along two rigid bars representing the strut.

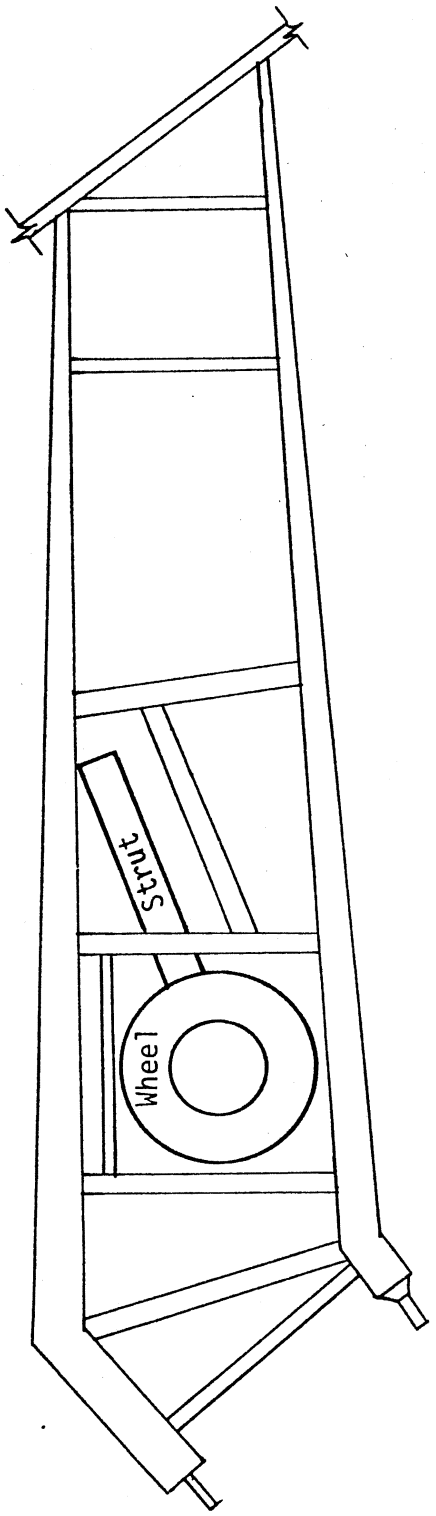


Figure 15. Landing Gear Location

A consistent mass matrix (4) for the assembly was then formulated for the three nodes shown in Figure 16.

The mass matrix for the three nodes on the landing gear is given in Equation (2.13).

$$M = \frac{m}{24}\begin{array}{c} \begin{matrix} u_1 & v_1 & w_1 & u_2 & v_2 & w_2 & u_3 & v_3 & w_3 \end{matrix} \\ \begin{bmatrix} 14 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 14 & 0 & 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 14 & 0 & 0 & 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 4 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 4 & 0 & 0 & 1 & 0 \\ 0 & 0 & 1 & 0 & 0 & 4 & 0 & 0 & 1 \\ 0 & 0 & 0 & 1 & 0 & 0 & 2 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 & 0 & 2 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 2 \end{bmatrix} \end{array} \qquad (2.13)$$

Because the landing gear assembly is assumed to be rigid, the following relationships between the nodal displacements exist:

$$u_1 + u_3 - 2u_2 = 0; \qquad (2.14(a))$$

$$v_1 + v_3 - 2v_2 = 0; \qquad (2.14(b))$$

$$w_1 + w_3 - 2w_2 = 0. \qquad (2.14(c))$$

Constraint Equations (2.14) allow the mass matrix, Equation (2.13), to be reduced (6) in terms of the displacements of node points 1 and 2 only. The resulting mass distribution is given by Equation (2.15). The mass matrix of the landing gear, Equation (2.15), was coupled to the structural mass matrix of the nodes surrounding the landing gear by applying Equation (2.5) to each of the two remaining landing gear nodes so that these nodes were considered as dependent variables and

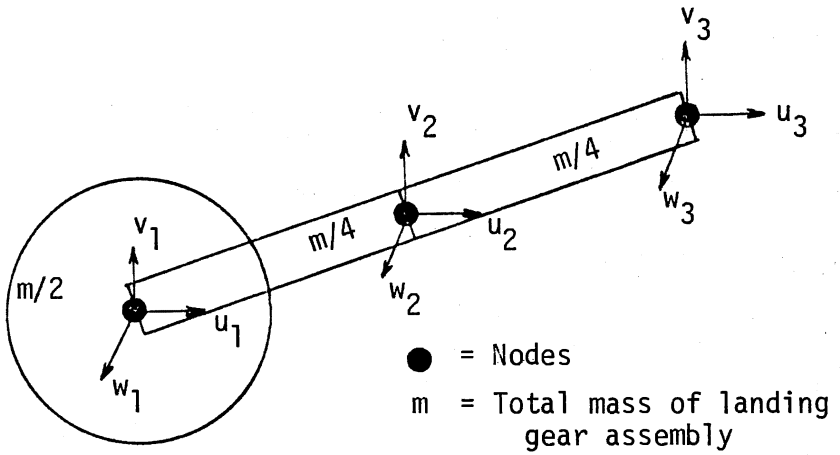


Figure 16. Landing Gear Mass Distribution

then eliminated from the solution set.

$$M_r = \frac{m}{6}\begin{array}{c} \begin{matrix} u_1 & v_1 & w_1 & u_2 & v_2 & w_2 \end{matrix} \\ \begin{bmatrix} 4 & 0 & 0 & -1 & 0 & 0 \\ 0 & 4 & 0 & 0 & -1 & 0 \\ 0 & 0 & 4 & 0 & 0 & -1 \\ -1 & 0 & 0 & 4 & 0 & 0 \\ 0 & -1 & 0 & 0 & 4 & 0 \\ 0 & 0 & -1 & 0 & 0 & 4 \end{bmatrix} \end{array} \qquad (2.15)$$

2.5 Reduced Problem Size

The imposed constraints discussed in sections 2.3.3 and 2.3.4 reduce the number of degrees of freedom in the model from 534 to 430. However, further reduction is necessary to produce a practical solution.

Guyan Reduction (10) is a method of reducing the size of an eigenvalue problem by systematically condensing the stiffness and mass matrices in terms of a selected set of degrees of freedom. In general, this procedure does not preserve the eigenvalues but, when used judiciously, it yields an excellent approximate solution.

In order to select a solution set of displacements, it is important to understand the mathematics involved in this reduction procedure. Consider two sets of displacements U_1 and U_2, where the matrix U_1 refers to all displacements to be retained as degrees of freedom for the dynamic solution, and U_2 denotes all remaining displacements. These displacements are related to the applied loads by

$$\begin{Bmatrix} P_1 \\ P_2 \end{Bmatrix} = \begin{bmatrix} K_{11} & K_{12} \\ K_{12}^T & K_{22} \end{bmatrix} \begin{Bmatrix} U_1 \\ U_2 \end{Bmatrix} \qquad (2.16)$$

where P_1 and P_2 are external loads corresponding to U_1 and U_2, respectively, and the K_{ij} are stiffness coefficients.

If the external loads P_2 are equal to, or can be considered to be, zero, then

$$U_2 = -K_{22}^{-1} K_{12}^T U_1. \tag{2.17}$$

Under these conditions all displacements can be expressed in terms of the retained displacements U_1 by the following transformation equation:

$$\begin{Bmatrix} U_1 \\ U_2 \end{Bmatrix} = \begin{bmatrix} I \\ -K_{22}^{-1} K_{12}^T \end{bmatrix} U_1 = [G] U_1. \tag{2.18}$$

The strain energy, V, and kinetic energy, T, of the structure can be expressed as:

$$V = \frac{1}{2} (U^T KU) = \frac{1}{2} (U_1^T G^T KGU_1); \tag{2.19}$$

$$T = \frac{1}{2} (\dot{U}^T M\dot{U}) = \frac{1}{2} (\dot{U}_1^T G^T MG\dot{U}_1). \tag{2.20}$$

It is now apparent that the eigenvalue problem can be expressed in terms of a condensed stiffness matrix, condensed mass matrix, and the retained displacements as

$$KU - \lambda MU = K_c U_1 - \lambda M_c U_1 \tag{2.21}$$

where

$$K_c = G^T KG, \tag{2.22}$$

$$M_c = G^T MG, \tag{2.23}$$

and

λ = frequency parameter.

When displacements U_1 and U_2 are completely uncoupled such that K_{12} is a null matrix and, in addition, the mass matrix has no coupled terms with respect to U_1 and U_2, this procedure exactly preserves the eigenvalues. In the analysis described in this study the above condition on the mass matrix is always met because the lumped mass concept results in a diagonal matrix.

For complex structures the requirement of uncoupled displacements is seldom met. However, the procedure can be used effectively whenever all of the K_{12} terms are extremely small compared with the remaining stiffness terms. In this analysis, the rod and shear panel idealization produces this condition for displacements normal to the midplane of the wing and displacements in the plane of the wing. Since only the frequencies and mode shapes related to displacements normal to the midplane of the wing were of interest, all others were eliminated from the solution set. This reduction combined with the multi-point constraints reduced the dynamic solution to 82 degrees of freedom which is practical for presently available eigenvalue computer programs.

Further reduction is possible with only slight loss of accuracy in the lower modes if the solution set of displacements is carefully selected. The retained degrees of freedom should be evenly distributed over the structure and contain all degrees of freedom associated with relatively large mass terms. This procedure was used to produce a solution set with 17 degrees of freedom for comparison with the 82 degrees of freedom solution.

2.6 Eigenvalue Extraction

NASTRAN provides three methods of eigenvalue extraction: a transformation method (the Tridiagonal Method); and two iterative methods (Determinant Method and Inverse Power Method with Shifts). The number of calculations required for both of the iterative methods is dependent on the semi-band width of the matrices involved and the number of eigenvalues extracted. The efficiency of the transformation method is dependent on the size of the solution set. The reduction process used in this analysis, discussed in section 2.5, produces full mass and stiffness matrices which reduces the efficiency of the two iterative methods. In several test problems it was found that if only one eigenvalue was extracted after the reduction procedure, all three methods would require approximately the same number of calculations. However, when several eigenvalues were extracted, the transformation method was found to be the most efficient approach.

2.7 Analytical Results

The analysis has provided two solutions (82 and 17 degrees of freedom) for both the undamaged and damaged configurations. Table I shows the close correlation at the lower frequencies. The additional approximation produced by reducing the number of degrees of freedom from 82 to 17 has had very little effect on the first six frequencies. The 17 degrees of freedom solutions have calculated frequencies higher than those calculated with 82 degrees of freedom which is a characteristic of approximate solutions. The analysis indicates that if at least four times the number of frequencies of interest are retained as

the number of degrees of freedom in the solution set, there is no significant loss in accuracy. A complete listing of input data and results is included in Appendixes A, B, C, and D for all configurations and solutions investigated.

TABLE I

NATURAL FREQUENCIES (HERTZ)

Mode	Degrees of Freedom			
	Undamaged 82	Undamaged 17	Damaged 82	Damaged 17
1	6.963	6.965	6.280	6.281
2	23.304	23.381	22.473	22.525
3	33.104	33.269	32.088	32.240
4	55.125	56.197	53.164	54.054
5	78.049	83.988	75.780	81.274
6	82.939	86.283	79.945	83.064
7	100.848	128.721	95.414	113.108

CHAPTER III

EXPERIMENTAL PROGRAM

3.1 Introduction

The analytical portion of this study calculated four natural frequencies for both the undamaged and damaged wing configurations in a frequency range from 6.9 Hertz to 57 Hertz. The effort described below was intended to investigate experimentally the natural frequencies and mode shapes for the same general range to verify the accuracy of the analytical solution.

3.2 Wing Support System

Desirable characteristics of the wing support system were: to simulate the attachment of the wing to the fuselage of the aircraft; to provide adequate adjustment for wing alignment; and to provide a support system with natural frequencies outside the range of investigation. The "T" configuration, shown in Figure 17, was subsequently designed and fabricated.

Each spar root, shown in Figure 18, was connected to its "T" support by tapered pins through the existing holes in the same fashion as the wing is attached to the aircraft fuselage. Although the "T" was essentially rigid, it was necessary to provide some tolerance in the holes of the "T" to permit alignment and installation of the connecting

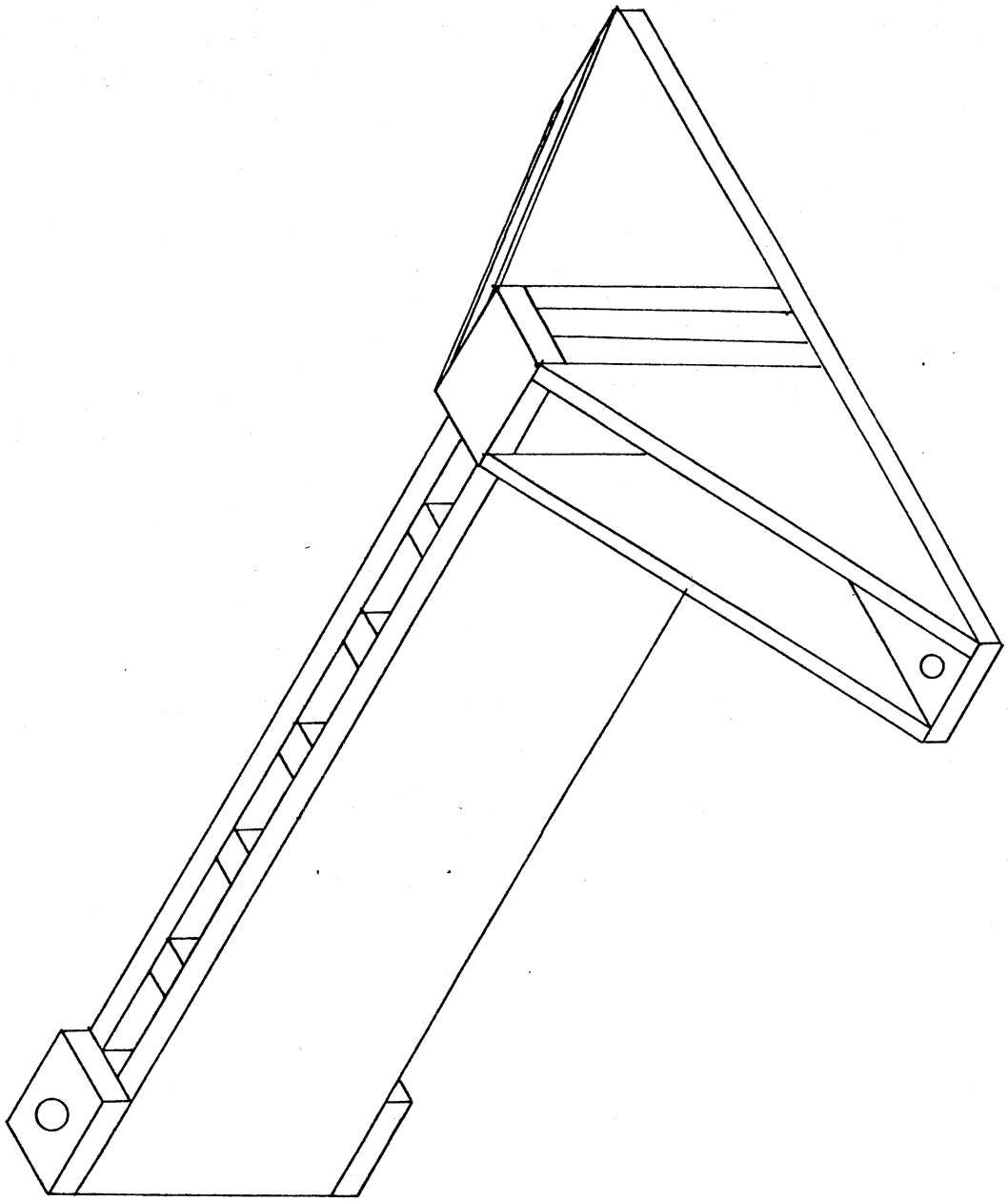
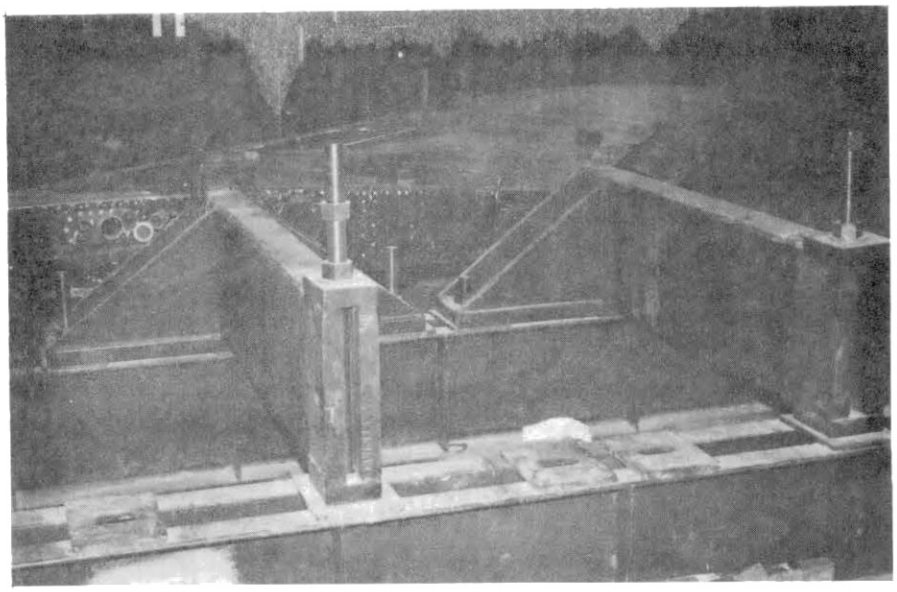
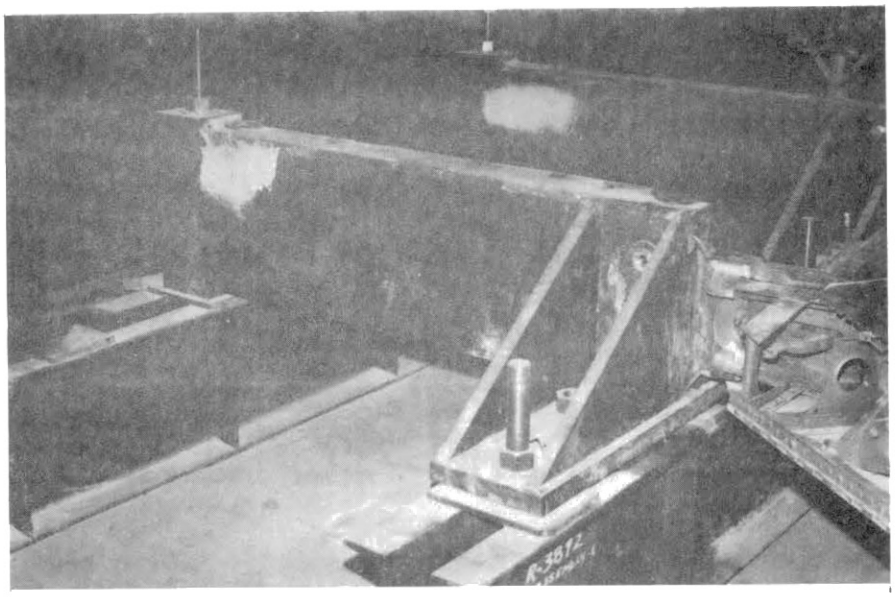


Figure 17. Wing Support System



(a) Rear View



(b) Side View

Figure 18. Wing Mounted on Support System

pins. This tolerance permitted rigid body motion of the wing and the connecting pins were later shimmed to eliminate any further motion.

3.3 Instrumentation

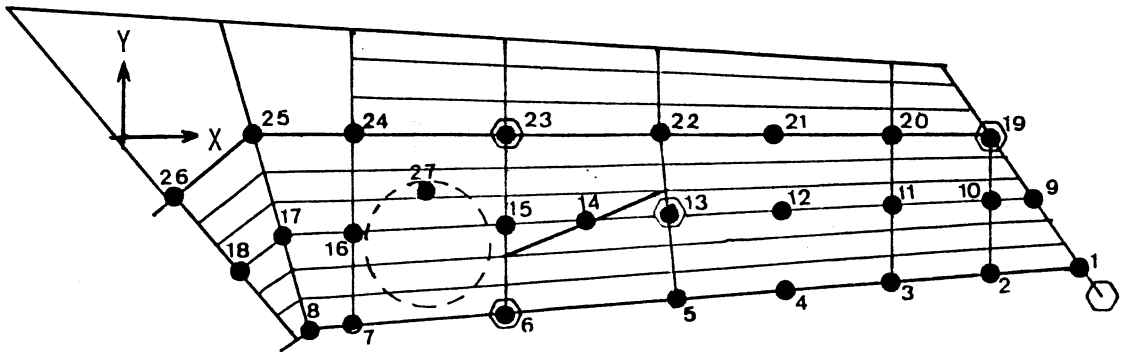
3.3.1 Accelerometer

A Kisler 818 accelerometer was used to record all accelerations during the test program. Twenty-six locations on the upper surface of the wing were established to provide data to determine mode shapes. One additional location was used during the tests of the damaged wing to investigate the vibration of the landing gear assembly. Locations of all test points are shown in Figure 19.

In an attempt to provide accurate readings from the accelerometer, mounting supports were permanently attached to the wing in all test locations, Figure 20. The accelerometer could also be easily moved to different locations on the wing during any test.

3.3.2 Bending Bridges

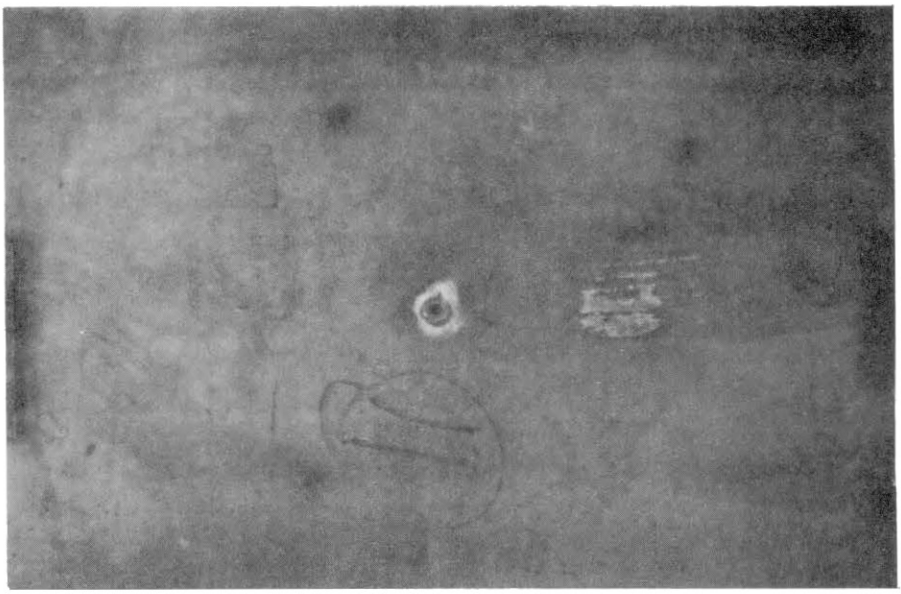
To provide additional information about the natural frequencies, bending bridges were placed on the spar ends at their juncture with the support system. Due to the irregular geometry of the spar members, it was not possible to locate the bending bridges where they would be insensitive to shear. Although these transducers provided only qualitative information, they ultimately served as an accurate means for determining peak response of the wing.



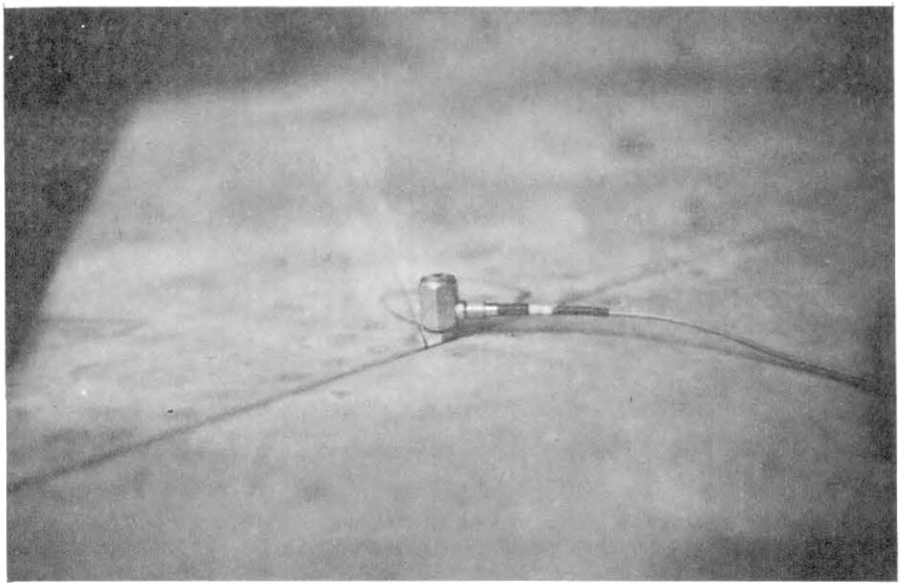
Freq.	#1	#2	#3	#4
Shaker Sta. Loc.	#13	Tip & #23 out of phase	#6 & #19 out of phase	Tip & #23 in phase

Accel. Sta.	X-Coord.	Y-Coord.
1	232.70	-30.40
2	209.00	-32.50
3	184.10	-34.70
4	159.10	-36.85
5	134.40	-39.00
6	91.80	-42.70
7	54.00	-46.30
8	43.80	-47.20
9	221.00	-15.20
10	209.00	-16.25
11	184.10	-17.35
12	159.10	-18.43
13	132.65	-19.50
14	111.35	-20.43
15	91.80	-21.35
16	54.00	-23.15
17	36.70	-23.60
18	26.65	-31.80
19	209.00	0.0
20	184.10	0.0
21	159.10	0.0
22	130.90	0.0
23	91.80	0.0
24	54.00	0.0
25	29.60	0.0
26	12.20	-14.60
27	72.90	-12.60
Tip	248.70	-50.40

Figure 19. Accelerometer and Shaker Locations



(a) Mounting Support



(b) Mounted Accelerometer

Figure 20. Accelerometer and Mounting Support

3.3.3 Load System

Ling Electronics Model 411 shakers were used to produce the dynamic load. During preliminary check-out of the shaker equipment, it was determined that the shakers must be moved to different locations for different frequencies to excite the wing at levels suitable for recording accelerations. The arrangements of shakers (Figure 19) for each frequency were determined from the analytical results.

Connection fixtures for the shakers were fabricated from aluminum beam sections and could be easily attached to the wing at different locations. The installation of the shakers is illustrated in Figure 21.

3.3.4 Data Acquisition

Oscilloscopes were used to record the response of the accelerometer, bending bridges, and signal generator output. During the tests the signal generator output and one bending bridge were monitored continuously to ensure that all accelerations were recorded at a constant frequency and shaker output. Accelerations and frequencies were measured directly from the oscilloscopes.

3.4 Test Program

Natural frequencies were investigated in the range of 3 Hertz to 60 Hertz. Although the analytical solution calculated four natural frequencies in this range, the bending bridges indicated five natural frequencies for both undamaged and damaged wings.

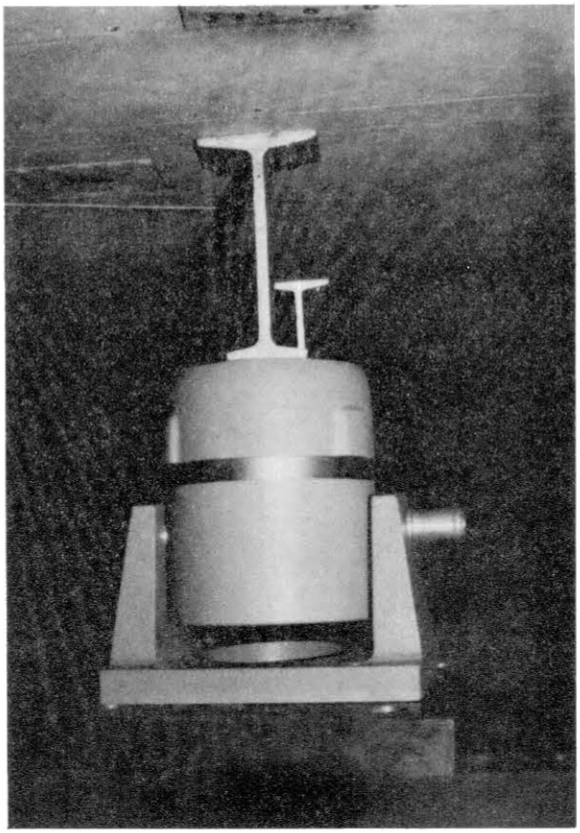


Figure 21. Shaker and Connection Fixture

3.4.1 Test Description

A total of 30 dynamic tests were performed. Three tests were performed at each frequency and the accelerations were averaged for comparison with the analytical solutions. This averaging was considered necessary because the oscilloscopes could only be read to an accuracy of ± 1 mm.

3.4.2 Test Procedure

As a check on the frequencies, each of the four shaker configurations, Figure 19, was examined for all frequencies within the range of investigation. All frequencies could be excited in any of the shaker configurations, but not any single configuration provided sufficient amplitude at every frequency for recording accelerations. The four shaker configurations, Figure 19, were selected because they provided the maximum mode shape response.

3.5 Results of Dynamic Tests

As mentioned in section 3.4, the bending bridges indicated five natural frequencies between 3.0 Hertz and 60 Hertz. Figures 22 and 23 show the response of the bending bridges during the damaged wing tests. Although this data suggest a natural frequency between 15 Hertz and 20 Hertz, the response for the accelerometer indicated that this frequency may be associated with component vibration. The responses near the landing gear assembly on the rear spar at test points 5 and 6 (Figure 19) are shown in Figures 24 and 25 for undamaged and damaged tests, respectively. For the excitation of a normal mode of vibration, the

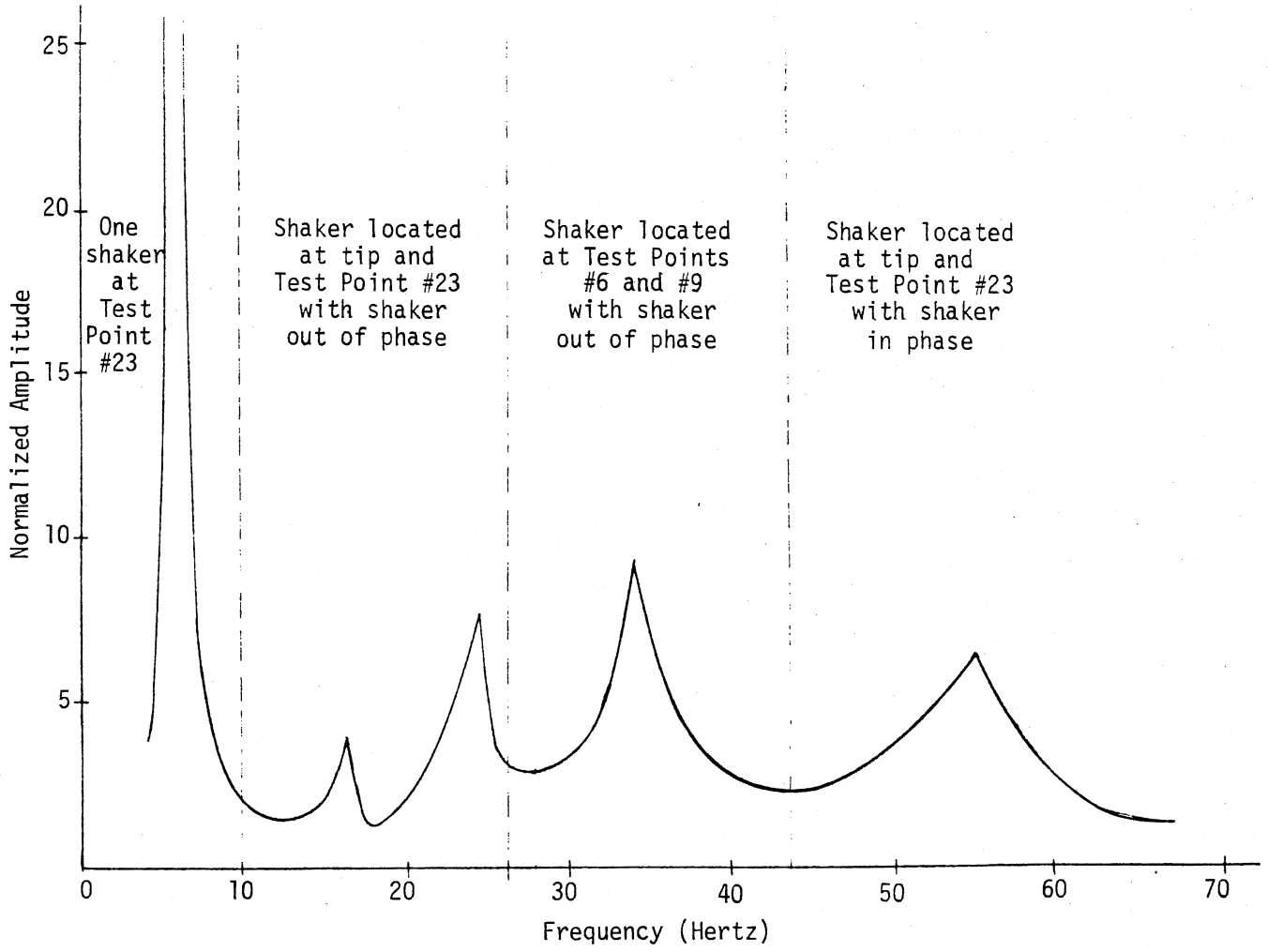


Figure 22. Bending Bridge Response (Forward Spar)

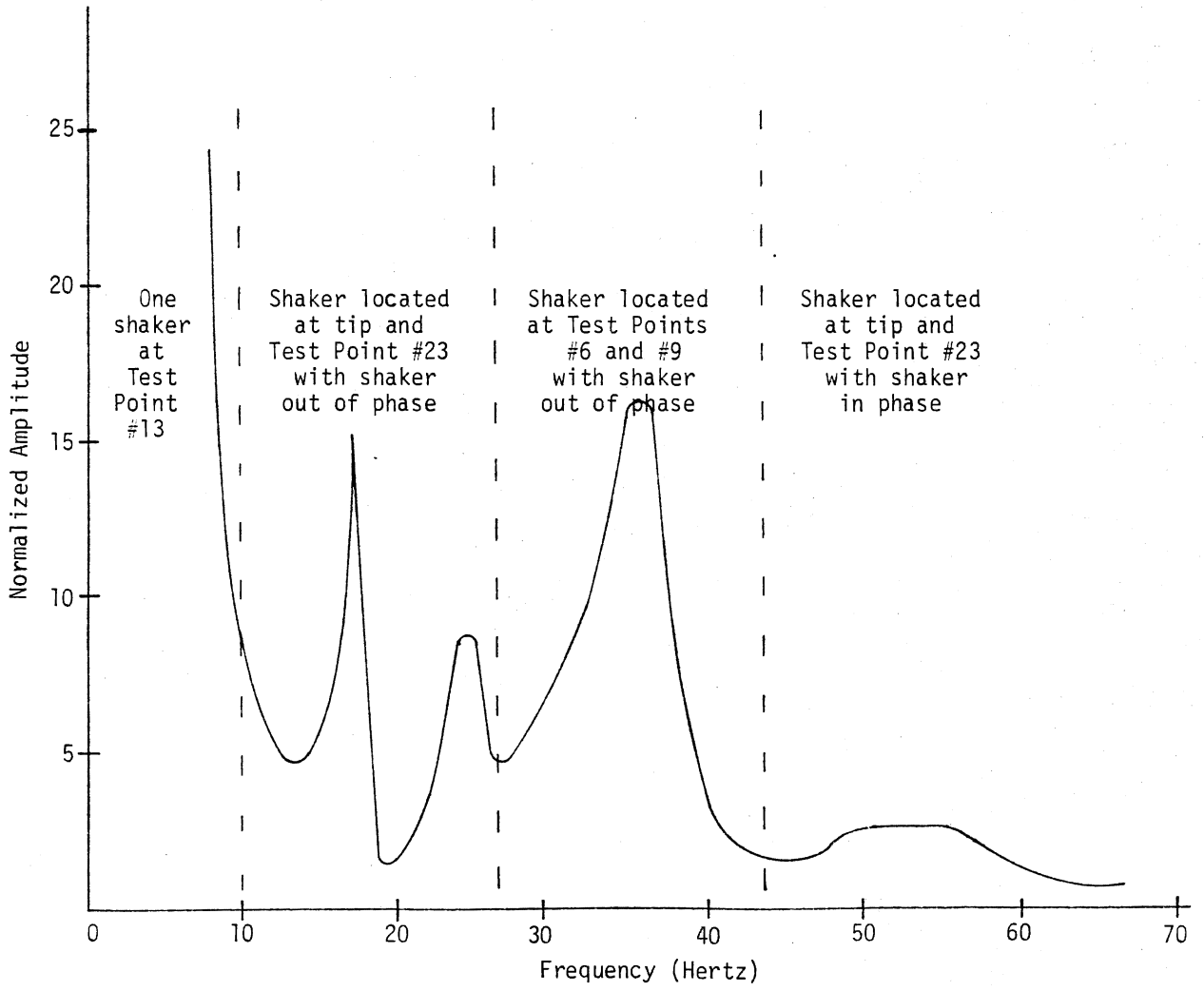
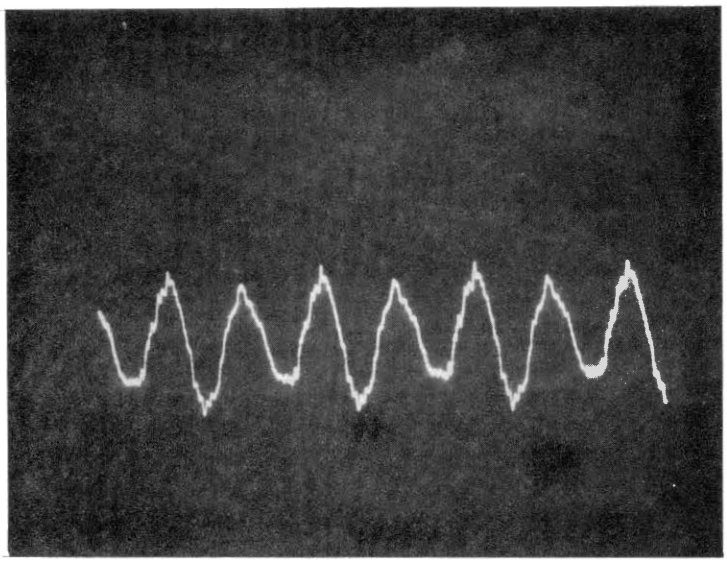
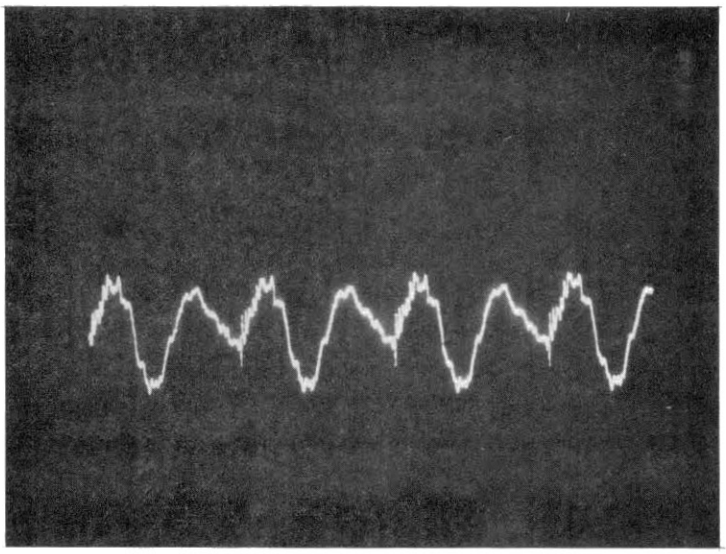


Figure 23. Bending Bridge Response (Rear Spar)

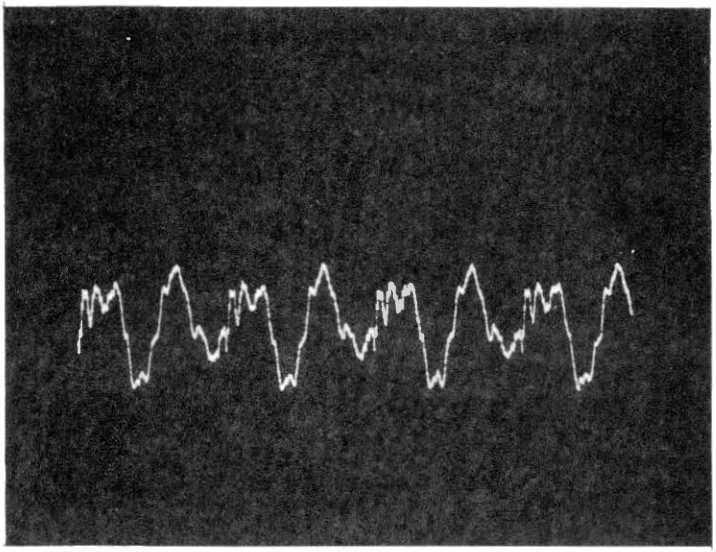


(a) Test Point No. 5

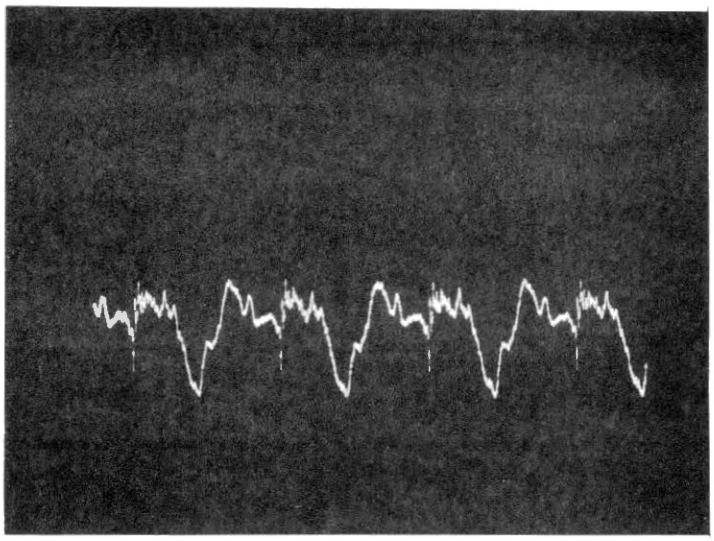


(b) Test Point No. 6

Figure 24. Accelerometer Response (Undamaged Wing)



(a) Test Point No. 5



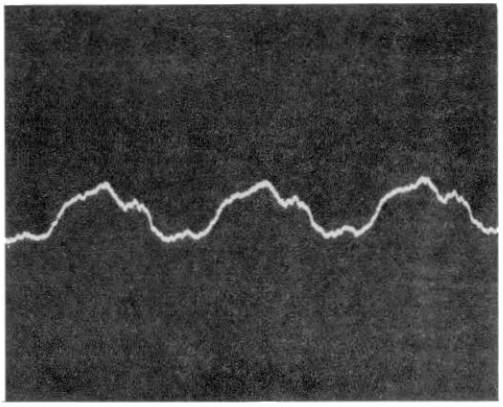
(b) Test Point No. 6

Figure 25. Accelerometer Response (Damaged Wing)

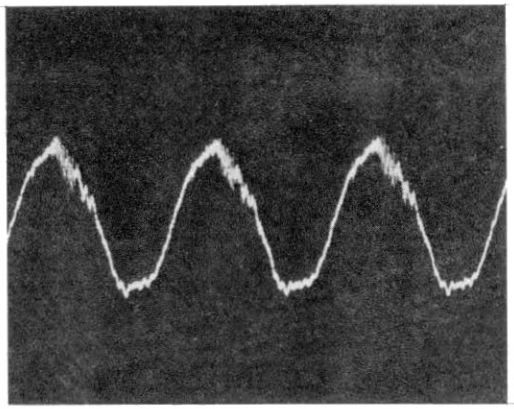
accelerometer response will have the same form as the input force (i.e., sinusoidal). The irregular shape noted in Figures 24 and 25 is indicative of component vibration rather than a natural frequency of the structure.

Typical accelerometer responses for the remaining frequencies are shown in Figures 26 and 27. The effect of component vibration can be detected in these figures in the form of slight disturbances in the signal. Normalized displacements for the first four natural frequencies are given in Tables II and III.

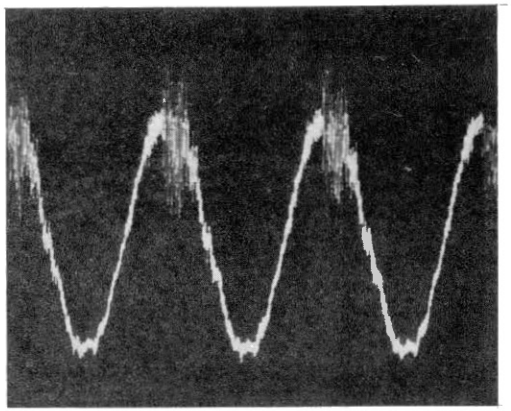
Comparison of Tables II and III reveals that the introduction of damage resulted in very minor changes in the dynamic response of the wing. Even though the bending stiffness of the forward spar was reduced by approximately 95%, the first natural frequency was only reduced 9%. The remaining three frequencies were reduced by an even smaller percentage. Also, the mode shapes were not appreciably altered by introduction of the damage.



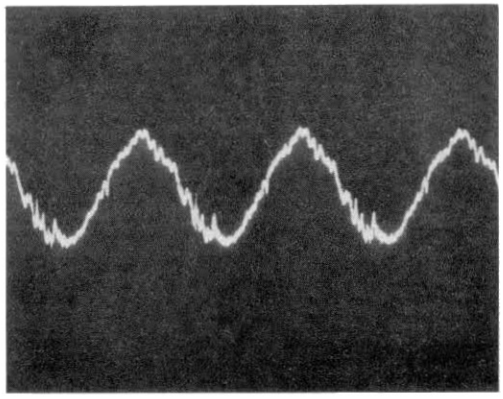
Test Point No. 23



Test Point No. 21



Test Point No. 19



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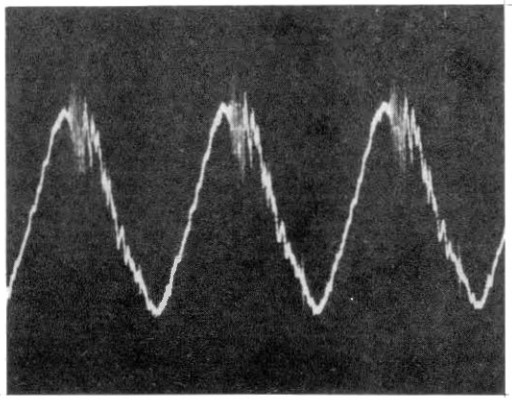
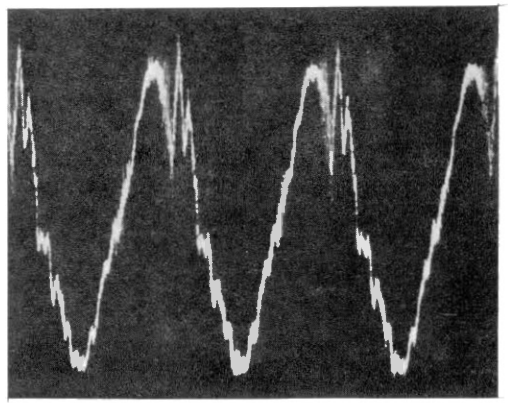
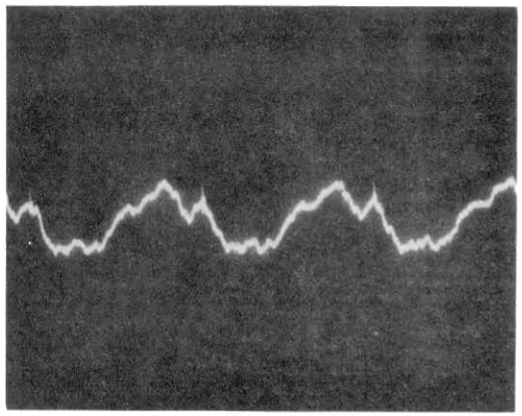


Test Point No. 3

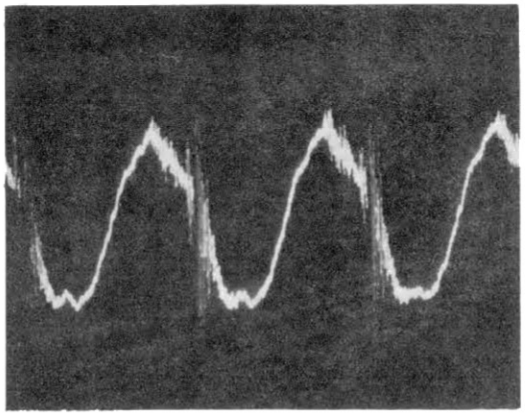


Test Point No. 1

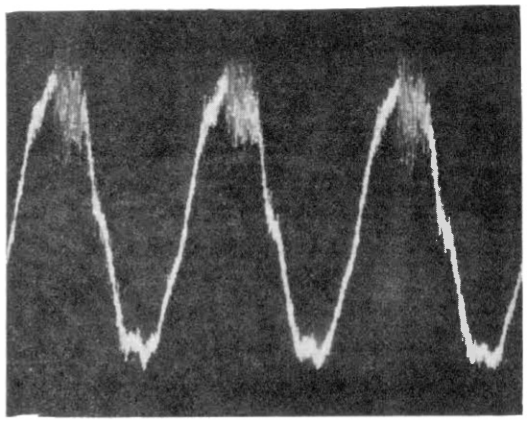
Figure 26. Typical Accelerometer Response (Undamaged Wing)



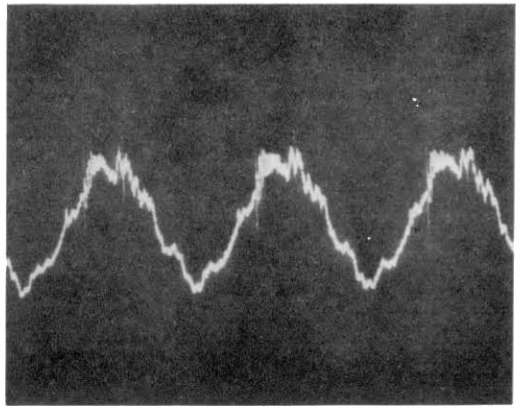
Test Point No. 23



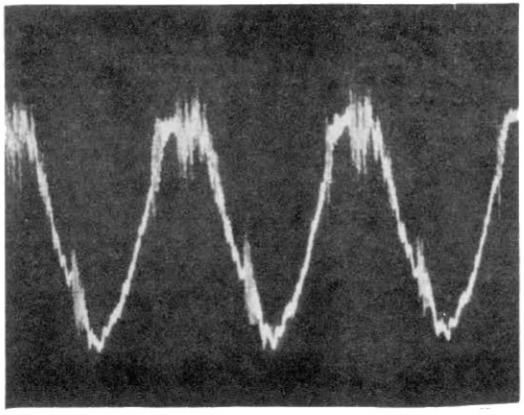
Test Point No. 21



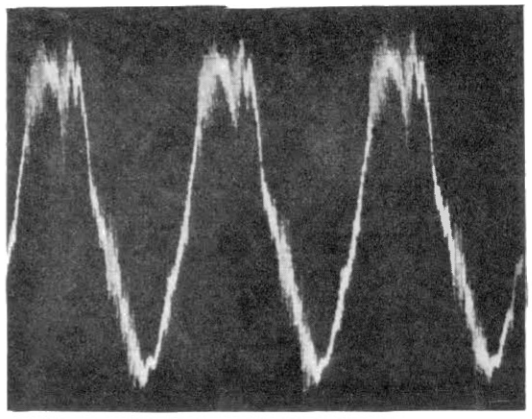
Test Point No. 19



Test Point No. 5



Test Point No. 3



Test Point No. 1

Figure 27. Typical Accelerometer Response (Damaged Wing)

TABLE II

DISPLACEMENTS OF UNDAMAGED WING

Sta. No.	Frequencies (Hertz)			
	6.5	23.8	35.7	54.0
1	1.000	1.000	0.564	1.000
2	0.845	0.783	0.143	0.622
3	0.677	0.535	-0.493	0.328
4	0.521	0.314	-0.764	-0.265
5	0.352	0.145	-0.871	-0.211
6	0.161	--	-0.557	-0.127
7	0.042	-0.024	-0.139	-0.028
8	0.019	-0.018	-0.085	-0.026
9	0.894	0.605	0.786	0.456
10	0.824	0.457	0.586	0.270
11	0.627	0.201	0.121	-0.180
12	0.543	--	-1.054	-0.678
13	0.340	-0.172	-0.447	-0.102
14	0.245	-0.216	-0.389	0.048
15	0.161	-0.229	-0.293	0.116
16	0.053	-0.119	-0.095	0.215
17	0.027	-0.083	-0.044	0.169
18	0.016	-0.036	-0.029	0.057
19	0.796	0.106	1.000	-0.244
20	0.648	-0.147	0.650	-0.383
21	0.485	-0.364	0.333	-0.305
22	0.345	-0.469	0.051	-0.079
23	0.183	-0.411	-0.064	0.322
24	0.071	-0.222	-0.043	0.433
25	0.029	-0.124	0.064	0.350
26	--	-0.033	--	0.116

TABLE III

DISPLACEMENTS OF DAMAGED WING

Sta. No.	Frequencies (Hertz) 5.9	22.7	34.5	52.6
1	1.000	1.000	0.490	1.000
2	0.826	0.683	-0.125	0.529
3	0.643	0.483	-0.521	0.247
4	0.491	0.297	-0.865	-0.293
5	0.368	0.141	-0.959	-0.253
6	0.155	--	-0.646	-0.145
7	0.038	--	-0.159	-0.049
8	0.020	--	-0.082	0.039
9	0.908	0.543	0.760	0.418
10	0.833	0.391	0.531	0.241
11	0.689	0.189	-0.069	-0.218
12	0.521	--	-0.969	-0.472
13	0.361	-0.145	-0.469	-0.147
14	0.243	-0.200	-0.459	-0.076
15	0.166	-0.239	-0.344	0.131
16	0.042	-0.092	-0.104	0.234
17	0.018	-0.054	-0.026	0.159
18	--	-0.023	--	0.057
19	0.802	-0.094	1.000	-0.184
20	0.661	-0.141	0.594	-0.334
21	0.467	-0.330	0.238	-0.293
22	0.354	-0.420	-0.037	-0.088
23	0.182	-0.420	-0.090	0.339
24	0.055	-0.156	--	0.425
25	0.018	-0.087	0.031	0.316
26	--	-0.024	0.012	0.095
27	--	-0.261	0.231	0.632

CHAPTER IV

COMPARISON OF RESULTS

4.1 Introduction

Comparison of results obtained in the experimental and analytical phases are described in the following paragraphs. Chapter II outlined two analytical solutions for both the undamaged and damaged configurations. For practical purposes these solutions are identical in the frequency ranges investigated and all comparisons will be made with reference to the 82 degree-of-freedom solution.

4.2 Natural Frequencies

The natural frequencies obtained in this study for the undamaged and damaged wing are shown in Table IV. A general characteristic of the finite element method of analysis is that the structure stiffness is overestimated. Therefore, an upper bound on the natural frequencies is expected from the analysis and the fundamental frequency can usually be calculated with greater accuracy than the higher frequencies. Excellent agreement was obtained for all frequencies, but the correlation between measured and calculated frequencies for the higher modes are better than those for the fundamental frequencies and the second and third natural frequencies are not upper bounds because they are slightly lower than the experimentally obtained values. Since the results from Reference (2) indicate that the rod/shear panel analytical

TABLE IV

NATURAL FREQUENCIES

Mode No.	Frequencies (Hertz)			
	Undamaged		Damaged	
	Experimental	Analytical	Experimental	Analytical
1	6.5	7.0	5.9	6.3
2	23.8	23.3	22.7	22.5
3	35.7	33.1	34.5	32.1
4	54.0	55.1	52.6	53.2

models of semi-monocoque structures are adequate for developing the structure stiffness matrix, it was concluded that potential sources of these discrepancies at the higher frequencies were:

1. Inadequate mass data for accurate description of the wing in the analysis; and

2. Uncertainty of the influence of the Guyan Reduction on the higher natural frequencies.

4.3 Mode Shapes

Profiles of the two spars and the centerline between the spars are provided in Figures 28 and 35 for each frequency and wing configuration investigated. Again, excellent agreement was obtained between measured and calculated results.

One discrepancy is apparent in the third and fourth mode shapes in the area described in Figure 10. The node (accelerometer station 12, Figure 19) in the center of this area has undergone relatively large displacements and the influence of this displacement can be seen on the rear spar (accelerometer stations 3 and 4, Figure 19). As noted in section 3.3.4 the analytical model was inadequate in describing the resistance to loads perpendicular to the midplane of the wing across this area unless additional constraints were imposed. The imposed constraints used to provide stiffness perpendicular to the midplane of the wing assumed that the displacements of these modes could be described in terms of the surrounding node points. In the first and second modes this assumption appears to be very realistic, but for the third and fourth modes it is apparent that the constraints have overestimated the stiffness.

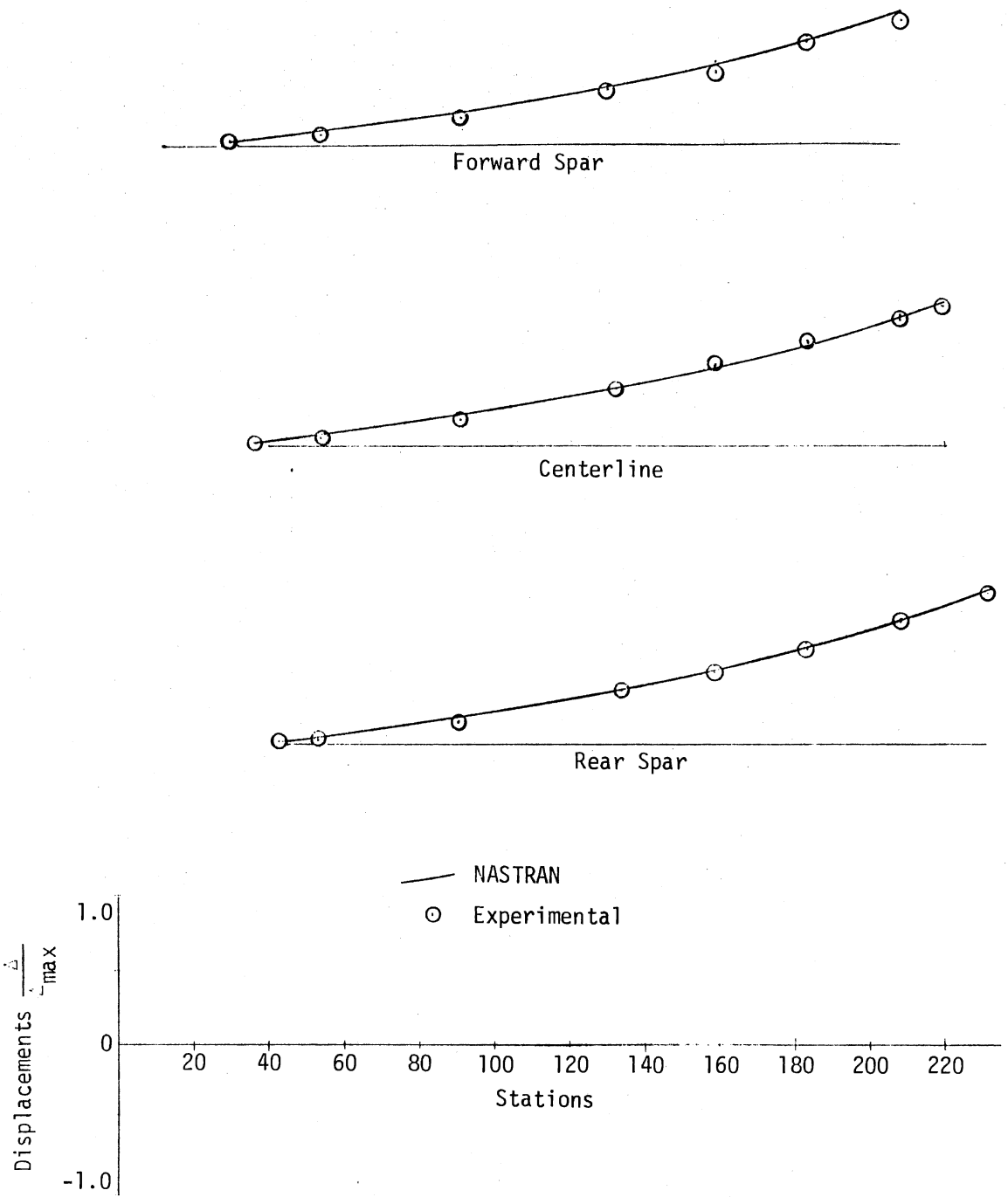


Figure 28. Normalized Displacements for First Mode (Undamaged Wing)

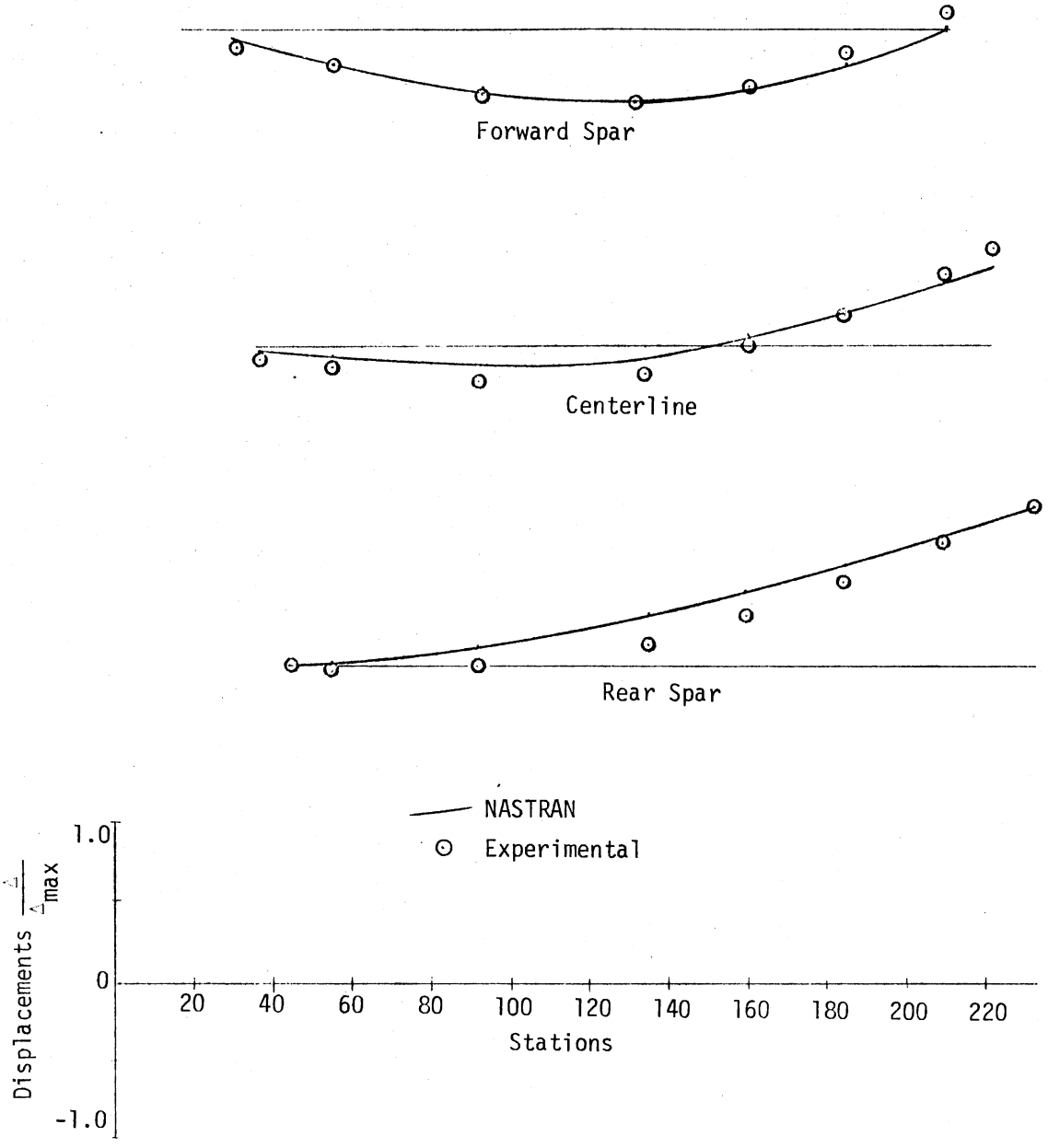


Figure 29. Normalized Displacements for Second Mode (Undamaged Wing)

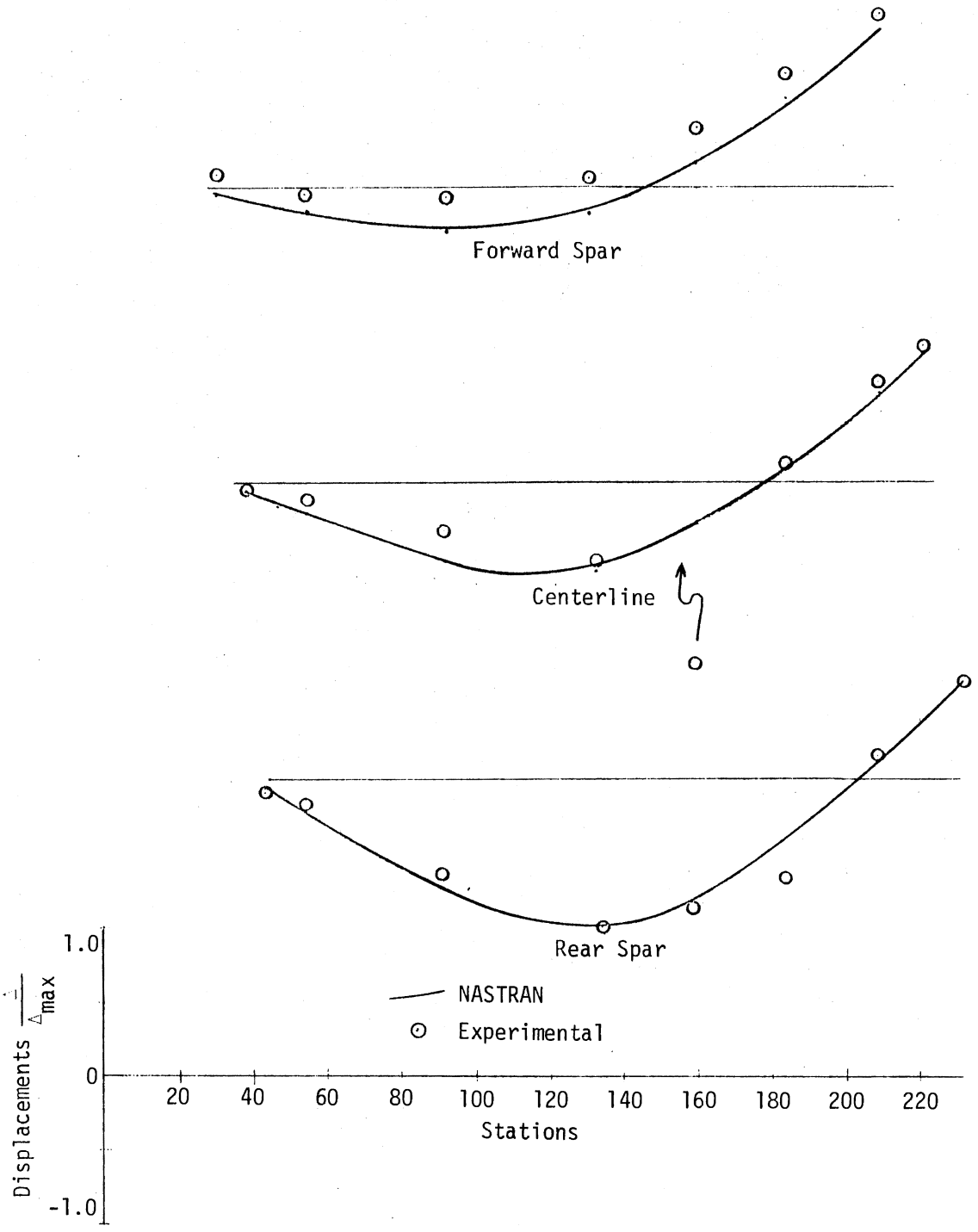


Figure 30. Normalized Displacements for Third Mode (Undamaged Wing)

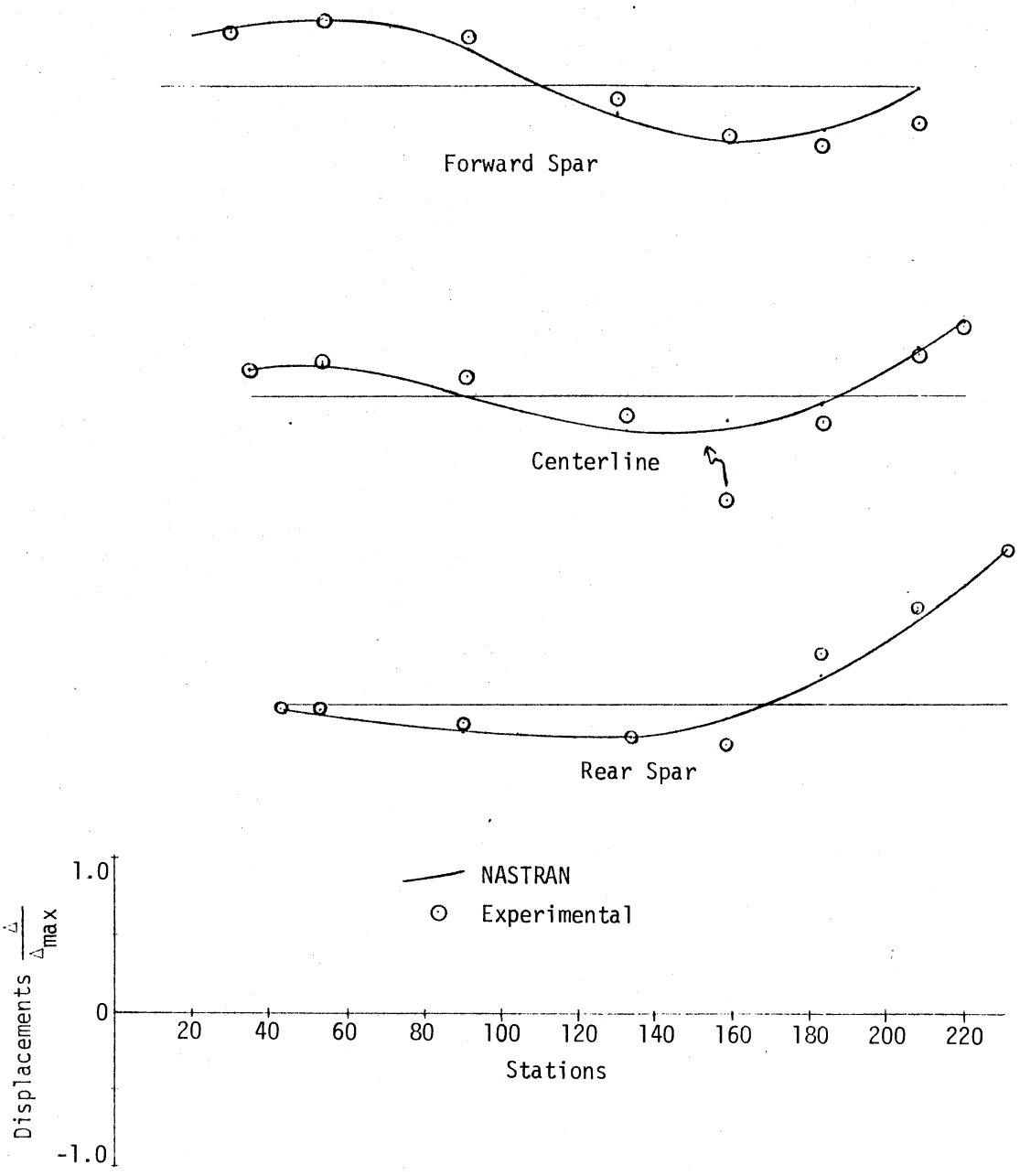


Figure 31. Normalized Displacements for Fourth Mode (Undamaged Wing)

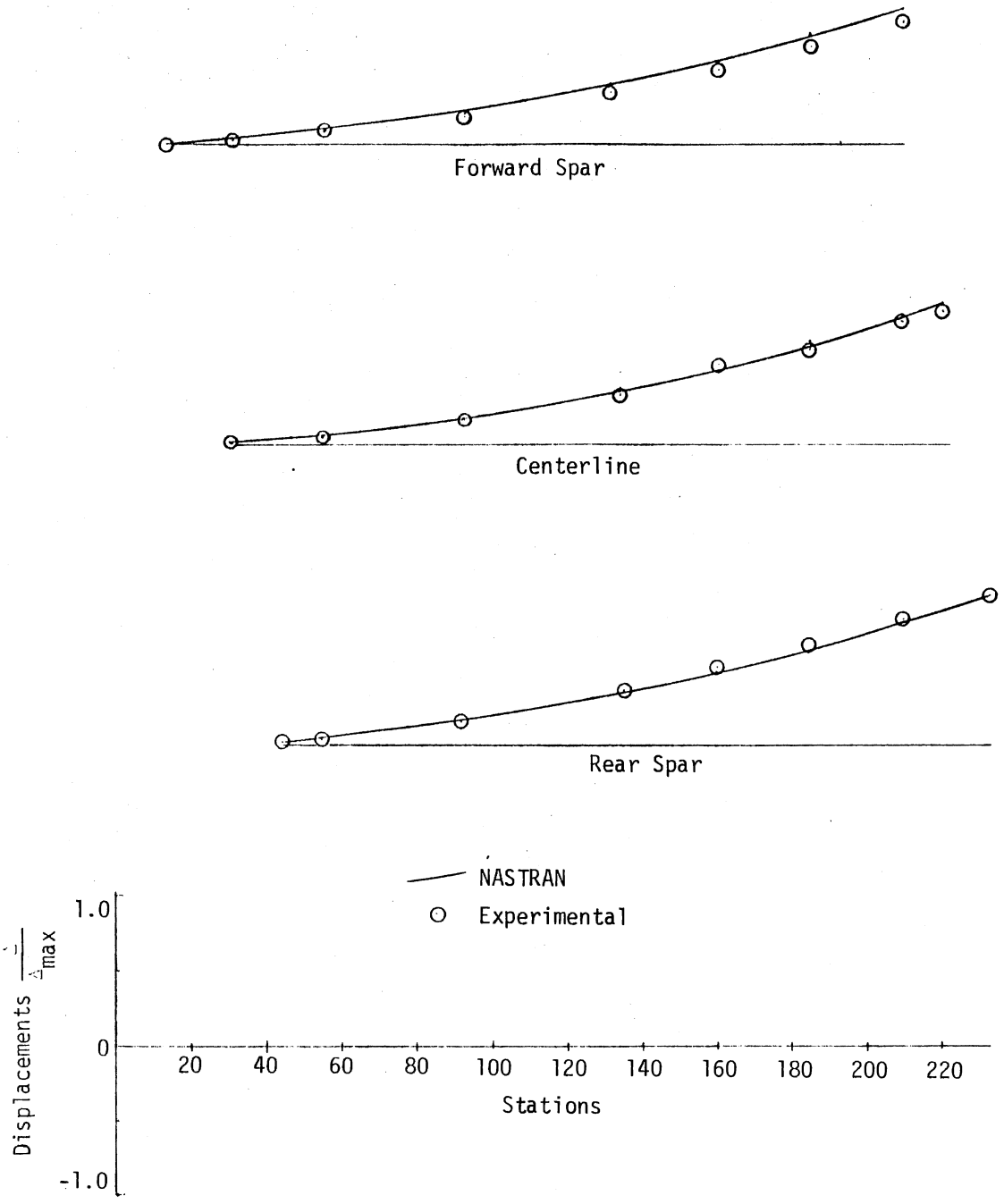


Figure 32. Normalized Displacements for First Mode (Damaged Wing)

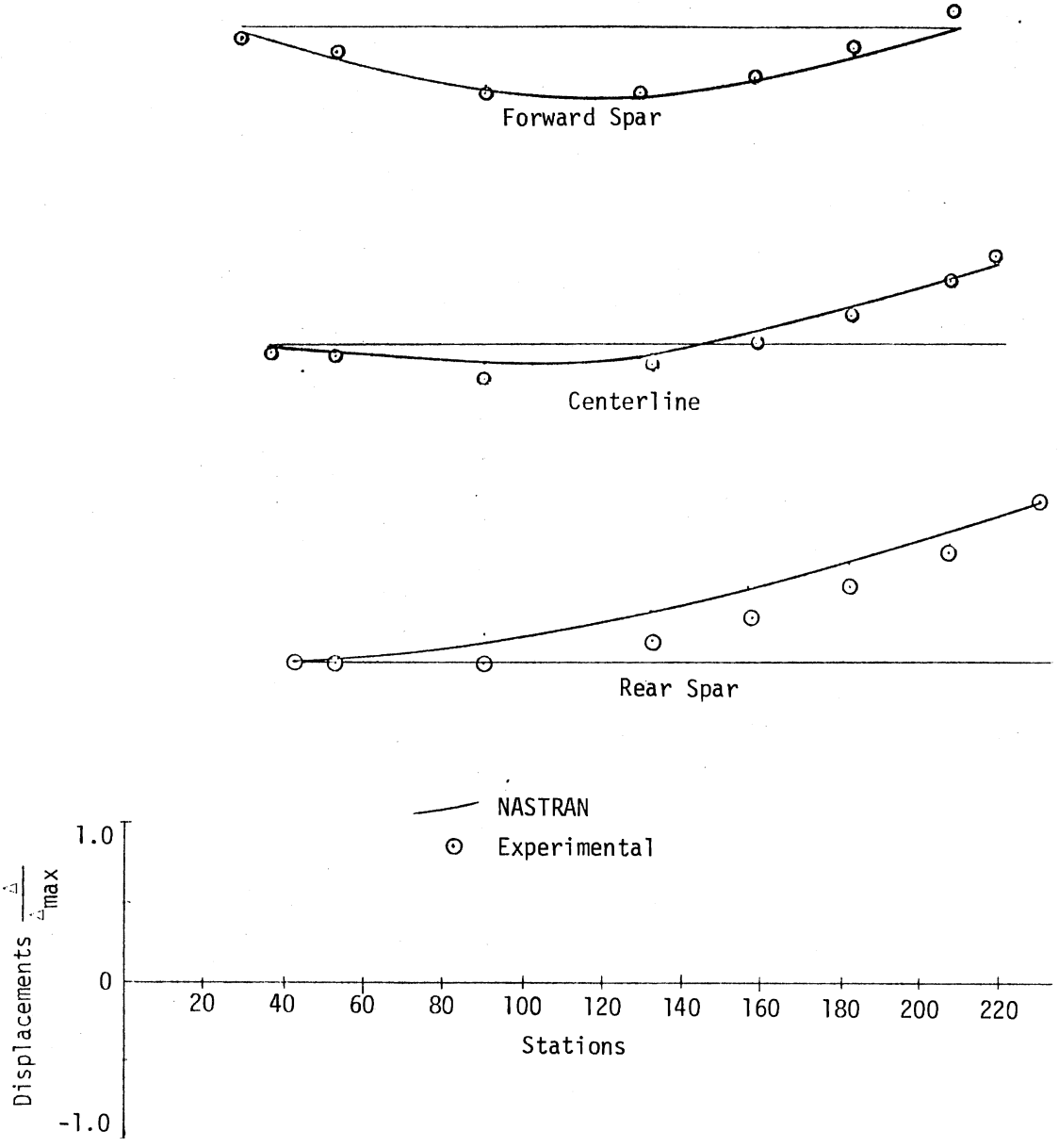


Figure 33. Normalized Displacements for Second Mode (Damaged Wing)

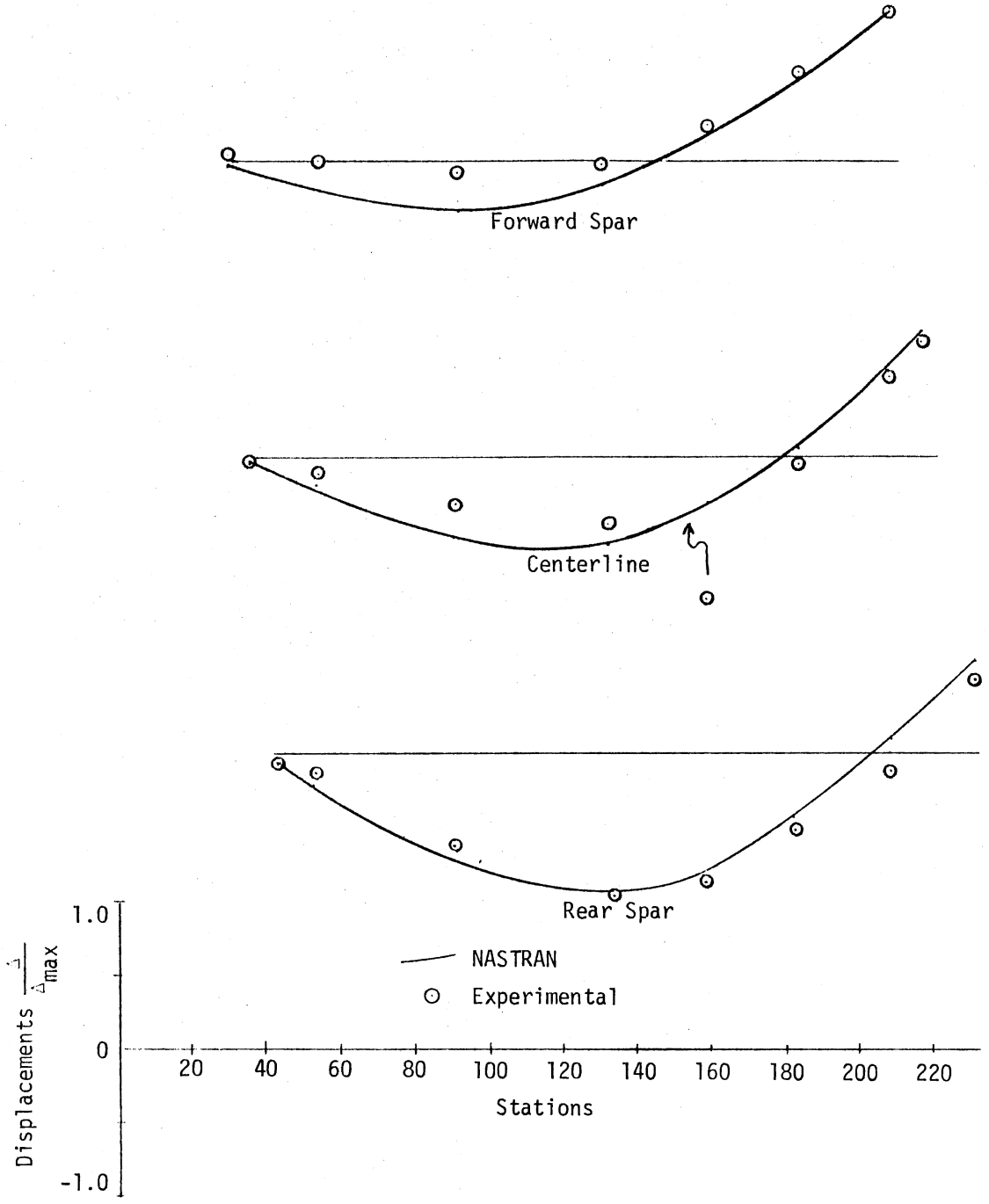


Figure 34. Normalized Displacements for Third Mode (Damaged Wing)

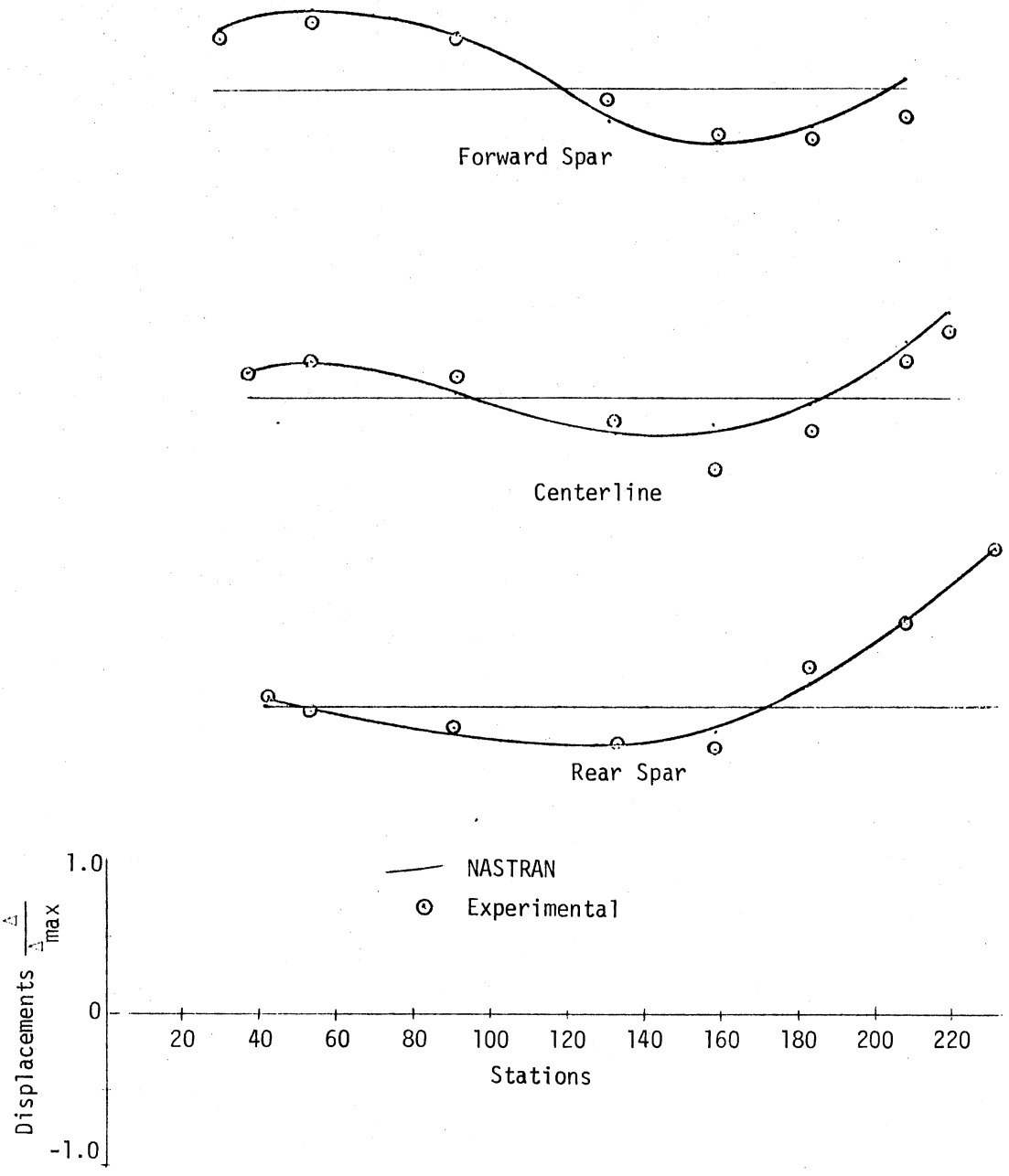


Figure 35. Normalized Displacements for Fourth Mode (Damaged Wing)

CHAPTER V

SUMMARY AND CONCLUSIONS

The relatively simple rod/shear-panel and lumped mass models of the highly-complex wing structure have provided extremely good comparison between measured and calculated natural frequencies and mode shapes. Both measured and calculated mode shapes indicated that for the first four frequencies these mode shapes are controlled by bending of the spars only or bending of both spars and ribs. Consequently, any deficiencies of the shear panels in approximating the behavior of the skin surface as noted in Reference (2) have had little influence. The lumped mass concept has adequately described the inertia properties of the structural components and the majority of parasitic material in the wing, and it is doubtful that a more elaborate mass distribution would ever be justified for a rod/shear-panel model. However, it may be necessary to use more elaborate mass idealizations for large nonstructural components (e.g., landing gear assembly) when the component mass contributes a considerable percentage of the total mass.

Problem size was effectively reduced without loss in accuracy by addition of multipoint constraints and Guyan Reduction. Both of these techniques are easily applied to rod/shear-panel models with lumped mass. With other finite element models (e.g., membrane and beam elements) and/or mass distributions the techniques are still justified,

but the selection of the displacement solution set may be extremely difficult.

In view of the agreement between experimental and analytical results described in this study, the rod/shear-panel idealization for semi-monocoque wing structures is adequate for determining natural frequencies and mode shapes. Modeling techniques used in the analytical phase to reduce problem size are efficient, accurate, and can be incorporated into any finite element dynamic analysis.

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APPENDIX A

UNDAMAGED WING: 82 DEGREES OF FREEDOM SOLUTION

```
$     ********************************************************************
$     *                        BULK DATA DECK FOR                        *
$     *                F 84 WING PROJECT - UNDAMAGED WING                *
$     *                  CONDENSED MASS MATRIX - 82 X 82                 *
$     ********************************************************************
$
$
$     ********************************************************************
$     *                     GRID POINTS - TOP OF WING                    *
$     ********************************************************************
$
GRID     1              232.9    -30.4    2.5
GRID     3              229.     -25.33   2.9
GRID     5              225.     -20.27   3.2
GRID     7              221.     -15.2    3.5
GRID     9              217.     -10.13   3.55
GRID     11             213.     -5.07    3.45
GRID     13             209.     -32.5    2.65
GRID     15             209.     -27.08   3.05
GRID     17             209.     -21.67   3.3
GRID     19             209.     -16.25   3.55
GRID     21             209.     -10.83   3.55
GRID     23             209.     -5.47    3.5
GRID     25             209.     0.0      3.25
GRID     27             203.9    6.4      2.6
GRID     29             199.9    11.7     1.85
GRID     31             196.8    15.6     .5
GRID     33             184.1    -34.7    2.85
GRID     35             184.1    -28.92   3.25
GRID     37             184.1    -23.13   3.65
GRID     39             184.1    -17.35   3.9
GRID     41             184.1    -11.57   3.8
GRID     43             184.1    -5.78    3.65
GRID     45             184.1    0.0      3.5
GRID     47             184.1    6.7      2.65
GRID     49             184.1    12.1     1.9
GRID     51             184.1    16.0     .5
GRID     53             159.1    -36.85   3.05
GRID     55             159.1    -30.71   3.45
GRID     57             159.1    -24.67   3.85
GRID     59             159.1    -18.425  4.1
GRID     61             159.1    -12.28   4.05
GRID     63             159.1    -6.14    3.9
GRID     65             159.1    0.0      3.7
GRID     67             159.1    7.0      2.8
GRID     69             159.1    12.7     2.
GRID     71             159.1    17.1     .5
GRID     73             134.4    -39.     3.3
GRID     75             133.32   -32.5    3.7
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GRID     81             132.07   -13.     4.35
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GRID     101            91.8     -28.47   4.35
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GRID     121            91.8     20.      .5
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GRID     125            54.      -38.58   4.35
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GRID     137            54.      -15.43   5.1
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GRID     143            54.      0.0      4.7
GRID     145            54.      8.5      3.55
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GRID     153            41.43    -39.33   4.5
GRID     155            39.07    -31.47   4.95
GRID     157            36.7     -23.6    5.25
GRID     159            34.33    -15.73   5.35
GRID     161            31.97    -7.87    5.1
GRID     163            29.6     0.0      5.
GRID     165            27.3     7.7      4.
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GRID     183            12.7     -14.6    5.45
GRID     185            .5       -.5      5.
GRID     187            -10.     11.5     3.6
GRID     189            -21.5    24.6     .5
GRID     191            32.7     -50.1    3.95
GRID     193            3.3      -22.1    5.
$
$     ********************************************************************
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GRID     6              225.     -20.27   -3.2
```

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GRID     16             209.    -27.08  -3.05
GRID     18             209.    -21.67  -3.3
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GRID     40             184.1   -17.35  -3.9
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GRID     52             184.1   16.0    -.5
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GRID     56             159.1   -30.71  -3.45
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GRID     186            .5      -.5     -5.
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GRID     190            -21.5   24.6    -.5
GRID     192            32.7    -56.1   -3.95
GRID     194            3.8     -21.7   -5.
$
$      ********************************************************************
$      *                  SHEAR PANELS - TOP OF WING                      *
$      ********************************************************************
$
CSHEAR   1      1       1       3       15      13
CSHEAR   3      1       3       5       17      15
CSHEAR   5      1       5       7       19      17
CSHEAR   7      1       7       9       21      19
CSHEAR   9      1       9       11      23      21
CSHEAR   11     1       13      15      35      33
CSHEAR   13     1       15      17      37      35
CSHEAR   15     1       17      19      39      37
CSHEAR   17     1       19      21      41      39
CSHEAR   19     1       21      23      43      41
CSHEAR   21     1       23      25      45      43
CSHEAR   23     1       25      27      47      45
CSHEAR   25     1       27      29      49      47
CSHEAR   27     1       29      31      51      49
CSHEAR   29     1       33      35      55      53
CSHEAR   31     1       35      37      57      55
CSHEAR   33     1       37      39      59      57
```

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CSHEAR  37      1       41      43      63      61
CSHEAR  39      1       43      45      65      63
CSHEAR  41      1       45      47      67      65
CSHEAR  43      1       47      49      69      67
CSHEAR  45      1       49      51      71      69
CSHEAR  47      1       53      55      75      73
CSHEAR  49      1       55      57      77      75
CSHEAR  51      1       57      59      79      77
CSHEAR  53      1       59      61      81      79
CSHEAR  55      1       61      63      83      81
CSHEAR  57      1       63      65      85      83
CSHEAR  59      1       65      67      87      85
CSHEAR  61      1       67      69      89      87
CSHEAR  63      1       69      71      91      89
CSHEAR  65      2       73      75      97      95
CSHEAR  67      2       75      77      101     97
CSHEAR  69      2       77      79      93      101
CSHEAR  71      2       93      81      109     105
CSHEAR  73      2       81      83      113     109
CSHEAR  75      2       83      85      115     113
CSHEAR  77      2       85      87      117     115
CSHEAR  79      2       87      89      119     117
CSHEAR  81      2       89      91      121     119
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CSHEAR  97      2       109     113     141     137
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CSHEAR  103     2       115     117     145     143
CSHEAR  105     2       117     119     147     145
CSHEAR  107     2       119     121     149     147
CSHEAR  109     2       123     125     153     151
CSHEAR  111     2       125     129     155     153
CSHEAR  113     2       129     133     157     155
CSHEAR  115     2       133     137     159     157
CSHEAR  117     2       137     141     161     159
CSHEAR  119     2       141     143     163     161
CSHEAR  121     4       143     145     165     163
CSHEAR  123     4       145     147     167     165
CSHEAR  125     4       147     149     169     167
CSHEAR  127     2       151     153     173     171
CSHEAR  129     2       153     155     175     173
CSHEAR  131     2       155     157     177     175
CSHEAR  133     2       157     159     179     177
CSHEAR  135     2       159     161     131     179
CSHEAR  137     2       161     163     183     181
CSHEAR  139     4       163     165     185     183
CSHEAR  141     4       165     167     187     185
CSHEAR  143     4       167     169     189     187
$
$       ********************************************************************
$       *                  SHEAR PANELS - BOTTOM OF WING                   *
```

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$       ********************************************************************
$
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CSHEAR  4       1       4       6       18      16
CSHEAR  6       1       6       8       20      18
CSHEAR  8       1       8       10      22      20
CSHEAR  10      1       10      12      24      22
CSHEAR  12      1       14      16      36      34
CSHEAR  14      1       16      18      38      36
CSHEAR  16      1       18      20      40      38
CSHEAR  18      1       20      22      42      40
CSHEAR  20      1       22      24      44      42
CSHEAR  22      1       24      26      46      44
CSHEAR  24      1       26      28      48      46
CSHEAR  26      1       28      30      50      48
CSHEAR  28      1       30      32      52      50
CSHEAR  30      1       34      36      56      54
CSHEAR  32      1       36      38      58      56
CSHEAR  34      1       38      40      60      58
CSHEAR  36      1       40      42      62      60
CSHEAR  38      1       42      44      64      62
CSHEAR  40      1       44      46      66      64
CSHEAR  42      1       46      48      68      66
CSHEAR  44      1       48      50      70      68
CSHEAR  46      1       50      52      72      70
CSHEAR  48      1       54      56      76      74
CSHEAR  50      1       56      58      78      76
CSHEAR  52      1       58      60      80      78
CSHEAR  54      1       60      62      82      80
CSHEAR  56      1       62      64      84      82
CSHEAR  58      1       64      66      86      84
CSHEAR  60      1       66      68      88      86
CSHEAR  62      1       68      70      90      88
CSHEAR  64      1       70      72      92      90
CSHEAR  66      1       74      76      98      96
CSHEAR  68      1       76      78      102     98
CSHEAR  70      1       78      80      94      102
CSHEAR  78      2       86      88      118     116
CSHEAR  80      2       88      90      120     118
CSHEAR  82      2       90      92      122     120
CSHEAR  102     2       114     116     144     142
CSHEAR  104     2       116     118     146     144
CSHEAR  106     2       118     120     148     146
CSHEAR  108     2       120     122     150     148
CSHEAR  110     4       124     126     154     152
CSHEAR  112     4       126     130     156     154
CSHEAR  114     4       130     134     158     156
CSHEAR  116     4       134     136     160     158
CSHEAR  118     4       138     142     162     160
CSHEAR  120     4       142     144     164     162
CSHEAR  122     4       144     146     166     164
CSHEAR  124     4       146     148     168     166
CSHEAR  126     4       148     150     170     168
CSHEAR  128     4       152     154     174     172
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CSHEAR  130     4       154     156     176     174
CSHEAR  132     4       156     158     178     176
CSHEAR  134     4       158     160     180     178
CSHEAR  136     4       160     162     182     180
CSHEAR  138     4       162     164     184     182
CSHEAR  140     4       164     166     186     184
CSHEAR  142     4       166     168     188     186
CSHEAR  144     4       168     170     190     188
$
$       ********************************************************************
$       *                    VERTICAL SHEAR PANELS                         *
$       ********************************************************************
$
CSHEAR  151     5       1       2       4       3
CSHEAR  152     5       3       4       6       5
CSHEAR  153     5       5       6       8       7
CSHEAR  154     5       7       8       10      9
CSHEAR  155     5       9       10      12      11
CSHEAR  156     5       11      12      26      25
CSHEAR  157     6       13      14      16      15
CSHEAR  158     6       15      16      18      17
CSHEAR  159     6       17      18      20      19
CSHEAR  160     6       19      20      22      21
CSHEAR  161     6       21      22      24      23
CSHEAR  162     6       23      24      26      25
CSHEAR  163     16      25      26      28      27
CSHEAR  164     16      27      28      30      29
CSHEAR  165     16      29      30      32      31
CSHEAR  166     7       33      34      36      35
CSHEAR  167     7       35      36      38      37
CSHEAR  168     7       37      38      40      39
CSHEAR  169     7       39      40      42      41
CSHEAR  170     7       41      42      44      43
CSHEAR  171     7       43      44      46      45
CSHEAR  172     16      45      46      48      47
CSHEAR  173     16      47      48      50      49
CSHEAR  174     16      49      50      52      51
CSHEAR  175     16      63      64      66      65
CSHEAR  176     16      65      66      68      67
CSHEAR  177     16      67      68      70      69
CSHEAR  178     16      69      70      72      71
CSHEAR  179     8       73      74      76      75
CSHEAR  180     8       75      76      78      77
CSHEAR  181     8       77      78      80      79
CSHEAR  182     8       79      80      82      81
CSHEAR  183     8       81      82      84      83
CSHEAR  184     8       83      84      86      85
CSHEAR  185     17      85      86      88      87
CSHEAR  186     17      87      88      90      89
CSHEAR  187     17      89      90      92      91
CSHEAR  188     9       95      96      98      97
CSHEAR  189     9       97      98      102     101
CSHEAR  191     10      101     102     106     105
CSHEAR  193     10      105     106     110     109
```

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00000000011111111112222222222333333333344444444445555555555666666666677777777778
12345678901234567890123456789012345678901234567890123456789012345678901234567890
CSHEAR  195     9       109     110     114     113
CSHEAR  197     9       113     114     116     115
CSHEAR  198     17      115     116     118     117
CSHEAR  199     17      117     118     120     119
CSHEAR  200     17      119     120     122     121
CSHEAR  201     11      123     124     126     125
CSHEAR  202     11      125     126     130     129
CSHEAR  204     11      129     130     134     133
CSHEAR  206     11      133     134     138     137
CSHEAR  208     11      137     138     142     141
CSHEAR  210     11      141     142     144     143
CSHEAR  211     17      143     144     146     145
CSHEAR  212     17      145     146     148     147
CSHEAR  213     17      147     148     150     149
CSHEAR  214     12      151     152     154     153
CSHEAR  215     12      153     154     156     155
CSHEAR  216     12      155     156     158     157
CSHEAR  217     12      157     158     160     159
CSHEAR  218     12      159     160     162     161
CSHEAR  219     12      161     162     164     163
CSHEAR  220     18      163     164     166     165
CSHEAR  221     18      165     166     168     167
CSHEAR  222     18      167     168     170     169
CSHEAR  223     13      171     172     174     173
CSHEAR  224     13      173     174     176     175
CSHEAR  225     13      175     176     178     177
CSHEAR  226     13      177     178     180     179
CSHEAR  227     13      179     180     182     181
CSHEAR  228     13      181     182     184     183
CSHEAR  229     19      183     184     186     185
CSHEAR  230     19      185     186     188     187
CSHEAR  231     19      187     188     190     189
CSHEAR  232     22      1       2       14      13
CSHEAR  233     22      13      14      34      33
CSHEAR  234     22      53      33      54      54
CSHEAR  235     22      73      53      54      74
CSHEAR  236     23      95      73      74      96
CSHEAR  237     25      123     95      96      124
CSHEAR  238     28      151     123     124     152
CSHEAR  239     28      171     151     152     172
CSHEAR  240     30      191     171     172     192
CSHEAR  241     14      93      81      82      94
CSHEAR  242     14      101     93      94      102
CSHEAR  243     15      141     113     114     142
CSHEAR  244     20      45      25      26      46
CSHEAR  245     21      65      45      46      66
CSHEAR  246     21      85      65      66      86
CSHEAR  247     24      115     85      86      116
CSHEAR  248     26      143     115     116     144
CSHEAR  249     27      163     143     144     164
CSHEAR  250     29      183     163     164     184
CSHEAR  251     31      193     183     184     194
CSHEAR  252     1       51      31      32      52
CSHEAR  253     1       71      51      52      72
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00000000011111111112222222222333333333344444444445555555555666666666677777777778
12345678901234567890123456789012345678901234567890123456789012345678901234567890

CSHEAR  254     1       91      71      72      92
CSHEAR  255     2       121     91      92      122
CSHEAR  256     2       149     121     122     150
CSHEAR  257     4       169     149     150     170
CSHEAR  258     4       189     169     170     190
$
$       ********************************************************************
$       *                  PROPERTY CARDS FOR SHEAR PANELS                 *
$       ********************************************************************
$
PSHEAR  1       1       .064            2       1       .081
PSHEAR  3       1       .128            4       1       .081
PSHEAR  5       1       .066            6       1       .05
PSHEAR  7       1       .14             8       1       .212
PSHEAR  9       1       .15             10      1       .411
PSHEAR  11      1       .204            12      1       .263
PSHEAR  13      1       .097            14      1       .182
PSHEAR  15      1       .1              16      1       .095
PSHEAR  17      1       .19             18      1       .3
PSHEAR  19      1       .065            20      1       .329
PSHEAR  21      1       .406            22      1       .141
PSHEAR  23      1       .219            24      1       .30
PSHEAR  25      1       .2              26      1       .246
PSHEAR  27      1       .371            28      1       .4
PSHEAR  29      1       .32             30      1       .5
PSHEAR  31      1       .15
$
$       ********************************************************************
$       *                        HORIZONTAL RODS                           *
$       ********************************************************************
$
CROD    301     39      1       3       302     39      2       4
CROD    303     40      3       5       304     40      4       6
CROD    305     41      5       7       306     41      6       8
CROD    307     42      7       9       308     42      8       10
CROD    309     42      9       11      310     42      10      12
CROD    311     41      11      25      312     41      12      26
CROD    313     34      13      1       314     33      14      2
CROD    315     19      15      3       716     8       16      4
CROD    317     19      17      5       718     8       18      6
CROD    319     19      19      7       720     8       20      8
CROD    321     19      21      9       722     8       22      10
CROD    323     19      23      11      724     8       24      12
CROD    325     64      13      15      326     53      14      16
CROD    327     65      15      17      328     54      16      18
CROD    329     65      17      19      330     54      18      20
CROD    331     66      19      21      332     55      20      22
CROD    333     66      21      23      334     55      22      24
CROD    335     65      23      25      336     54      24      26
CROD    337     40      25      27      338     40      26      28
CROD    339     39      27      29      340     39      28      30
CROD    341     38      29      31      342     38      30      32
CROD    343     36      33      13      344     35      34      14
CROD    345     21      35      15      346     10      36      16
```

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00000000011111111112222222222333333333344444444445555555555666666666677777777778
12345678901234567890123456789012345678901234567890123456789012345678901234567890

CROD    347     21      37      17      348     10      38      18
CROD    349     21      39      19      350     10      40      20
CROD    351     21      41      21      352     10      42      22
CROD    353     21      43      23      354     10      44      24
CROD    355     25      45      25      356     28      46      26
CROD    357     13      47      27      358     17      48      28
CROD    359     13      49      29      360     17      50      30
CROD    363     73      33      35      364     49      34      36
CROD    365     75      35      37      366     52      36      38
CROD    367     77      37      39      368     56      38      40
CROD    369     77      39      41      370     58      40      42
CROD    371     76      41      43      372     56      42      44
CROD    373     76      43      45      374     56      44      46
CROD    375     62      45      47      376     62      46      48
CROD    377     62      47      49      378     62      48      50
CROD    379     61      49      51      380     61      50      52
CROD    381     40      53      33      382     38      54      34
CROD    383     22      55      35      384     11      56      36
CROD    385     22      57      37      386     11      58      38
CROD    387     22      59      39      388     11      60      40
CROD    389     22      61      41      390     11      62      42
CROD    391     22      63      43      392     11      64      44
CROD    393     26      65      45      394     30      66      46
CROD    395     14      67      47      396     18      68      48
CROD    397     14      69      49      398     18      70      50
CROD    413     68      65      67      414     68      66      68
CROD    415     68      67      69      416     68      68      70
CROD    417     67      69      71      418     67      70      72
CROD    419     43      73      53      420     42      74      54
CROD    421     24      75      55      422     12      76      56
CROD    423     24      77      57      424     12      78      58
CROD    425     24      79      59      426     12      80      60
CROD    427     24      81      61      428     12      82      62
CROD    429     24      83      63      430     12      84      64
CROD    431     29      85      65      432     31      86      66
CROD    433     16      87      67      434     19      88      68
CROD    435     16      89      69      436     19      90      70
CROD    439     108     73      75      440     102     74      76
CROD    441     109     75      77      442     105     76      78
CROD    443     111     77      79      444     106     78      80
CROD    445     112     79      81      446     107     80      82
CROD    447     111     81      83      448     80      82      84
CROD    449     110     83      85      450     59      84      86
CROD    451     88      85      87      452     88      86      88
CROD    453     88      87      89      454     88      88      90
CROD    455     87      89      91      456     87      90      92
CROD    457     56      95      73      458     78      96      74
CROD    459     32      97      75      460     15      98      76
CROD    461     32      101     77      462     15      102     78
CROD    463     44      101     93      464     37      102     94
CROD    465     32      93      79      466     15      94      80
CROD    467     32      105     93
CROD    469     44      93      81      470     37      94      82
CROD    471     32      109     81
```

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00000000011111111112222222223333333334444444445555555555666666666777777777 8
12345678901234567890123456789012345678901234567890123456789012345678901234567890
CROD    473      32      113     83
CROD    475      85      115     85      476     72      116     86
CROD    477      23      117     87      478     29      118     88
CROD    479      23      119     89      480     29      120     90
CROD    483      121     95      97      484     79      96      98
CROD    485      122     97      101     486     80      98      102
CROD    489      125     101     105     490     37      102     106
CROD    493      128     105     109     494     46      106     110
CROD    497      126     109     113     498     37      110     114
CROD    501      123     113     115     502     86      114     116
CROD    503      102     115     117     504     102     116     118
CROD    505      102     117     119     506     102     118     120
CROD    507      101     119     121     508     101     120     122
CROD    509      89      123     95      510     92      124     96
CROD    511      57      125     97
CROD    515      70      129     101
CROD    519      74      133     105
CROD    523      63      137     109
CROD    527      51      141     113     528     35      142     114
CROD    529      111     143     115     530     112     144     116
CROD    531      27      145     117     532     32      146     118
CROD    533      27      147     119     534     32      148     120
CROD    537      113     123     125     538     81      124     126
CROD    539      114     125     129     540     82      126     130
CROD    543      116     129     133     544     83      130     134
CROD    547      127     133     137     548     84      134     138
CROD    551      116     137     141     552     83      138     142
CROD    555      115     141     143     556     118     142     144
CROD    557      130     143     145     558     130     144     146
CROD    559      130     145     147     560     130     146     148
CROD    561      129     147     149     562     129     148     150
CROD    563      124     151     123     564     127     152     124
CROD    565      34      153     125     966     28      154     126
CROD    567      34      155     129     968     28      156     130
CROD    569      34      157     133     970     28      158     134
CROD    571      34      159     137     972     28      160     138
CROD    573      34      161     141     974     28      162     142
CROD    575      119     163     143     576     117     164     144
CROD    577      9       165     145     978     9       166     146
CROD    579      9       167     147     960     9       168     148
CROD    583      96      151     153     564     94      152     154
CROD    585      100     153     155     586     95      154     156
CROD    587      103     155     157     588     97      156     158
CROD    589      105     157     159     590     99      158     160
CROD    591      104     159     161     592     98      160     162
CROD    593      103     161     163     594     96      162     164
CROD    595      121     163     165     596     121     164     166
CROD    597      121     165     167     598     121     166     168
CROD    599      120     167     169     600     120     168     170
CROD    601      124     171     151     1002    127     172     152
CROD    603      37      173     153     1004    28      174     154
CROD    605      37      175     155     1006    28      176     156
CROD    607      37      177     157     1008    28      178     158
CROD    609      37      179     159     1010    28      180     160
```

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00000000011111111112222222223333333334444444445555555555666666666777777777 8
12345678901234567890123456789012345678901234567890123456789012345678901234567890
CROD    611      37      181     161     1012    28      182     162
CROD    613      135     183     163     1014    136     184     164
CROD    615      20      185     165     1016    20      186     166
CROD    617      20      187     167     1018    20      188     168
CROD    621      47      171     173     622     45      172     174
CROD    623      49      173     175     624     46      174     176
CROD    625      50      175     177     626     47      176     178
CROD    627      50      177     179     628     48      178     180
CROD    629      50      179     181     630     48      180     182
CROD    631      50      181     183     632     48      182     184
CROD    633      75      183     185     634     75      184     186
CROD    635      71      185     187     636     71      186     188
CROD    637      69      187     189     638     69      188     190
CROD    639      91      191     171     640     93      192     172
CROD    641      132     193     183     642     131     194     184
CROD    761      2       51      31      762     2       52      32
CROD    799      3       71      51      800     3       72      52
CROD    801      63      53      55      802     63      54      56
CROD    803      63      55      57      804     63      56      58
CROD    805      63      57      59      806     63      58      60
CROD    807      63      59      61      808     63      60      62
CROD    809      63      61      63      810     63      62      64
CROD    811      63      63      65      812     63      64      66
CROD    837      4       91      71      838     4       92      72
CROD    881      6       121     91      882     6       122     92
CROD    935      7       149     121     936     7       150     122
CROD    981      2       169     149     982     2       170     150
$
$       ********************************************************************
$       *                          VERTICAL RODS                           *
$       ********************************************************************
$
CROD    650      5       57      58
CROD    651      5       59      60
CROD    652      5       61      62
CROD    653      5       63      64
CROD    1101     1       1       2       1102    1       3       4
CROD    1103     1       5       6       1104    1       7       8
CROD    1105     1       9       10      1106    1       11      12
CROD    1107     1       13      14      1108    1       15      16
CROD    1109     1       17      18      1110    1       19      20
CROD    1111     1       21      22      1112    1       23      24
CROD    1113     1       25      26      1114    1       27      28
CROD    1115     1       29      30      1116    38      31      32
CROD    1117     1       33      34      1118    1       35      36
CROD    1019     7       189     169     1020    7       190     170
CROD    1119     1       37      38      1120    1       39      40
CROD    1121     1       41      42      1122    1       43      44
CROD    1123     1       45      46      1124    1       47      48
CROD    1125     1       49      50      1126    61      51      52
CROD    1127     1       53      54      1128    1       55      56
CROD    1129     1       65      66      1130    1       67      68
CROD    1131     1       69      70      1132    67      71      72
CROD    1133     1       73      74      1134    1       75      76
```

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00000000011111111112222222223333333334444444445555555556666666667777777778
12345678901234567890123456789012345678901234567890123456789012345678901234567890

CROD    1135    1       77      78      1136    1       79      80
CROD    1137    1       81      82      1138    1       83      84
CROD    1139    1       85      86      1140    1       87      88
CROD    1141    1       89      90      1142    1       91      92
CROD    1143    1       93      94      1144    1       95      96
CROD    1145    1       97      98
CROD    1147    1       101     102
CROD    1149    1       105     106
CROD    1151    1       109     110
CROD    1153    1       113     114     1154    1       115     116
CROD    1155    1       117     118     1156    1       119     120
CROD    1157    101     121     122     1158    1       123     124
CROD    1159    1       125     126
CROD    1161    1       129     130
CROD    1163    1       133     134
CROD    1165    1       137     138
CROD    1167    1       141     142     1168    1       143     144
CROD    1169    1       145     146     1170    1       147     148
CROD    1171    133     149     150     1172    1       151     152
CROD    1173    1       153     154     1174    1       155     156
CROD    1175    1       157     158     1176    1       159     160
CROD    1177    1       161     162     1178    1       163     164
CROD    1179    1       165     166     1180    1       167     168
CROD    1181    134     169     170     1182    1       171     172
CROD    1183    1       173     174     1184    1       175     176
CROD    1185    1       177     178     1186    1       179     180
CROD    1187    1       181     182     1188    1       183     184
CROD    1189    1       185     186     1190    1       187     188
CROD    1191    90      189     190
$
$       ************************************************************
$       *                PROPERTY CARDS FOR ROD MEMBERS            *
$       ************************************************************
$
PROD    1       2       .001
PROD    2       2       .15
PROD    3       2       .18
PROD    4       2       .19
PROD    5       2       .20
PROD    6       2       .26
PROD    7       2       .28
PROD    8       2       .33
PROD    9       2       .38
PROD    10      2       .52
PROD    11      2       .55
PROD    12      2       .57
PROD    13      2       .58
PROD    14      2       .61
PROD    15      2       .62
PROD    16      2       .63
PROD    17      2       .66
PROD    18      2       .69
PROD    19      2       .70
PROD    20      2       .71
```

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00000000011111111112222222223333333334444444445555555556666666667777777778
12345678901234567890123456789012345678901234567890123456789012345678901234567890

PROD    21      2       .72
PROD    22      2       .75
PROD    23      2       .76
PROD    24      2       .77
PROD    25      2       .79
PROD    26      2       .80
PROD    27      2       .81
PROD    28      2       .82
PROD    29      2       .83
PROD    30      2       .84
PROD    31      2       .85
PROD    32      2       .88
PROD    33      2       .93
PROD    34      2       .96
PROD    35      2       .97
PROD    36      2       1.00
PROD    37      2       1.02
PROD    38      2       1.03
PROD    39      2       1.04
PROD    40      2       1.05
PROD    41      2       1.06
PROD    42      2       1.07
PROD    43      2       1.09
PROD    44      2       1.18
PROD    45      2       1.29
PROD    46      2       1.30
PROD    47      2       1.31
PROD    48      2       1.32
PROD    49      2       1.33
PROD    50      2       1.34
PROD    51      2       1.36
PROD    52      2       1.37
PROD    53      2       1.39
PROD    54      2       1.40
PROD    55      2       1.41
PROD    56      2       1.49
PROD    57      2       1.50
PROD    58      2       1.59
PROD    59      2       1.65
PROD    60      2       1.67
PROD    61      2       1.68
PROD    62      2       1.69
PROD    63      2       1.70
PROD    64      2       1.73
PROD    65      2       1.74
PROD    66      2       1.75
PROD    67      2       1.78
PROD    68      2       1.79
PROD    69      2       1.82
PROD    70      2       1.84
PROD    71      2       1.86
PROD    72      2       1.88
PROD    73      2       1.89
PROD    74      2       1.91
```

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00000000011111111112222222223333333333444444444455555555556666666666777777777778
12345678901234567890123456789012345678901234567890123456789012345678901234567890
PROD     75       2       1.92
PROD     76       2       1.94
PROD     77       2       1.95
PROD     78       2       1.96
PROD     79       2       2.00
PROD     80       2       2.02
PROD     81       2       2.04
PROD     82       2       2.08
PROD     83       2       2.10
PROD     84       2       2.11
PROD     85       2       2.16
PROD     86       2       2.31
PROD     87       2       2.57
PROD     88       2       2.58
PROD     89       2       2.60
PROD     90       2       2.67
PROD     91       2       2.84
PROD     92       2       2.86
PROD     93       2       3.04
PROD     94       2       3.05
PROD     95       2       3.10
PROD     96       2       3.13
PROD     97       2       3.14
PROD     98       2       3.15
PROD     99       2       3.17
PROD     100      2       3.18
PROD     101      2       3.19
PROD     102      2       3.20
PROD     103      2       3.21
PROD     104      2       3.22
PROD     105      2       3.23
PROD     106      2       3.26
PROD     107      2       3.27
PROD     108      2       3.36
PROD     109      2       3.38
PROD     110      2       3.40
PROD     111      2       3.41
PROD     112      2       3.42
PROD     113      2       3.58
PROD     114      2       3.62
PROD     115      2       3.63
PROD     116      2       3.64
PROD     117      2       3.79
PROD     118      2       3.97
PROD     119      2       3.98
PROD     120      2       4.00
PROD     121      2       4.02
PROD     122      2       4.04
PROD     123      2       4.05
PROD     124      2       4.10
PROD     125      2       4.22
PROD     126      2       4.23
PROD     127      2       4.35
PROD     128      2       4.37
```

```
00000000011111111112222222223333333333444444444455555555556666666666777777777778
12345678901234567890123456789012345678901234567890123456789012345678901234567890
PROD     129      2       4.42
PROD     130      2       4.43
PROD     131      2       4.64
PROD     132      2       5.02
PROD     133      2       5.40
PROD     134      2       5.80
PROD     135      2       6.23
PROD     136      2       7.01
$
$       ******************************************************************
$       *                    SINGLE POINT CONSTRAINTS                    *
$       ******************************************************************
$
SPC      1       191     1               192     1
SPC      1       193     1               194     1
SPC      1       191     2               192     2
SPC      1       193     2               194     2
SPC      1       191     3               192     3
SPC      1       193     3               194     3
$
$       ******************************************************************
$       *                    MULTIPOINT CONSTRAINTS                      *
$       ******************************************************************
$
MPC      3       164     1       .34     184     1       -1.0
MPC      3       164     2       .33     184     2       -1.0
MPC      3       163     1       .36     183     1       -1.0
MPC      3       163     2       .34     183     2       -1.0
MPC      3       152     1       .76     172     1       -1.0
MPC      3       151     1       .76     171     1       -1.0
MPC      3       152     2       .8      172     2       -1.0
MPC      3       151     2       .8      171     2       -1.0
MPC      3       96      2       -1.0    74      2       .53             +CF
+CF              152     2       .47
MPC      3       124     2       -1.0    74      2       .11             +JW
+JW              152     2       .89
MPC      3       84      1       .48     142     1       .52             +AA
+AA              114     1       -1.
MPC      3       78      1       .48     130     1       .52             +BB
+BB              102     1       -1.0
MPC      3       76      1       .48     126     1       .52             +CC
+CC              98      1       -1.0
MPC      3       82      1       .48     138     1       .52             +Q
+Q               110     1       -1.0
MPC      3       94      1       .66     134     1       .34             +R
+R               106     1       -1.0
$
$       ******************************************************************
$       *                       ELASTIC SPRINGS                          *
$       ******************************************************************
$
CELAS2   9490    7.633+3 102     1       106     1
CELAS2   9494    1.1+4   106     1       110     1
CELAS2   9498    7.633+3 110     1       114     1
```

```
$
$      ********************************************************************
$      *                        TRIANGULAR MEMBERS                        *
$      ********************************************************************
$
CTRMEM  275     1       23      11      25
CTRMEM  276     1       24      12      26
CTRMEM  277     2       93      79      81
CTRMEM  278     2       94      80      82
CTRMEM  279     2       101     83      105
PTRMEM  1       1       .064            2       1       .081
$
$      ********************************************************************
$      *                          MATERIAL CARDS                          *
$      ********************************************************************
$
MAT1    1       10.3+6  3.9+6
MAT1    2       10.3+6  3.9+6
$
$      ********************************************************************
$      *                       MISCELLANEOUS CARDS                        *
$      ********************************************************************
$
GRDSET                                                  456
PARAM   IRES    1
PARAM   GRDPNT  0
CIGR    30      GIV     1.      1000.   82      4                       +TJ
+TJ     MAX
$
$      ********************************************************************
$      *                     LANDING GEAR GRID POINTS                     *
$      ********************************************************************
$
GRID    107             72.4    -22.25  0.0
GRID    103             99.79   -17.64  0.0
$
$      ********************************************************************
$      *                     LANDING GEAR MASS MATRIX                     *
$      ********************************************************************
$
DMIG    MASS    0       1       1       2
DMIG    MASS    107     1               107     1       .7              +M1
+M1     103     1       -.175
DMIG    MASS    107     2               107     2       .7              +M2
+M2     103     2       -.175
DMIG    MASS    107     3               107     3       .7              +M3
+M3     103     3       -.175
DMIG    MASS    103     1               107     1       -.175           +M4
+M4     103     1       .7
DMIG    MASS    103     2               107     2       -.175           +M5
+M5     103     2       .7
DMIG    MASS    103     3               107     3       -.175           +M6
+M6     103     3       .7
$
```

```
$      ********************************************************************
$      *                          LUMPED MASS                             *
$      ********************************************************************
$
CONM2       2001        1       0.000170
CONM2       2002        3       0.007589
CONM2       2003        5       0.006615
CONM2       2004        7       0.035604
CONM2       2005        9       0.004534
CONM2       2006       11       0.003397
CONM2       2007       13       0.015508
CONM2       2008       15       0.013902
CONM2       2009       17       0.012658
CONM2       2010       19       0.011802
CONM2       2011       21       0.010691
CONM2       2012       23       0.009566
CONM2       2013       25       0.013329
CONM2       2014       27       0.007175
CONM2       2015       29       0.004650
CONM2       2016       31       0.001104
CONM2       2017       33       0.017372
CONM2       2018       35       0.017588
CONM2       2019       37       0.017508
CONM2       2020       39       0.017915
CONM2       2021       41       0.017887
CONM2       2022       43       0.017805
CONM2       2023       45       0.022979
CONM2       2024       47       0.012533
CONM2       2025       49       0.009653
CONM2       2026       51       0.002271
CONM2       2027       53       0.017716
CONM2       2028       55       0.014549
CONM2       2029       57       0.014757
CONM2       2030       59       0.014960
CONM2       2031       61       0.015074
CONM2       2032       63       0.015242
CONM2       2033       65       0.020172
CONM2       2034       67       0.015144
CONM2       2035       69       0.012845
CONM2       2036       71       0.003357
CONM2       2037       73       0.043527
CONM2       2038       75       0.026404
CONM2       2039       77       0.026208
CONM2       2040       79       0.022157
CONM2       2041       81       0.043269
CONM2       2042       83       0.026669
CONM2       2043       85       0.070151
CONM2       2044       87       0.022762
CONM2       2045       89       0.019127
CONM2       2046       91       0.005607
CONM2       2047       93       0.026283
CONM2       2048       95       0.066814
CONM2       2049       97       0.043953
CONM2       2050      101       0.052182
```

```
00000000011111111112222222223333333334444444445555555555666666666677777777778
12345678901234567890123456789012345678901234567890123456789012345678901234567890
CONM2        2051      105        0.045818
CONM2        2052      109        0.049429
CONM2        2053      113        0.045555
CONM2        2054      115        0.125776
CONM2        2055      117        0.026447
CONM2        2056      119        0.024241
CONM2        2057      121        0.037729
CONM2        2058      123        0.083662
CONM2        2059      125        0.034826
CONM2        2060      129        0.041142
CONM2        2061      133        0.043313
CONM2        2062      137        0.041096
CONM2        2063      141        0.039928
CONM2        2064      143        0.146163
CONM2        2065      145        0.027036
CONM2        2066      147        0.023748
CONM2        2067      149        0.009707
CONM2        2068      151        0.039556
CONM2        2069      153        0.021188
CONM2        2070      155        0.023967
CONM2        2071      157        0.0026536
CONM2        2072      159        0.028713
CONM2        2073      161        0.030555
CONM2        2074      163        0.101492
CONM2        2075      165        0.034932
CONM2        2076      167        0.035345
CONM2        2077      169        0.018409
CONM2        2078      171        0.023043
CONM2        2079      173        0.006317
CONM2        2080      175        0.007698
CONM2        2081      177        0.009067
CONM2        2082      179        0.010381
CONM2        2083      181        0.011461
CONM2        2084      183        0.114614
CONM2        2085      185        0.028495
CONM2        2086      187        0.023536
CONM2        2087      189        0.015235
CONM2        2088      191        0.012964
CONM2        2089      193        0.023746
CONM2        2090        2        0.003170
CONM2        2091        4        0.004794
CONM2        2092        6        0.004379
CONM2        2093        8        0.003927
CONM2        2094       10        0.003417
CONM2        2095       12        0.002835
CONM2        2096       14        0.019268
CONM2        2097       16        0.009673
CONM2        2098       18        0.009189
CONM2        2099       20        0.008693
CONM2        2100       22        0.008164
CONM2        2101       24        0.007575
CONM2        2102       26        0.013101
CONM2        2103       28        0.006154
CONM2        2104       30        0.005407
```

```
00000000011111111112222222223333333334444444445555555555666666666677777777778
12345678901234567890123456789012345678901234567890123456789012345678901234567890
CONM2        2105       32        0.000917
CONM2        2106       34        0.017392
CONM2        2107       36        0.014714
CONM2        2108       38        0.014935
CONM2        2109       40        0.015045
CONM2        2110       42        0.015023
CONM2        2111       44        0.014937
CONM2        2112       46        0.022636
CONM2        2113       48        0.014405
CONM2        2114       50        0.011013
CONM2        2115       52        0.001800
CONM2        2116       54        0.017716
CONM2        2117       56        0.011652
CONM2        2118       58        0.011629
CONM2        2119       60        0.012001
CONM2        2120       62        0.012083
CONM2        2121       64        0.012218
CONM2        2122       66        0.027647
CONM2        2123       68        0.017419
CONM2        2124       70        0.014706
CONM2        2125       72        0.002617
CONM2        2126       74        0.042602
CONM2        2127       76        0.023220
CONM2        2128       78        0.023160
CONM2        2129       80        0.013803
CONM2        2130       82        0.026445
CONM2        2131       84        0.013881
CONM2        2132       86        0.063616
CONM2        2133       88        0.026099
CONM2        2134       90        0.021621
CONM2        2135       92        0.004274
CONM2        2136       94        0.019930
CONM2        2137       96        0.084568
CONM2        2138       98        0.017845
CONM2        2139      102        0.020486
CONM2        2140      106        0.011598
CONM2        2141      110        0.011680
CONM2        2142      114        0.024459
CONM2        2143      116        0.120969
CONM2        2144      118        0.032740
CONM2        2145      120        0.027143
CONM2        2146      122        0.035763
CONM2        2147      124        0.030606
CONM2        2148      126        0.013274
CONM2        2149      130        0.014681
CONM2        2150      134        0.016261
CONM2        2151      138        0.017304
CONM2        2152      142        0.033507
CONM2        2153      144        0.146308
CONM2        2154      146        0.030378
CONM2        2155      148        0.029538
CONM2        2156      150        0.007571
CONM2        2157      152        0.041174
CONM2        2158      154        0.022762
```

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0000000001111111111222222222233333333334444444444555555555566666666667777777778
1234567890123456789012345678901234567890123456789012345678901234567890123456789012
CONM2        2159     156       0.025943
CONM2        2160     158       0.028713
CONM2        2161     160       0.031485
CONM2        2162     162       0.033693
CONM2        2163     164       0.166222
CONM2        2164     166       0.035230
CONM2        2165     168       0.035503
CONM2        2166     170       0.019106
CONM2        2167     172       0.023464
CONM2        2168     174       0.006721
CONM2        2169     176       0.009301
CONM2        2170     178       0.009366
CONM2        2171     180       0.011376
CONM2        2172     182       0.012575
CONM2        2173     184       0.116972
CONM2        2174     186       0.023495
CONM2        2175     188       0.028536
CONM2        2176     190       0.015235
CONM2        2177     192       0.012984
CONM2        2178     194       0.023746
$
$     ********************************************************************
$     *          MULTIPOINT CONSTRAINTS FOR DYNAMIC SOLUTION             *
$     ********************************************************************
$
MPC     3       107     1       -10.75  95      1       .361            +X1
+X1             96      1       .361    97      1       .433            +X2
+X2             98      1       .433    101     1       .503            +X3
+X3             102     1       .503    105     1       .525            +X4
+X4             106     1       .542    109     1       .485            +X5
+X5             110     1       .498    113     1       .413            +X6
+X6             114     1       .413    123     1       .327            +X7
+X7             124     1       .327    125     1       .4              +X8
+X8             126     1       .4      129     1       .479            +X9
+X9             130     1       .479    133     1       .523            +X10
+X10            134     1       .523    137     1       .493            +X11
+X11            138     1       .493    141     1       .418            +X12
+X12            142     1       .418
MPC     3       103     1       -11.517 81      1       .304            +X13
+X13            82      1       .304    83      1       .295            +X14
+X14            84      1       .295    85      1       .278            +X15
+X15            86      1       .278    93      1       .785            +X16
+X16            94      1       .785    101     1       .734            +X17
+X17            102     1       .134    105     1       .997            +X18
+X18            106     1       1.131   109     1       1.01            +X19
+X19            110     1       1.147   113     1       .716            +X20
+X20            114     1       .716    115     1       .504            +X21
+X21            116     1       .504
MPC     3       107     2       -10.75  95      2       .361            +Y1
+Y1             96      2       .361    97      2       .433            +Y2
+Y2             98      2       .433    101     2       .503            +Y3
+Y3             102     2       .503    105     2       .525            +Y4
+Y4             106     2       .542    109     2       .485            +Y5
+Y5             110     2       .498    113     2       .413            +Y6
```

```
0000000001111111111222222222233333333334444444444555555555566666666667777777778
1234567890123456789012345678901234567890123456789012345678901234567890123456789012
+Y6             114     2       .413    123     2       .327            +Y7
+Y7             124     2       .327    125     2       .4              +Y8
+Y8             126     2       .4      129     2       .479            +Y9
+Y9             130     2       .479    133     2       .523            +Y10
+Y10            134     2       .523    137     2       .493            +Y11
+Y11            138     2       .493    141     2       .418            +Y12
+Y12            142     2       .418
MPC     3       103     2       -11.517 81      2       .304            +Y13
+Y13            82      2       .304    83      2       .295            +Y14
+Y14            84      2       .295    85      2       .278            +Y15
+Y15            86      2       .278    93      2       .785            +Y16
+Y16            94      2       .785    101     2       .734            +Y17
+Y17            102     2       .134    105     2       .997            +Y18
+Y18            106     2       1.131   109     2       1.01            +Y19
+Y19            110     2       1.147   113     2       .716            +Y20
+Y20            114     2       .716    115     2       .504            +Y21
+Y21            116     2       .504
MPC     3       107     3       -10.75  95      3       .361            +Z1
+Z1             96      3       .361    97      3       .433            +Z2
+Z2             98      3       .433    101     3       .503            +Z3
+Z3             102     3       .503    105     3       .525            +Z4
+Z4             106     3       .542    109     3       .485            +Z5
+Z5             110     3       .498    113     3       .413            +Z6
+Z6             114     3       .413    123     3       .327            +Z7
+Z7             124     3       .327    125     3       .4              +Z8
+Z8             126     3       .4      129     3       .479            +Z9
+Z9             130     3       .479    133     3       .523            +Z10
+Z10            134     3       .523    137     3       .493            +Z11
+Z11            138     3       .493    141     3       .418            +Z12
+Z12            142     3       .418
MPC     3       103     3       -11.517 81      3       .304            +Z13
+Z13            82      3       .304    83      3       .295            +Z14
+Z14            84      3       .295    85      3       .278            +Z15
+Z15            86      3       .278    93      3       .785            +Z16
+Z16            94      3       .785    101     3       .734            +Z17
+Z17            102     3       .134    105     3       .997            +Z18
+Z18            106     3       1.131   109     3       1.01            +Z19
+Z19            110     3       1.147   113     3       .716            +Z20
+Z20            114     3       .716    115     3       .504            +Z21
+Z21            116     3       .504
MPC     3       2       3       1.0     1       3       -1.0
MPC     3       4       3       1.0     3       3       -1.0
MPC     3       6       3       1.0     5       3       -1.0
MPC     3       8       3       1.0     7       3       -1.0
MPC     3       10      3       1.0     9       3       -1.0
MPC     3       12      3       1.0     11      3       -1.0
MPC     3       14      3       1.0     13      3       -1.0
MPC     3       16      3       1.0     15      3       -1.0
MPC     3       18      3       1.0     17      3       -1.0
MPC     3       20      3       1.0     19      3       -1.0
MPC     3       22      3       1.0     21      3       -1.0
MPC     3       24      3       1.0     23      3       -1.0
MPC     3       26      3       1.0     25      3       -1.0
MPC     3       28      3       1.0     27      3       -1.0
```

```
00000000011111111112222222222333333333344444444445555555555666666666677777777778
12345678901234567890123456789012345678901234567890123456789012345678901234567890

MPC     3       30      3       1.0     29      3       -1.0
MPC     3       32      3       1.0     31      3       -1.0
MPC     3       34      3       1.0     33      3       -1.0
MPC     3       36      3       1.0     35      3       -1.0
MPC     3       38      3       1.0     37      3       -1.0
MPC     3       40      3       1.0     39      3       -1.0
MPC     3       42      3       1.0     41      3       -1.0
MPC     3       44      3       1.0     43      3       -1.0
MPC     3       46      3       1.0     45      3       -1.0
MPC     3       48      3       1.0     47      3       -1.0
MPC     3       50      3       1.0     49      3       -1.0
MPC     3       52      3       1.0     51      3       -1.0
MPC     3       54      3       1.0     53      3       -1.0
MPC     3       56      3       1.0     55      3       -1.0
MPC     3       58      3       1.0     57      3       -1.0
MPC     3       60      3       1.0     59      3       -1.0
MPC     3       62      3       1.0     61      3       -1.0
MPC     3       64      3       1.0     63      3       -1.0
MPC     3       66      3       1.0     65      3       -1.0
MPC     3       68      3       1.0     67      3       -1.0
MPC     3       70      3       1.0     69      3       -1.0
MPC     3       72      3       1.0     71      3       -1.0
MPC     3       74      3       1.0     73      3       -1.0
MPC     3       76      3       1.0     75      3       -1.0
MPC     3       78      3       1.0     77      3       -1.0
MPC     3       80      3       1.0     79      3       -1.0
MPC     3       82      3       1.0     81      3       -1.0
MPC     3       84      3       1.0     83      3       -1.0
MPC     3       86      3       1.0     85      3       -1.0
MPC     3       88      3       1.0     87      3       -1.0
MPC     3       90      3       1.0     89      3       -1.0
MPC     3       92      3       1.0     91      3       -1.0
MPC     3       94      3       1.0     93      3       -1.0
MPC     3       96      3       1.0     95      3       -1.0
MPC     3       98      3       1.0     97      3       -1.0
MPC     3       102     3       1.0     101     3       -1.0
MPC     3       106     3       1.0     105     3       -1.0
MPC     3       110     3       1.0     109     3       -1.0
MPC     3       114     3       1.0     113     3       -1.0
MPC     3       116     3       1.0     115     3       -1.0
MPC     3       118     3       1.0     117     3       -1.0
MPC     3       120     3       1.0     119     3       -1.0
MPC     3       122     3       1.0     121     3       -1.0
MPC     3       124     3       1.0     123     3       -1.0
MPC     3       126     3       1.0     125     3       -1.0
MPC     3       130     3       1.0     129     3       -1.0
MPC     3       134     3       1.0     133     3       -1.0
MPC     3       136     3       1.0     137     3       -1.0
MPC     3       142     3       1.0     141     3       -1.0
MPC     3       144     3       1.0     143     3       -1.0
MPC     3       146     3       1.0     145     3       -1.0
MPC     3       148     3       1.0     147     3       -1.0
MPC     3       150     3       1.0     149     3       -1.0
MPC     3       152     3       1.0     151     3       -1.0
```

```
00000000011111111112222222222333333333344444444445555555555666666666677777777778
12345678901234567890123456789012345678901234567890123456789012345678901234567890

MPC     3       154     3       1.0     153     3       -1.0
MPC     3       156     3       1.0     155     3       -1.0
MPC     3       158     3       1.0     157     3       -1.0
MPC     3       160     3       1.0     159     3       -1.0
MPC     3       162     3       1.0     161     3       -1.0
MPC     3       164     3       1.0     163     3       -1.0
MPC     3       166     3       1.0     165     3       -1.0
MPC     3       168     3       1.0     167     3       -1.0
MPC     3       170     3       1.0     169     3       -1.0
MPC     3       172     3       1.0     171     3       -1.0
MPC     3       174     3       1.0     173     3       -1.0
MPC     3       176     3       1.0     175     3       -1.0
MPC     3       178     3       1.0     177     3       -1.0
MPC     3       180     3       1.0     179     3       -1.0
MPC     3       182     3       1.0     181     3       -1.0
MPC     3       184     3       1.0     183     3       -1.0
MPC     3       186     3       1.0     185     3       -1.0
MPC     3       188     3       1.0     187     3       -1.0
MPC     3       190     3       1.0     189     3       -1.0
MPC     3       55      3       -4.052  75      3       .394            +E
+E              35      3       .4      57      3       1.629           +E1
+E1             53      3       1.629
MPC     3       57      3       -4.044  77      3       .386            +D
+D              37      3       .4      59      3       1.629           +D1
+D1             55      3       1.629
MPC     3       59      3       -4.036  79      3       .378            +C
+C              39      3       .4      61      3       1.629           +C1
+C1             57      3       1.629
MPC     3       61      3       -4.028  81      3       .370            +B
+B              41      3       .4      63      3       1.629           +B1
+B1             59      3       1.629
MPC     3       63      3       -4.02   83      3       .362            +A
+A              43      3       .4      65      3       1.629           +A1
+A1             61      3       1.629
$
$       ********************************************************************
$       *                    OMITTED DEGREES OF FREEDOM                    *
$       ********************************************************************
$
OMIT1   1       77      79      80      81      83      98      101     +AAA
+AAA    102     105     106     109     110     129     130     133     +AAB
+AAB    134     137     138
OMIT1   1       1       THRU    75
OMIT1   1       85      THRU    93
OMIT1   1       95      THRU    97
OMIT1   1       113     THRU    126
OMIT1   1       141     THRU    150
OMIT1   1       153     THRU    162
OMIT1   1       165     THRU    190
OMIT1   2       97      101     102     105     106     109     110     +BBB
+BBB    125     129     130     133     134     137     138
OMIT1   2       98      126
OMIT1   2       1       THRU    95
OMIT1   2       113     THRU    123
```

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0000000001111111111222222222233333333334444444444555555555566666666667777777778
1234567890123456789012345678901234567890123456789012345678901234567890123456789

OMIT1   2       141     THRU    150
OMIT1   2       153     THRU    162
OMIT1   2       165     THRU    190
ENDDATA
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CONDENSED MASS MATRIX - 82 X 82

REAL EIGENVALUES

MODE NO.	EXTRACTION ORDER	EIGENVALUE	RADIANS	CYCLES	GENERALIZED MASS	GENERALIZED STIFFNESS
1	82	1.914282E 03	4.375252E 01	6.963430E 00	5.286211E-01	1.011930E 03
2	81	2.143927E 04	1.464215E 02	2.330371E 01	3.945203E-01	8.458223E 03
3	80	4.326591E 04	2.080046E 02	3.310497E 01	4.890236E-01	2.115805E 04
4	79	1.199669E 05	3.463625E 02	5.512532E 01	4.549053E-01	5.457359E 04
5	78	2.404898E 05	4.903975E 02	7.804919E 01	0.0	0.0
6	77	2.715664E 05	5.211204E 02	8.293889E 01	0.0	0.0
7	76	4.015105E 05	6.336487E 02	1.008483E 02	0.0	0.0
8	75	6.693089E 05	8.302463E 02	1.321378E 02	0.0	0.0
9	74	7.065806E 05	8.405835E 02	1.337830E 02	0.0	0.0
10	73	1.053275E 06	1.026292E 03	1.633395E 02	0.0	0.0
11	72	1.203173E 06	1.096892E 03	1.745759E 02	0.0	0.0
12	71	1.411073E 06	1.187886E 03	1.890580E 02	0.0	0.0
13	70	1.688506E 06	1.299425E 03	2.068100E 02	0.0	0.0
14	69	1.915360E 06	1.383965E 03	2.202650E 02	0.0	0.0
15	68	2.051079E 06	1.432159E 03	2.279352E 02	0.0	0.0
16	67	2.281925E 06	1.510604E 03	2.404202E 02	0.0	0.0
17	66	2.498592E 06	1.580694E 03	2.515752E 02	0.0	0.0
18	65	2.723992E 06	1.650452E 03	2.626775E 02	0.0	0.0
19	64	3.533247E 06	1.879693E 03	2.991624E 02	0.0	0.0
20	63	3.957678E 06	1.989391E 03	3.166213E 02	0.0	0.0
21	62	4.096680E 06	2.024520E 03	3.222122E 02	0.0	0.0
22	61	4.823832E 06	2.196322E 03	3.495554E 02	0.0	0.0
23	60	5.205076E 06	2.281464E 03	3.631062E 02	0.0	0.0
24	59	5.829524E 06	2.414441E 03	3.842700E 02	0.0	0.0
25	58	6.033488E 06	2.456316E 03	3.909348E 02	0.0	0.0
26	57	6.629173E 06	2.574718E 03	4.097791E 02	0.0	0.0
27	56	7.122239E 06	2.668752E 03	4.247451E 02	0.0	0.0
28	55	7.399129E 06	2.720134E 03	4.329229E 02	0.0	0.0
29	54	8.113650E 06	2.848447E 03	4.533445E 02	0.0	0.0
30	53	8.799043E 06	2.966318E 03	4.721042E 02	0.0	0.0
31	52	9.402648E 06	3.066374E 03	4.880286E 02	0.0	0.0
32	51	1.033812E 07	3.215294E 03	5.117300E 02	0.0	0.0
33	50	1.105548E 07	3.324979E 03	5.291868E 02	0.0	0.0
34	49	1.167135E 07	3.416336E 03	5.437268E 02	0.0	0.0
35	48	1.444547E 07	3.800720E 03	6.049033E 02	0.0	0.0
36	47	1.538784E 07	3.922733E 03	6.243225E 02	0.0	0.0
37	46	1.605284E 07	4.006599E 03	6.376702E 02	0.0	0.0
38	45	1.628740E 07	4.035765E 03	6.423120E 02	0.0	0.0
39	44	1.871333E 07	4.325891E 03	6.884868E 02	0.0	0.0
40	43	2.047730E 07	4.525184E 03	7.202053E 02	0.0	0.0
41	42	2.075651E 07	4.555930E 03	7.250986E 02	0.0	0.0
42	41	2.298701E 07	4.794477E 03	7.630647E 02	0.0	0.0
43	40	2.303090E 07	4.799051E 03	7.637927E 02	0.0	0.0

CONDENSED MASS MATRIX – 82 X 82

REAL EIGENVALUES

MODE NO.	EXTRACTION ORDER	EIGENVALUE	RADIANS	CYCLES	GENERALIZED MASS	GENERALIZED STIFFNESS
44	39	2.347344E 07	4.844941E 03	7.710964E 02	0.0	0.0
45	38	2.368835E 07	4.867066E 03	7.746177E 02	0.0	0.0
46	37	2.427258E 07	4.926719E 03	7.841116E 02	0.0	0.0
47	36	2.492379E 07	4.992375E 03	7.945613E 02	0.0	0.0
48	35	2.596179E 07	5.095273E 03	8.109380E 02	0.0	0.0
49	34	2.802462E 07	5.293828E 03	8.425391E 02	0.0	0.0
50	33	2.860986E 07	5.348816E 03	8.512905E 02	0.0	0.0
51	32	2.884963E 07	5.371184E 03	8.548506E 02	0.0	0.0
52	31	3.116019E 07	5.582133E 03	8.884241E 02	0.0	0.0
53	30	3.273350E 07	5.721320E 03	9.105764E 02	0.0	0.0
54	29	3.486189E 07	5.904395E 03	9.397136E 02	0.0	0.0
55	28	3.787517E 07	6.154281E 03	9.794844E 02	0.0	0.0
56	27	4.079338E 07	6.386969E 03	1.016518E 03	0.0	0.0
57	26	4.290141E 07	6.549918E 03	1.042452E 03	0.0	0.0
58	25	4.312230E 07	6.566758E 03	1.045132E 03	0.0	0.0
59	24	4.451917E 07	6.672270E 03	1.061925E 03	0.0	0.0
60	23	4.596325E 07	6.779621E 03	1.079010E 03	0.0	0.0
61	22	4.649496E 07	6.818723E 03	1.085233E 03	0.0	0.0
62	21	4.709453E 07	6.862547E 03	1.092208E 03	0.0	0.0
63	20	4.915296E 07	7.010918E 03	1.115822E 03	0.0	0.0
64	19	4.968315E 07	7.048629E 03	1.121824E 03	0.0	0.0
65	18	5.221502E 07	7.225956E 03	1.150053E 03	0.0	0.0
66	17	5.624797E 07	7.499863E 03	1.193640E 03	0.0	0.0
67	16	5.743109E 07	7.578332E 03	1.206129E 03	0.0	0.0
68	15	6.112654E 07	7.818348E 03	1.244329E 03	0.0	0.0
69	14	6.389307E 07	7.993313E 03	1.272175E 03	0.0	0.0
70	13	6.573670E 07	8.107816E 03	1.290399E 03	0.0	0.0
71	12	6.672606E 07	8.168602E 03	1.300073E 03	0.0	0.0
72	11	6.746854E 07	8.213922E 03	1.307286E 03	0.0	0.0
73	10	7.963438E 07	8.923809E 03	1.420268E 03	0.0	0.0
74	9	8.052602E 07	8.973629E 03	1.428198E 03	0.0	0.0
75	8	8.108749E 07	9.004859E 03	1.433168E 03	0.0	0.0
76	7	8.466866E 07	9.202645E 03	1.464646E 03	0.0	0.0
77	6	8.816979E 07	9.389879E 03	1.494446E 03	0.0	0.0
78	5	9.041616E 07	9.508742E 03	1.513364E 03	0.0	0.0
79	4	1.051744E 08	1.025546E 04	1.632207E 03	0.0	0.0
80	3	1.145709E 08	1.070378E 04	1.703560E 03	0.0	0.0
81	2	1.290095E 08	1.135823E 04	1.807719E 03	0.0	0.0
82	1	1.605620E 08	1.267130E 04	2.016701E 03	0.0	0.0

CONDENSED MASS MATRIX – 82 X 82
EIGENVALUE # 1.914282E 03

REAL EIGENVECTOR NO. 1

POINT ID.	TYPE	T1	T2	T3	POINT ID.	TYPE	T1	T2	T3
1	G	-1.195838E-02	1.478187E-03	1.000000E 00	44	G	2.652098E-02	2.729518E-03	6.928865E-01
2	G	2.085496E-02	4.380543E-03	1.000000E 00	45	G	-1.953093E-02	-1.192193E-03	6.961863E-01
3	G	-1.466999E-02	1.200238E-03	9.773111E-01	46	G	2.553989E-02	2.629300E-03	6.961863E-01
4	G	2.315365E-02	4.344311E-03	9.773111E-01	47	G	-1.438599E-02	-7.046578E-04	6.997675E-01
5	G	-1.670073E-02	1.037650E-03	9.538242E-01	48	G	1.971364E-02	2.122998E-03	6.997675E-01
6	G	2.478336E-02	4.200965E-03	9.538242E-01	49	G	-9.826824E-03	-2.301807E-04	7.029958E-01
7	G	-1.877720E-02	8.677216E-04	9.301903E-01	50	G	1.457838E-02	1.745587E-03	7.029958E-01
8	G	2.640287E-02	4.029915E-03	9.301903E-01	51	G	-1.139683E-03	4.056171E-04	7.047437E-01
9	G	-1.931571E-02	7.528032E-04	9.064371E-01	52	G	5.407415E-03	9.254974E-04	7.047437E-01
10	G	2.645595E-02	3.787438E-03	9.064371E-01	53	G	-1.471826E-02	-1.819861E-03	5.126265E-01
11	G	-1.901605E-02	5.846743E-04	8.825591E-01	54	G	2.346493E-02	7.442515E-04	5.126265E-01
12	G	2.561201E-02	3.550948E-03	8.825591E-01	55	G	-1.655490E-02	-2.272774E-03	5.198145E-01
13	G	-1.290568E-02	3.827296E-04	8.415498E-01	56	G	2.498836E-02	1.226133E-03	5.198144E-01
14	G	2.195438E-02	3.355714E-03	8.415498E-01	57	G	-1.864255E-02	-2.580394E-03	5.252601E-01
15	G	-1.551437E-02	1.574178E-04	8.449113E-01	58	G	2.671268E-02	1.612115E-03	5.252600E-01
16	G	2.411409E-02	3.577932E-03	8.449113E-01	59	G	-2.029017E-02	-2.639988E-03	5.296772E-01
17	G	-1.717858E-02	6.876379E-05	8.480343E-01	60	G	2.820672E-02	1.762232E-03	5.296770E-01
18	G	2.530973E-02	3.660836E-03	8.480343E-01	61	G	-2.023974E-02	-2.450710E-03	5.332851E-01
19	G	-1.896279E-02	3.994950E-06	8.509118E-01	62	G	2.763743E-02	1.637923E-03	5.332850E-01
20	G	2.665494E-02	3.720268E-03	8.509118E-01	63	G	-2.003875E-02	-2.218374E-03	5.359188E-01
21	G	-1.921676E-02	6.523152E-05	8.536375E-01	64	G	2.663109E-02	1.454817E-03	5.359187E-01
22	G	2.639955E-02	3.656451E-03	8.536375E-01	65	G	-2.024857E-02	-2.141065E-03	5.369123E-01
23	G	-1.929239E-02	1.263575E-04	8.561690E-01	66	G	2.616341E-02	1.406204E-03	5.369123E-01
24	G	2.592232E-02	3.598315E-03	8.561690E-01	67	G	-1.456620E-02	-1.760957E-03	5.403620E-01
25	G	-1.829077E-02	2.390690E-04	8.585931E-01	68	G	1.968266E-02	1.001227E-03	5.403820E-01
26	G	2.434422E-02	3.490770E-03	8.585931E-01	69	G	-9.963620E-03	-1.311903E-03	5.437376E-01
27	G	-1.417048E-02	5.402141E-04	8.296964E-01	70	G	1.440392E-02	6.574909E-04	5.437376E-01
28	G	1.958796E-02	2.962612E-03	8.296964E-01	71	G	-9.982451E-04	-6.711897E-04	5.456295E-01
29	G	-9.543739E-03	2.452191E-04	8.029499E-01	72	G	5.100876E-03	-1.993769E-04	5.456295E-01
30	G	1.436099E-02	1.973167E-03	8.029499E-01	73	G	-1.480184E-02	-3.666472E-03	3.635248E-01
31	G	-1.089211E-03	1.461134E-03	7.870396E-01	74	G	2.199707E-02	1.072666E-03	3.635248E-01
32	G	5.336676E-03	1.909898E-03	7.870396E-01	75	G	-1.659816E-02	-3.904530E-03	3.649794E-01
33	G	-1.411020E-02	-1.040275E-03	6.757618E-01	76	G	2.498931E-02	1.273023E-03	3.649794E-01
34	G	2.318409E-02	2.417373E-03	6.757618E-01	77	G	-1.824891E-02	-4.113846E-03	3.662011E-01
35	G	-1.635005E-02	-1.272238E-03	6.794228E-01	78	G	2.748272E-02	1.447387E-03	3.662011E-01
36	G	2.497340E-02	2.646916E-03	6.794228E-01	79	G	-1.849238E-02	-4.196785E-03	3.673999E-01
37	G	-1.882831E-02	-1.463656E-03	6.829407E-01	80	G	2.684416E-02	1.387022E-03	3.673999E-01
38	G	2.704870E-02	2.835390E-03	6.829407E-01	81	G	-1.891326E-02	-4.209343E-03	3.685569E-01
39	G	-2.051365E-02	-1.551533E-03	6.863241E-01	82	G	2.625540E-02	1.305501E-03	3.685569E-01
40	G	2.821030E-02	2.934592E-03	6.863241E-01	83	G	-1.889639E-02	-4.242696E-03	3.698552E-01
41	G	-2.023118E-02	-1.438664E-03	6.896270E-01	84	G	2.571425E-02	1.318502E-03	3.698552E-01
42	G	2.743641E-02	2.842569E-03	6.896270E-01	85	G	-1.877206E-02	-4.212420E-03	3.713311E-01
43	G	-1.984550E-02	-1.307313E-03	6.928865E-01	86	G	2.422237E-02	1.140253E-03	3.713311E-01

CONDENSED MASS MATRIX - 82 X 82
EIGENVALUE # 1.914282E 03

REAL EIGENVECTOR NO. 1

POINT ID.	TYPE	T1	T2	T3	POINT ID.	TYPE	T1	T2	T3
87	G	-1.370995E-02	-3.560771E-03	3.761967E-01	144	G	1.286425E-02	7.474546E-04	6.422299E-02
88	G	1.820214E-02	4.180854E-04	3.761967E-01	145	G	-8.428678E-03	-4.135162E-03	6.908387E-02
89	G	-9.158105E-03	-2.873255E-03	3.807757E-01	146	G	1.095501E-02	-3.370721E-05	6.908387E-02
90	G	1.305165E-02	-1.290478E-04	3.807757E-01	147	G	-5.190037E-03	-3.343322E-03	7.352161E-02
91	G	-9.998807E-04	-1.985275E-03	3.834918E-01	148	G	8.371457E-03	-6.716733E-04	7.352161E-02
92	G	4.396427E-03	-1.337726E-03	3.834918E-01	149	G	3.490425E-04	-2.457224E-03	7.636136E-02
93	G	-1.764790E-02	-6.923486E-03	2.600481E-01	150	G	3.206030E-03	-1.910533E-03	7.636136E-02
94	G	2.658972E-02	-2.187233E-03	2.600481E-01	151	G	-6.143305E-03	-1.694081E-03	1.340584E-02
95	G	-1.266853E-02	-4.876200E-03	1.545221E-01	152	G	6.966509E-03	8.459462E-05	1.340584E-02
96	G	1.626033E-02	6.082724E-04	1.545221E-01	153	G	-1.022924E-02	-3.727631E-03	1.380067E-02
97	G	-1.342672E-02	-5.249389E-03	1.606398E-01	154	G	9.533308E-03	1.499335E-03	1.380067E-02
98	G	1.739526E-02	1.375705E-03	1.606398E-01	155	G	-1.210210E-02	-4.633624E-03	1.483757E-02
101	G	-1.521067E-02	-5.636405E-03	1.670020E-01	156	G	1.055717E-02	2.064050E-03	1.483757E-02
102	G	1.972621E-02	1.962267E-03	1.670020E-01	157	G	-1.248273E-02	-4.663285E-03	1.586226E-02
103	G	1.812959E-03	-3.129309E-03	2.090507E-01	158	G	1.059004E-02	1.982970E-03	1.586226E-02
105	G	-1.646799E-02	-5.982082E-03	1.731196E-01	159	G	-1.155195E-02	-3.940206E-03	1.648025E-02
106	G	2.130678E-02	-1.541536E-03	1.731196E-01	160	G	1.020596E-02	1.453297E-03	1.648025E-02
107	G	6.999623E-04	-2.376748E-03	1.097501E-01	161	G	-9.263955E-03	-2.487091E-03	1.638177E-02
109	G	-1.597762E-02	-5.953573E-03	1.785913E-01	162	G	8.975234E-03	2.733832E-04	1.638177E-02
110	G	1.828717E-02	-1.811245E-03	1.785913E-01	163	G	-6.960135E-03	-7.095791E-04	1.470312E-02
113	G	-1.547420E-02	-5.814068E-03	1.831810E-01	164	G	8.020990E-03	-1.239856E-03	1.470312E-02
114	G	1.899809E-02	4.061693E-04	1.831810E-01	165	G	-4.679393E-03	-7.679109E-04	1.116493E-02
115	G	-1.554319E-02	-5.723011E-03	1.882067E-01	166	G	6.654698E-03	-9.288443E-04	1.116493E-02
116	G	1.862357E-02	2.777562E-04	1.882067E-01	167	G	-2.706696E-03	-8.596478E-04	8.040242E-03
117	G	-1.125472E-02	-5.012788E-03	1.936558E-01	168	G	5.489998E-03	-6.016283E-04	8.040242E-03
118	G	1.451556E-02	-4.724700E-04	1.936558E-01	169	G	9.571025E-04	-7.011439E-04	5.155545E-03
119	G	-7.172629E-03	-4.171498E-03	1.988588E-01	170	G	2.508168E-03	-5.640089E-04	5.155545E-03
120	G	1.046691E-02	-1.103320E-03	1.988588E-01	171	G	-4.668910E-03	-1.355265E-03	8.477509E-03
121	G	-3.299739E-04	-3.173504E-03	2.020695E-01	172	G	5.294546E-03	6.767570E-05	8.477509E-03
122	G	3.531345E-03	-2.503254E-03	2.020695E-01	173	G	-8.494914E-03	-5.321641E-03	6.699711E-03
123	G	-7.937293E-03	-4.289705E-03	3.383078E-02	174	G	7.844958E-03	2.943987E-03	6.699711E-03
124	G	9.043891E-03	1.932824E-04	3.383078E-02	175	G	-9.960711E-03	-6.467272E-03	5.462736E-03
125	G	-1.110671E-02	-4.569747E-03	3.867354E-02	176	G	8.540135E-03	3.694297E-03	5.462736E-03
126	G	1.038536E-02	6.501868E-04	3.867354E-02	177	G	-1.020316E-02	-6.329406E-03	4.085500E-03
129	G	-1.333454E-02	-5.019076E-03	4.378480E-02	178	G	8.469906E-03	3.626769E-03	4.085500E-03
130	G	1.256636E-02	1.188031E-03	4.378480E-02	179	G	-9.213936E-03	-5.191345E-03	2.565892E-03
133	G	-1.440489E-02	-5.313214E-03	4.904220E-02	180	G	7.692546E-03	2.968165E-03	2.565892E-03
134	G	1.105166E-02	1.452078E-03	4.904220E-02	181	G	-6.909441E-03	-3.214641E-03	1.106295E-03
137	G	-1.396746E-02	-5.312845E-03	5.429903E-02	182	G	6.014004E-03	1.699058E-03	1.106295E-03
138	G	1.093187E-02	1.289888E-03	5.429903E-02	183	G	-2.505649E-03	-2.412569E-04	4.273152E-04
141	G	-1.263739E-02	-5.107045E-03	5.945259E-02	184	G	2.727137E-03	-4.091521E-04	4.273152E-04
142	G	1.279856E-02	9.449783E-04	5.945259E-02	185	G	-4.044943E-03	-6.258739E-04	-8.386701E-03
143	G	-1.107210E-02	-4.902534E-03	6.422299E-02	186	G	5.378518E-03	1.009158E-03	-8.386701E-03

CONDENSED MASS MATRIX - 82 X 82
EIGENVALUE # 1.914282E 03

R E A L E I G E N V E C T O R N O . 1

POINT ID.	TYPE	T1	T2	T3
187	G	-2.272418E-03	5.199492E-04	-1.767544E-02
188	G	4.591044E-03	7.501440E-04	-1.767544E-02
189	G	1.619910E-03	1.538465E-03	-2.893170E-02
190	G	1.761851E-03	6.695827E-04	-2.893170E-02
191	G	0.0	0.0	0.0
192	G	0.0	0.0	0.0
193	G	0.0	0.0	0.0
194	G	0.0	0.0	0.0

CONCENSED MASS MATRIX - 82 X 82
EIGENVALUE # 2.143927E 04

REAL EIGENVECTOR NO. 2

POINT ID.	TYPE	T1	T2	T3	POINT ID.	TYPE	T1	T2	T3
1	G	-7.218447E-03	-1.380964E-02	1.000000E 00	44	G	4.093311E-02	-1.693333E-01	-6.747544E-02
2	G	3.910998E-02	-1.404635E-01	1.000000E 00	45	G	-1.199446E-02	5.273461E-03	-2.077274E-01
3	G	-1.049278E-02	-3.229542E-03	8.343530E-01	46	G	3.954173E-02	-1.657411E-01	-2.077274E-01
4	G	4.200374E-02	-1.513223E-01	8.343530E-01	47	G	-5.596492E-03	-1.468591E-02	-3.665209E-01
5	G	-1.252377E-02	5.133431E-03	6.672025E-01	48	G	3.227180E-02	-1.441418E-01	-3.665209E-01
6	G	4.373906E-02	-1.598733E-01	6.672025E-01	49	G	-4.363940E-04	-3.544417E-02	-5.166036E-01
7	G	-1.465752E-02	1.341233E-02	4.993140E-01	50	G	2.547408E-02	-1.276977E-01	-5.166036E-01
8	G	4.522634E-02	-1.685736E-01	4.993140E-01	51	G	9.445384E-03	-6.506693E-02	-5.991850E-01
9	G	-1.487060E-02	1.485928E-02	3.312068E-01	52	G	1.592049E-02	-8.916819E-02	-5.991850E-01
10	G	4.472870E-02	-1.704663E-01	3.312068E-01	53	G	-1.005761E-02	-1.346235E-02	4.696612E-01
11	G	-1.437467E-02	1.176728E-02	1.633520E-01	54	G	4.019947E-02	-1.510251E-01	4.696612E-01
12	G	4.335358E-02	-1.679308E-01	1.633520E-01	55	G	-1.056926E-02	-4.880782E-03	3.395371E-01
13	G	-9.011939E-03	-1.150273E-02	8.284426E-01	56	G	4.103563E-02	-1.594254E-01	3.395371E-01
14	G	4.101081E-02	-1.454681E-01	8.284426E-01	57	G	-1.006513E-02	4.232440E-03	2.061126E-01
15	G	-1.141622E-02	-1.375465E-03	6.927384E-01	58	G	4.039380E-02	-1.680505E-01	2.061125E-01
16	G	4.288727E-02	-1.556163E-01	6.927384E-01	59	G	-1.009896E-02	1.025744E-02	7.003123E-02
17	G	-1.267826E-02	5.229257E-03	5.554809E-01	60	G	4.126001E-02	-1.734957E-01	7.003123E-02
18	G	4.349770E-02	-1.622615E-01	5.554809E-01	61	G	-8.261822E-03	1.003403E-02	-6.935674E-02
19	G	-1.444002E-02	1.194547E-02	4.164847E-01	62	G	3.627068E-02	-1.728154E-01	-6.935674E-02
20	G	4.498961E-02	-1.690214E-01	4.164847E-01	63	G	-6.662432E-03	7.617287E-03	-2.143237E-01
21	G	-1.433127E-02	1.221336E-02	2.766920E-01	64	G	3.531759E-02	-1.703823E-01	-2.143237E-01
22	G	4.393438E-02	-1.693068E-01	2.766920E-01	65	G	-7.295392E-03	2.875411E-03	-3.698049E-01
23	G	-1.450762E-02	1.106952E-02	1.370857E-01	66	G	3.445304E-02	-1.661875E-01	-3.698049E-01
24	G	4.351057E-02	-1.681730E-01	1.370857E-01	67	G	1.664928E-04	-1.776128E-02	-5.261899E-01
25	G	-1.446901E-02	4.617952E-03	-4.427187E-03	68	G	2.549806E-02	-1.449395E-01	-5.261899E-01
26	G	4.215439E-02	-1.616549E-01	-4.427187E-03	69	G	4.430030E-03	-3.872320E-02	-6.734886E-01
27	G	-7.025577E-03	-1.070453E-02	-2.050917E-01	70	G	2.094403E-02	-1.285459E-01	-6.734886E-01
28	G	3.364571E-02	-1.456187E-01	-2.050917E-01	71	G	1.000792E-02	-6.774390E-02	-7.583565E-01
29	G	-8.474390E-04	-3.322203E-02	-3.949356E-01	72	G	1.441977E-02	-8.995664E-02	-7.583565E-01
30	G	2.622051E-02	-1.293467E-01	-3.949356E-01	73	G	-1.210246E-02	-1.779071E-02	3.178440E-01
31	G	8.726604E-03	-5.305552E-02	-5.029110E-01	74	G	3.439982E-02	-1.461252E-01	3.178440E-01
32	G	1.611417E-02	-8.880788E-02	-5.029110E-01	75	G	-9.741444E-03	-9.572282E-03	1.883365E-01
33	G	-1.021532E-02	-1.072020E-02	6.439268E-01	76	G	4.158675E-02	-1.529539E-01	1.883385E-01
34	G	4.189082E-02	-1.500341E-01	6.439268E-01	77	G	-9.367216E-03	-1.479734E-03	5.864577E-02
35	G	-1.147353E-02	-8.865427E-04	5.019094E-01	78	G	4.911612E-02	-1.602216E-01	5.864577E-02
36	G	4.249794E-02	-1.598448E-01	5.019094E-01	79	G	-1.986526E-03	4.093010E-03	-7.095826E-02
37	G	-1.343396E-02	8.978300E-03	3.592378E-01	80	G	4.011795E-02	-1.659933E-01	-7.095826E-02
38	G	4.417037E-02	-1.696506E-01	3.592378E-01	81	G	2.574755E-03	4.384995E-03	-2.002187E-01
39	G	-1.426846E-02	1.512097E-02	2.167330E-01	82	G	3.490479E-02	-1.661934E-01	-2.002187E-01
40	G	4.398744E-02	-1.756953E-01	2.167330E-01	83	G	3.816592E-03	1.033910E-03	-3.292734E-01
41	G	-1.313934E-02	1.259805E-02	7.441062E-02	84	G	1.654093E-02	-1.635510E-01	-3.292734E-01
42	G	4.301033E-02	-1.730999E-01	7.441062E-02	85	G	5.876064E-03	-3.074031E-03	-4.556936E-01
43	G	-1.245062E-02	8.862685E-03	-6.747544E-02	86	G	7.545002E-03	-1.583509E-01	-4.556936E-01

CONDENSED MASS MATRIX - 82 X 82
EIGENVALUE # 2.143927E 04

REAL EIGENVECTOR NO. 2

POINT ID.	TYPE	T1	T2	T3	POINT ID.	TYPE	T1	T2	T3
87	G	1.169265E-02	-2.246629E-02	-5.953507E-01	144	G	-1.794909E-02	-3.157033E-02	-1.978238E-01
88	G	1.129906E-02	-1.369480E-01	-5.953507E-01	145	G	2.603643E-02	9.694178E-03	-2.405873E-01
89	G	1.650294E-02	-4.238886E-02	-7.254696E-01	146	G	-8.610964E-03	-2.630107E-02	-2.405873E-01
90	G	1.376945E-02	-1.208212E-01	-7.254696E-01	147	G	2.607574E-02	2.881526E-03	-2.824551E-01
91	G	1.939329E-02	-6.782055E-02	-8.029031E-01	148	G	8.426770E-04	-2.131673E-02	-2.824551E-01
92	G	1.719322E-02	-8.627033E-02	-8.029031E-01	149	G	2.008488E-02	-5.151294E-03	-3.088508E-01
93	G	1.534548E-03	1.450722E-02	-1.302063E-01	150	G	1.346098E-02	-9.949181E-03	-3.088508E-01
94	G	4.275743E-02	-1.789266E-01	-1.302063E-01	151	G	-3.142703E-03	4.444558E-03	-2.289784E-04
95	G	-9.754967E-03	-1.058873E-04	1.129793E-01	152	G	8.053917E-03	-1.063174E-02	-2.289784E-04
96	G	2.295482E-02	-8.244324E-02	1.129793E-01	153	G	1.040868E-03	6.938618E-03	-1.866696E-02
97	G	-4.701477E-03	4.556965E-03	2.726818E-02	154	G	7.819668E-04	-1.437690E-02	-1.866696E-02
98	G	2.185290E-02	-8.964735E-02	2.726818E-02	155	G	5.275726E-03	8.950926E-03	-3.698429E-02
101	G	9.105662E-04	8.437231E-03	-5.943744E-02	156	G	-5.819473E-03	-1.710530E-02	-3.698429E-02
102	G	2.189410E-02	-9.500295E-02	-5.943744E-02	157	G	9.422783E-03	1.016529E-02	-5.444517E-02
103	G	1.036895E-02	-4.014967E-02	-2.110052E-01	158	G	-1.125743E-02	-1.848771E-02	-5.444517E-02
105	G	3.779792E-03	1.336028E-02	-1.439196E-01	159	G	1.295161E-02	1.036426E-02	-7.040042E-02
106	G	2.434276E-02	-5.086653E-02	-1.439196E-01	160	G	-1.487381E-02	-1.835229E-02	-7.040042E-02
107	G	4.250474E-03	-2.023100E-02	-9.199363E-02	161	G	1.501866E-02	9.119902E-03	-8.444130E-02
109	G	1.077140E-02	1.221599E-02	-2.253688E-01	162	G	-1.269817E-02	-1.539732E-02	-8.444130E-02
110	G	7.892989E-03	-4.918137E-02	-2.253688E-01	163	G	1.886100E-02	8.446861E-03	-9.544575E-02
113	G	1.496400E-02	9.224173E-03	-3.016044E-01	164	G	-1.250923E-02	-1.304889E-02	-9.544575E-02
114	G	-7.045761E-03	-8.823544E-02	-3.016044E-01	165	G	1.758476E-02	7.427704E-03	-1.060459E-01
115	G	2.103055E-02	7.619698E-03	-3.774630E-01	166	G	-6.128263E-03	-1.047015E-02	-1.060459E-01
116	G	-1.504716E-02	-8.685338E-02	-3.774630E-01	167	G	1.684665E-02	6.028090E-03	-1.173462E-01
117	G	2.403204E-02	-3.544510E-03	-4.636812E-01	168	G	-1.641487E-03	-7.865656E-03	-1.173462E-01
118	G	-3.407457E-03	-7.546383E-02	-4.636812E-01	169	G	1.111423E-02	9.491588E-04	-1.294098E-01
119	G	2.734203E-02	-1.702587E-02	-5.459138E-01	170	G	7.132038E-03	-1.823977E-03	-1.294098E-01
120	G	5.915806E-03	-6.544304E-02	-5.459138E-01	171	G	-2.388455E-03	3.555648E-03	-4.455417E-04
121	G	2.672341E-02	-3.283934E-02	-5.964841E-01	172	G	6.120976E-03	-8.505397E-03	-4.455417E-04
122	G	1.967139E-02	-4.334444E-02	-5.964841E-01	173	G	1.573483E-03	6.277189E-03	-1.129404E-02
123	G	-4.437134E-03	1.055367E-02	1.343887E-02	174	G	-2.784829E-04	-1.334151E-02	-1.129404E-02
124	G	1.059931E-02	-2.553602E-02	1.343887E-02	175	G	5.508866E-03	8.531746E-03	-1.991845E-02
125	G	-8.466188E-04	1.221035E-02	-2.157058E-02	176	G	-6.241340E-03	-1.648299E-02	-1.991845E-02
126	G	3.637040E-03	-2.511076E-02	-2.157058E-02	177	G	9.267319E-03	1.008908E-02	-2.575968E-02
129	G	3.070020E-03	1.456310E-02	-5.529243E-02	178	G	-1.106311E-02	-1.771187E-02	-2.575968E-02
130	G	-3.233919E-03	-2.668463E-02	-5.529243E-02	179	G	1.214339E-02	1.046656E-02	-2.884815E-02
133	G	8.320745E-03	1.614327E-02	-8.912085E-02	180	G	-1.332798E-02	-1.628666E-02	-2.884815E-02
134	G	-1.140335E-02	-2.849730E-02	-8.912885E-02	181	G	1.282501E-02	8.916143E-03	-2.946821E-02
137	G	1.233504E-02	1.619771E-02	-1.236698E-01	182	G	-1.207247E-02	-1.214157E-02	-2.946821E-02
138	G	-1.704097E-02	-2.974577E-02	-1.236698E-01	183	G	6.789960E-03	2.871933E-03	-2.899783E-02
141	G	1.758946E-02	1.541246E-02	-1.596812E-01	184	G	-4.253138E-03	-4.306134E-03	-2.899783E-02
142	G	-2.881809E-02	-3.104778E-02	-1.596812E-01	185	G	1.520830E-02	1.109262E-02	-2.683908E-02
143	G	2.457755E-02	1.511890E-02	-1.978238E-01	186	G	-7.079061E-03	-6.881654E-03	-2.683908E-02

CONDENSED MASS MATRIX - 82 X 82
EIGENVALUE # 2.143927E 04

REAL EIGENVECTOR NO. 2

POINT ID.	TYPE	T1	T2	T3
187	G	1.469643E-02	1.084239E-02	-2.464168E-02
188	G	-2.180431E-03	-2.551777E-03	-2.464168E-02
189	G	8.886609E-03	6.322529E-03	-2.168761E-02
190	G	7.750735E-03	5.632345E-03	-2.168761E-02
191	G	0.0	0.0	0.0
192	G	0.0	0.0	0.0
193	G	0.0	0.0	0.0
194	G	0.0	0.0	0.0

CONDENSED MASS MATRIX - 82 X 82
EIGENVALUE # 4.326591E 04

REAL EIGENVECTOR NO. 3

POINT ID.	TYPE	T1	T2	T3	POINT ID.	TYPE	T1	T2	T3
1	G	3.466423E-02	-3.328779E-02	-5.255191E-01	44	G	-4.882982E-02	-1.671789E-01	-3.221296E-01
2	G	-4.388881E-02	-1.530348E-01	-5.255191E-01	45	G	5.165786E-02	-9.191345E-03	-4.533839E-01
3	G	3.890337E-02	-2.562135E-02	-5.863227E-01	46	G	-5.066981E-02	-1.634005E-01	-4.533839E-01
4	G	-4.754169E-02	-1.602992E-01	-5.863227E-01	47	G	4.030983E-02	-2.793828E-02	-5.971859E-01
5	G	4.176565E-02	-2.106898E-02	-6.429428E-01	48	G	-3.671787E-02	-1.432606E-01	-5.971859E-01
6	G	-4.938291E-02	-1.641913E-01	-6.429428E-01	49	G	3.065585E-02	-4.677365E-02	-7.304396E-01
7	G	4.579883E-02	-1.614809E-02	-6.968079E-01	50	G	-2.613509E-02	-1.282218E-01	-7.304396E-01
8	G	-5.205009E-02	-1.682501E-01	-6.968079E-01	51	G	1.168868E-02	-7.298148E-02	-8.031671E-01
9	G	4.766001E-02	-1.572216E-02	-7.482406E-01	52	G	-4.567571E-03	-9.421349E-02	-8.031671E-01
10	G	-5.198109E-02	-1.674160E-01	-7.482406E-01	53	G	2.355809E-02	-3.350735E-02	6.708410E-01
11	G	4.917436E-02	-1.689820E-02	-7.969216E-01	54	G	-2.747697E-02	-1.331303E-01	6.708410E-01
12	G	-5.105338E-02	-1.645674E-01	-7.969216E-01	55	G	2.247876E-02	-2.245716E-02	5.013046E-01
13	G	3.665185E-02	-2.915621E-02	-9.743714E-02	56	G	-2.617274E-02	-1.440450E-01	5.013045E-01
14	G	-4.588894E-02	-1.511067E-01	-9.743714E-02	57	G	2.491363E-02	-1.291981E-02	3.562143E-01
15	G	3.972035E-02	-1.980677E-02	-2.276379E-01	58	G	-2.763959E-02	-1.533124E-01	3.562143E-01
16	G	-4.785591E-02	-1.604079E-01	-2.276379E-01	59	G	2.813990E-02	-7.881470E-03	2.241585E-01
17	G	4.160961E-02	-1.453505E-02	-3.556210E-01	60	G	-2.887401E-02	-1.581915E-01	2.241584E-01
18	G	-4.877896E-02	-1.655671E-01	-3.556210E-01	61	G	3.277645E-02	-9.365145E-03	1.008250E-01
19	G	4.516109E-02	-9.529229E-03	-4.810355E-01	62	G	-3.558275E-02	-1.566389E-01	1.008250E-01
20	G	-5.083345E-02	-1.704600E-01	-4.810355E-01	63	G	3.646053E-02	-1.274293E-02	-1.343622E-02
21	G	4.679027E-02	-1.022616E-02	-6.044708E-01	64	G	-3.622636E-02	-1.533968E-01	-1.343622E-02
22	G	-5.118130E-02	-1.696659E-01	-6.044708E-01	65	G	4.672579E-02	-1.595959E-02	-1.137612E-01
23	G	4.952800E-02	-1.175364E-02	-7.245735E-01	66	G	-4.405288E-02	-1.507002E-01	-1.137612E-01
24	G	-5.154607E-02	-1.681015E-01	-7.245735E-01	67	G	3.495954E-02	-3.163930E-02	-2.404034E-01
25	G	5.227623E-02	-1.713242E-02	-8.436297E-01	68	G	-3.082104E-02	-1.345160E-01	-2.404034E-01
26	G	-5.182943E-02	-1.627062E-01	-8.436297E-01	69	G	2.731455E-02	-4.846417E-02	-3.620449E-01
27	G	4.105681E-02	-3.215489E-02	-9.068104E-01	70	G	-2.136052E-02	-1.215962E-01	-3.620449E-01
28	G	-3.819554E-02	-1.455935E-01	-9.068104E-01	71	G	9.953681E-03	-7.216239E-02	-4.317274E-01
29	G	3.041660E-02	-4.913503E-02	-9.680865E-01	72	G	-3.053623E-03	-9.000689E-02	-4.317274E-01
30	G	-2.583409E-02	-1.288501E-01	-9.680865E-01	73	G	-1.315415E-03	-2.689954E-02	8.069718E-01
31	G	1.091192E-02	-7.582819E-02	-1.000000E 00	74	G	-2.008953E-04	-1.327373E-01	8.069718E-01
32	G	-4.409548E-03	-9.726280E-02	-1.000000E 00	75	G	1.033983E-03	-1.995404E-02	7.027183E-01
33	G	3.598137E-02	-2.287552E-02	3.343211E-01	76	G	5.045518E-03	-1.386991E-01	7.027183E-01
34	G	-4.373651E-02	-1.498072E-01	3.343211E-01	77	G	2.972815E-03	-1.248252E-02	5.958457E-01
35	G	3.559904E-02	-1.386329E-02	2.033544E-01	78	G	4.949678E-03	-1.461591E-01	5.958457E-01
36	G	-4.254077E-02	-1.588094E-01	2.033544E-01	79	G	6.827231E-03	-7.283427E-03	4.865997E-01
37	G	3.851084E-02	-4.898373E-03	7.188827E-02	80	G	-3.130130E-03	-1.520035E-01	4.865997E-01
38	G	-4.439381E-02	-1.677420E-01	7.188827E-02	81	G	6.189715E-03	-7.380471E-03	3.759840E-01
39	G	4.241585E-02	6.393180E-04	-5.937070E-02	82	G	1.424251E-03	-1.517138E-01	3.759840E-01
40	G	-4.757369E-02	-1.732270E-01	-5.937070E-02	83	G	1.734739E-02	-8.585948E-03	2.649485E-01
41	G	4.367810E-02	-1.794405E-03	-1.906433E-01	84	G	-1.916292E-02	-1.517736E-01	2.649485E-01
42	G	-4.634536E-02	-1.707938E-01	-1.906433E-01	85	G	2.078212E-02	-1.204945E-02	1.531056E-01
43	G	4.738529E-02	-5.441703E-03	-3.221296E-01	86	G	-2.690557E-02	-1.473853E-01	1.531056E-01

CONDENSED MASS MATRIX - 82 X 82
EIGENVALUE # 4.326591E 04

REAL EIGENVECTOR NO. 3

POINT ID.	TYPE	T1	T2	T3	PCINT ID.	TYPE	T1	T2	T3
87	G	2.172996E-02	-2.917964E-02	3.246603E-02	144	G	1.867844E-02	-1.883042E-02	1.414903E-01
88	G	-1.657451E-02	-1.285840E-01	3.246603E-02	145	G	-3.624219E-03	-6.092381E-03	1.285762E-01
89	G	2.075921E-02	-4.642081E-02	-8.018911E-02	146	G	1.651151E-02	-1.796368E-02	1.285762E-01
90	G	-8.054662E-03	-1.146422E-01	-8.018911E-02	147	G	4.950192E-03	-8.188110E-03	1.142211E-01
91	G	1.306224E-02	-6.853449E-02	-1.476079E-01	148	G	1.737712E-02	-1.666375E-02	1.142211E-01
92	G	5.523706E-03	-8.458561E-02	-1.476079E-01	149	G	1.324832E-02	-1.095017E-02	1.048788E-01
93	G	-4.589517E-03	-1.717960E-02	4.627650E-01	150	G	1.575751E-02	-1.270654E-02	1.048788E-01
94	G	8.491062E-03	-1.180060E-01	4.627650E-01	151	G	-2.878106E-02	-3.492823E-03	6.462121E-02
95	G	-3.744800E-02	-1.687030E-02	5.912295E-01	152	G	2.997157E-02	-5.134246E-04	6.462121E-02
96	G	3.877586E-02	-7.059205E-02	5.912295E-01	153	G	-2.683052E-02	-5.843613E-03	5.890620E-02
97	G	-2.475519E-02	-1.367638E-02	5.415827E-01	154	G	2.501731E-02	-8.215464E-04	5.890620E-02
98	G	1.650474E-02	-7.632041E-02	5.415827E-01	155	G	-2.372941E-02	-6.831694E-03	5.599753E-02
101	G	-1.687379E-02	-9.964414E-03	4.865787E-01	156	G	2.081497E-02	-1.223773E-03	5.599753E-02
102	G	1.319639E-02	-8.126521E-02	4.865787E-01	157	G	-2.093583E-02	-6.953444E-03	5.431772E-02
103	G	-1.321500E-03	-4.358831E-02	3.459267E-01	158	G	1.824990E-02	-1.715087E-03	5.431772E-02
105	G	-1.300441E-02	-5.452503E-03	4.262604E-01	159	G	-1.831252E-02	-6.237764E-03	5.284040E-02
106	G	1.187349E-02	-5.250763E-02	4.262604E-01	160	G	1.695823E-02	-2.474183E-03	5.284040E-02
107	G	-1.323709E-03	-2.486504E-02	3.065848E-01	161	G	-1.443951E-02	-4.290435E-03	5.068329E-02
109	G	-9.664547E-03	-5.129367E-03	3.634619E-01	162	G	1.575256E-02	-3.882017E-03	5.068329E-02
110	G	9.397898E-03	-5.164723E-02	3.634619E-01	163	G	-1.342856E-02	-2.206454E-03	4.612677E-02
113	G	-1.160229E-02	-7.121291E-03	3.001950E-01	164	G	1.806292E-02	-5.109388E-03	4.612677E-02
114	G	-1.279871E-04	-8.203983E-02	3.001950E-01	165	G	-5.858645E-03	-1.329983E-03	3.695667E-02
115	G	-4.742492E-03	-8.382659E-03	2.422166E-01	166	G	1.592371E-02	-4.443642E-03	3.695667E-02
116	G	3.105684E-03	-8.012366E-02	2.422166E-01	167	G	-3.996002E-04	-1.285523E-03	2.810739E-02
117	G	5.387947E-03	-1.671718E-02	1.783396E-01	168	G	1.477619E-02	-3.190230E-03	2.810739E-02
118	G	5.047668E-03	-7.131565E-02	1.783396E-01	169	G	7.484172E-03	-1.613080E-03	1.942048E-02
119	G	1.271226E-02	-2.673677E-02	1.168039E-01	170	G	1.026401E-02	-1.852880E-03	1.942048E-02
120	G	9.290770E-03	-6.374073E-02	1.168039E-01	171	G	-2.187360E-02	-2.794258E-03	4.143449E-02
121	G	1.815376E-02	-3.876912E-02	7.819486E-02	172	G	2.277840E-02	-4.107398E-04	4.143449E-02
122	G	1.520118E-02	-4.688171E-02	7.819486E-02	173	G	-2.346668E-02	-7.823545E-03	2.839378E-02
123	G	-3.558331E-02	-8.951392E-03	1.609220E-01	174	G	2.131540E-02	1.295715E-03	2.839378E-02
124	G	3.845309E-02	-1.505805E-02	1.609220E-01	175	G	-2.106299E-02	-8.371420E-03	1.998553E-02
125	G	-2.827329E-02	-8.802991E-03	1.613113E-01	176	G	1.765040E-02	8.566633E-04	1.998553E-02
126	G	2.708249E-02	-1.104814E-02	1.613113E-01	177	G	-1.867576E-02	-8.368485E-03	1.441560E-02
129	G	-2.415385E-02	-8.442879E-03	1.629066E-01	178	G	1.502539E-02	1.036158E-03	1.441560E-02
130	G	2.080873E-02	-1.005621E-02	1.629066E-01	179	G	-1.585670E-02	-7.507253E-03	1.084388E-02
133	G	-2.106199E-02	-7.724509E-03	1.632050E-01	180	G	1.291806E-02	1.230998E-03	1.084388E-02
134	G	1.843938E-02	-1.125172E-02	1.632050E-01	181	G	-1.204157E-02	-5.413689E-03	8.818869E-03
137	G	-1.887210E-02	-6.919492E-03	1.612406E-01	182	G	1.075403E-02	8.922189E-04	8.818869E-03
138	G	1.675818E-02	-1.386886E-02	1.612406E-01	183	G	-4.834279E-03	-7.501943E-04	8.804422E-03
141	G	-1.861357E-02	-5.760122E-03	1.558549E-01	184	G	6.141391E-03	-1.686099E-03	8.804422E-03
142	G	1.744272E-02	-1.741917E-02	1.558549E-01	185	G	-6.411839E-03	2.022125E-04	-1.068278E-02
143	G	-1.498135E-02	-4.909657E-03	1.414903E-01	186	G	1.324743E-02	2.852333E-03	-1.068278E-02

CONDENSED MASS MATRIX - 82 X 82
EIGENVALUE # 4.326591E 04

REAL EIGENVECTOR NO. 3

POINT ID.	TYPE	T1	T2	T3
187	G	-1.533735E-03	3.553339E-03	-3.117509E-02
188	G	1.309499E-02	3.864565E-03	-3.117509E-02
189	G	7.754140E-03	6.462511E-03	-5.562136E-02
190	G	8.600518E-03	5.206671E-03	-5.562136E-02
191	G	0.0	0.0	0.0
192	G	0.0	0.0	0.0
193	G	0.0	0.0	0.0
194	G	0.0	0.0	0.0

CONDENSED MASS MATRIX - 82 X 82
EIGENVALUE # 1.199669E 05

REAL EIGENVECTOR NO. 4

POINT ID.	TYPE	T1	T2	T3	POINT ID.	TYPE	T1	T2	T3
1	G	3.555513E-02	-4.059912E-02	-1.000000E 00	44	G	-2.711607E-02	6.598210E-02	2.174084E-01
2	G	-5.257584E-02	4.364522E-02	-1.000000E 00	45	G	2.891637E-02	-3.012671E-02	2.886665E-01
3	G	3.930432E-02	-5.052624E-02	-8.408457E-01	46	G	-2.332233E-02	6.509018E-02	2.886665E-01
4	G	-5.463366E-02	5.480513E-02	-8.408457E-01	47	G	2.223426E-02	-1.959470E-02	3.826801E-01
5	G	4.033278E-02	-6.004025E-02	-6.751068E-01	48	G	-1.251613E-02	5.343742E-02	3.826801E-01
6	G	-5.343856E-02	6.586051E-02	-6.751068E-01	49	G	1.774006E-02	-7.643279E-03	4.713970E-01
7	G	4.236242E-02	-6.874436E-02	-5.060665E-01	50	G	-2.596673E-03	4.422270E-02	4.713970E-01
8	G	-5.240013E-02	7.662946E-02	-5.060665E-01	51	G	1.069744E-02	9.173844E-03	5.183604E-01
9	G	4.215118E-02	-7.042825E-02	-3.355758E-01	52	G	5.911224E-03	2.233608E-02	5.183604E-01
10	G	-4.840958E-02	8.082616E-02	-3.355758E-01	53	G	1.894242E-02	-6.719694E-03	1.119378E-01
11	G	4.269644E-02	-6.569302E-02	-1.650772E-01	54	G	-3.134073E-02	5.604718E-02	1.119378E-01
12	G	-4.404338E-02	7.944006E-02	-1.650772E-01	55	G	1.674796E-02	-6.583054E-03	1.091182E-01
13	G	3.897997E-02	-3.747964E-02	-6.012461E-01	56	G	-2.684185E-02	5.596938E-02	1.091182E-01
14	G	-5.655092E-02	5.442815E-02	-6.012461E-01	57	G	1.325453E-02	-8.101020E-03	1.292101E-01
15	G	3.901026E-02	-4.440505E-02	-5.140659E-01	58	G	-2.116630E-02	5.762889E-02	1.292101E-01
16	G	-5.349317E-02	6.145598E-02	-5.140659E-01	59	G	1.119456E-02	-1.017962E-02	1.631659E-01
17	G	3.823030E-02	-4.992798E-02	-4.193879E-01	60	G	-1.459061E-02	5.971382E-02	1.631658E-01
18	G	-4.992911E-02	6.721205E-02	-4.193879E-01	61	G	7.721762E-03	-1.130474E-02	2.091458E-01
19	G	3.978338E-02	-5.591759E-02	-3.181037E-01	62	G	-7.144000E-03	6.072278E-02	2.091458E-01
20	G	-4.859037E-02	7.344890E-02	-3.181037E-01	63	G	2.657752E-03	-1.199319E-02	2.715093E-01
21	G	3.947249E-02	-5.706866E-02	-2.133330E-01	64	G	1.415425E-03	6.159309E-02	2.715092E-01
22	G	-4.495184E-02	7.479149E-02	-2.133330E-01	65	G	-2.430169E-04	-9.985019E-03	3.625618E-01
23	G	4.191117E-02	-5.678418E-02	-1.060705E-01	66	G	5.998891E-03	6.029279E-02	3.625616E-01
24	G	-4.327168E-02	7.463032E-02	-1.060705E-01	67	G	-3.543813E-04	-2.074983E-04	4.319021E-01
25	G	4.853388E-02	-5.191834E-02	3.932886E-03	68	G	1.134231E-02	5.075932E-02	4.319021E-01
26	G	-4.404599E-02	6.976175E-02	3.932886E-03	69	G	7.111949E-04	9.086251E-03	4.925850E-01
27	G	3.048316E-02	-4.365536E-02	1.868497E-01	70	G	1.384010E-02	4.355950E-02	4.925850E-01
28	G	-2.082241E-02	6.395465E-02	1.868497E-01	71	G	6.762400E-03	2.048698E-02	5.251747E-01
29	G	2.128041E-02	-2.558852E-02	3.536195E-01	72	G	1.072313E-02	2.862002E-02	5.251747E-01
30	G	-6.416421E-03	5.423831E-02	3.536195E-01	73	G	-5.580045E-04	3.034955E-02	2.295916E-01
31	G	1.205741E-02	-3.418250E-04	4.468542E-01	74	G	-7.528096E-03	2.628751E-02	2.295916E-01
32	G	5.226996E-03	2.140855E-02	4.468542E-01	75	G	-1.902052E-04	3.077868E-02	2.268609E-01
33	G	3.547367E-02	-2.240483E-02	-1.834168E-01	76	G	-5.089510E-03	2.718776E-02	2.268609E-01
34	G	-5.172556E-02	5.746970E-02	-1.834168E-01	77	G	1.511394E-03	3.168360E-02	2.228081E-01
35	G	3.156729E-02	-2.796085E-02	-1.001654E-01	78	G	-4.764225E-03	2.745426E-02	2.228081E-01
36	G	-4.472559E-02	6.295091E-02	-1.001654E-01	79	G	-9.987339E-03	3.161892E-02	2.171227E-01
37	G	3.110947E-02	-3.311450E-02	-1.757279E-02	80	G	5.184533E-04	2.803870E-02	2.171227E-01
38	G	-4.082091E-02	6.791312E-02	-1.757279E-02	81	G	-1.943838E-02	3.137831E-02	2.096890E-01
39	G	3.031992E-02	-3.583876E-02	6.320810E-02	82	G	1.311038E-02	2.924897E-02	2.096890E-01
40	G	-3.683432E-02	7.049572E-02	6.320810E-02	83	G	-2.215139E-02	3.198375E-02	2.021901E-01
41	G	2.808189E-02	-3.368909E-02	1.419216E-01	84	G	2.964906E-02	3.010341E-02	2.021901E-01
42	G	-3.106851E-02	6.827879E-02	1.419216E-01	85	G	-3.286956E-02	3.105942E-02	1.904725E-01
43	G	2.789102E-02	-3.132330E-02	2.174084E-01	86	G	5.509584E-02	3.132740E-02	1.904725E-01

CONDENSED MASS MATRIX - 82 X 82
EIGENVALUE # 1.199669E 05

REAL EIGENVECTOR NO. 4

POINT ID.	TYPE	T1	T2	T3	POINT ID.	TYPE	T1	T2	T3
87	G	-2.304812E-02	3.135922E-02	1.916354E-01	144	G	7.615335E-03	-4.673264E-02	-4.415938E-01
88	G	3.626473E-02	3.006777E-02	1.916354E-01	145	G	-3.669892E-03	4.279884E-02	-5.404232E-01
89	G	-1.943603E-02	3.140894E-02	1.897175E-01	146	G	1.109809E-02	-3.438333E-02	-5.404232E-01
90	G	2.959511E-02	2.945164E-02	1.897175E-01	147	G	-2.246271E-03	2.735411E-02	-6.338279E-01
91	G	-6.535508E-03	3.089990E-02	1.876969E-01	148	G	8.247953E-03	-2.302667E-02	-6.338279E-01
92	G	9.654187E-03	3.020319E-02	1.876969E-01	149	G	3.989443E-03	1.028264E-02	-6.894191E-01
93	G	-1.668667E-02	1.787492E-02	1.224695E-01	150	G	4.127532E-03	9.558543E-04	-6.894191E-01
94	G	5.725332E-05	6.284523E-02	1.224695E-01	151	G	-1.428572E-02	2.364486E-02	-1.562354E-03
95	G	-1.530132E-02	5.058330E-02	1.805354E-01	152	G	2.003575E-02	-3.038600E-02	-1.562354E-03
96	G	1.293671E-02	-3.490392E-04	1.805354E-01	153	G	-1.139514E-02	3.013878E-02	-6.139603E-02
97	G	-1.571421E-02	5.367368E-02	1.263722E-01	154	G	1.296350E-02	-3.464468E-02	-6.139603E-02
98	G	5.096670E-03	-6.039150E-03	1.263722E-01	155	G	-1.010545E-02	3.609160E-02	-1.221746E-01
101	G	-2.111085E-02	5.658096E-02	6.909662E-02	156	G	9.152502E-03	-3.911159E-02	-1.221746E-01
102	G	5.960200E-03	-1.123930E-02	6.909662E-02	157	G	-8.390661E-03	4.138826E-02	-1.845673E-01
103	G	-3.622661E-03	2.669055E-02	2.311012E-04	158	G	6.343499E-03	-4.311375E-02	-1.845673E-01
105	G	-1.874936E-02	6.098091E-02	8.222573E-03	159	G	-5.712092E-03	4.597631E-02	-2.487891E-01
106	G	3.138818E-03	7.707909E-03	8.222573E-03	160	G	5.383305E-03	-4.602834E-02	-2.487891E-01
107	G	-2.735342E-03	1.582626E-02	-7.424879E-02	161	G	-1.853682E-03	4.910221E-02	-3.152797E-01
109	G	-2.520471E-02	6.081315E-02	-6.817722E-02	162	G	2.846288E-03	-4.824654E-02	-3.152797E-01
110	G	1.155286E-02	3.966592E-03	-6.817722E-02	163	G	1.333656E-02	5.883457E-02	-3.878372E-01
113	G	-2.754578E-02	5.701756E-02	-1.592169E-01	164	G	-8.229908E-03	-5.673696E-02	-3.878372E-01
114	G	2.587648E-02	-4.540889E-02	-1.592169E-01	165	G	3.212875E-03	4.586553E-02	-4.798374E-01
115	G	-3.198432E-02	5.457617E-02	-2.427757E-01	166	G	1.168800E-03	-4.375929E-02	-4.798374E-01
116	G	4.806675E-02	-4.243895E-02	-2.427757E-01	167	G	3.844011E-03	3.326386E-02	-5.709736E-01
117	G	-2.394128E-02	4.201686E-02	-3.323367E-01	168	G	5.964476E-04	-3.096393E-02	-5.709736E-01
118	G	3.432738E-02	-2.859759E-02	-3.323367E-01	169	G	1.880591E-03	6.292000E-03	-6.612358E-01
119	G	-1.830789E-02	2.812894E-02	-4.123045E-01	170	G	4.367649E-04	-4.529797E-03	-6.612358E-01
120	G	2.402476E-02	-1.736387E-02	-4.123045E-01	171	G	-1.085715E-02	1.891589E-02	-1.486989E-03
121	G	-5.691864E-03	1.312573E-02	-4.593087E-01	172	G	1.522717E-02	-2.430880E-02	-1.486989E-03
122	G	5.742893E-03	3.447083E-03	-4.593087E-01	173	G	-6.395929E-03	2.357300E-02	-3.913923E-02
123	G	-1.588262E-02	4.642993E-02	3.509489E-02	174	G	8.617472E-03	-2.887999E-02	-3.913923E-02
124	G	1.982749E-02	-2.415191E-02	3.509489E-02	175	G	-2.651683E-03	2.734591E-02	-7.357520E-02
125	G	-1.526040E-02	4.988824E-02	-4.205016E-02	176	G	3.075040E-03	-3.200008E-02	-7.357520E-02
126	G	1.449931E-02	-3.212854E-02	-4.205016E-02	177	G	2.408082E-03	3.095152E-02	-1.040350E-01
129	G	-1.482638E-02	5.494457E-02	-1.215697E-01	178	G	-2.680936E-03	-3.424869E-02	-1.040350E-01
130	G	1.585967E-02	-4.040997E-02	-1.215697E-01	179	G	9.037402E-03	3.379940E-02	-1.300018E-01
133	G	-1.703586E-02	5.785350E-02	-2.017725E-01	180	G	-8.786704E-03	-3.522090E-02	-1.300018E-01
134	G	9.120677E-03	-4.582172E-02	-2.017725E-01	181	G	1.490004E-02	3.359833E-02	-1.504540E-01
137	G	-1.504188E-02	5.728568E-02	-2.817072E-01	182	G	-1.314295E-02	-3.287722E-02	-1.504540E-01
138	G	1.011515E-02	-4.735259E-02	-2.817072E-01	183	G	4.801162E-03	2.000375E-02	-1.653095E-01
141	G	-1.268730E-02	5.521742E-02	-3.609376E-01	184	G	-2.798168E-03	-1.872320E-02	-1.653095E-01
142	G	2.239411E-02	-4.668205E-02	-3.609376E-01	185	G	4.257236E-03	4.559812E-02	-2.964329E-01
143	G	-1.024695E-03	5.501441E-02	-4.415938E-01	186	G	-6.367252E-04	-4.303460E-02	-2.964329E-01

CONDENSED MASS MATRIX - 82 X 82
EIGENVALUE # 1.199669E 05

REAL EIGENVECTOR NO. 4

POINT ID.	TYPE	T1	T2	T3
187	G	3.345568E-03	4.102465E-02	-4.385950E-01
188	G	3.692759E-04	-3.850487E-02	-4.385950E-01
189	G	3.353158E-03	7.316690E-03	-5.998932E-01
190	G	1.855826E-03	-3.548186E-03	-5.998932E-01
191	G	0.0	0.0	0.0
192	G	0.0	0.0	0.0
193	G	0.0	0.0	0.0
194	G	0.0	0.0	0.0

APPENDIX B

UNDAMAGED WING: 17 DEGREES OF FREEDOM SOLUTION

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00000000011111111112222222222333333333344444444445555555555666666666677777777778
12345678901234567890123456789012345678901234567890123456789012345678901234567890

$       ***********************************************************************
$       *                      ADDITIONAL BULK DATA FOR                       *
$       *               F 84 WING PROJECT - UNDAMAGED WING                    *
$       *                  CONDENSED MASS MATRIX - 17 X 17                    *
$       ***********************************************************************
$
$
$       ***********************************************************************
$       *                    OMITTED DEGREES OF FREEDOM                       *
$       ***********************************************************************
$
OMIT1   3       3       5       7       9       11      15      17
OMIT1   3       19      21      23      27      29      31      35
OMIT1   3       37      39      41      43      47      49      51
OMIT1   3       67      69      71      75      77      79      81
OMIT1   3       83      87      89      91      93      97      101
OMIT1   3       105     109     113     117     119     121     125
OMIT1   3       129     133     137     141     145     147     149
OMIT1   3       153     155     157     159     161     165     167
OMIT1   3       169     173     175     177     179     181     185
OMIT1   3       187     189
ENDDATA
```

CONDENSED MASS MATRIX - 17 X 17

REAL EIGENVALUES

MODE NO.	EXTRACTION ORDER	EIGENVALUE	RADIANS	CYCLES	GENERALIZED MASS	GENERALIZED STIFFNESS
1	17	1.915057E 03	4.376137E 01	6.964839E 00	5.282393E-01	1.011608E 03
2	16	2.158105E 04	1.469049E 02	2.338065E 01	3.905166E-01	8.427758E 03
3	15	4.369478E 04	2.090330E 02	3.326863E 01	6.733770E-01	2.942306E 04
4	14	1.246784E 05	3.530984E 02	5.619736E 01	3.980706E-01	4.963082E 04
5	13	2.784779E 05	5.277160E 02	8.398766E 01	0.0	0.0
6	12	2.939069E 05	5.421318E 02	8.628297E 01	0.0	0.0
7	11	6.541221E 05	8.087781E 02	1.287211E 02	0.0	0.0
8	10	8.002711E 05	8.945786E 02	1.423766E 02	0.0	0.0
9	9	1.397331E 06	1.182088E 03	1.881351E 02	0.0	0.0
10	8	1.664125E 06	1.290010E 03	2.053115E 02	0.0	0.0
11	7	2.185773E 06	1.478436E 03	2.353004E 02	0.0	0.0
12	6	3.057087E 06	1.748453E 03	2.782749E 02	0.0	0.0
13	5	3.486708E 06	1.867273E 03	2.971855E 02	0.0	0.0
14	4	6.046200E 06	2.458902E 03	3.913464E 02	0.0	0.0
15	3	7.722652E 06	2.778966E 03	4.422861E 02	0.0	0.0
16	2	9.436723E 06	3.071925E 03	4.889121E 02	0.0	0.0
17	1	8.854835E 07	9.410012E 03	1.497650E 03	0.0	0.0

CONDENSED MASS MATRIX - 17 X 17
EIGENVALUE # 1.915057E 03

REAL EIGENVECTOR NO. 1

POINT ID.	TYPE	T1	T2	T3	POINT ID.	TYPE	T1	T2	T3
1	G	1.196496E-02	-1.504230E-03	-1.000000E 00	44	G	-2.652879E-02	-2.733996E-03	-6.926513E-01
2	G	-2.085740E-02	-4.279751E-03	-1.000000E 00	45	G	1.952203E-02	1.222451E-03	-6.961862E-01
3	G	1.468344E-02	-1.228517E-03	-9.770063E-01	46	G	-2.553747E-02	-2.607511E-03	-6.961862E-01
4	G	-2.316152E-02	-4.240293E-03	-9.770063E-01	47	G	1.438182E-02	7.223513E-04	-6.996140E-01
5	G	1.671481E-02	-1.035903E-03	-9.533699E-01	48	G	-1.971816E-02	-2.093300E-03	-6.996140E-01
6	G	-2.479183E-02	-4.127413E-03	-9.533699E-01	49	G	9.825144E-03	2.557978E-04	-7.027200E-01
7	G	1.878905E-02	-8.283441E-04	-9.297289E-01	50	G	-1.458735E-02	-1.716937E-03	-7.027200E-01
8	G	-2.641102E-02	-3.996383E-03	-9.297289E-01	51	G	1.137918E-03	-3.759617E-04	-7.044535E-01
9	G	1.932176E-02	-6.874958E-04	-9.060643E-01	52	G	-5.416188E-03	-9.026383E-04	-7.044535E-01
10	G	-2.646092E-02	-3.783143E-03	-9.060643E-01	53	G	1.472420E-02	1.832068E-03	-5.126265E-01
11	G	1.901588E-02	-5.154943E-04	-8.823503E-01	54	G	-2.346027E-02	-7.068897E-04	-5.126265E-01
12	G	-2.561557E-02	-3.555756E-03	-8.823503E-01	55	G	1.656330E-02	2.276649E-03	-5.196795E-01
13	G	1.291285E-02	-3.813950E-04	-8.415495E-01	56	G	-2.499034E-02	-1.180695E-03	-5.196795E-01
14	G	-2.195729E-02	-3.269692E-03	-8.415495E-01	57	G	1.865165E-02	2.579492E-03	-5.250363E-01
15	G	1.552819E-02	-1.796449E-04	-8.444365E-01	58	G	-2.671906E-02	-1.562518E-03	-5.250362E-01
16	G	-2.412255E-02	-3.471119E-03	-8.444365E-01	59	G	2.029828E-02	2.639286E-03	-5.294274E-01
17	G	1.719414E-02	-7.508774E-05	-8.473107E-01	60	G	-2.821412E-02	-1.713611E-03	-5.294273E-01
18	G	-2.532017E-02	-3.576427E-03	-8.473107E-01	61	G	2.024525E-02	2.450430E-03	-5.330716E-01
19	G	1.897601E-02	2.005885E-05	-8.501500E-01	62	G	-2.764220E-02	-1.590442E-03	-5.330715E-01
20	G	-2.666480E-02	-3.673688E-03	-8.501500E-01	63	G	2.004039E-02	2.215477E-03	-5.357966E-01
21	G	1.922444E-02	-1.247032E-05	-8.529814E-01	64	G	-2.663551E-02	-1.405017E-03	-5.357965E-01
22	G	-2.640691E-02	-3.644999E-03	-8.529814E-01	65	G	2.024958E-02	2.120795E-03	-5.369121E-01
23	G	1.929550E-02	-5.708582E-05	-8.557738E-01	66	G	-2.617014E-02	-1.338765E-03	-5.369121E-01
24	G	-2.592950E-02	-3.607691E-03	-8.557738E-01	67	G	1.456039E-02	1.748561E-03	-5.401629E-01
25	G	1.829772E-02	-1.858286E-04	-8.585929E-01	68	G	-1.968627E-02	-9.447713E-04	-5.401629E-01
26	G	-2.435882E-02	-3.484031E-03	-8.585929E-01	69	G	9.956073E-03	1.319467E-03	-5.433480E-01
27	G	1.416573E-02	-5.336429E-04	-8.295658E-01	70	G	-1.440829E-02	-6.131951E-04	-5.433480E-01
28	G	-1.959314E-02	-2.917951E-03	-8.295658E-01	71	G	9.920285E-04	6.935743E-04	-5.451968E-01
29	G	9.540331E-03	-2.313709E-04	-8.026970E-01	72	G	-5.106065E-03	2.242004E-04	-5.451968E-01
30	G	-1.436780E-02	-1.927578E-03	-8.026970E-01	73	G	1.481067E-02	3.650554E-03	-3.635244E-01
31	G	1.081060E-03	-1.438546E-03	-7.867482E-01	74	G	-2.199617E-02	-1.011349E-03	-3.635244E-01
32	G	-5.340233E-03	-1.878250E-03	-7.867482E-01	75	G	1.660462E-02	3.885308E-03	-3.648146E-01
33	G	1.411954E-02	1.016187E-03	-6.757616E-01	76	G	-2.498970E-02	-1.212078E-03	-3.648146E-01
34	G	-2.318548E-02	-2.309841E-03	-6.757616E-01	77	G	1.825363E-02	4.105449E-03	-3.659469E-01
35	G	1.636376E-02	1.240743E-03	-6.791292E-01	78	G	-2.748284E-02	-1.400897E-03	-3.659469E-01
36	G	-2.498291E-02	-2.537199E-03	-6.791292E-01	79	G	1.849778E-02	4.205916E-03	-3.671255E-01
37	G	1.884190E-02	1.451246E-03	-6.824906E-01	80	G	-2.684782E-02	-1.361726E-03	-3.671255E-01
38	G	-2.706032E-02	-2.756258E-03	-6.824906E-01	81	G	1.882016E-02	4.230570E-03	-3.683125E-01
39	G	2.052376E-02	1.570464E-03	-6.858437E-01	82	G	-2.626419E-02	-1.295072E-03	-3.683125E-01
40	G	-2.822047E-02	-2.896014E-03	-6.858437E-01	83	G	1.890024E-02	4.266769E-03	-3.697192E-01
41	G	2.023929E-02	1.483136E-03	-6.892182E-01	84	G	-2.571439E-02	-1.321000E-03	-3.697192E-01
42	G	-2.744726E-02	-2.836951E-03	-6.892182E-01	85	G	1.876912E-02	4.220638E-03	-3.713309E-01
43	G	1.984907E-02	1.358896E-03	-6.926513E-01	86	G	-2.421699E-02	-1.119806E-03	-3.713309E-01

CONDENSED MASS MATRIX - 17 X 17
EIGENVALUE # 1.915057E 03

REAL EIGENVECTOR NO. 1

POINT ID.	TYPE	T1	T2	T3	POINT ID.	TYPE	T1	T2	T3
87	G	1.370194E-02	3.558157E-03	-3.761017E-01	144	G	-1.286086E-02	-7.605711E-04	-6.422299E-02
88	G	-1.820275E-02	-3.915946E-04	-3.761017E-01	145	G	8.431852E-03	4.120909E-03	-6.906664E-02
89	G	9.142350E-03	2.877835E-03	-3.805876E-01	146	G	-1.094884E-02	2.068674E-05	-6.906664E-02
90	G	-1.305407E-02	1.535041E-04	-3.805876E-01	147	G	5.196456E-03	3.330403E-03	-7.348955E-02
91	G	9.787560E-04	1.997845E-03	-3.832760E-01	148	G	-8.361399E-03	6.579834E-04	-7.348955E-02
92	G	-4.408967E-03	1.350667E-03	-3.832760E-01	149	G	-3.364424E-04	2.444671E-03	-7.632732E-02
93	G	1.765342E-02	6.914858E-03	-2.597418E-01	150	G	-3.191094E-03	1.896123E-03	-7.632732E-02
94	G	-2.659494E-02	2.212180E-03	-2.597418E-01	151	G	6.144524E-03	1.690601E-03	-1.340577E-02
95	G	1.267287E-02	4.848246E-03	-1.545216E-01	152	G	-6.966464E-03	-8.267254E-05	-1.340577E-02
96	G	-1.626005E-02	-5.748714E-04	-1.545216E-01	153	G	1.022956E-02	3.723190E-03	-1.379292E-02
97	G	1.343185E-02	5.217284E-03	-1.605021E-01	154	G	-9.534307E-03	-1.498539E-03	-1.379292E-02
98	G	-1.739630E-02	-1.331085E-03	-1.605021E-01	155	G	1.210158E-02	4.629213E-03	-1.482467E-02
101	G	1.521283E-02	5.608175E-03	-1.667685E-01	156	G	-1.055782E-02	-2.064853E-03	-1.482467E-02
102	G	-1.972556E-02	-1.920272E-03	-1.667685E-01	157	G	1.248109E-02	4.659526E-03	-1.584746E-02
103	G	-1.812701E-03	3.113790E-03	-2.088570E-01	158	G	-1.058977E-02	-1.985648E-03	-1.584746E-02
105	G	1.647092E-02	5.959924E-03	-1.728426E-01	159	G	1.154958E-02	3.937483E-03	-1.646705E-02
106	G	-2.131009E-02	1.525345E-03	-1.728426E-01	160	G	-1.020412E-02	-1.457595E-03	-1.646705E-02
107	G	-6.995976E-04	2.366944E-03	-1.096397E-01	161	G	9.262770E-03	2.485647E-03	-1.637351E-02
109	G	1.597955E-02	5.939104E-03	-1.783413E-01	162	G	-8.972403E-03	-2.789202E-04	-1.637351E-02
110	G	-1.829033E-02	1.782155E-03	-1.783413E-01	163	G	6.960623E-03	7.089709E-04	-1.470326E-02
113	G	1.547058E-02	5.797166E-03	-1.830484E-01	164	G	-8.016463E-03	1.234093E-03	-1.470326E-02
114	G	-1.899470E-02	-4.855311E-04	-1.830484E-01	165	G	4.679985E-03	7.666373E-04	-1.116848E-02
115	G	1.554494E-02	5.696662E-03	-1.882065E-01	166	G	-6.645184E-03	9.250175E-04	-1.116848E-02
116	G	-1.862030E-02	-3.369171E-04	-1.882065E-01	167	G	2.709919E-03	8.585143E-04	-8.048061E-03
117	G	1.125107E-02	4.977193E-03	-1.936302E-01	168	G	-5.478315E-03	5.990821E-04	-8.048061E-03
118	G	-1.451206E-02	4.245396E-04	-1.936302E-01	169	G	-9.493134E-04	6.998600E-04	-5.168624E-03
119	G	7.168081E-03	4.136682E-03	-1.988065E-01	170	G	-2.499921E-03	5.619726E-04	-5.168624E-03
120	G	-1.046754E-02	1.059073E-03	-1.988065E-01	171	G	4.669838E-03	1.352481E-03	-8.477461E-03
121	G	3.262914E-04	3.136842E-03	-2.020212E-01	172	G	-5.294513E-03	-6.613803E-05	-8.477461E-03
122	G	-3.536718E-03	2.461398E-03	-2.020212E-01	173	G	8.494657E-03	5.318113E-03	-6.696425E-03
123	G	7.938746E-03	4.277948E-03	-3.383060E-02	174	G	-7.845458E-03	-2.944126E-03	-6.696425E-03
124	G	-9.044122E-03	-1.848270E-04	-3.383060E-02	175	G	9.959653E-03	6.463788E-03	-5.457949E-03
125	G	1.110794E-02	4.557494E-03	-3.864618E-02	176	G	-8.540731E-03	-3.695678E-03	-5.457949E-03
126	G	-1.038702E-02	-6.450170E-04	-3.864618E-02	177	G	1.020142E-02	6.326284E-03	-4.080806E-03
129	G	1.333523E-02	5.007550E-03	-4.374154E-02	178	G	-8.470286E-03	-3.629014E-03	-4.080806E-03
130	G	-1.256500E-02	-1.187978E-03	-4.374154E-02	179	G	9.212151E-03	5.189065E-03	-2.562442E-03
133	G	1.440315E-02	5.303379E-03	-4.899375E-02	180	G	-7.692497E-03	-2.970812E-03	-2.562442E-03
134	G	-1.105129E-02	-1.458255E-03	-4.899375E-02	181	G	6.908450E-03	3.213519E-03	-1.104681E-03
137	G	1.396399E-02	5.304080E-03	-5.425534E-02	182	G	-6.013330E-03	-1.701549E-03	-1.104681E-03
138	G	-1.092985E-02	-1.301752E-03	-5.425534E-02	183	G	2.505824E-03	2.410501E-04	-4.274009E-04
141	G	1.263142E-02	5.097866E-03	-5.942348E-02	184	G	-2.725597E-03	4.072506E-04	-4.274009E-04
142	G	-1.279192E-02	-9.598911E-04	-5.942348E-02	185	G	4.040189E-03	6.321715E-04	8.344222E-03
143	G	1.107300E-02	4.889715E-03	-6.422299E-02	186	G	-5.366594E-03	-1.012207E-03	8.344222E-03

CONDENSED MASS MATRIX - 17 X 17
EIGENVALUE # 1.915057E 03

R E A L E I G E N V E C T O R N O . 1

POINT ID.	TYPE	T1	T2	T3
187	G	2.270198E-03	-5.116090E-04	1.758283E-02
188	G	-4.577585E-03	-7.515252E-04	1.758283E-02
189	G	-1.614050E-03	-1.534101E-03	2.878346E-02
190	G	-1.750685E-03	-6.619182E-04	2.878346E-02
191	G	0.0	0.0	0.0
192	G	0.0	0.0	0.0
193	G	0.0	0.0	0.0
194	G	0.0	0.0	0.0

CONDENSED MASS MATRIX - 17 X 17
EIGENVALUE # 2.158105E 04

REAL EIGENVECTOR NO. 2

POINT ID.	TYPE	T1	T2	T3	POINT ID.	TYPE	T1	T2	T3
1	G	-7.344272E-03	-1.280845E-02	1.000000E 00	44	G	4.084556E-02	-1.678828E-01	-6.888962E-02
2	G	3.906329E-02	-1.403438E-01	1.000000E 00	45	G	-1.219314E-02	4.745897E-03	-2.074201E-01
3	G	-1.070336E-02	-2.245676E-03	8.317533E-01	46	G	3.951515E-02	-1.640008E-01	-2.074201E-01
4	G	4.200972E-02	-1.512087E-01	8.317533E-01	47	G	-5.672704E-03	-1.506982E-02	-3.629374E-01
5	G	-1.274807E-02	5.809139E-03	6.634890E-01	48	G	3.214007E-02	-1.426141E-01	-3.629374E-01
6	G	4.373575E-02	-1.594653E-01	6.634890E-01	49	G	-4.537799E-04	-3.547460E-02	-5.098607E-01
7	G	-1.485422E-02	1.371853E-02	4.957167E-01	50	G	2.527493E-02	-1.264066E-01	-5.098607E-01
8	G	4.518471E-02	-1.677965E-01	4.957167E-01	51	G	9.412721E-03	-6.463569E-02	-5.911210E-01
9	G	-1.501267E-02	1.487633E-02	3.284669E-01	52	G	1.575747E-02	-8.848315E-02	-5.911210E-01
10	G	4.462718E-02	-1.693928E-01	3.284669E-01	53	G	-1.007665E-02	-1.392488E-02	4.691550E-01
11	G	-1.445166E-02	1.162479E-02	1.620162E-01	54	G	4.002721E-02	-1.495408E-01	4.691550E-01
12	G	4.318853E-02	-1.666839E-01	1.620162E-01	55	G	-1.061805E-02	-5.319294E-03	3.383567E-01
13	G	-9.141624E-03	-1.095190E-02	8.282426E-01	56	G	4.088693E-02	-1.579626E-01	3.383567E-01
14	G	4.097573E-02	-1.451200E-01	8.282426E-01	57	G	-1.014727E-02	3.761602E-03	2.045578E-01
15	G	-1.159674E-02	-6.723546E-04	6.892173E-01	58	G	4.024118E-02	-1.665474E-01	2.045578E-01
16	G	4.286595E-02	-1.553980E-01	6.892173E-01	59	G	-1.017065E-02	9.694185E-03	6.847429E-02
17	G	-1.287770E-02	5.776245E-03	5.506371E-01	60	G	4.109091E-02	-1.718869E-01	6.847423E-02
18	G	4.347036E-02	-1.618353E-01	5.506371E-01	61	G	-8.361075E-03	9.354688E-03	-7.058239E-02
19	G	-1.462066E-02	1.223141E-02	4.118813E-01	62	G	3.615810E-02	-1.710755E-01	-7.058239E-02
20	G	4.492790E-02	-1.682759E-01	4.118813E-01	63	G	-6.758552E-03	6.806191E-03	-2.149391E-01
21	G	-1.447111E-02	1.226905E-02	2.731548E-01	64	G	3.513932E-02	-1.684908E-01	-2.149391E-01
22	G	4.383506E-02	-1.682792E-01	2.731548E-01	65	G	-7.373672E-03	1.815493E-03	-3.696052E-01
23	G	-1.459778E-02	1.095830E-02	1.353433E-01	66	G	3.428179E-02	-1.640233E-01	-3.696052E-01
24	G	4.336162E-02	-1.669353E-01	1.353433E-01	67	G	8.664280E-05	-1.852540E-02	-5.211686E-01
25	G	-1.445448E-02	4.488137E-03	-4.001491E-03	68	G	2.536893E-02	-1.431173E-01	-5.211686E-01
26	G	4.193562E-02	-1.603776E-01	-4.001491E-03	69	G	4.380263E-03	-3.894984E-02	-6.640333E-01
27	G	-7.114228E-03	-1.104362E-02	-2.023004E-01	70	G	2.081914E-02	-1.270797E-01	-6.640333E-01
28	G	3.352138E-02	-1.441889E-01	-2.023004E-01	71	G	9.938359E-03	-6.736082E-02	-7.470924E-01
29	G	-8.885234E-04	-3.326660E-02	-3.894867E-01	72	G	1.432678E-02	-8.930379E-02	-7.470924E-01
30	G	2.604903E-02	-1.280908E-01	-3.894867E-01	73	G	-1.218317E-02	-1.740758E-02	3.172843E-01
31	G	8.641265E-03	-6.267673E-02	-4.960831E-01	74	G	3.437182E-02	-1.457147E-01	3.172843E-01
32	G	1.600799E-02	-8.810478E-02	-4.960831E-01	75	G	-9.831686E-03	-9.198193E-03	1.871139E-01
33	G	-1.031607E-02	-1.004862E-02	6.435421E-01	76	G	4.148428E-02	-1.525338E-01	1.871139E-01
34	G	4.179960E-02	-1.499127E-01	6.435421E-01	77	G	-9.451177E-03	-1.211253E-03	5.723899E-02
35	G	-1.162591E-02	-1.854698E-04	4.995509E-01	78	G	4.894147E-02	-1.596897E-01	5.723899E-02
36	G	4.246010E-02	-1.597109E-01	4.995509E-01	79	G	-2.012916E-03	4.215352E-03	-7.222039E-02
37	G	-1.359184E-02	9.489853E-03	3.560246E-01	80	G	3.984383E-02	-1.653056E-01	-7.222039E-02
38	G	4.412841E-02	-1.692358E-01	3.560246E-01	81	G	2.623830E-03	4.380818E-03	-2.011846E-01
39	G	-1.440876E-02	1.534701E-02	2.135391E-01	82	G	3.440822E-02	-1.653823E-01	-2.011846E-01
40	G	4.392216E-02	-1.749211E-01	2.135391E-01	83	G	3.750966E-03	7.832344E-04	-3.299277E-01
41	G	-1.326843E-02	1.254579E-02	7.180917E-02	84	G	1.634178E-02	-1.622192E-01	-3.299277E-01
42	G	4.291178E-02	-1.719737E-01	7.180917E-02	85	G	5.715903E-03	-3.671178E-03	-4.556149E-01
43	G	-1.257434E-02	8.557875E-03	-6.888962E-02	86	G	7.528279E-03	-1.562898E-01	-4.556149E-01

CONDENSED MASS MATRIX - 17 X 17
EIGENVALUE # 2.158105E 04

REAL EIGENVECTOR NO. 2

POINT ID.	TYPE	T1	T2	T3	POINT ID.	TYPE	T1	T2	T3
87	G	1.156264E-02	-2.300051E-02	-5.910910E-01	144	G	-1.797492E-02	-3.071608E-02	-1.978419E-01
88	G	1.123584E-02	-1.350257E-01	-5.910910E-01	145	G	2.584028E-02	9.401355E-03	-2.387541E-01
89	G	1.636272E-02	-4.244351E-02	-7.170053E-01	146	G	-8.660831E-03	-2.554369E-02	-2.387541E-01
90	G	1.374391E-02	-1.191690E-01	-7.170053E-01	147	G	2.578977E-02	2.842893E-03	-2.787723E-01
91	G	1.928326E-02	-6.727040E-02	-7.925124E-01	148	G	-7.715188E-04	-2.071107E-02	-2.787723E-01
92	G	1.714341E-02	-8.545262E-02	-7.925124E-01	149	G	1.976638E-02	-4.945096E-03	-3.043321E-01
93	G	1.508450E-03	1.466092E-02	-1.300087E-01	150	G	1.326593E-02	-9.695232E-03	-3.043321E-01
94	G	4.252728E-02	-1.787347E-01	-1.300087E-01	151	G	-3.143382E-03	4.467066E-03	-2.747644E-04
95	G	-9.751394E-03	-4.301552E-05	1.125838E-01	152	G	8.003592E-03	-1.058944E-02	-2.747644E-04
96	G	2.287566E-02	-8.220583E-02	1.125838E-01	153	G	1.003595E-03	6.953333E-03	-1.864490E-02
97	G	-4.745901E-03	4.608572E-03	2.696577E-02	154	G	8.223385E-04	-1.428588E-02	-1.864490E-02
98	G	2.182405E-02	-8.940351E-02	2.696577E-02	155	G	5.205028E-03	8.960556E-03	-3.691965E-02
101	G	8.232396E-04	8.466080E-03	-5.960171E-02	156	G	-5.711298E-03	-1.698045E-02	-3.691965E-02
102	G	2.186657E-02	-9.473991E-02	-5.960171E-02	157	G	9.328272E-03	1.016799E-02	-5.437058E-02
103	G	1.026910E-02	-3.986206E-02	-2.109836E-01	158	G	-1.111544E-02	-1.833823E-02	-5.437058E-02
105	G	3.703589E-03	1.336101E-02	-1.438808E-01	159	G	1.285015E-02	1.034822E-02	-7.034940E-02
106	G	2.424305E-02	-5.065675E-02	-1.438808E-01	160	G	-1.474444E-02	-1.817780E-02	-7.034940E-02
107	G	4.220597E-03	-2.005509E-02	-9.228367E-02	161	G	1.494224E-02	9.057228E-03	-8.443487E-02
109	G	1.066371E-02	1.215511E-02	-2.252267E-01	162	G	-1.266378E-02	-1.518681E-02	-8.443487E-02
110	G	7.737149E-03	-4.880311E-02	-2.252267E-01	163	G	1.886847E-02	8.296728E-03	-9.542817E-02
113	G	1.486518E-02	9.042118E-03	-3.011621E-01	164	G	-1.263703E-02	-1.276563E-02	-9.542817E-02
114	G	-7.060442E-03	-8.697653E-02	-3.011621E-01	165	G	1.749384E-02	7.213030E-03	-1.053323E-01
115	G	2.096017E-02	7.171433E-03	-3.774749E-01	166	G	-6.248392E-03	-1.014494E-02	-1.053323E-01
116	G	-1.509624E-02	-8.515126E-02	-3.774749E-01	167	G	1.668226E-02	5.845051E-03	-1.158605E-01
117	G	2.383711E-02	-3.917273E-03	-4.601736E-01	168	G	-1.770032E-03	-7.596340E-03	-1.158605E-01
118	G	-3.432799E-03	-7.389492E-02	-4.601736E-01	169	G	1.093325E-02	9.544105E-04	-1.272032E-01
119	G	2.711213E-02	-1.694956E-02	-5.389951E-01	170	G	6.947532E-03	-1.765845E-03	-1.272032E-01
120	G	5.857766E-03	-6.412858E-02	-5.389951E-01	171	G	-2.388971E-03	3.573656E-03	-4.751040E-04
121	G	2.650755E-02	-3.231237E-02	-5.880652E-01	172	G	6.082729E-03	-8.471556E-03	-4.751040E-04
122	G	1.949038E-02	-4.267013E-02	-5.880652E-01	173	G	1.553971E-03	6.266437E-03	-1.120340E-02
123	G	-4.452437E-03	1.070079E-02	1.332516E-02	174	G	-2.520673E-04	-1.322605E-02	-1.120340E-02
124	G	1.054631E-02	-2.545322E-02	1.332516E-02	175	G	5.466156E-03	8.503631E-03	-1.973223E-02
125	G	-8.949568E-04	1.235450E-02	-2.199974E-02	176	G	-6.159179E-03	-1.632341E-02	-1.973223E-02
126	G	3.676147E-03	-2.505002E-02	-2.199974E-02	177	G	9.202622E-03	1.005340E-02	-2.554047E-02
129	G	2.997851E-03	1.467403E-02	-5.593856E-02	178	G	-1.094557E-02	-1.754157E-02	-2.554047E-02
130	G	-3.125643E-03	-2.657362E-02	-5.593856E-02	179	G	1.206413E-02	1.042385E-02	-2.866297E-02
133	G	8.220453E-03	1.618420E-02	-8.987945E-02	180	G	-1.320890E-02	-1.613045E-02	-2.866297E-02
134	G	-1.124987E-02	-2.826750E-02	-8.987945E-02	181	G	1.275383E-02	8.861668E-03	-2.936870E-02
137	G	1.223194E-02	1.615081E-02	-1.243921E-01	182	G	-1.199665E-02	-1.200992E-02	-2.936870E-02
138	G	-1.688230E-02	-2.933091E-02	-1.243921E-01	183	G	6.792646E-03	2.820888E-03	-2.898635E-02
141	G	1.748150E-02	1.522685E-02	-1.601800E-01	184	G	-4.296590E-03	-4.212659E-03	-2.898635E-02
142	G	-2.866249E-02	-3.037468E-02	-1.601800E-01	185	G	1.517033E-02	1.087500E-02	-2.614208E-02
143	G	2.448701E-02	1.474201E-02	-1.978419E-01	186	G	-7.192530E-03	-6.729856E-03	-2.614208E-02

CONDENSED MASS MATRIX - 17 X 17
EIGENVALUE # 2.158105E 04

REAL EIGENVECTOR NO. 2

POINT ID.	TYPE	T1	T2	T3
187	G	1.460570E-02	1.060840E-02	-2.323081E-02
188	G	-2.333013E-03	-2.468392E-03	-2.323081E-02
189	G	8.716471E-03	6.179404E-03	-1.954031E-02
190	G	7.588204E-03	5.545449E-03	-1.954031E-02
191	G	0.0	0.0	0.0
192	G	0.0	0.0	0.0
193	G	0.0	0.0	0.0
194	G	0.0	0.0	0.0

CONDENSED MASS MATRIX - 17 X 17
EIGENVALUE # 4.369478E 04

REAL EIGENVECTOR NO. 3

POINT ID.	TYPE	T1	T2	T3	POINT ID.	TYPE	T1	T2	T3
1	G	4.070684E-02	-4.235703E-02	-6.187099E-01	44	G	-5.798275E-02	-1.984761E-01	-3.832045E-01
2	G	-5.250441E-02	-1.826431E-01	-6.187099E-01	45	G	6.097378E-02	-1.383790E-02	-5.381088E-01
3	G	4.590784E-02	-3.321835E-02	-6.864647E-01	46	G	-5.977606E-02	-1.931945E-01	-5.381088E-01
4	G	-5.683662E-02	-1.911750E-01	-6.864647E-01	47	G	4.779884E-02	-3.594846E-02	-7.013992E-01
5	G	4.942262E-02	-2.724400E-02	-7.517329E-01	48	G	-4.323340E-02	-1.696082E-01	-7.013992E-01
6	G	-5.900742E-02	-1.962723E-01	-7.517329E-01	49	G	3.653003E-02	-5.760384E-02	-8.529295E-01
7	G	5.423421E-02	-2.076687E-02	-8.160924E-01	50	G	-3.064986E-02	-1.521878E-01	-8.529295E-01
8	G	-6.208508E-02	-2.016557E-01	-8.160924E-01	51	G	1.427517E-02	-8.793080E-02	-9.370136E-01
9	G	5.642620E-02	-1.987936E-02	-8.792529E-01	52	G	-5.077753E-03	-1.128442E-01	-9.370136E-01
10	G	-6.184558E-02	-2.009604E-01	-8.792529E-01	53	G	2.745577E-02	-4.216157E-02	7.972394E-01
11	G	5.820864E-02	-2.136920E-02	-9.404567E-01	54	G	-3.299650E-02	-1.574232E-01	7.972394E-01
12	G	-6.059524E-02	-1.974040E-01	-9.404567E-01	55	G	2.625315E-02	-2.888057E-02	5.928202E-01
13	G	4.292351E-02	-3.661507E-02	-1.118301E-01	56	G	-3.142690E-02	-1.705276E-01	5.928202E-01
14	G	-5.476948E-02	-1.803828E-01	-1.118301E-01	57	G	2.912678E-02	-1.753786E-02	4.184643E-01
15	G	4.684450E-02	-2.578026E-02	-2.612534E-01	58	G	-3.306383E-02	-1.815054E-01	4.184642E-01
16	G	-5.727598E-02	-1.911851E-01	-2.612534E-01	59	G	3.300225E-02	-1.172337E-02	2.609055E-01
17	G	4.924271E-02	-1.938544E-02	-4.098735E-01	60	G	-3.443979E-02	-1.870704E-01	2.609054E-01
18	G	-5.839032E-02	-1.975070E-01	-4.098735E-01	61	G	3.854944E-02	-1.374571E-02	1.149306E-01
19	G	5.349752E-02	-1.312596E-02	-5.578203E-01	62	G	-4.249219E-02	-1.849025E-01	1.149306E-01
20	G	-6.070903E-02	-2.037066E-01	-5.578203E-01	63	G	4.295996E-02	-1.803203E-02	-1.916473E-02
21	G	5.544264E-02	-1.362967E-02	-7.055560E-01	64	G	-4.298151E-02	-1.807305E-01	-1.916473E-02
22	G	-6.100800E-02	-2.031506E-01	-7.055560E-01	65	G	5.535926E-02	-2.222319E-02	-1.360894E-01
23	G	5.868787E-02	-1.530218E-02	-8.519833E-01	66	G	-5.223229E-02	-1.771426E-01	-1.360894E-01
24	G	-6.125798E-02	-2.014672E-01	-8.519833E-01	67	G	4.150121E-02	-4.041777E-02	-2.794503E-01
25	G	6.224483E-02	-2.210945E-02	-1.000000E 00	68	G	-3.626354E-02	-1.584454E-01	-2.794503E-01
26	G	-6.169136E-02	-1.946075E-01	-1.000000E 00	69	G	3.262211E-02	-5.959240E-02	-4.171105E-01
27	G	4.861502E-02	-4.144247E-02	-1.069145E 00	70	G	-2.475625E-02	-1.436557E-01	-4.171105E-01
28	G	-4.498314E-02	-1.728730E-01	-1.069145E 00	71	G	1.206306E-02	-8.674359E-02	-4.968921E-01
29	G	3.626916E-02	-6.098390E-02	-1.135710E 00	72	G	-3.190058E-03	-1.074764E-01	-4.968921E-01
30	G	-3.028657E-02	-1.530089E-01	-1.135710E 00	73	G	-2.424435E-03	-3.112918E-02	9.575316E-01
31	G	1.326531E-02	-9.172183E-02	-1.171027E 00	74	G	-3.084179E-04	-1.604870E-01	9.575316E-01
32	G	-4.865829E-03	-1.166270E-01	-1.171027E 00	75	G	5.681838E-04	-2.272524E-02	8.254862E-01
33	G	4.214420E-02	-2.813270E-02	3.991742E-01	76	G	6.000642E-03	-1.674190E-01	8.254862E-01
34	G	-5.224694E-02	-1.795605E-01	3.991742E-01	77	G	3.130920E-03	-1.443955E-02	6.941831E-01
35	G	4.172814E-02	-1.738696E-02	2.412110E-01	78	G	5.937144E-03	-1.753881E-01	6.941831E-01
36	G	-5.073897E-02	-1.902493E-01	2.412110E-01	79	G	7.446703E-03	-9.268887E-03	5.633278E-01
37	G	4.526503E-02	-6.954648E-03	8.398992E-02	80	G	-3.488796E-03	-1.810674E-01	5.633278E-01
38	G	-5.290818E-02	-2.005484E-01	8.398992E-02	81	G	6.518267E-03	-1.017534E-02	4.330270E-01
39	G	4.995538E-02	-7.094189E-04	-7.205945E-02	82	G	2.254640E-03	-1.797194E-01	4.330270E-01
40	G	-5.663197E-02	-2.066587E-01	-7.205945E-02	83	G	1.992717E-02	-1.224553E-02	3.058209E-01
41	G	5.158782E-02	-3.971975E-03	-2.276873E-01	84	G	-2.298523E-02	-1.780364E-01	3.058209E-01
42	G	-5.510207E-02	-2.033219E-01	-2.276873E-01	85	G	2.425325E-02	-1.647648E-02	1.799322E-01
43	G	5.606920E-02	-8.755453E-03	-3.832045E-01	86	G	-3.219759E-02	-1.719598E-01	1.799322E-01

CONDENSED MASS MATRIX - 17 X 17
EIGENVALUE # 4.369478E 04

REAL EIGENVECTOR NO. 3

POINT ID.	TYPE	T1	T2	T3	POINT ID.	TYPE	T1	T2	T3
87	G	2.580927E-02	-3.627480E-02	4.196663E-02	144	G	2.167482E-02	-1.948533E-02	1.673368E-01
88	G	-1.947161E-02	-1.500556E-01	4.196663E-02	145	G	-5.021542E-03	-6.146114E-03	1.531029E-01
89	G	2.510658E-02	-5.598258E-02	-8.619213E-02	146	G	1.884925E-02	-1.864355E-02	1.531029E-01
90	G	-8.790061E-03	-1.339568E-01	-8.619213E-02	147	G	4.643321E-03	-8.371621E-03	1.374502E-01
91	G	1.665407E-02	-8.120418E-02	-1.630130E-01	148	G	1.957897E-02	-1.728439E-02	1.374502E-01
92	G	7.717982E-03	-9.967524E-02	-1.630130E-01	149	G	1.381236E-02	-1.128682E-02	1.275334E-01
93	G	-6.235830E-03	-2.054935E-02	5.300357E-01	150	G	1.705557E-02	-1.309202E-02	1.275334E-01
94	G	1.061079E-02	-1.398561E-01	5.300357E-01	151	G	-3.428985E-02	-3.679038E-03	7.650614E-02
95	G	-4.497827E-02	-1.722866E-02	7.006156E-01	152	G	3.544022E-02	-7.343970E-04	7.650614E-02
96	G	4.580748E-02	-8.540326E-02	7.006156E-01	153	G	-3.205683E-02	-6.403726E-03	6.901908E-02
97	G	-3.010872E-02	-1.313112E-02	6.308267E-01	154	G	3.004272E-02	-8.089691E-04	6.901908E-02
98	G	1.981343E-02	-9.309202E-02	6.308267E-01	155	G	-2.840104E-02	-7.591888E-03	6.512010E-02
101	G	-2.091929E-02	-9.099200E-03	5.582554E-01	156	G	2.524959E-02	-1.029104E-03	6.512010E-02
102	G	1.605281E-02	-9.870297E-02	5.582554E-01	157	G	-2.504059E-02	-7.795684E-03	6.298393E-02
103	G	-1.763938E-03	-4.964800E-02	3.958716E-01	158	G	2.212096E-02	-1.408939E-03	6.298393E-02
105	G	-1.612176E-02	-4.263837E-03	4.835719E-01	159	G	-2.186562E-02	-7.023767E-03	6.140170E-02
106	G	1.462337E-02	-6.026935E-02	4.835719E-01	160	G	2.029511E-02	-2.177047E-03	6.140170E-02
107	G	-1.656129E-03	-2.801171E-02	3.534551E-01	161	G	-1.733442E-02	-4.798133E-03	5.931159E-02
109	G	-1.204516E-02	-4.615646E-03	4.110648E-01	162	G	1.854066E-02	-3.784847E-03	5.931159E-02
110	G	1.155280E-02	-5.792109E-02	4.110648E-01	163	G	-1.619063E-02	-2.352838E-03	5.469336E-02
113	G	-1.386404E-02	-7.069089E-03	3.455434E-01	164	G	2.084033E-02	-5.299732E-03	5.469336E-02
114	G	-4.454472E-04	-8.831209E-02	3.455434E-01	165	G	-7.546995E-03	-1.356047E-03	4.416684E-02
115	G	-5.900953E-03	-8.405492E-03	2.859614E-01	166	G	1.797838E-02	-4.628368E-03	4.416684E-02
116	G	3.107827E-03	-8.667463E-02	2.859614E-01	167	G	-1.406874E-03	-1.343236E-03	3.410704E-02
117	G	6.080922E-03	-1.747021E-02	2.152827E-01	168	G	1.631707E-02	-3.288153E-03	3.410704E-02
118	G	5.727340E-03	-7.733279E-02	2.152827E-01	169	G	7.745028E-03	-1.639314E-03	2.433398E-02
119	G	1.483544E-02	-2.851906E-02	1.471718E-01	170	G	1.086693E-02	-1.887155E-03	2.433398E-02
120	G	1.102441E-02	-6.913638E-02	1.471718E-01	171	G	-2.606029E-02	-2.943230E-03	4.905249E-02
121	G	2.147159E-02	-4.172741E-02	1.047651E-01	172	G	2.693457E-02	-5.875174E-04	4.905249E-02
122	G	1.804143E-02	-5.063750E-02	1.047651E-01	173	G	-2.793219E-02	-8.945104E-03	3.349302E-02
123	G	-4.243313E-02	-8.852854E-03	1.905556E-01	174	G	2.552692E-02	1.900215E-03	3.349302E-02
124	G	4.549459E-02	-1.830718E-02	1.905556E-01	175	G	-2.507352E-02	-9.642683E-03	2.356576E-02
125	G	-3.394787E-02	-8.633994E-03	1.872081E-01	176	G	2.135680E-02	1.617478E-03	2.356576E-02
126	G	3.256369E-02	-1.341194E-02	1.872081E-01	177	G	-2.221557E-02	-9.665955E-03	1.703361E-02
129	G	-2.904060E-02	-8.370124E-03	1.867123E-01	178	G	1.824828E-02	1.872370E-03	1.703361E-02
130	G	2.539035E-02	-1.166169E-02	1.867123E-01	179	G	-1.886302E-02	-8.683238E-03	1.285427E-02
133	G	-2.529556E-02	-7.876750E-03	1.861655E-01	180	G	1.562690E-02	2.021046E-03	1.285427E-02
134	G	2.241249E-02	-1.220291E-02	1.861655E-01	181	G	-1.435879E-02	-6.264158E-03	1.048353E-02
137	G	-2.252998E-02	-7.243391E-03	1.844103E-01	182	G	1.284342E-02	1.466688E-03	1.048353E-02
138	G	2.013572E-02	-1.438075E-02	1.844103E-01	183	G	-5.828626E-03	-7.999646E-04	1.049296E-02
141	G	-2.196645E-02	-6.096162E-03	1.801584E-01	184	G	7.085711E-03	-1.748913E-03	1.049296E-02
142	G	2.036050E-02	-1.787297E-02	1.801584E-01	185	G	-7.825445E-03	-2.248395E-04	-1.109968E-02
143	G	-1.807532E-02	-5.020395E-03	1.673368E-01	186	G	1.484995E-02	3.429178E-03	-1.109968E-02

CONDENSED MASS MATRIX - 17 X 17
EIGENVALUE # 4.369478E 04

REAL EIGENVECTOR NO. 3

POINT ID.	TYPE	T1	T2	T3
187	G	-2.370535E-03	3.456087E-03	-3.326248E-02
188	G	1.438091E-02	4.360992E-03	-3.326248E-02
189	G	7.973157E-03	6.811101E-03	-5.976617E-02
190	G	8.945081E-03	5.364895E-03	-5.976617E-02
191	G	0.0	0.0	0.0
192	G	0.0	0.0	0.0
193	G	0.0	0.0	0.0
194	G	0.0	0.0	0.0

CONDENSED MASS MATRIX - 17 X 17
EIGENVALUE # 1.246784E 05

REAL EIGENVECTOR NO. 4

POINT ID.	TYPE	T1	T2	T3	POINT ID.	TYPE	T1	T2	T3
1	G	-3.681909E-02	4.912077E-02	1.000000E 00	44	G	2.643541E-02	-5.683549E-02	-2.180816E-01
2	G	5.282573E-02	-3.884379E-02	1.000000E 00	45	G	-3.022247E-02	3.224440E-02	-2.868112E-01
3	G	-4.103635E-02	5.893329E-02	8.269002E-01	46	G	2.277179E-02	-5.472790E-02	-2.868112E-01
4	G	5.516196E-02	-5.002509E-02	8.269002E-01	47	G	-2.323077E-02	2.217279E-02	-3.670051E-01
5	G	-4.218876E-02	6.673038E-02	6.554538E-01	48	G	1.147021E-02	-4.386922E-02	-3.670051E-01
6	G	5.395025E-02	-5.944271E-02	6.554538E-01	49	G	-1.862577E-02	1.160663E-02	-4.429234E-01
7	G	-4.405313E-02	7.347643E-02	4.874461E-01	50	G	1.312138E-03	-3.548877E-02	-4.429234E-01
8	G	5.263449E-02	-6.828833E-02	4.874461E-01	51	G	-1.170878E-02	-3.511807E-03	-4.849985E-01
9	G	-4.352911E-02	7.371736E-02	3.219827E-01	52	G	-7.242702E-03	-1.583722E-02	-4.849985E-01
10	G	4.818701E-02	-7.108557E-02	3.219827E-01	53	G	-1.908519E-02	9.908795E-03	-1.233444E-01
11	G	-4.371732E-02	6.831157E-02	1.593372E-01	54	G	3.023557E-02	-4.760708E-02	-1.233444E-01
12	G	4.332083E-02	-6.906527E-02	1.593372E-01	55	G	-1.709364E-02	9.422485E-03	-1.156687E-01
13	G	-4.007628E-02	4.328566E-02	5.951792E-01	56	G	2.587815E-02	-4.719273E-02	-1.156687E-01
14	G	5.664254E-02	-4.817726E-02	5.951792E-01	57	G	-1.375683E-02	1.059594E-02	-1.320431E-01
15	G	-4.050523E-02	5.076448E-02	4.952800E-01	58	G	2.030020E-02	-4.854081E-02	-1.320431E-01
16	G	5.383125E-02	-5.566967E-02	4.952800E-01	59	G	-1.178255E-02	1.239484E-02	-1.633248E-01
17	G	-3.988947E-02	5.558749E-02	3.961870E-01	60	G	1.365399E-02	-5.038188E-02	-1.633247E-01
18	G	5.027967E-02	-6.052251E-02	3.961870E-01	61	G	-8.463815E-03	1.329478E-02	-2.075600E-01
19	G	-4.134619E-02	6.043182E-02	2.970609E-01	62	G	6.560195E-03	-5.119248E-02	-2.075600E-01
20	G	4.867990E-02	-6.538445E-02	2.970609E-01	63	G	-3.354635E-03	1.368725E-02	-2.689927E-01
21	G	-4.083580E-02	6.061324E-02	1.979640E-01	64	G	-2.297356E-03	-5.175549E-02	-2.689927E-01
22	G	4.474130E-02	-6.555241E-02	1.979640E-01	65	G	-1.721938E-04	1.085552E-02	-3.595243E-01
23	G	-4.298996E-02	5.962981E-02	9.947658E-02	66	G	-7.453505E-03	-4.955467E-02	-3.595243E-01
24	G	4.263109E-02	-6.452006E-02	9.947658E-02	67	G	-8.366134E-04	2.152492E-03	-4.123313E-01
25	G	-4.922111E-02	5.472780E-02	-1.412690E-04	68	G	-1.224666E-02	-4.123130E-02	-4.123313E-01
26	G	4.295266E-02	-5.953132E-02	-1.412690E-04	69	G	-2.182966E-03	-5.369484E-03	-4.589316E-01
27	G	-3.149877E-02	4.594820E-02	-1.720727E-01	70	G	-1.478389E-02	-3.519123E-02	-4.589316E-01
28	G	1.982078E-02	-5.359950E-02	-1.720727E-01	71	G	-7.960301E-03	-1.504067E-02	-4.864808E-01
29	G	-2.225504E-02	2.918742E-02	-3.271663E-01	72	G	-1.176982E-02	-2.252839E-02	-4.864808E-01
30	G	5.215418E-03	-4.480817E-02	-3.271663E-01	73	G	1.085865E-03	-2.696778E-02	-2.361884E-01
31	G	-1.323742E-02	5.760390E-03	-4.145560E-01	74	G	6.049521E-03	-1.809548E-02	-2.361884E-01
32	G	-6.270237E-03	-1.444208E-02	-4.145560E-01	75	G	2.574038E-04	-2.767161E-02	-2.255501E-01
33	G	-3.626039E-02	2.714311E-02	1.724985E-01	76	G	3.421358E-03	-1.901793E-02	-2.255501E-01
34	G	5.135687E-02	-5.046961E-02	1.724985E-01	77	G	-1.754397E-03	-2.832197E-02	-2.163801E-01
35	G	-3.245565E-02	3.252874E-02	9.050858E-02	78	G	2.903580E-03	-1.981335E-02	-2.163801E-01
36	G	4.439509E-02	-5.574586E-02	9.050858E-02	79	G	9.535011E-03	-2.769984E-02	-2.080529E-01
37	G	-3.205134E-02	3.734430E-02	1.005191E-02	80	G	-2.131744E-03	-2.117436E-02	-2.080529E-01
38	G	4.045384E-02	-6.029527E-02	1.005191E-02	81	G	1.917902E-02	-2.696982E-02	-1.997465E-01
39	G	-3.126315E-02	3.972369E-02	-6.830299E-02	82	G	-1.517332E-02	-2.307406E-02	-1.997465E-01
40	G	3.640242E-02	-6.246590E-02	-6.830299E-02	83	G	2.161308E-02	-2.736218E-02	-1.943033E-01
41	G	-2.905794E-02	3.726564E-02	-1.447512E-01	84	G	-3.023354E-02	-2.472709E-02	-1.943033E-01
42	G	3.046839E-02	-5.983908E-02	-1.447512E-01	85	G	3.235638E-02	-2.678707E-02	-1.860018E-01
43	G	-2.888197E-02	3.436780E-02	-2.180816E-01	86	G	-5.492616E-02	-2.572712E-02	-1.860018E-01

CONDENSED MASS MATRIX - 17 X 17
EIGENVALUE # 1.246784E 05

REAL EIGENVECTOR NO. 4

POINT ID.	TYPE	T1	T2	T3	POINT ID.	TYPE	T1	T2	T3
87	G	2.124257E-02	-2.719582E-02	-1.835062E-01	144	G	-6.354570E-03	3.891917E-02	4.316712E-01
88	G	-3.635499E-02	-2.469630E-02	-1.835062E-01	145	G	2.243747E-03	-3.688808E-02	5.078101E-01
89	G	1.656128E-02	-2.693618E-02	-1.786425E-01	146	G	-9.878870E-03	2.772148E-02	5.078101E-01
90	G	-2.980414E-02	-2.433592E-02	-1.786425E-01	147	G	1.374122E-03	-2.450563E-02	5.791354E-01
91	G	3.432411E-03	-2.615025E-02	-1.757525E-01	148	G	-7.346138E-03	1.817172E-02	5.791354E-01
92	G	-1.150975E-02	-2.547602E-02	-1.757525E-01	149	G	-3.450566E-03	-1.036717E-02	6.247663E-01
93	G	1.624548E-02	-1.351626E-02	-1.075600E-01	150	G	-3.503628E-03	-1.622024E-03	6.247663E-01
94	G	-2.046050E-03	-5.743664E-02	-1.075600E-01	151	G	1.337371E-02	-2.259638E-02	3.050075E-03
95	G	1.557151E-02	-4.876319E-02	-1.774539E-01	152	G	-1.942719E-02	2.986363E-02	3.050075E-03
96	G	-1.379219E-02	4.445300E-03	-1.774539E-01	153	G	1.083019E-02	-2.871442E-02	6.228484E-02
97	G	1.569361E-02	-5.202033E-02	-1.166373E-01	154	G	-1.315686E-02	3.372456E-02	6.228484E-02
98	G	-6.054033E-03	1.100930E-02	-1.166373E-01	155	G	9.515099E-03	-3.402485E-02	1.218820E-01
101	G	2.087661E-02	-5.465401E-02	-5.437489E-02	156	G	-9.530999E-03	3.752284E-02	1.218820E-01
102	G	-7.066935E-03	1.628458E-02	-5.437489E-02	157	G	7.599574E-03	-3.831757E-02	1.823534E-01
103	G	2.980839E-03	-2.483805E-02	1.111457E-02	158	G	-6.494630E-03	4.051609E-02	1.823534E-01
105	G	1.807913E-02	-5.861917E-02	8.976582E-03	159	G	4.432347E-03	-4.141076E-02	2.436802E-01
106	G	-4.374728E-03	-5.810391E-03	8.976582E-03	160	G	-4.877713E-03	4.193909E-02	2.436802E-01
107	G	2.242621E-03	-1.456434E-02	7.857227E-02	161	G	-5.290147E-04	-4.232620E-02	3.059804E-01
109	G	2.407270E-02	-5.757973E-02	8.379000E-02	162	G	-1.002082E-03	4.194054E-02	3.059804E-01
110	G	-1.196182E-02	-3.855943E-03	8.379000E-02	163	G	-1.791740E-02	-4.845202E-02	3.705128E-01
113	G	2.621635E-02	-5.314312E-02	1.664674E-01	164	G	1.259400E-02	4.682448E-02	3.705128E-01
114	G	-2.505326E-02	3.737474E-02	1.664674E-01	165	G	-9.844135E-03	-3.611349E-02	4.361218E-01
115	G	3.084135E-02	-4.972911E-02	2.434092E-01	166	G	5.405366E-03	3.449333E-02	4.361218E-01
116	G	-4.690498E-02	3.312984E-02	2.434092E-01	167	G	-9.089105E-03	-2.571652E-02	4.984947E-01
117	G	2.209187E-02	-3.821974E-02	3.141783E-01	168	G	4.852243E-03	2.397162E-02	4.984947E-01
118	G	-3.356457E-02	2.087769E-02	3.141783E-01	169	G	-2.945519E-03	-5.111232E-03	5.611144E-01
119	G	1.605305E-02	-2.685545E-02	3.765423E-01	170	G	6.996652E-04	3.870424E-03	5.611144E-01
120	G	-2.379091E-02	1.138687E-02	3.765423E-01	171	G	1.016402E-02	-1.807710E-02	2.518818E-03
121	G	3.688234E-03	-1.440661E-02	4.152301E-01	172	G	-1.476466E-02	2.389090E-02	2.518818E-03
122	G	-6.823108E-03	-5.817425E-03	4.152301E-01	173	G	5.897969E-03	-2.213704E-02	3.902154E-02
123	G	1.504890E-02	-4.392479E-02	-3.179549E-02	174	G	-8.654900E-03	2.768730E-02	3.902154E-02
124	G	-1.946382E-02	2.458813E-02	-3.179549E-02	175	G	2.265869E-03	-2.529349E-02	7.181954E-02
125	G	1.464200E-02	-4.724051E-02	4.269793E-02	176	G	-3.380859E-03	3.011602E-02	7.181954E-02
126	G	-1.480055E-02	3.172813E-02	4.269793E-02	177	G	-2.588409E-03	-2.816211E-02	1.003621E-01
129	G	1.401974E-02	-5.202900E-02	1.193078E-01	178	G	2.162785E-03	3.162837E-02	1.003621E-01
130	G	-1.627049E-02	3.912388E-02	1.193078E-01	179	G	-8.909672E-03	-3.019977E-02	1.243109E-01
133	G	1.582474E-02	-5.462538E-02	1.968313E-01	180	G	8.061364E-03	3.182345E-02	1.243109E-01
134	G	-8.895103E-03	4.361024E-02	1.968313E-01	181	G	-1.469636E-02	-2.937677E-02	1.428133E-01
137	G	1.332809E-02	-5.363179E-02	2.747335E-01	182	G	1.254337E-02	2.890999E-02	1.428133E-01
138	G	-8.997351E-03	4.389278E-02	2.747335E-01	183	G	-9.450262E-03	-1.647368E-02	1.556354E-01
141	G	1.034927E-02	-5.046505E-02	3.523965E-01	184	G	4.281957E-03	1.545208E-02	1.556354E-01
142	G	-2.027147E-02	4.100235E-02	3.523965E-01	185	G	-1.596583E-02	-3.368564E-02	2.085923E-01
143	G	-6.206522E-04	-4.806583E-02	4.316712E-01	186	G	1.229943E-02	3.155195E-02	2.085923E-01

CONDENSED MASS MATRIX - 17 X 17
EIGENVALUE # 1.246784E 05

REAL EIGENVECTOR NO. 4

POINT ID.	TYPE	T1	T2	T3
187	G	-1.402483E-02	-2.972309E-02	2.659997E-01
188	G	1.025993E-02	2.764729E-02	2.659997E-01
189	G	-5.700897E-03	-7.441737E-03	3.357524E-01
190	G	5.799897E-04	4.238132E-03	3.357524E-01
191	G	0.0	0.0	0.0
192	G	0.0	0.0	0.0
193	G	0.0	0.0	0.0
194	G	0.0	0.0	0.0

APPENDIX C

DAMAGED WING: 82 DEGREES OF FREEDOM SOLUTION

```
00000000011111111112222222222333333333344444444445555555555666666666677777777778
12345678901234567890123456789012345678901234567890123456789012345678901234567890

$       ******************************************************************
$       *                     BULK DATA DECK FOR                        *
$       *            F 84 WING PROJECT - DAMAGED WING                    *
$       *              CONDENSED MASS MATRIX - 82 X 82                   *
$       ******************************************************************
$
$
$       ******************************************************************
$       *                 GRID POINTS - TOP OF WING                      *
$       ******************************************************************
$
GRID    1               232.9   -30.4   2.5
GRID    3               229.    -25.33  2.9
GRID    5               225.    -20.27  3.2
GRID    7               221.    -15.2   3.5
GRID    9               217.    -10.13  3.55
GRID    11              213.    -5.07   3.45
GRID    13              209.    -32.5   2.65
GRID    15              209.    -27.08  3.05
GRID    17              209.    -21.67  3.3
GRID    19              209.    -16.25  3.55
GRID    21              209.    -10.83  3.55
GRID    23              209.    -5.47   3.5
GRID    25              209.    0.0     3.25
GRID    27              203.9   6.4     2.6
GRID    29              199.9   11.7    1.85
GRID    31              196.8   15.6    .5
GRID    33              184.1   -34.7   2.85
GRID    35              184.1   -28.92  3.25
GRID    37              184.1   -23.13  3.65
GRID    39              184.1   -17.35  3.9
GRID    41              184.1   -11.57  3.8
GRID    43              184.1   -5.78   3.65
GRID    45              184.1   0.0     3.5
GRID    47              184.1   6.7     2.65
GRID    49              184.1   12.1    1.9
GRID    51              184.1   16.0    .5
GRID    53              159.1   -36.85  3.05
GRID    55              159.1   -30.71  3.45
GRID    57              159.1   -24.67  3.85
GRID    59              159.1   -18.425 4.1
GRID    61              159.1   -12.28  4.05
GRID    63              159.1   -6.14   3.9
GRID    65              159.1   0.0     3.7
GRID    67              159.1   7.0     2.8
GRID    69              159.1   12.7    2.
GRID    71              159.1   17.1    .5
GRID    73              134.4   -39.    3.3
GRID    75              133.82  -32.5   3.7
GRID    77              133.23  -26.    4.1
GRID    79              132.65  -19.5   4.35
GRID    81              132.07  -13.    4.35
GRID    83              131.48  -6.5    4.2
GRID    85              130.9   0.0     4.
GRID    87              130.9   7.4     3.0
GRID    89              130.9   13.4    2.1
GRID    91              130.9   18.3    .5
GRID    93              111.35  -20.43  4.58
GRID    95              91.8    -42.7   3.6
GRID    97              91.8    -35.58  4.
GRID    101             91.8    -28.47  4.35
GRID    105             91.8    -21.35  4.8
GRID    109             91.8    -14.23  4.75
GRID    111             91.8    0.0     0.0
GRID    113             91.8    -7.12   4.5
GRID    115             91.8    0.0     4.35
GRID    117             91.8    8.0     3.3
GRID    119             91.8    14.4    2.25
GRID    121             91.8    20.     .5
GRID    123             54.     -46.3   4.
GRID    125             54.     -38.58  4.35
GRID    129             54.     -30.87  4.85
GRID    133             54.     -23.15  5.15
GRID    135             29.6    0.0     0.0
GRID    137             54.     -15.43  5.1
GRID    139             54.     0.0     0.0
GRID    141             54.     -7.72   4.85
GRID    143             54.     0.0     4.7
GRID    145             54.     8.5     3.55
GRID    147             54.     15.4    2.4
GRID    149             54.     21.6    .5
GRID    151             43.8    -47.2   4.
GRID    153             41.43   -39.33  4.5
GRID    155             39.07   -31.47  4.95
GRID    157             36.7    -23.6   5.25
GRID    159             34.33   -15.73  5.35
GRID    161             31.97   -7.87   5.1
GRID    163             29.6    0.0     5.
GRID    165             27.3    7.7     4.
GRID    167             25.     15.3    2.8
GRID    169             22.7    23.     .5
GRID    171             41.1    -49.    4.
GRID    173             36.28   -43.27  4.3
GRID    175             31.47   -37.53  4.75
GRID    177             26.65   -31.8   5.15
GRID    179             21.83   -26.07  5.4
GRID    181             17.02   -20.33  5.45
GRID    183             12.7    -14.6   5.45
GRID    185             .5      -.5     5.
GRID    187             -10.    11.5    3.6
GRID    189             -21.5   24.6    .5
GRID    191             32.7    -56.1   3.95
GRID    193             3.3     -22.1   5.
$
$       ******************************************************************
$       *               GRID POINTS - BOTTOM OF WING                     *
$       ******************************************************************
$
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00000000011111111112222222222333333333344444444445555555556666666666777777777788
12345678901234567890123456789012345678901234567890123456789012345678901234567890

GRID     2              232.9    -30.4    -2.5
GRID     4              229.     -25.33   -2.9
GRID     6              225.     -20.27   -3.2
GRID     8              221.     -15.2    -3.5
GRID     10             217.     -10.13   -3.55
GRID     12             213.     -5.07    -3.45
GRID     14             209.     -32.5    -2.65
GRID     16             209.     -27.08   -3.05
GRID     18             209.     -21.67   -3.3
GRID     20             209.     -16.25   -3.55
GRID     22             209.     -10.83   -3.55
GRID     24             209.     -5.42    -3.5
GRID     26             209.     0.0      -3.25
GRID     28             204.3    6.0      -2.6
GRID     30             199.2    12.6     -1.85
GRID     32             196.8    15.6     -.5
GRID     34             184.1    -34.7    -2.85
GRID     36             184.1    -28.92   -3.25
GRID     38             184.1    -23.13   -3.65
GRID     40             184.1    -17.35   -3.9
GRID     42             184.1    -11.57   -3.8
GRID     44             184.1    -5.78    -3.65
GRID     46             184.1    0.0      -3.5
GRID     48             184.1    6.2      -2.65
GRID     50             184.1    13.0     -1.9
GRID     52             184.1    16.0     -.5
GRID     54             159.1    -36.85   -3.05
GRID     56             159.1    -30.71   -3.45
GRID     58             159.1    -24.67   -3.85
GRID     60             159.1    -18.425  -4.1
GRID     62             159.1    -12.28   -4.05
GRID     64             159.1    -6.14    -3.9
GRID     66             159.1    0.0      -3.7
GRID     68             159.1    6.6      -2.8
GRID     70             159.1    13.8     -2.
GRID     72             159.1    17.1     -.5
GRID     74             134.4    -39.     -3.3
GRID     76             133.32   -32.5    -3.7
GRID     78             133.23   -26.     -4.1
GRID     80             132.65   -19.5    -4.35
GRID     82             132.07   -13.     -4.35
GRID     84             131.48   -6.5     -4.2
GRID     86             130.9    0.0      -4.
GRID     88             130.9    7.0      -3.0
GRID     90             130.9    14.7     -2.1
GRID     92             130.9    18.3     -.5
GRID     94             111.35   -20.43   -4.58
GRID     96             91.8     -42.7    -3.6
GRID     98             91.8     -35.58   -4.
GRID     102            91.8     -28.47   -4.35
GRID     106            91.8     -21.35   -.75
GRID     108            130.9    0.0      0.0
GRID     110            91.8     -14.23   -.70
GRID     114            91.8     -7.12    -4.5
```

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00000000011111111112222222222333333333344444444445555555556666666666777777777788
12345678901234567890123456789012345678901234567890123456789012345678901234567890

GRID     116            91.8     0.0      -4.35
GRID     118            91.8     7.6      -3.3
GRID     120            91.8     16.      -2.25
GRID     122            91.8     20.      -.5
GRID     124            54.      -46.3    -4.
GRID     126            54.      -38.58   -4.35
GRID     130            54.      -30.87   -4.85
GRID     134            54.      -23.15   -5.15
GRID     138            54.      -15.43   -5.1
GRID     142            54.      -7.72    -4.85
GRID     144            54.      0.0      -4.7
GRID     146            54.      8.2      -3.55
GRID     148            54.      17.2     -2.4
GRID     150            54.      21.6     -.5
GRID     152            43.8     -47.2    -4.
GRID     154            41.43    -39.33   -4.5
GRID     156            39.07    -31.47   -4.95
GRID     158            36.7     -23.6    -5.25
GRID     160            34.33    -15.73   -5.35
GRID     162            31.97    -7.87    -5.1
GRID     164            29.6     0.0      -5.
GRID     166            27.3     7.7      -4.
GRID     168            25.      15.3     -2.8
GRID     170            22.7     23.      -.5
GRID     172            41.1     -49.     -4.
GRID     174            36.28    -43.27   -4.3
GRID     176            31.47    -37.53   -4.75
GRID     178            26.65    -31.8    -5.15
GRID     180            21.83    -26.07   -5.4
GRID     182            17.02    -20.33   -5.45
GRID     184            12.7     -14.6    -5.45
GRID     186            .5       -.5      -5.
GRID     188            -10.     11.5     -3.6
GRID     190            -21.5    24.6     -.5
GRID     192            32.7     -56.1    -3.95
GRID     194            3.8      -21.7    -5.
$
$     ********************************************************************
$     *                  SHEAR PANELS - TOP OF WING                      *
$     ********************************************************************
$
CSHEAR   1      1       1       3       15      13
CSHEAR   3      1       3       5       17      15
CSHEAR   5      1       5       7       19      17
CSHEAR   7      1       7       9       21      19
CSHEAR   9      1       9       11      23      21
CSHEAR   11     1       13      15      35      33
CSHEAR   21     1       23      25      45      43
CSHEAR   31     1       35      37      57      55
CSHEAR   41     1       45      47      67      65
CSHEAR   13     1       15      17      37      35
CSHEAR   15     1       17      19      39      37
CSHEAR   17     1       19      21      41      39
CSHEAR   19     1       21      23      43      41
```

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0000000001111111111222222222233333333334444444444555555555566666666667777777778
12345678901234567890123456789012345678901234567890123456789012345678901234567890

CSHEAR  23      1       25      27      47      45
CSHEAR  25      1       27      29      49      47
CSHEAR  27      1       29      31      51      49
CSHEAR  29      1       33      35      55      53
CSHEAR  33      1       37      39      59      57
CSHEAR  35      1       39      41      61      59
CSHEAR  37      1       41      43      63      61
CSHEAR  39      1       43      45      65      63
CSHEAR  43      1       47      49      69      67
CSHEAR  45      1       49      51      71      69
CSHEAR  47      1       53      55      75      73
CSHEAR  49      1       55      57      77      75
CSHEAR  51      1       57      59      79      77
CSHEAR  53      1       59      61      81      79
CSHEAR  55      1       61      63      83      81
CSHEAR  57      1       63      65      85      83
CSHEAR  59      1       65      67      87      85
CSHEAR  61      1       67      69      89      87
CSHEAR  63      1       69      71      91      89
CSHEAR  65      2       73      75      97      95
CSHEAR  67      2       75      77      101     97
CSHEAR  69      2       77      79      93      101
CSHEAR  71      2       93      81      109     105
CSHEAR  73      2       81      83      113     109
CSHEAR  75      2       83      85      115     113
CSHEAR  77      2       85      87      117     115
CSHEAR  79      2       87      89      119     117
CSHEAR  81      2       89      91      121     119
CSHEAR  83      2       95      97      125     123
CSHEAR  85      2       97      101     129     125
CSHEAR  89      2       101     105     133     129
CSHEAR  93      2       105     109     137     133
CSHEAR  105     2       117     119     147     145
CSHEAR  107     2       119     121     149     147
CSHEAR  109     2       123     125     153     151
CSHEAR  111     2       125     129     155     153
CSHEAR  113     2       129     133     157     155
CSHEAR  115     2       133     137     159     157
CSHEAR  117     2       137     141     161     159
CSHEAR  119     2       141     143     163     161
CSHEAR  121     4       143     145     165     163
CSHEAR  123     4       145     147     167     165
CSHEAR  125     4       147     149     169     167
CSHEAR  127     2       151     153     173     171
CSHEAR  129     2       153     155     175     173
CSHEAR  131     2       155     157     177     175
CSHEAR  133     2       157     159     179     177
CSHEAR  135     2       159     161     181     179
CSHEAR  137     2       161     163     183     181
CSHEAR  139     4       163     165     185     183
CSHEAR  141     4       165     167     187     185
CSHEAR  143     4       167     169     189     187
$
$       *************************************************************************
```

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0000000001111111111222222222233333333334444444444555555555566666666667777777778
12345678901234567890123456789012345678901234567890123456789012345678901234567890

$       *                SHEAR PANELS - BOTTOM OF WING                          *
$       *************************************************************************
$
CSHEAR  2       1       2       4       16      14
CSHEAR  4       1       4       6       18      16
CSHEAR  6       1       6       8       20      18
CSHEAR  8       1       8       10      22      20
CSHEAR  10      1       10      12      24      22
CSHEAR  12      1       14      16      36      34
CSHEAR  14      1       16      18      38      36
CSHEAR  16      1       18      20      40      38
CSHEAR  18      1       20      22      42      40
CSHEAR  20      1       22      24      44      42
CSHEAR  22      1       24      26      46      44
CSHEAR  24      1       26      28      48      46
CSHEAR  26      1       28      30      50      48
CSHEAR  28      1       30      32      52      50
CSHEAR  30      1       34      36      56      54
CSHEAR  32      1       36      38      58      56
CSHEAR  34      1       38      40      60      58
CSHEAR  36      1       40      42      62      60
CSHEAR  38      1       42      44      64      62
CSHEAR  40      1       44      46      66      64
CSHEAR  42      1       46      48      68      66
CSHEAR  44      1       48      50      70      68
CSHEAR  46      1       50      52      72      70
CSHEAR  48      1       54      56      76      74
CSHEAR  50      1       56      58      78      76
CSHEAR  52      1       58      60      80      78
CSHEAR  54      1       60      62      82      80
CSHEAR  56      1       62      64      84      82
CSHEAR  58      1       64      66      86      84
CSHEAR  60      1       66      68      88      86
CSHEAR  62      1       68      70      90      88
CSHEAR  64      1       70      72      92      90
CSHEAR  66      1       74      76      98      96
CSHEAR  68      1       76      78      102     98
CSHEAR  70      1       78      80      94      102
CSHEAR  78      2       86      88      118     116
CSHEAR  80      2       88      90      120     118
CSHEAR  82      2       90      92      122     120
CSHEAR  102     2       114     116     144     142
CSHEAR  104     2       116     118     146     144
CSHEAR  106     2       118     120     148     146
CSHEAR  108     2       120     122     150     148
CSHEAR  110     4       124     126     154     152
CSHEAR  112     4       126     130     156     154
CSHEAR  114     4       130     134     158     156
CSHEAR  116     4       134     138     160     158
CSHEAR  118     4       138     142     162     160
CSHEAR  120     4       142     144     164     162
CSHEAR  122     4       144     146     166     164
CSHEAR  124     4       146     148     168     166
CSHEAR  126     4       148     150     170     168
```

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$$$$$$$$$1111111111222222222233333333334444444444555555555566666666667777777778
12345678901234567890123456789012345678901234567890123456789012345678901234567890

CSHEAR  128     4       152     154     174     172
CSHEAR  130     4       154     156     176     174
CSHEAR  132     4       156     158     178     176
CSHEAR  134     4       158     160     180     178
CSHEAR  136     4       160     162     182     180
CSHEAR  138     4       162     164     184     182
CSHEAR  140     4       164     166     186     184
CSHEAR  142     4       166     168     188     186
CSHEAR  144     4       168     170     190     188
$
$     ************************************************************
$     *                  VERTICAL SHEAR PANELS                   *
$     ************************************************************
$
CSHEAR  151     5       1       2       4       3
CSHEAR  152     5       3       4       6       5
CSHEAR  153     5       5       6       8       7
CSHEAR  154     5       7       8       10      9
CSHEAR  155     5       9       10      12      11
CSHEAR  156     5       11      12      26      25
CSHEAR  157     6       13      14      16      15
CSHEAR  158     6       15      16      18      17
CSHEAR  159     6       17      18      20      19
CSHEAR  160     6       19      20      22      21
CSHEAR  161     6       21      22      24      23
CSHEAR  162     6       23      24      26      25
CSHEAR  163     16      25      26      28      27
CSHEAR  164     16      27      28      30      29
CSHEAR  165     16      29      30      32      31
CSHEAR  166     16      33      34      36      35
CSHEAR  167     7       35      36      38      37
CSHEAR  168     7       37      38      40      39
CSHEAR  169     7       39      40      42      41
CSHEAR  170     7       41      42      44      43
CSHEAR  171     7       43      44      46      45
CSHEAR  172     16      45      46      48      47
CSHEAR  173     16      47      48      50      49
CSHEAR  174     16      49      50      52      51
CSHEAR  175     16      63      64      66      65
CSHEAR  176     16      65      66      68      67
CSHEAR  177     16      67      68      70      69
CSHEAR  178     16      69      70      72      71
CSHEAR  179     8       73      74      76      75
CSHEAR  180     8       75      76      78      77
CSHEAR  181     8       77      78      80      79
CSHEAR  182     8       79      80      82      81
CSHEAR  183     8       81      82      84      83
CSHEAR  184     8       83      84      86      85
CSHEAR  185     17      85      86      88      87
CSHEAR  186     17      87      88      90      89
CSHEAR  187     17      89      90      92      91
CSHEAR  188     9       95      96      98      97
CSHEAR  189     9       97      98      102     101
CSHEAR  191     10      101     102     106     105
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0000000001111111111222222222233333333334444444445555555556666666667777777778
1234567890123456789012345678901234567890123456789012345678901234567890123456790

CSHEAR  193     10      105     106     110     109
CSHEAR  195     9       109     110     114     113
CSHEAR  197     9       113     114     116     115
CSHEAR  198     17      115     116     118     117
CSHEAR  199     17      117     118     120     119
CSHEAR  200     17      119     120     122     121
CSHEAR  201     11      123     124     126     125
CSHEAR  202     11      125     126     130     129
CSHEAR  204     11      129     130     134     133
CSHEAR  206     11      133     134     138     137
CSHEAR  208     11      137     138     142     141
CSHEAR  210     11      141     142     144     143
CSHEAR  211     17      143     144     146     145
CSHEAR  212     17      145     146     148     147
CSHEAR  213     17      147     148     150     149
CSHEAR  214     12      151     152     154     153
CSHEAR  215     12      153     154     156     155
CSHEAR  216     12      155     156     158     157
CSHEAR  217     12      157     158     160     159
CSHEAR  218     12      159     160     162     161
CSHEAR  219     12      161     162     164     163
CSHEAR  220     10      163     164     166     165
CSHEAR  221     18      165     166     168     167
CSHEAR  222     18      167     168     170     169
CSHEAR  223     13      171     172     174     173
CSHEAR  224     13      173     174     176     175
CSHEAR  225     13      175     176     178     177
CSHEAR  226     13      177     178     180     179
CSHEAR  227     13      179     180     182     181
CSHEAR  228     13      181     182     184     183
CSHEAR  229     19      183     184     186     185
CSHEAR  230     19      185     186     188     187
CSHEAR  231     19      187     188     190     189
CSHEAR  232     22      1       2       14      13
CSHEAR  233     22      13      14      34      33
CSHEAR  234     22      53      33      34      54
CSHEAR  235     22      73      53      54      74
CSHEAR  236     23      95      73      74      96
CSHEAR  237     25      123     95      96      124
CSHEAR  238     28      151     123     124     152
CSHEAR  239     28      171     151     152     172
CSHEAR  240     30      191     171     172     192
CSHEAR  241     14      93      81      82      94
CSHEAR  242     14      101     93      94      102
CSHEAR  243     15      141     113     114     142
CSHEAR  244     20      45      25      26      46
CSHEAR  245     21      65      45      46      66
CSHEAR  246     21      85      65      66      86
CSHEAR  247     24      115     65      108     111
CSHEAR  248     26      139     111     116     144
CSHEAR  249     27      163     143     139     135
CSHEAR  250     29      183     163     164     184
CSHEAR  251     31      193     183     184     194
CSHEAR  252     1       51      31      32      52
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$23456789012345678901234567890123456789012345678901234567890123456789012345678901234567890
CSHEAR  253     1       71      51      52      72
CSHEAR  254     1       91      71      72      92
CSHEAR  255     2       121     91      92      122
CSHEAR  256     2       149     121     122     150
CSHEAR  257     4       169     149     150     170
CSHEAR  258     4       189     169     170     190
CSHEAR  1247    24      111     103     86      116
CSHEAR  1249    27      135     139     144     164
$
$       ********************************************************************
$       *                  PROPERTY CARDS FOR SHEAR PANELS                 *
$       ********************************************************************
$
PSHEAR  1       1       .064            2       1       .081
PSHEAR  3       1       .128            4       1       .081
PSHEAR  5       1       .066            6       1       .05
PSHEAR  7       1       .14             8       1       .212
PSHEAR  9       1       .15             10      1       .411
PSHEAR  11      1       .206            12      1       .263
PSHEAR  13      1       .097            14      1       .182
PSHEAR  15      1       .1              16      1       .095
PSHEAR  17      1       .19             18      1       .3
PSHEAR  19      1       .065            20      1       .329
PSHEAR  21      1       .406            22      1       .141
PSHEAR  23      1       .219            24      1       .30
PSHEAR  25      1       .2              26      1       .246
PSHEAR  27      1       .371            28      1       .4
PSHEAR  29      1       .32             30      1       .5
PSHEAR  31      1       .15
$
$       ********************************************************************
$       *                        HORIZONTAL RODS                           *
$       ********************************************************************
$
CROD    301     43      1       3       302     43      2       4
CROD    303     44      3       5       304     44      4       6
CROD    305     45      5       7       306     45      6       8
CROD    307     46      7       9       308     46      8       10
CROD    309     46      9       11      310     46      10      12
CROD    311     45      11      25      312     45      12      26
CROD    313     38      13      1       314     37      14      2
CROD    315     23      15      3       716     9       16      4
CROD    317     23      17      5       718     9       18      6
CROD    319     23      19      7       720     9       20      8
CROD    321     23      21      9       722     9       22      10
CROD    323     23      23      11      724     9       24      12
CROD    325     70      13      15      326     57      14      16
CROD    327     71      15      17      328     58      16      18
CROD    329     71      17      19      330     58      18      20
CROD    331     72      19      21      332     59      20      22
CROD    333     72      21      23      334     59      22      24
CROD    335     71      23      25      336     58      24      26
CROD    337     44      25      27      338     44      26      28
CROD    339     43      27      29      340     43      28      30
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$23456789012345678901234567890123456789012345678901234567890123456789012345678901234567890
CROD    341     42      29      31      342     42      30      32
CROD    343     40      33      13      344     39      34      14
CROD    345     25      35      15      346     13      36      16
CROD    347     25      37      17      348     13      38      18
CROD    349     25      39      19      350     13      40      20
CROD    351     25      41      21      352     13      42      22
CROD    353     25      43      23      354     13      44      24
CROD    355     29      45      25      356     32      46      26
CROD    357     17      47      27      356     21      48      28
CROD    359     17      49      29      360     21      50      30
CROD    363     79      33      35      364     54      34      36
CROD    365     80      35      37      366     56      36      38
CROD    367     82      37      39      368     63      38      40
CROD    369     82      39      41      370     63      40      42
CROD    371     81      41      43      372     61      42      44
CROD    373     81      43      45      374     61      44      46
CROD    375     68      45      47      376     68      46      48
CROD    377     68      47      49      378     68      48      50
CROD    379     67      49      51      380     67      50      52
CROD    381     44      53      33      382     42      54      34
CROD    383     26      55      35      384     15      56      36
CROD    385     26      57      37      386     15      58      38
CROD    387     26      59      39      388     15      60      40
CROD    389     26      61      41      390     15      62      42
CROD    391     26      63      43      392     15      64      44
CROD    393     30      65      45      394     34      66      46
CROD    395     18      67      47      396     22      68      48
CROD    397     18      69      49      398     22      70      50
CROD    413     74      65      67      414     74      66      68
CROD    415     74      67      69      416     74      68      70
CROD    417     73      69      71      418     73      70      72
CROD    419     47      73      53      420     46      74      54
CROD    421     28      75      55      422     16      76      56
CROD    423     28      77      57      424     16      78      58
CROD    425     28      79      59      426     16      80      60
CROD    427     28      81      61      428     16      82      62
CROD    429     28      83      63      430     16      84      64
CROD    431     33      85      65      432     35      86      66
CROD    433     20      87      67      434     23      88      68
CROD    435     20      89      69      436     23      90      70
CROD    439     114     73      75      440     108     74      76
CROD    441     115     75      77      442     111     76      78
CROD    443     117     77      79      444     112     78      80
CROD    445     118     79      81      446     113     80      82
CROD    447     117     81      83      448     66      82      84
CROD    449     116     83      85      450     65      84      86
CROD    451     94      85      87      452     94      86      88
CROD    453     96      87      89      454     94      88      90
CROD    455     93      89      91      456     93      90      92
CROD    457     61      95      73      458     83      96      74
CROD    459     36      97      75      460     19      98      76
CROD    461     36      101     77      462     19      102     78
CROD    463     49      101     93      464     41      102     94
CROD    465     36      93      79      466     19      94      80
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00000000011111111112222222222333333333344444444445555555555666666666677777777778
12345678901234567890123456789012345678901234567890123456789012345678901234567890

CROD    467     36      105     93
CROD    469     49      93      81      470     41      94      82
CROD    471     36      109     81
CROD    473     36      113     83
CROD    475     60      115     65      476     48      116     86
CROD    477     27      117     87      478     33      118     88
CROD    479     27      119     69      480     33      120     90
CROD    483     125     95      97      484     84      96      98
CROD    485     126     97      101     486     85      98      102
CROD    489     129     101     105     490     41      102     106
CROD    493     132     105     109     494     51      106     110
CROD    497     130     109     113     498     41      110     114
CROD    501     127     113     115     502     92      114     116
CROD    503     133     115     117     504     108     116     118
CROD    505     108     117     119     506     108     118     120
CROD    507     107     119     121     508     107     120     122
CROD    509     95      123     95      510     98      124     96
CROD    511     62      125     97
CROD    515     76      129     101
CROD    519     64      133     105
CROD    523     69      137     109
CROD    527     1       141     113     528     39      142     114
CROD    529     8       139     111     530     77      144     116
CROD    531     31      145     117     532     36      146     118
CROD    533     12      147     119     534     36      148     120
CROD    537     119     123     125     538     86      124     126
CROD    539     120     125     129     540     87      126     130
CROD    543     122     129     133     544     88      130     134
CROD    547     127     133     137     548     84      134     138
CROD    551     122     137     141     552     88      138     142
CROD    555     121     141     143     556     123     142     144
CROD    557     134     143     145     558     134     144     146
CROD    559     134     145     147     560     134     146     148
CROD    561     133     147     149     562     133     148     150
CROD    563     128     151     123     564     131     152     124
CROD    565     38      153     125     966     32      154     126
CROD    567     38      155     129     968     32      156     130
CROD    569     38      157     133     970     32      158     134
CROD    571     38      159     137     972     32      160     138
CROD    573     38      161     141     974     32      162     142
CROD    575     91      163     143     576     90      164     144
CROD    577     10      165     145     978     10      166     146
CROD    579     10      167     147     980     10      168     148
CROD    583     102     151     153     584     100     152     154
CROD    585     106     153     155     586     101     154     156
CROD    587     109     155     157     588     103     156     158
CROD    589     111     157     159     590     105     158     160
CROD    591     110     159     161     592     104     160     162
CROD    593     109     161     163     594     102     162     164
CROD    595     125     163     165     596     125     164     166
CROD    597     125     165     167     598     125     166     168
CROD    599     124     167     169     600     124     168     170
CROD    601     128     171     151     1002    131     172     152
CROD    603     41      173     153     1004    32      174     154
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00000000011111111112222222222333333333344444444445555555555666666666677777777778
12345678901234567890123456789012345678901234567890123456789012345678901234567890

CROD    605     41      175     155     1006    32      176     156
CROD    607     41      177     157     1008    32      178     158
CROD    609     41      179     159     1010    32      180     160
CROD    611     41      181     161     1012    32      182     162
CROD    613     139     183     163     1014    140     184     164
CROD    615     24      185     165     1016    24      186     166
CROD    617     24      187     167     1018    24      188     168
CROD    621     52      171     173     622     50      172     174
CROD    623     54      173     175     624     51      174     176
CROD    625     55      175     177     626     52      176     176
CROD    627     55      177     179     628     53      178     180
CROD    629     55      179     181     630     53      180     182
CROD    631     55      181     183     632     53      182     184
CROD    633     80      183     165     634     80      184     186
CROD    635     78      185     167     636     78      186     188
CROD    637     69      187     189     638     69      188     190
CROD    639     97      191     171     640     99      192     172
CROD    641     136     193     183     642     135     194     184
CROD    761     2       51      31      762     2       52      32
CROD    799     3       71      51      800     3       72      52
CROD    801     69      53      55      802     69      54      56
CROD    803     69      55      57      804     69      56      58
CROD    805     69      57      59      806     69      58      60
CROD    807     69      59      61      808     69      60      62
CROD    809     69      61      63      810     69      62      64
CROD    811     69      63      65      812     69      64      66
CROD    837     4       91      71      838     4       92      72
CROD    881     6       121     91      882     6       122     92
CROD    935     7       149     121     936     7       150     122
CROD    981     2       169     149     982     2       170     150
CROD    1019    7       189     169     1020    7       190     170
CROD    1329    11      135     139     1429    14      111     107
$
$       ************************************************************************
$       *                          VERTICAL RODS                               *
$       ************************************************************************
$
CROD    650     5       57      58
CROD    651     5       59      60
CROD    652     5       61      62
CROD    653     5       63      64
CROD    1101    1       1       2       1102    1       3       4
CROD    1103    1       5       6       1104    1       7       8
CROD    1105    1       9       10      1106    1       11      12
CROD    1107    1       13      14      1108    1       15      16
CROD    1109    1       17      18      1110    1       19      20
CROD    1111    1       21      22      1112    1       23      24
CROD    1113    1       25      26      1114    1       27      28
CROD    1115    1       29      30      1116    42      31      32
CROD    1117    1       33      34      1118    1       35      36
CROD    1119    1       37      38      1120    1       39      40
CROD    1121    1       41      42      1122    1       43      44
CROD    1123    1       45      46      1124    1       47      48
CROD    1125    1       49      50      1126    67      51      52
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0000000001111111111222222222233333333334444444444555555555566666666667777777778
1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890

CROD    1127    1       53      54      1128    1       55      56
CROD    1129    1       65      66      1130    1       67      68
CROD    1131    1       69      70      1132    73      71      72
CROD    1133    1       73      74      1134    1       75      76
CROD    1135    1       77      78      1136    1       79      80
CROD    1137    1       81      82      1138    1       83      84
CROD    1139    1       85      100     1140    1       87      88
CROD    1141    1       89      90      1142    1       91      92
CROD    1143    1       93      94      1144    1       95      96
CROD    1145    1       97      98
CROD    1147    1       101     102
CROD    1149    1       105     106
CROD    1151    1       109     110
CROD    1153    1       113     114     1154    1       115     111
CROD    1155    1       117     118     1156    1       119     120
CROD    1157    107     121     122     1158    1       123     124
CROD    1159    1       125     126
CROD    1161    1       129     130
CROD    1163    1       133     134
CROD    1165    1       137     138
CROD    1167    1       141     142     1168    1       143     139
CROD    1169    1       145     146     1170    1       147     148
CROD    1171    137     149     150     1172    1       151     152
CROD    1173    1       153     154     1174    1       155     156
CROD    1175    1       157     158     1176    1       159     160
CROD    1177    1       161     162     1178    1       163     135
CROD    1179    1       165     166     1180    1       167     168
CROD    1181    138     169     170     1182    1       171     172
CROD    1183    1       173     174     1184    1       175     176
CROD    1185    1       177     178     1186    1       179     180
CROD    1187    1       181     182     1188    1       183     184
CROD    1189    1       185     186     1190    1       187     188
CROD    1191    96      189     190
CROD    1208    1       139     144     1254    1       111     116
CROD    1278    1       135     164     1239    1       108     86
$
$       ********************************************************************
$       *                  PROPERTY CARDS FOR ROD MEMBERS                  *
$       ********************************************************************
$
PROD    1       2       .001
PROD    2       2       .15
PROD    3       2       .18
PROD    4       2       .19
PROD    5       2       .20
PROD    6       2       .26
PROD    7       2       .28
PROD    8       2       .31
PROD    9       2       .33
PROD    10      2       .38
PROD    11      2       .47
PROD    12      2       .48
PROD    13      2       .52
PROD    14      2       .54
```

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0000000001111111111222222222233333333334444444444555555555566666666667777777778
1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890

PROD    15      2       .55
PROD    16      2       .57
PROD    17      2       .58
PROD    18      2       .61
PROD    19      2       .62
PROD    20      2       .63
PROD    21      2       .66
PROD    22      2       .69
PROD    23      2       .70
PROD    24      2       .71
PROD    25      2       .72
PROD    26      2       .75
PROD    27      2       .76
PROD    28      2       .77
PROD    29      2       .79
PROD    30      2       .80
PROD    31      2       .81
PROD    32      2       .82
PROD    33      2       .83
PROD    34      2       .84
PROD    35      2       .85
PROD    36      2       .88
PROD    37      2       .93
PROD    38      2       .96
PROD    39      2       .97
PROD    40      2       1.00
PROD    41      2       1.02
PROD    42      2       1.03
PROD    43      2       1.04
PROD    44      2       1.05
PROD    45      2       1.06
PROD    46      2       1.07
PROD    47      2       1.09
PROD    48      2       1.15
PROD    49      2       1.18
PROD    50      2       1.29
PROD    51      2       1.30
PROD    52      2       1.31
PROD    53      2       1.32
PROD    54      2       1.33
PROD    55      2       1.34
PROD    56      2       1.37
PROD    57      2       1.39
PROD    58      2       1.40
PROD    59      2       1.41
PROD    60      2       1.43
PROD    61      2       1.49
PROD    62      2       1.50
PROD    63      2       1.50
PROD    64      2       1.63
PROD    65      2       1.65
PROD    66      2       1.67
PROD    67      2       1.68
PROD    68      2       1.69
```

```
00C0300001111111111222222222233333333334444444444555555555566666666667777777777
1234567890123456789012345678901234567890123456789012345678901234567890123456789
PROD     69       2        1.70
PROD     70       2        1.73
PROD     71       2        1.74
PROD     72       2        1.75
PROD     73       2        1.78
PROD     74       2        1.79
PROD     75       2        1.82
PROD     76       2        1.84
PROD     77       2        1.84
PROD     78       2        1.86
PROD     79       2        1.89
PROD     80       2        1.92
PROD     81       2        1.94
PROD     82       2        1.95
PROD     83       2        1.96
PROD     84       2        2.00
PROD     85       2        2.02
PROD     86       2        2.04
PROD     87       2        2.08
PROD     88       2        2.10
PROD     89       2        2.11
PROD     90       2        2.15
PROD     91       2        2.17
PROD     92       2        2.31
PROD     93       2        2.57
PROD     94       2        2.58
PROD     95       2        2.60
PROD     96       2        2.67
PROD     97       2        2.84
PROD     98       2        2.86
PROD     99       2        3.04
PROD     100      2        3.05
PROD     101      2        3.10
PROD     102      2        3.13
PROD     103      2        3.14
PROD     104      2        3.15
PROD     105      2        3.17
PROD     106      2        3.18
PROD     107      2        3.19
PROD     108      2        3.20
PROD     109      2        3.21
PROD     110      2        3.22
PROD     111      2        3.23
PROD     112      2        3.26
PROD     113      2        3.27
PROD     114      2        3.36
PROD     115      2        3.38
PROD     116      2        3.40
PROD     117      2        3.41
PROD     118      2        3.42
PROD     119      2        3.58
PROD     120      2        3.62
PROD     121      2        3.63
PROD     122      2        3.64
```

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0000000001111111111222222222233333333334444444444555555555566666666667777777777
1234567890123456789012345678901234567890123456789012345678901234567890123456789
PROD     123      2        3.97
PROD     124      2        4.00
PROD     125      2        4.02
PROD     126      2        4.04
PROD     127      2        4.05
PROD     128      2        4.10
PROD     129      2        4.22
PROD     130      2        4.23
PROD     131      2        4.35
PROD     132      2        4.37
PROD     133      2        4.42
PROD     134      2        4.43
PROD     135      2        4.64
PROD     136      2        5.02
PROD     137      2        5.40
PROD     138      2        5.80
PROD     139      2        6.23
PROD     140      2        7.01
$
$    ********************************************************************
$    *                    SINGLE POINT CONSTRAINTS                      *
$    ********************************************************************
$
SPC      1       191      1                192      1
SPC      1       193      1                194      1
SPC      1       191      2                192      2
SPC      1       193      2                194      2
SPC      1       191      3                192      3
SPC      1       193      3                194      3
$
$    ********************************************************************
$    *                    MULTI POINT CONSTRAINTS                       *
$    ********************************************************************
$
MPC      3       164      1       .34      184      1       -1.0
MPC      3       164      2       .33      184      2       -1.0
MPC      3       163      1       .36      183      1       -1.0
MPC      3       163      2       .34      183      2       -1.0
MPC      3       152      1       .76      172      1       -1.0
MPC      3       151      1       .76      171      1       -1.0
MPC      3       152      2       .8       172      2       -1.0
MPC      3       151      2       .8       171      2       -1.0
MPC      3       96       2      -1.0      74       2       .53             +CF
+CF              152      2       .47
MPC      3       124      2      -1.0      74       2       .11             +JW
+JW              152      2       .89
MPC      3       84       1       .48      142      1       .52             +AA
+AA              114      1      -1.
MPC      3       78       1       .48      130      1       .52             +BB
+BB              102      1      -1.0
MPC      3       76       1       .48      126      1       .52             +CC
+CC              98       1      -1.0
MPC      3       82       1       .48      138      1       .52             +Q
+Q               110      1      -1.0
```

```
00000000011111111112222222222333333333344444444445555555555666666666677777777778
12345678901234567890123456789012345678901234567890123456789012345678901234567890
MPC     3       94      1       .66     134     1       .34             +A
+A              106     1       -1.0
MPC     3       111     2       -1.0    115     2       .5              +X
+X              116     2       .5
MPC     3       111     3       1.0     115     3       -1.0
MPC     3       139     2       -1.     143     2       .5              +Z
MPC     3       139     3       1.0     143     3       -1.0
+Z              144     2       .5
MPC     3       108     1       -1.0    85      1       .5              +Y1Y
+Y1Y            86      1       .5
MPC     3       108     2       -1.0    85      2       .5              +Y2Y
+Y2Y            86      2       .5
MPC     3       108     3       1.0     85      3       -1.0
MPC     3       135     1       -1.0    163     1       .5              +W1
+W1             164     1       .5
MPC     3       135     2       -1.0    163     2       .5              +W2
+W2             164     2       .5
MPC     3       135     3       1.0     163     3       -1.0
$
$       ********************************************************************
$       *                         ELASTIC SPRINGS                          *
$       ********************************************************************
$
CELAS2  9490    7.633+3 102     1       106     1
CELAS2  9494    1.1+4   106     1       110     1
CELAS2  9498    7.633+3 110     1       114     1
$
$       ********************************************************************
$       *                       TRIANGULAR MEMBERS                         *
$       ********************************************************************
$
CTRMEM  275     1       23      11      25
CTRMEM  276     1       24      12      26
CTRMEM  277     2       93      79      81
CTRMEM  278     2       94      80      82
CTRMEM  279     2       101     93      105
PTRMEM  1       1       .064            2       1       .081
$
$       ********************************************************************
$       *                         MATERIAL CARDS                           *
$       ********************************************************************
$
MAT1    2       10.3+6  3.9+6
MAT1    1       10.3+6  3.9+6
$
$       ********************************************************************
$       *                      MISCELLANEOUS CARDS                         *
$       ********************************************************************
$
GRDSET                                                  456
PARAM   GRDPNT  0
PARAM   INES    1
EIGR    30      GIV     1.      1000.   82      4                       +TJ
+TJ     MAX
```

```
00000000011111111112222222222333333333344444444445555555555666666666677777777778
12345678901234567890123456789012345678901234567890123456789012345678901234567890
$
$       ********************************************************************
$       *                    LANDING GEAR GRID POINTS                      *
$       ********************************************************************
$
GRID    107             72.4    -22.25  0.0
GRID    103             99.79   -17.64  0.0
$
$       ********************************************************************
$       *                    LANDING GEAR MASS MATRIX                      *
$       ********************************************************************
$
DMIG    MASS    0       1       1       2
DMIG    MASS    107     1               107     1       .7              +M1
+M1     103     1       -.175
DMIG    MASS    107     2               107     2       .7              +M2
+M2     103     2       -.175
DMIG    MASS    107     3               107     3       .7              +M3
+M3     103     3       -.175
DMIG    MASS    103     1               107     1       -.175           +M4
+M4     103     1       .7
DMIG    MASS    103     2               107     2       -.175           +M5
+M5     103     2       .7
DMIG    MASS    103     3               107     3       -.175           +M6
+M6     103     3       .7
$
$       ********************************************************************
$       *                          LUMPED MASS                             *
$       ********************************************************************
$
CONM2       2001        1       0.008365
CONM2       2002        3       0.007770
CONM2       2003        5       0.006772
CONM2       2004        7       0.005737
CONM2       2005        9       0.004642
CONM2       2006        11      0.003478
CONM2       2007        13      0.015960
CONM2       2008        15      0.014234
CONM2       2009        17      0.013165
CONM2       2010        19      0.012083
CONM2       2011        21      0.010946
CONM2       2012        23      0.009793
CONM2       2013        25      0.013647
CONM2       2014        27      0.007346
CONM2       2015        29      0.004965
CONM2       2016        31      0.001192
CONM2       2017        33      0.017806
CONM2       2018        35      0.018008
CONM2       2019        37      0.018232
CONM2       2020        39      0.018342
CONM2       2021        41      0.018314
CONM2       2022        43      0.018229
CONM2       2023        45      0.023526
CONM2       2024        47      0.012831
```

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0000000001111111111222222222233333333334444444444555555555566666666667777777778
1234567890123456789012345678901234567890123456789012345678901234567890123456789
CONM2    2025    49    0.009883
CONM2    2026    51    0.002325
CONM2    2027    53    0.016138
CONM2    2028    55    0.014895
CONM2    2029    57    0.015108
CONM2    2030    59    0.015316
CONM2    2031    61    0.015433
CONM2    2032    63    0.015605
CONM2    2033    65    0.028643
CONM2    2034    67    0.015504
CONM2    2035    69    0.013151
CONM2    2036    71    0.003437
CONM2    2037    73    0.044564
CONM2    2038    75    0.029081
CONM2    2039    77    0.029880
CONM2    2040    79    0.022664
CONM2    2041    81    0.044300
CONM2    2042    83    0.029372
CONM2    2043    85    0.065312
CONM2    2044    87    0.023304
CONM2    2045    89    0.019583
CONM2    2046    91    0.005740
CONM2    2047    93    0.028957
CONM2    2048    95    0.091954
CONM2    2049    97    0.045000
CONM2    2050   101    0.053426
CONM2    2051   105    0.046909
CONM2    2052   108    0.011529
CONM2    2053   109    0.046254
CONM2    2054   111    0.018073
CONM2    2055   113    0.037930
CONM2    2056   115    0.049085
CONM2    2057   117    0.024214
CONM2    2058   119    0.024818
CONM2    2059   121    0.007913
CONM2    2060   123    0.035660
CONM2    2061   125    0.035656
CONM2    2062   129    0.042122
CONM2    2063   133    0.044345
CONM2    2064   135    0.003669
CONM2    2065   137    0.037543
CONM2    2066   139    0.014693
CONM2    2067   141    0.031809
CONM2    2068   143    0.070689
CONM2    2069   145    0.022617
CONM2    2070   147    0.024365
CONM2    2071   149    0.009938
CONM2    2072   151    0.040499
CONM2    2073   153    0.021693
CONM2    2074   155    0.024538
CONM2    2075   157    0.027168
CONM2    2076   159    0.029398
CONM2    2077   161    0.031283
CONM2    2078   163    0.160253
```

```
0000000001111111111222222222233333333334444444444555555555566666666667777777778
1234567890123456789012345678901234567890123456789012345678901234567890123456789
CONM2    2079   165    0.035764
CONM2    2080   167    0.036187
CONM2    2081   169    0.018048
CONM2    2082   171    0.023283
CONM2    2083   173    0.006468
CONM2    2084   175    0.007682
CONM2    2085   177    0.009283
CONM2    2086   179    0.010629
CONM2    2087   181    0.011734
CONM2    2088   183    0.116984
CONM2    2089   185    0.029174
CONM2    2090   187    0.029216
CONM2    2091   189    0.015598
CONM2    2092   191    0.012984
CONM2    2093   193    0.023746
CONM2    2094     2    0.008365
CONM2    2095     4    0.004908
CONM2    2096     6    0.004483
CONM2    2097     8    0.004020
CONM2    2098    10    0.003498
CONM2    2099    12    0.002903
CONM2    2100    14    0.015960
CONM2    2101    16    0.009404
CONM2    2102    18    0.009408
CONM2    2103    20    0.003900
CONM2    2104    22    0.008359
CONM2    2105    24    0.007756
CONM2    2106    26    0.013413
CONM2    2107    28    0.008348
CONM2    2108    30    0.005536
CONM2    2109    32    0.000939
CONM2    2110    34    0.017806
CONM2    2111    36    0.015064
CONM2    2112    38    0.015291
CONM2    2113    40    0.015403
CONM2    2114    42    0.015381
CONM2    2115    44    0.015293
CONM2    2116    46    0.023175
CONM2    2117    48    0.014749
CONM2    2118    50    0.011275
CONM2    2119    52    0.001843
CONM2    2120    54    0.018138
CONM2    2121    56    0.011930
CONM2    2122    58    0.012111
CONM2    2123    60    0.012287
CONM2    2124    62    0.012371
CONM2    2125    64    0.012509
CONM2    2126    66    0.026510
CONM2    2127    68    0.017834
CONM2    2128    70    0.015057
CONM2    2129    72    0.002679
CONM2    2130    74    0.043618
CONM2    2131    76    0.023773
CONM2    2132    78    0.023712
```

```
000000000111111111122222222223333333333444444444455555555556666666666777777777788
123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890
CONM2        2133      80        0.019251
CONM2        2134      82        0.029123
CONM2        2135      84        0.014212
CONM2        2136      86        0.060670
CONM2        2137      88        0.026721
CONM2        2138      90        0.022137
CONM2        2139      92        0.004376
CONM2        2140      94        0.020405
CONM2        2141      96        0.066604
CONM2        2142      98        0.018270
CONM2        2143     102        0.020974
CONM2        2144     106        0.011865
CONM2        2145     110        0.011958
CONM2        2146     114        0.022733
CONM2        2147     116        0.123638
CONM2        2148     118        0.033520
CONM2        2149     120        0.027789
CONM2        2150     122        0.005900
CONM2        2151     124        0.082527
CONM2        2152     126        0.013590
CONM2        2153     130        0.015235
CONM2        2154     134        0.016649
CONM2        2155     130        0.017716
CONM2        2156     142        0.031996
CONM2        2157     144        0.152910
CONM2        2158     146        0.031102
CONM2        2159     148        0.026146
CONM2        2160     150        0.007752
CONM2        2161     152        0.042155
CONM2        2162     154        0.023304
CONM2        2163     156        0.026561
CONM2        2164     158        0.029632
CONM2        2165     160        0.032236
CONM2        2166     162        0.034496
CONM2        2167     164        0.165095
CONM2        2168     166        0.036070
CONM2        2169     168        0.036349
CONM2        2170     170        0.010537
CONM2        2171     172        0.023714
CONM2        2172     174        0.006881
CONM2        2173     176        0.008493
CONM2        2174     178        0.010101
CONM2        2175     180        0.011647
CONM2        2176     182        0.012875
CONM2        2177     184        0.119193
CONM2        2178     186        0.029174
CONM2        2179     188        0.029216
CONM2        2180     190        0.015598
CONM2        2181     192        0.012984
CONM2        2182     194        0.023746
$
$     ********************************************************************
$     *          MULTIPOINT CONSTRAINTS FOR DYNAMIC SOLUTION             *
$     ********************************************************************
```

```
000000000111111111122222222223333333333444444444455555555556666666666777777777788
123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890
$
MPC     3       55      3       -4.052  75      3       .394            +E
+E              35      3       .4      57      3       1.629           +E1
+E1             53      3       1.629
MPC     3       57      3       -4.044  77      3       .386            +D
+D              37      3       .4      59      3       1.629           +D1
+D1             55      3       1.629
MPC     3       59      3       -4.036  79      3       .378            +C
+C              39      3       .4      61      3       1.629           +C1
+C1             57      3       1.629
MPC     3       61      3       -4.028  81      3       .370            +B
+B              41      3       .4      63      3       1.629           +B1
+B1             59      3       1.629
MPC     3       63      3       -4.02   83      3       .362            +A
+A              43      3       .4      65      3       1.629           +A1
+A1             61      3       1.629
MPC     3       107     1       -10.75  95      1       .361            +X1
+X1             96      1       .361    97      1       .433            +X2
+X2             98      1       .433    101     1       .503            +X3
+X3             102     1       .503    105     1       .525            +X4
+X4             106     1       .542    109     1       .485            +X5
+X5             110     1       .498    113     1       .413            +X6
+X6             114     1       .413    123     1       .327            +X7
+X7             124     1       .327    125     1       .4              +X8
+X8             126     1       .4      129     1       .479            +X9
+X9             130     1       .479    133     1       .523            +X10
+X10            134     1       .523    137     1       .493            +X11
+X11            138     1       .493    141     1       .418            +X12
+X12            142     1       .418
MPC     3       103     1       -11.517 81      1       .304            +X13
+X13            82      1       .304    83      1       .295            +X14
+X14            84      1       .295    85      1       .278            +X15
+X15            86      1       .278    93      1       .785            +X16
+X16            94      1       .785    101     1       .734            +X17
+X17            102     1       .134    105     1       .997            +X18
+X18            106     1       1.131   109     1       1.01            +X19
+X19            110     1       1.147   113     1       .716            +X20
+X20            114     1       .716    115     1       .504            +X21
+X21            116     1       .504
MPC     3       107     2       -10.75  95      2       .361            +Y1
+Y1             96      2       .361    97      2       .433            +Y2
+Y2             98      2       .433    101     2       .503            +Y3
+Y3             102     2       .503    105     2       .525            +Y4
+Y4             106     2       .542    109     2       .485            +Y5
+Y5             110     2       .498    113     2       .413            +Y6
+Y6             114     2       .413    123     2       .327            +Y7
+Y7             124     2       .327    125     2       .4              +Y8
+Y8             126     2       .4      129     2       .479            +Y9
+Y9             130     2       .479    133     2       .523            +Y10
+Y10            134     2       .523    137     2       .493            +Y11
+Y11            138     2       .493    141     2       .418            +Y12
+Y12            142     2       .418
MPC     3       103     2       -11.517 81      2       .304            +Y13
+Y13            82      2       .304    83      2       .295            +Y14
```

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00000000011111111112222222222333333333344444444445555555555666666666777777777
12345678901234567890123456789012345678901234567890123456789012345678901234567890
+Y14             84      2       .295    85      2       .278            +Y15
+Y15             86      2       .278    93      2       .785            +Y16
+Y16             94      2       .785    101     2       .734            +Y17
+Y17             102     2       .134    105     2       .997            +Y18
+Y18             106     2       1.131   109     2       1.01            +Y19
+Y19             110     2       1.147   113     2       .716            +Y20
+Y20             114     2       .716    115     2       .504            +Y21
+Y21             116     2       .504
MPC     3        107     3       -10.75  95      3       .361            +Z1
+Z1              96      3       .361    97      3       .433            +Z2
+Z2              98      3       .433    101     3       .503            +Z3
+Z3              102     3       .503    105     3       .525            +Z4
+Z4              106     3       .542    109     3       .485            +Z5
+Z5              110     3       .498    113     3       .413            +Z6
+Z6              114     3       .413    123     3       .327            +Z7
+Z7              124     3       .327    125     3       .4              +Z8
+Z8              126     3       .4      129     3       .479            +Z9
+Z9              130     3       .479    133     3       .523            +Z10
+Z10             134     3       .523    137     3       .493            +Z11
+Z11             138     3       .493    141     3       .418            +Z12
+Z12             142     3       .418
MPC     3        103     3       -11.517 81      3       .304            +Z13
+Z13             82      3       .304    83      3       .295            +Z14
+Z14             84      3       .295    85      3       .278            +Z15
+Z15             86      3       .278    93      3       .785            +Z16
+Z16             94      3       .785    101     3       .734            +Z17
+Z17             102     3       .134    105     3       .997            +Z18
+Z18             106     3       1.131   109     3       1.01            +Z19
+Z19             110     3       1.147   113     3       .716            +Z20
+Z20             114     3       .716    115     3       .504            +Z21
+Z21             116     3       .504
MPC     3        2       3       1.0     1       3       -1.0
MPC     3        4       3       1.0     3       3       -1.0
MPC     3        6       3       1.0     5       3       -1.0
MPC     3        8       3       1.0     7       3       -1.0
MPC     3        10      3       1.0     9       3       -1.0
MPC     3        12      3       1.0     11      3       -1.0
MPC     3        14      3       1.0     13      3       -1.0
MPC     3        16      3       1.0     15      3       -1.0
MPC     3        18      3       1.0     17      3       -1.0
MPC     3        20      3       1.0     19      3       -1.0
MPC     3        22      3       1.0     21      3       -1.0
MPC     3        24      3       1.0     23      3       -1.0
MPC     3        26      3       1.0     25      3       -1.0
MPC     3        28      3       1.0     27      3       -1.0
MPC     3        30      3       1.0     29      3       -1.0
MPC     3        32      3       1.0     31      3       -1.0
MPC     3        34      3       1.0     33      3       -1.0
MPC     3        36      3       1.0     35      3       -1.0
MPC     3        38      3       1.0     37      3       -1.0
MPC     3        40      3       1.0     39      3       -1.0
MPC     3        42      3       1.0     41      3       -1.0
MPC     3        44      3       1.0     43      3       -1.0
MPC     3        46      3       1.0     45      3       -1.0
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00000000011111111112222222222333333333344444444445555555555666666666777777777
12345678901234567890123456789012345678901234567890123456789012345678901234567890
MPC     3        48      3       1.0     47      3       -1.0
MPC     3        50      3       1.0     49      3       -1.0
MPC     3        52      3       1.0     51      3       -1.0
MPC     3        54      3       1.0     53      3       -1.0
MPC     3        56      3       1.0     55      3       -1.0
MPC     3        58      3       1.0     57      3       -1.0
MPC     3        60      3       1.0     59      3       -1.0
MPC     3        62      3       1.0     61      3       -1.0
MPC     3        64      3       1.0     63      3       -1.0
MPC     3        66      3       1.0     65      3       -1.0
MPC     3        68      3       1.0     67      3       -1.0
MPC     3        70      3       1.0     69      3       -1.0
MPC     3        72      3       1.0     71      3       -1.0
MPC     3        74      3       1.0     73      3       -1.0
MPC     3        76      3       1.0     75      3       -1.0
MPC     3        78      3       1.0     77      3       -1.0
MPC     3        80      3       1.0     79      3       -1.0
MPC     3        82      3       1.0     81      3       -1.0
MPC     3        84      3       1.0     83      3       -1.0
MPC     3        86      3       1.0     85      3       -1.0
MPC     3        88      3       1.0     87      3       -1.0
MPC     3        90      3       1.0     89      3       -1.0
MPC     3        92      3       1.0     91      3       -1.0
MPC     3        94      3       1.0     93      3       -1.0
MPC     3        96      3       1.0     95      3       -1.0
MPC     3        98      3       1.0     97      3       -1.0
MPC     3        102     3       1.0     101     3       -1.0
MPC     3        106     3       1.0     105     3       -1.0
MPC     3        110     3       1.0     109     3       -1.0
MPC     3        114     3       1.0     113     3       -1.0
MPC     3        116     3       1.0     115     3       -1.0
MPC     3        118     3       1.0     117     3       -1.0
MPC     3        120     3       1.0     119     3       -1.0
MPC     3        122     3       1.0     121     3       -1.0
MPC     3        124     3       1.0     123     3       -1.0
MPC     3        126     3       1.0     125     3       -1.0
MPC     3        130     3       1.0     129     3       -1.0
MPC     3        134     3       1.0     133     3       -1.0
MPC     3        138     3       1.0     137     3       -1.0
MPC     3        142     3       1.0     141     3       -1.0
MPC     3        144     3       1.0     143     3       -1.0
MPC     3        146     3       1.0     145     3       -1.0
MPC     3        148     3       1.0     147     3       -1.0
MPC     3        150     3       1.0     149     3       -1.0
MPC     3        152     3       1.0     151     3       -1.0
MPC     3        154     3       1.0     153     3       -1.0
MPC     3        156     3       1.0     155     3       -1.0
MPC     3        158     3       1.0     157     3       -1.0
MPC     3        160     3       1.0     159     3       -1.0
MPC     3        162     3       1.0     161     3       -1.0
MPC     3        164     3       1.0     163     3       -1.0
MPC     3        166     3       1.0     165     3       -1.0
MPC     3        168     3       1.0     167     3       -1.0
MPC     3        170     3       1.0     169     3       -1.0
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00000000011111111112222222222333333333344444444445555555555666666666677777777778
12345678901234567890123456789012345678901234567890123456789012345678901234567890

MPC     3       172     3       1.0     171     3       -1.0
MPC     3       174     3       1.0     173     3       -1.0
MPC     3       176     3       1.0     175     3       -1.0
MPC     3       178     3       1.0     177     3       -1.0
MPC     3       180     3       1.0     179     3       -1.0
MPC     3       182     3       1.0     181     3       -1.0
MPC     3       184     3       1.0     183     3       -1.0
MPC     3       186     3       1.0     185     3       -1.0
MPC     3       188     3       1.0     187     3       -1.0
MPC     3       190     3       1.0     189     3       -1.0
$
$       **********************************************************************
$       *                         OMITTED DEGREES OF FREEDOM                 *
$       **********************************************************************
$
OMIT1   1       111     139
OMIT1   1       77      79      80      81      83      98      101     +AAA
+AAA    102     105     106     109     110     129     130     133     +AAB
+AAB    134     137     138
OMIT1   1       1       THRU    75
OMIT1   1       85      THRU    93
OMIT1   1       95      THRU    97
OMIT1   1       113     THRU    126
OMIT1   1       141     THRU    150
OMIT1   1       153     THRU    162
OMIT1   1       165     THRU    190
OMIT1   2       97      101     102     105     106     109     110     +BBB
+BBB    125     129     130     133     134     137     138
OMIT1   2       98      126
OMIT1   2       1       THRU    95
OMIT1   2       113     THRU    123
OMIT1   2       141     THRU    150
OMIT1   2       153     THRU    162
OMIT1   2       165     THRU    190
ENDDATA
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CONDENSED MASS MATRIX - 82 X 82

REAL EIGENVALUES

MODE NO.	EXTRACTION ORDER	EIGENVALUE	RADIANS	CYCLES	GENERALIZED MASS	GENERALIZED STIFFNESS
1	82	1.557177E 03	3.946109E 01	6.280428E 00	5.454678E-01	8.493899E 02
2	81	1.993877E 04	1.412047E 02	2.247342E 01	4.032115E-01	8.039539E 03
3	80	4.064966E 04	2.016176E 02	3.208844E 01	5.238331E-01	2.129364E 04
4	79	1.115813E 05	3.340378E 02	5.316377E 01	4.823068E-01	5.381642E 04
5	78	2.267093E 05	4.761359E 02	7.578003E 01	0.0	0.0
6	77	2.523123E 05	5.023069E 02	7.994463E 01	0.0	0.0
7	76	3.594068E 05	5.995054E 02	9.541426E 01	0.0	0.0
8	75	5.599265E 05	7.482825E 02	1.190929E 02	0.0	0.0
9	74	6.604453E 05	8.248911E 02	1.312855E 02	0.0	0.0
10	73	9.779825E 05	9.889299E 02	1.573931E 02	0.0	0.0
11	72	1.119253E 06	1.057948E 03	1.683776E 02	0.0	0.0
12	71	1.231973E 06	1.109943E 03	1.766529E 02	0.0	0.0
13	70	1.561327E 06	1.249531E 03	1.988690E 02	0.0	0.0
14	69	1.829655E 06	1.352721E 03	2.152923E 02	0.0	0.0
15	68	1.897981E 06	1.377672E 03	2.192634E 02	0.0	0.0
16	67	2.239848E 06	1.496612E 03	2.381933E 02	0.0	0.0
17	66	2.447416E 06	1.564422E 03	2.489855E 02	0.0	0.0
18	65	2.686985E 06	1.639203E 03	2.608872E 02	0.0	0.0
19	64	3.394412E 06	1.842393E 03	2.932258E 02	0.0	0.0
20	63	3.845726E 06	1.961052E 03	3.121111E 02	0.0	0.0
21	62	4.023149E 06	2.005779E 03	3.192295E 02	0.0	0.0
22	61	4.985442E 06	2.232810E 03	3.553628E 02	0.0	0.0
23	60	5.070856E 06	2.251856E 03	3.583940E 02	0.0	0.0
24	59	5.699505E 06	2.387364E 03	3.799607E 02	0.0	0.0
25	58	6.162378E 06	2.482414E 03	3.950884E 02	0.0	0.0
26	57	6.465798E 06	2.542793E 03	4.046980E 02	0.0	0.0
27	56	6.805817E 06	2.608796E 03	4.152029E 02	0.0	0.0
28	55	7.187535E 06	2.680958E 03	4.266877E 02	0.0	0.0
29	54	7.805659E 06	2.793861E 03	4.446567E 02	0.0	0.0
30	53	8.123265E 06	2.850134E 03	4.536130E 02	0.0	0.0
31	52	9.203724E 06	3.033764E 03	4.828384E 02	0.0	0.0
32	51	9.792125E 06	3.129237E 03	4.980334E 02	0.0	0.0
33	50	1.045064E 07	3.232745E 03	5.145073E 02	0.0	0.0
34	49	1.170846E 07	3.421763E 03	5.445906E 02	0.0	0.0
35	48	1.444699E 07	3.800920E 03	6.049353E 02	0.0	0.0
36	47	1.470010E 07	3.834071E 03	6.102114E 02	0.0	0.0
37	46	1.590242E 07	3.987784E 03	6.346755E 02	0.0	0.0
38	45	1.607114E 07	4.008883E 03	6.380334E 02	0.0	0.0
39	44	1.773461E 07	4.211246E 03	6.702407E 02	0.0	0.0
40	43	2.003787E 07	4.476367E 03	7.124360E 02	0.0	0.0
41	42	2.130678E 07	4.615926E 03	7.346475E 02	0.0	0.0
42	41	2.259880E 07	4.753820E 03	7.565940E 02	0.0	0.0
43	40	2.283426E 07	4.778520E 03	7.605251E 02	0.0	0.0

CONDENSED MASS MATRIX - 82 X 82

REAL EIGENVALUES

MODE NO.	EXTRACTION ORDER	EIGENVALUE	RADIANS	CYCLES	GENERALIZED MASS	GENERALIZED STIFFNESS
44	39	2.341627E 07	4.839035E 03	7.701565E 02	0.0	0.0
45	38	2.400528E 07	4.899520E 03	7.797827E 02	0.0	0.0
46	37	2.434016E 07	4.933574E 03	7.852029E 02	0.0	0.0
47	36	2.468691E 07	4.968594E 03	7.907764E 02	0.0	0.0
48	35	2.607560E 07	5.106426E 03	8.127129E 02	0.0	0.0
49	34	2.735712E 07	5.230402E 03	8.324443E 02	0.0	0.0
50	33	2.768379E 07	5.261539E 03	8.373999E 02	0.0	0.0
51	32	2.819155E 07	5.309570E 03	8.450444E 02	0.0	0.0
52	31	3.167704E 07	5.628234E 03	8.957615E 02	0.0	0.0
53	30	3.252861E 07	5.703387E 03	9.077222E 02	0.0	0.0
54	29	3.404891E 07	5.835145E 03	9.286921E 02	0.0	0.0
55	28	3.877313E 07	6.226813E 03	9.910281E 02	0.0	0.0
56	27	3.984742E 07	6.312480E 03	1.004663E 03	0.0	0.0
57	26	4.206630E 07	6.485855E 03	1.032256E 03	0.0	0.0
58	25	4.253254E 07	6.521699E 03	1.037961E 03	0.0	0.0
59	24	4.359229E 07	6.602445E 03	1.050812E 03	0.0	0.0
60	23	4.462528E 07	6.680215E 03	1.063189E 03	0.0	0.0
61	22	4.527675E 07	6.728801E 03	1.070922E 03	0.0	0.0
62	21	4.595574E 07	6.782016E 03	1.079391E 03	0.0	0.0
63	20	4.800661E 07	6.928680E 03	1.102734E 03	0.0	0.0
64	19	5.076851E 07	7.125203E 03	1.134011E 03	0.0	0.0
65	18	5.103166E 07	7.143645E 03	1.136947E 03	0.0	0.0
66	17	5.493309E 07	7.411688E 03	1.179607E 03	0.0	0.0
67	16	5.609930E 07	7.489945E 03	1.192062E 03	0.0	0.0
68	15	5.972250E 07	7.728031E 03	1.229955E 03	0.0	0.0
69	14	6.233338E 07	7.895148E 03	1.256552E 03	0.0	0.0
70	13	6.528400E 07	8.079852E 03	1.285948E 03	0.0	0.0
71	12	6.591285E 07	8.118672E 03	1.292127E 03	0.0	0.0
72	11	6.614058E 07	8.132688E 03	1.294358E 03	0.0	0.0
73	10	7.777507E 07	8.819020E 03	1.403591E 03	0.0	0.0
74	9	7.879118E 07	8.876441E 03	1.412730E 03	0.0	0.0
75	8	7.920208E 07	8.899555E 03	1.416408E 03	0.0	0.0
76	7	8.271592E 07	9.094828E 03	1.447487E 03	0.0	0.0
77	6	8.611277E 07	9.279695E 03	1.476910E 03	0.0	0.0
78	5	8.830339E 07	9.396988E 03	1.495577E 03	0.0	0.0
79	4	1.027183E 08	1.013500E 04	1.613036E 03	0.0	0.0
80	3	1.118913E 08	1.057787E 04	1.683520E 03	0.0	0.0
81	2	1.260041E 08	1.122516E 04	1.786539E 03	0.0	0.0
82	1	1.581658E 08	1.257640E 04	2.001596E 03	0.0	0.0

CONDENSED MASS MATRIX - 82 X 82
EIGENVALUE # 1.557177E 03

REAL EIGENVECTOR NO. 1

POINT ID.	TYPE	T1	T2	T3	POINT ID.	TYPE	T1	T2	T3
1	G	-1.308350E-02	1.417144E-02	1.000000E 00	44	G	2.371356E-02	1.429886E-02	7.029132E-01
2	G	1.961876E-02	1.864831E-02	1.000000E 00	45	G	-2.276279E-02	7.843941E-03	7.082311E-01
3	G	-1.615249E-02	1.346650E-02	9.792035E-01	46	G	2.231473E-02	1.414522E-02	7.082311E-01
4	G	2.157910E-02	1.870346E-02	9.792035E-01	47	G	-1.809635E-02	8.621261E-03	7.140874E-01
5	G	-1.854603E-02	1.289607E-02	9.576302E-01	48	G	1.606321E-02	1.332992E-02	7.140874E-01
6	G	2.287912E-02	1.841913E-02	9.576302E-01	49	G	-1.385700E-02	9.395000E-03	7.194886E-01
7	G	-2.097714E-02	1.232117E-02	9.359370E-01	50	G	1.048883E-02	1.271739E-02	7.194886E-01
8	G	2.416627E-02	1.810843E-02	9.359370E-01	51	G	-5.479295E-03	1.046140E-02	7.224417E-01
9	G	-2.185638E-02	1.190800E-02	9.141425E-01	52	G	1.093328E-03	1.133544E-02	7.224417E-01
10	G	2.388135E-02	1.762618E-02	9.141425E-01	53	G	-1.550150E-02	5.700186E-03	5.116214E-01
11	G	-2.189298E-02	1.150419E-02	8.922375E-01	54	G	2.283444E-02	1.036052E-02	5.116214E-01
12	G	2.268898E-02	1.708126E-02	8.922375E-01	55	G	-1.784149E-02	5.137198E-03	5.205228E-01
13	G	-1.387643E-02	1.138952E-02	8.413972E-01	56	G	2.400417E-02	1.095412E-02	5.205228E-01
14	G	2.085317E-02	1.626262E-02	8.413972E-01	57	G	-2.046799E-02	4.709065E-03	5.278569E-01
15	G	-1.688539E-02	1.102155E-02	8.466488E-01	58	G	2.540114E-02	1.146531E-02	5.278568E-01
16	G	2.267564E-02	1.662802E-02	8.466488E-01	59	G	-2.259269E-02	4.564501E-03	5.342847E-01
17	G	-1.894372E-02	1.083652E-02	8.516968E-01	60	G	2.653360E-02	1.170092E-02	5.342845E-01
18	G	2.352674E-02	1.680865E-02	8.516968E-01	61	G	-2.283612E-02	4.741155E-03	5.400299E-01
19	G	-2.110813E-02	1.067257E-02	8.565406E-01	62	G	2.558068E-02	1.157676E-02	5.400299E-01
20	G	2.450919E-02	1.696895E-02	8.565406E-01	63	G	-2.320632E-02	5.000044E-03	5.449950E-01
21	G	-2.171650E-02	1.072591E-02	8.612562E-01	64	G	2.411558E-02	1.137335E-02	5.449948E-01
22	G	2.388642E-02	1.691359E-02	8.612562E-01	65	G	-2.357730E-02	5.175710E-03	5.486535E-01
23	G	-2.214767E-02	1.080189E-02	8.657914E-01	66	G	2.304095E-02	1.125877E-02	5.486535E-01
24	G	2.302766E-02	1.684085E-02	8.657914E-01	67	G	-1.837993E-02	5.872350E-03	5.544293E-01
25	G	-2.145120E-02	1.101011E-02	8.702619E-01	68	G	1.625003E-02	1.053488E-02	5.544293E-01
26	G	2.103379E-02	1.663687E-02	8.702619E-01	69	G	-1.427087E-02	6.628748E-03	5.599740E-01
27	G	-1.780706E-02	1.118439E-02	8.437124E-01	70	G	1.036385E-02	9.948798E-03	5.599740E-01
28	G	1.593142E-02	1.556729E-02	8.437124E-01	71	G	-5.390916E-03	7.705882E-03	5.631427E-01
29	G	-1.355985E-02	1.092353E-02	8.192095E-01	72	G	7.421137E-04	8.513030E-03	5.631427E-01
30	G	1.027529E-02	1.398669E-02	8.192090E-01	73	G	-1.564401E-02	2.230439E-03	3.605665E-01
31	G	-5.348749E-03	1.238810E-02	8.045734E-01	74	G	2.176705E-02	8.773077E-03	3.605665E-01
32	G	1.051196E-03	1.319029E-02	8.045734E-01	75	G	-1.785842E-02	1.847840E-03	3.638906E-01
33	G	-1.495118E-02	8.225311E-03	6.754755E-01	76	G	2.427880E-02	9.093102E-03	3.638906E-01
34	G	2.227141E-02	1.370076E-02	6.754755E-01	77	G	-1.988798E-02	1.506686E-03	3.670028E-01
35	G	-1.765721E-02	7.851012E-03	6.811884E-01	78	G	2.629482E-02	9.379216E-03	3.670028E-01
36	G	2.373371E-02	1.407259E-02	6.811884E-01	79	G	-2.100526E-02	1.305538E-03	3.700936E-01
37	G	-2.056419E-02	7.515650E-03	6.867720E-01	80	G	2.536751E-02	9.392653E-03	3.700936E-01
38	G	2.545270E-02	1.440437E-02	6.867720E-01	81	G	-2.240960E-02	1.238723E-03	3.731257E-01
39	G	-2.265510E-02	7.337186E-03	6.922240E-01	82	G	2.461724E-02	9.299789E-03	3.731257E-01
40	G	2.624106E-02	1.459341E-02	6.922240E-01	83	G	-2.206016E-02	1.302089E-03	3.763788E-01
41	G	-2.278998E-02	7.488240E-03	6.975951E-01	84	G	2.397834E-02	9.190757E-03	3.763788E-01
42	G	2.506094E-02	1.446575E-02	6.975951E-01	85	G	-2.260865E-02	1.316836E-03	3.797179E-01
43	G	-2.270883E-02	7.675532E-03	7.029132E-01	86	G	2.224441E-02	8.779921E-03	3.797179E-01

CONDENSED MASS MATRIX - 82 X 82
EIGENVALUE # 1.557177E 03

REAL EIGENVECTOR NO. 1

POINT ID.	TYPE	T1	T2	T3	POINT ID.	TYPE	T1	T2	T3
87	G	-1.866472E-02	2.236695E-03	3.863719E-01	139	G	1.122391E-03	-1.037000E-03	5.032885E-02
88	G	1.536804E-02	7.686436E-03	3.863719E-01	141	G	-9.876169E-03	-3.346039E-03	4.724972E-02
89	G	-1.407569E-02	3.187651E-03	3.924784E-01	142	G	1.204604E-02	1.100538E-03	4.724972E-02
90	G	9.428743E-03	6.888911E-03	3.924784E-01	143	G	-8.223411E-03	-3.143159E-03	5.032885E-02
91	G	-5.904507E-03	4.385006E-03	3.961117E-01	144	G	1.141931E-02	1.069159E-03	5.032885E-02
92	G	-1.408748E-04	5.261533E-03	3.961117E-01	145	G	-9.741463E-03	-2.553130E-03	5.403731E-02
93	G	-1.995803E-02	-3.686721E-03	2.581444E-01	146	G	8.959725E-03	5.686753E-04	5.403731E-02
94	G	2.513739E-02	5.153071E-03	2.581444E-01	147	G	-6.777190E-03	-1.956368E-03	5.757311E-02
95	G	-1.294816E-02	-1.203728E-03	1.488402E-01	148	G	5.776696E-03	1.256175E-04	5.757311E-02
96	G	1.594965E-02	4.459783E-03	1.488402E-01	149	G	-2.095331E-03	-1.270140E-03	5.981407E-02
97	G	-1.420467E-02	-1.583471E-03	1.548492E-01	150	G	5.101098E-04	-8.401445E-04	5.981407E-02
98	G	1.679869E-02	5.131058E-03	1.548492E-01	151	G	-5.806725E-03	-1.189767E-03	1.177475E-02
101	G	-1.673561E-02	-1.996317E-03	1.610807E-01	152	G	6.666742E-03	-4.041435E-04	1.177475E-02
102	G	1.888295E-02	5.644687E-03	1.610807E-01	153	G	-1.016255E-02	-3.175341E-03	1.124037E-02
103	G	-5.045258E-04	9.005058E-04	2.053822E-01	154	G	9.043049E-03	1.032496E-03	1.124037E-02
105	G	-1.842384E-02	-2.331826E-03	1.670616E-01	155	G	-1.210527E-02	-4.066896E-03	1.145921E-02
106	G	2.005613E-02	1.893341E-03	1.670616E-01	156	G	9.894978E-03	1.641521E-03	1.145921E-02
107	G	-2.574760E-04	-1.077088E-04	1.026884E-01	157	G	-1.227450E-02	-4.103117E-03	1.183155E-02
108	G	-1.821228E-04	5.048376E-03	3.797179E-01	158	G	9.745035E-03	1.651754E-03	1.183155E-02
109	G	-1.896948E-02	-2.320655E-03	1.720334E-01	159	G	-1.069640E-02	-3.373794E-03	1.203464E-02
110	G	1.699392E-02	1.553057E-03	1.720334E-01	160	G	9.188522E-03	1.276408E-03	1.203464E-02
111	G	-2.867695E-03	6.594602E-04	1.803364E-01	161	G	-7.978652E-03	-2.122354E-03	1.183284E-02
113	G	-2.219084E-02	-2.219504E-03	1.758892E-01	162	G	7.683370E-03	2.847102E-04	1.183284E-02
114	G	1.777354E-02	3.482334E-03	1.758892E-01	163	G	-4.993118E-03	-5.977643E-04	1.062702E-02
115	G	-2.276730E-02	-2.132091E-03	1.803364E-01	164	G	6.067663E-03	-1.095084E-03	1.062702E-02
116	G	1.732387E-02	3.451012E-03	1.803364E-01	165	G	-3.226888E-03	-6.284271E-04	7.891670E-03
117	G	-1.626660E-02	-1.480473E-03	1.854489E-01	166	G	4.932169E-03	-9.303072E-04	7.891670E-03
118	G	1.236663E-02	2.804400E-03	1.854489E-01	167	G	-2.459479E-03	-8.874685E-04	5.412605E-03
119	G	-1.225730E-02	-6.867580E-04	1.904153E-01	168	G	3.750068E-03	-7.863683E-04	5.412605E-03
120	G	7.567693E-03	2.235407E-03	1.904153E-01	169	G	2.898311E-04	-8.094369E-04	3.062966E-03
121	G	-4.811335E-03	2.656258E-04	1.934860E-01	170	G	1.305236E-03	-7.753728E-04	3.062966E-03
122	G	-3.380412E-04	9.012409E-04	1.934860E-01	171	G	-4.413109E-03	-9.518133E-04	7.401530E-03
123	G	-7.641409E-03	-2.563793E-03	3.085022E-02	172	G	5.066723E-03	-3.233147E-04	7.401530E-03
124	G	8.636963E-03	6.053504E-04	3.085022E-02	173	G	-8.295786E-03	-4.979733E-03	5.399238E-03
125	G	-1.128846E-02	-2.778275E-03	3.384491E-02	174	G	7.396173E-03	2.499836E-03	5.399238E-03
126	G	9.893961E-03	7.255021E-04	3.384491E-02	175	G	-9.747781E-03	-6.149188E-03	4.071705E-03
129	G	-1.373944E-02	-3.147711E-03	3.702009E-02	176	G	7.938448E-03	3.273314E-03	4.071705E-03
130	G	1.204123E-02	1.044945E-03	3.702009E-02	177	G	-9.770364E-03	-5.918302E-03	2.736849E-03
133	G	-1.487103E-02	-3.428976E-03	4.037531E-02	178	G	7.725347E-03	3.240969E-03	2.736849E-03
134	G	1.019251E-02	1.252794E-03	4.037531E-02	179	G	-8.440118E-03	-4.669771E-03	1.402319E-03
135	G	5.372735E-04	-8.464239E-04	1.062702E-02	180	G	6.822418E-03	2.626436E-03	1.402319E-03
137	G	-1.422779E-02	-3.494396E-03	4.380643E-02	181	G	-5.939376E-03	-2.763578E-03	2.830559E-04
138	G	9.957012E-03	1.201357E-03	4.380643E-02	182	G	5.074807E-03	1.434735E-03	2.830559E-04

CONDENSED MASS MATRIX - 82 X 82
EIGENVALUE # 1.557177E 03

REAL EIGENVECTOR NO. 1

POINT ID.	TYPE	T1	T2	T3
183	G	-1.797523E-03	-2.032399E-04	3.514040E-05
184	G	2.063007E-03	-3.613776E-04	3.514040E-05
185	G	-3.075808E-03	-7.010100E-04	-6.537285E-03
186	G	3.899087E-03	4.738790E-04	-6.537285E-03
187	G	-1.682740E-03	1.722297E-04	-1.346479E-02
188	G	3.267237E-03	1.995343E-04	-1.346479E-02
189	G	9.761609E-04	7.211955E-04	-2.188371E-02
190	G	1.202498E-03	1.603487E-04	-2.188371E-02
191	G	0.0	0.0	0.0
192	G	0.0	0.0	0.0
193	G	0.0	0.0	0.0
194	G	0.0	0.0	0.0

CONDENSED MASS MATRIX - 82 X 82
EIGENVALUE # 1.993877E 04

REAL EIGENVECTOR NO. 2

POINT ID.	TYPE	T1	T2	T3	POINT ID.	TYPE	T1	T2	T3
1	G	-8.313507E-03	-5.618431E-03	1.000000E 00	44	G	4.112411E-02	-1.600322E-01	-7.098669E-02
2	G	3.787933E-02	-1.331920E-01	1.000000E 00	45	G	-1.180848E-02	1.623129E-02	-2.126853E-01
3	G	-1.136626E-02	5.191319E-03	8.335769E-01	46	G	4.020011E-02	-1.564156E-01	-2.126853E-01
4	G	4.104002E-02	-1.439052E-01	8.335769E-01	47	G	-5.190726E-03	-3.923282E-03	-3.729244E-01
5	G	-1.319026E-02	1.375663E-02	6.656981E-01	48	G	3.309844E-02	-1.346132E-01	-3.729244E-01
6	G	4.305710E-02	-1.522743E-01	6.656981E-01	49	G	4.067934E-04	-2.486857E-02	-5.243444E-01
7	G	-1.511122E-02	2.224259E-02	4.971088E-01	50	G	2.663601E-02	-1.180007E-01	-5.243444E-01
8	G	4.483443E-02	-1.607867E-01	4.971088E-01	51	G	1.051920E-02	-5.477321E-02	-6.077070E-01
9	G	-1.510769E-02	2.368818E-02	3.283151E-01	52	G	1.735567E-02	-7.910192E-02	-6.077070E-01
10	G	4.461873E-02	-1.624734E-01	3.283151E-01	53	G	-1.149588E-02	-8.336394E-04	4.727874E-01
11	G	-1.433089E-02	2.099535E-02	1.597807E-01	54	G	3.892613E-02	-1.405474E-01	4.727874E-01
12	G	4.353649E-02	-1.597040E-01	1.597807E-01	55	G	-1.180749E-02	7.873569E-03	3.404857E-01
13	G	-1.018147E-02	-2.106345E-03	8.296419E-01	56	G	4.006407E-02	-1.490980E-01	3.404857E-01
14	G	3.965225E-02	-1.370404E-01	8.296419E-01	57	G	-1.133505E-02	1.708934E-02	2.048613E-01
15	G	-1.239065E-02	8.094296E-03	6.928702E-01	58	G	3.982276E-02	-1.578971E-01	2.048613E-01
16	G	4.187070E-02	-1.472619E-01	6.928702E-01	59	G	-1.109747E-02	2.311705E-02	6.665504E-02
17	G	-1.345287E-02	1.473157E-02	5.546355E-01	60	G	4.098001E-02	-1.634660E-01	6.665504E-02
18	G	4.281164E-02	-1.539400E-01	5.546355E-01	61	G	-9.449076E-03	2.278189E-02	-7.465088E-02
19	G	-1.496392E-02	2.147333E-02	4.147321E-01	62	G	3.654939E-02	-1.628071E-01	-7.465088E-02
20	G	4.458306E-02	-1.607279E-01	4.147321E-01	63	G	-7.204138E-03	2.020115E-02	-2.211033E-01
21	G	-1.463616E-02	2.172669E-02	2.740728E-01	64	G	3.627456E-02	-1.603569E-01	-2.211032E-01
22	G	4.381422E-02	-1.610021E-01	2.740728E-01	65	G	-7.708121E-03	1.537153E-02	-3.771903E-01
23	G	-1.449263E-02	2.056409E-02	1.336396E-01	66	G	3.500015E-02	-1.561574E-01	-3.771903E-01
24	G	4.369993E-02	-1.598601E-01	1.336396E-01	67	G	5.529698E-04	-5.564190E-03	-5.358577E-01
25	G	-1.414329E-02	1.407061E-02	-8.689657E-03	68	G	2.714428E-02	-1.346554E-01	-5.358577E-01
26	G	4.248237E-02	-1.533101E-01	-8.689657E-03	69	G	4.807603E-03	-2.686796E-02	-6.854519E-01
27	G	-6.439779E-03	-1.119629E-03	-2.104483E-01	70	G	2.275106E-02	-1.180729E-01	-6.854519E-01
28	G	3.442057E-02	-1.368630E-01	-2.104483E-01	71	G	1.107952E-02	-5.633245E-02	-7.716225E-01
29	G	-2.156445E-05	-2.360892E-02	-4.014304E-01	72	G	1.547093E-02	-7.890362E-02	-7.716225E-01
30	G	2.735258E-02	-1.202201E-01	-4.014304E-01	73	G	-1.301403E-02	-3.017881E-03	3.219669E-01
31	G	9.930909E-03	-5.337065E-02	-5.100731E-01	74	G	3.336744E-02	-1.344750E-01	3.219669E-01
32	G	1.715904E-02	-7.945573E-02	-5.100731E-01	75	G	-1.096918E-02	5.358730E-03	1.888995E-01
33	G	-1.154134E-02	9.587372E-05	6.465160E-01	76	G	4.069409E-02	-1.418005E-01	1.888995E-01
34	G	4.051417E-02	-1.404503E-01	6.465160E-01	77	G	-1.068161E-02	1.357963E-02	5.552970E-02
35	G	-1.261394E-02	1.001336E-02	5.033298E-01	78	G	4.803139E-02	-1.495246E-01	5.552970E-02
36	G	4.149847E-02	-1.503506E-01	5.033298E-01	79	G	-4.122704E-03	1.910307E-02	-7.778555E-02
37	G	-1.435612E-02	1.996493E-02	3.594811E-01	80	G	3.944216E-02	-1.555614E-01	-7.778555E-02
38	G	4.350978E-02	-1.602609E-01	3.594811E-01	81	G	1.431871E-03	1.934674E-02	-2.107667E-01
39	G	-1.504971E-02	2.616720E-02	2.157750E-01	82	G	3.432802E-02	-1.558593E-01	-2.107667E-01
40	G	4.371813E-02	-1.663901E-01	2.157750E-01	83	G	1.259177E-03	1.572431E-02	-3.436219E-01
41	G	-1.358296E-02	2.362766E-02	7.221502E-02	84	G	1.674346E-02	-1.532261E-01	-3.436219E-01
42	G	4.303248E-02	-1.638092E-01	7.221502E-02	85	G	4.477516E-03	1.162844E-02	-4.740535E-01
43	G	-1.270068E-02	1.986224E-02	-7.098669E-02	86	G	1.147830E-02	-1.477476E-01	-4.740535E-01

CONDENSED MASS MATRIX - 82 X 82
EIGENVALUE # 1.993877E 04

REAL EIGENVECTOR NO. 2

POINT ID.	TYPE	T1	T2	T3	POINT ID.	TYPE	T1	T2	T3
87	G	9.641688E-03	-8.094329E-03	-6.176687E-01	139	G	7.576894E-03	-1.123527E-02	-1.893387E-01
88	G	1.361620E-02	-1.259009E-01	-6.176687E-01	141	G	1.972148E-02	1.084951E-02	-1.546319E-01
89	G	1.693064E-02	-2.844280E-02	-7.520068E-01	142	G	-3.046948E-02	-3.225824E-02	-1.546319E-01
90	G	1.666951E-02	-1.093743E-01	-7.520068E-01	143	G	2.900920E-02	1.031223E-02	-1.893387E-01
91	G	2.136389E-02	-5.465415E-02	-8.320152E-01	144	G	-1.852340E-02	-3.278279E-02	-1.893387E-01
92	G	2.024714E-02	-7.369810E-02	-8.320152E-01	145	G	3.766319E-02	5.467400E-03	-2.292855E-01
93	G	-1.995029E-03	3.403538E-02	-1.382400E-01	146	G	-8.930001E-03	-2.796317E-02	-2.292855E-01
94	G	4.171643E-02	-1.690949E-01	-1.382400E-01	147	G	3.222880E-02	-6.905249E-04	-2.689511E-01
95	G	-9.849910E-03	1.371687E-02	1.193956E-01	148	G	3.764026E-05	-2.336783E-02	-2.689511E-01
96	G	2.387008E-02	-7.677418E-02	1.193956E-01	149	G	2.167426E-02	-8.181777E-03	-2.939029E-01
97	G	-6.012551E-03	1.886128E-02	2.786682E-02	150	G	1.346241E-02	-1.266164E-02	-2.939029E-01
98	G	2.164476E-02	-8.323026E-02	2.786682E-02	151	G	-1.907094E-03	2.217227E-03	7.116029E-04
101	G	-1.590549E-03	2.345160E-02	-6.427842E-02	152	G	9.396184E-03	-1.170726E-02	7.116029E-04
102	G	2.138913E-02	-8.211867E-02	-6.427842E-02	153	G	4.844703E-04	4.073265E-03	-1.623317E-02
103	G	8.493043E-03	-2.714883E-02	-2.244462E-01	154	G	1.299670E-03	-1.542952E-02	-1.623317E-02
105	G	-8.533909E-04	2.922067E-02	-1.549361E-01	155	G	3.299923E-03	5.609334E-03	-3.300746E-02
106	G	2.362684E-02	-3.934396E-02	-1.549361E-01	156	G	-5.683288E-03	-1.811598E-02	-3.300746E-02
107	G	2.831263E-03	-1.492766E-02	-9.459251E-02	157	G	6.579503E-03	6.604407E-03	-4.897043E-02
108	G	7.977910E-03	-6.805956E-02	-4.740535E-01	158	G	-1.120945E-02	-1.946796E-02	-4.897043E-02
109	G	2.232695E-03	2.878906E-02	-2.412901E-01	159	G	1.102122E-02	7.196307E-03	-6.353426E-02
110	G	7.495429E-03	-3.712579E-02	-2.412901E-01	160	G	-1.471987E-02	-1.933669E-02	-6.353426E-02
111	G	5.091328E-03	-2.586459E-02	-4.041121E-01	161	G	1.417338E-02	6.393373E-03	-7.628787E-02
113	G	1.390611E-02	2.644400E-02	-3.213324E-01	162	G	-1.173292E-02	-1.629516E-02	-7.628787E-02
114	G	-7.807266E-03	-7.841343E-02	-3.213324E-01	163	G	1.872666E-02	5.902711E-03	-8.615071E-02
115	G	2.198538E-02	2.514219E-02	-4.041121E-01	164	G	-9.663086E-03	-1.360387E-02	-8.615071E-02
116	G	-1.558302E-02	-7.687134E-02	-4.041121E-01	165	G	1.754551E-02	4.808985E-03	-9.560239E-02
117	G	3.272351E-02	1.299718E-02	-4.965872E-01	166	G	-3.717503E-03	-1.120898E-02	-9.560239E-02
118	G	-2.915856E-03	-6.451452E-02	-4.965872E-01	167	G	1.928939E-02	4.096873E-03	-1.055044E-01
119	G	3.236047E-02	-1.696246E-03	-5.843670E-01	168	G	1.772068E-03	-8.455310E-03	-1.055044E-01
120	G	6.096005E-03	-5.365065E-02	-5.843670E-01	169	G	1.473618E-02	-2.408270E-04	-1.159565E-01
121	G	2.835778E-02	-1.868885E-02	-6.383686E-01	170	G	1.197882E-02	-2.435395E-03	-1.159565E-01
122	G	2.028150E-02	-3.001142E-02	-6.383686E-01	171	G	-1.449391E-03	1.773781E-03	1.761816E-04
123	G	-3.272748E-03	9.019393E-03	1.475148E-02	172	G	7.141098E-03	-9.365827E-03	1.761816E-04
124	G	1.208016E-02	-2.521173E-02	1.475148E-02	173	G	1.097997E-03	3.307376E-03	-9.976588E-03
125	G	-1.270989E-03	1.048868E-02	-1.969057E-02	174	G	2.776741E-04	-1.448595E-02	-9.976588E-03
126	G	4.060760E-03	-2.549644E-02	-1.969057E-02	175	G	3.859213E-03	4.921138E-03	-1.797892E-02
129	G	1.016621E-03	1.234746E-02	-5.300018E-02	176	G	-5.989607E-03	-1.765532E-02	-1.797892E-02
130	G	-3.203724E-03	-2.754617E-02	-5.300018E-02	177	G	7.015634E-03	6.481729E-03	-2.337197E-02
133	G	4.470326E-03	1.317355E-02	-8.624566E-02	178	G	-1.090691E-02	-1.874208E-02	-2.337197E-02
134	G	-1.148825E-02	-2.963292E-02	-8.624566E-02	179	G	1.015480E-02	7.564928E-03	-2.618312E-02
135	G	4.531786E-03	-3.850579E-03	-8.615071E-02	180	G	-1.298773E-02	-1.699043E-02	-2.618312E-02
137	G	5.447481E-03	1.239847E-02	-1.199312E-01	181	G	1.148320E-02	6.895449E-03	-2.666884E-02
138	G	-1.727312E-02	-3.106040E-02	-1.199312E-01	182	G	-1.125762E-02	-1.237771E-02	-2.666884E-02

CONDENSED MASS MATRIX - 82 X 82
EIGENVALUE # 1.993877E 04

R E A L E I G E N V E C T O R N O . 2

POINT ID.	TYPE	T1	T2	T3
183	G	6.741598E-03	2.006922E-03	-2.612148E-02
184	G	-3.285450E-03	-4.409277E-03	-2.612148E-02
185	G	1.577836E-02	1.082741E-02	-2.395535E-02
186	G	-4.569564E-03	-5.447660E-03	-2.395535E-02
187	G	1.598075E-02	1.129981E-02	-2.167567E-02
188	G	9.450756E-04	-4.461783E-04	-2.167567E-02
189	G	1.225969E-02	8.648518E-03	-1.861062E-02
190	G	1.037478E-02	7.330175E-03	-1.861062E-02
191	G	0.0	0.0	0.0
192	G	0.0	0.0	0.0
193	G	0.0	0.0	0.0
194	G	0.0	0.0	0.0

CONDENSED MASS MATRIX - 82 X 82
EIGENVALUE # 4.064966E 04

REAL EIGENVECTOR NO. 3

POINT ID.	TYPE	T1	T2	T3	POINT ID.	TYPE	T1	T2	T3
1	G	3.584485E-02	-5.429219E-02	-4.991551E-01	44	G	-4.239692E-02	-1.825870E-01	-3.203406E-01
2	G	-4.083481E-02	-1.751226E-01	-4.991551E-01	45	G	5.743020E-02	-2.282247E-02	-4.527368E-01
3	G	4.082529E-02	-4.583276E-02	-5.625252E-01	46	G	-4.356575E-02	-1.737871E-01	-4.527368E-01
4	G	-4.371074E-02	-1.820096E-01	-5.625252E-01	47	G	4.709142E-02	-4.173872E-02	-5.981249E-01
5	G	4.446548E-02	-4.044855E-02	-6.218961E-01	48	G	-2.872717E-02	-1.584527E-01	-5.981249E-01
6	G	-4.484562E-02	-1.855519E-01	-6.218961E-01	49	G	3.838321E-02	-6.077031E-02	-7.330166E-01
7	G	4.921627E-02	-3.471905E-02	-6.786782E-01	50	G	-1.743933E-02	-1.432554E-01	-7.330166E-01
8	G	-4.676005E-02	-1.892468E-01	-6.786782E-01	51	G	2.047246E-02	-8.730185E-02	-8.066750E-01
9	G	5.179842E-02	-3.362135E-02	-7.331526E-01	52	G	4.311003E-03	-1.088147E-01	-8.066750E-01
10	G	-4.597032E-02	-1.879298E-01	-7.331526E-01	53	G	2.462385E-02	-4.312737E-02	6.770211E-01
11	G	5.396085E-02	-3.428108E-02	-7.849940E-01	54	G	-2.647227E-02	-1.450168E-01	6.770211E-01
12	G	-4.432561E-02	-1.845050E-01	-7.849940E-01	55	G	2.455404E-02	-3.214059E-02	5.082101E-01
13	G	3.745805E-02	-4.654303E-02	-7.980996E-02	56	G	-2.438796E-02	-1.558549E-01	5.082101E-01
14	G	-4.309789E-02	-1.698682E-01	-7.980996E-02	57	G	2.802796E-02	-2.261945E-02	3.627388E-01
15	G	4.141316E-02	-3.709782E-02	-2.111157E-01	58	G	-2.507725E-02	-1.652262E-01	3.627387E-01
16	G	-4.437046E-02	-1.792678E-01	-2.111157E-01	59	G	3.224054E-02	-1.756696E-02	2.295878E-01
17	G	4.416949E-02	-3.173370E-02	-3.403643E-01	60	G	-2.562138E-02	-1.702231E-01	2.295877E-01
18	G	-4.456039E-02	-1.845261E-01	-3.403643E-01	61	G	3.786633E-02	-1.904286E-02	1.044869E-01
19	G	4.846514E-02	-2.662157E-02	-4.672303E-01	62	G	-3.133655E-02	-1.687739E-01	1.044868E-01
20	G	-4.581242E-02	-1.895320E-01	-4.672303E-01	63	G	4.221696E-02	-2.238991E-02	-1.250753E-02
21	G	5.088785E-02	-2.728729E-02	-5.922414E-01	64	G	-3.139861E-02	-1.656260E-01	-1.250753E-02
22	G	-4.532804E-02	-1.887753E-01	-5.922414E-01	65	G	5.269706E-02	-2.574867E-02	-1.172446E-01
23	G	5.427253E-02	-2.882014E-02	-7.140509E-01	66	G	-3.695767E-02	-1.628789E-01	-1.172446E-01
24	G	-4.489378E-02	-1.872036E-01	-7.140509E-01	67	G	4.282584E-02	-4.183909E-02	-2.459368E-01
25	G	5.745984E-02	-3.430006E-02	-8.349573E-01	68	G	-2.377437E-02	-1.464133E-01	-2.459368E-01
26	G	-4.403811E-02	-1.816993E-01	-8.349573E-01	69	G	3.584567E-02	-5.899675E-02	-3.693771E-01
27	G	4.768828E-02	-4.861321E-02	-9.016126E-01	70	G	-1.302257E-02	-1.332865E-01	-3.693771E-01
28	G	-3.014757E-02	-1.639206E-01	-9.016126E-01	71	G	1.847923E-02	-8.308107E-02	-4.401291E-01
29	G	3.806729E-02	-6.530702E-02	-9.661681E-01	72	G	5.665615E-03	-1.012127E-01	-4.401291E-01
30	G	-1.708142E-02	-1.462399E-01	-9.661681E-01	73	G	8.481136E-04	-3.339015E-02	8.182909E-01
31	G	1.935669E-02	-9.203488E-02	-1.000000E 00	74	G	-4.258808E-04	-1.393493E-01	8.182909E-01
32	G	4.439726E-03	-1.137150E-01	-1.000000E 00	75	G	3.428681E-03	-2.641578E-02	7.134308E-01
33	G	3.664401E-02	-3.658289E-02	3.436044E-01	76	G	5.772409E-03	-1.456094E-01	7.134308E-01
34	G	-4.155024E-02	-1.650852E-01	3.436044E-01	77	G	5.771926E-03	-1.893161E-02	6.058345E-01
35	G	3.733186E-02	-2.746756E-02	2.110171E-01	78	G	6.272480E-03	-1.533259E-01	6.058345E-01
36	G	-3.970595E-02	-1.741902E-01	2.110171E-01	79	G	1.121707E-02	-1.366428E-02	4.958307E-01
37	G	4.116184E-02	-1.841703E-02	7.797712E-02	80	G	-1.015813E-03	-1.593353E-01	4.958307E-01
38	G	-4.080151E-02	-1.832077E-01	7.797712E-02	81	G	1.244508E-02	-1.371615E-02	3.844787E-01
39	G	4.592749E-02	-1.284477E-02	-5.479595E-02	82	G	3.647119E-03	-1.591554E-01	3.844787E-01
40	G	-4.311091E-02	-1.887317E-01	-5.479595E-02	83	G	2.587790E-02	-1.489756E-02	2.724814E-01
41	G	4.796004E-02	-1.533450E-02	-1.875188E-01	84	G	-1.561881E-03	-1.591563E-01	2.724814E-01
42	G	-4.106922E-02	-1.862473E-01	-1.875188E-01	85	G	3.029722E-02	-1.838360E-02	1.598793E-01
43	G	5.237443E-02	-1.904012E-02	-3.203406E-01	86	G	-2.522016E-02	-1.548085E-01	1.598793E-01

CONDENSED MASS MATRIX - 82 X 82
EIGENVALUE # 4.064966E 04

REAL EIGENVECTOR NO. 3

POINT ID.	TYPE	T1	T2	T3	POINT ID.	TYPE	T1	T2	T3
87	G	3.105220E-02	-3.560865E-02	3.835514E-02	139	G	-4.866635E-04	-1.560651E-02	1.651953E-01
88	G	-1.144401E-02	-1.357420E-01	3.835514E-02	141	G	-2.904420E-02	-1.147120E-02	1.753766E-01
89	G	3.132989E-02	-5.292009E-02	-7.499439E-02	142	G	2.172492E-02	-1.839587E-02	1.753766E-01
90	G	-7.070350E-04	-1.216131E-01	-7.499439E-02	143	G	-2.262295E-02	-1.145558E-02	1.651953E-01
91	G	2.418336E-02	-7.517046E-02	-1.428572E-01	144	G	2.519451E-02	-1.975744E-02	1.651953E-01
92	G	1.545661E-02	-9.133995E-02	-1.428572E-01	145	G	4.724924E-03	-1.228955E-02	1.574781E-01
93	G	-5.927419E-04	-1.937547E-02	4.823125E-01	146	G	2.265046E-02	-1.952698E-02	1.574781E-01
94	G	1.020485E-02	-1.252639E-01	4.823125E-01	147	G	1.045971E-02	-1.347819E-02	1.484240E-01
95	G	-3.680191E-02	-2.159301E-02	6.099280E-01	148	G	2.480262E-02	-1.866670E-02	1.484240E-01
96	G	4.015043E-02	-7.423610E-02	6.099280E-01	149	G	1.886037E-02	-1.520352E-02	1.424168E-01
97	G	-2.322495E-02	-1.847661E-02	5.640095E-01	150	G	2.254120E-02	-1.635085E-02	1.424168E-01
98	G	1.745446E-02	-7.871693E-02	5.640095E-01	151	G	-2.920714E-02	-4.685736E-03	6.696188E-02
101	G	-1.398295E-02	-1.461022E-02	5.130584E-01	152	G	3.153228E-02	-9.169759E-04	6.696188E-02
102	G	1.428423E-02	-8.272564E-02	5.130584E-01	153	G	-2.712913E-02	-7.214036E-03	6.137164E-02
103	G	2.560676E-03	-4.663002E-02	3.731431E-01	154	G	2.633386E-02	-1.431649E-03	6.137164E-02
105	G	-9.703625E-03	-1.000704E-01	4.562894E-01	155	G	-2.418552E-02	-8.397724E-03	5.862912E-02
106	G	1.366381E-02	-5.365220E-02	4.562894E-01	156	G	2.231684E-02	-1.859031E-03	5.862912E-02
107	G	1.529304E-04	-2.763474E-02	3.278298E-01	157	G	-2.199976E-02	-8.755222E-03	5.713010E-02
108	G	2.538527E-03	-8.659601E-02	1.598793E-01	158	G	2.027310E-02	-2.276361E-03	5.713010E-02
109	G	-4.753090E-03	-9.088177E-03	3.986658E-01	159	G	-2.087558E-02	-8.411527E-03	5.576797E-02
110	G	1.189960E-02	-5.253284E-02	3.986658E-01	160	G	1.960346E-02	-2.457369E-03	5.576797E-02
111	G	6.057214E-03	-4.447756E-02	2.889820E-01	161	G	-1.676399E-02	-6.137300E-03	5.352954E-02
113	G	-5.317029E-03	-1.001136E-02	3.416939E-01	162	G	1.866799E-02	-4.410777E-03	5.352954E-02
114	G	3.799929E-03	-8.005732E-02	3.416939E-01	163	G	-1.435801E-02	-3.259683E-03	4.849626E-02
115	G	8.562982E-03	-1.027760E-02	2.889820E-01	164	G	2.045166E-02	-5.922318E-03	4.849626E-02
116	G	6.167378E-03	-7.867748E-02	2.889820E-01	165	G	-8.280482E-03	-3.082380E-03	3.913669E-02
117	G	2.034816E-02	-1.765136E-02	2.276086E-01	166	G	2.010877E-02	-4.485268E-03	3.913669E-02
118	G	1.020100E-02	-7.071412E-02	2.276086E-01	167	G	1.261076E-03	-2.132424E-03	3.041102E-02
119	G	2.555532E-02	-2.729481E-02	1.673365E-01	168	G	1.972614E-02	-2.850015E-03	3.041102E-02
120	G	1.643453E-02	-6.361628E-02	1.673365E-01	169	G	1.181233E-02	-1.637584E-03	2.216518E-02
121	G	2.799179E-02	-3.907700E-02	1.293837E-01	170	G	1.522822E-02	-1.585943E-03	2.216518E-02
122	G	2.400376E-02	-4.709375E-02	1.293837E-01	171	G	-2.219743E-02	-3.749389E-03	4.289442E-02
123	G	-3.606895E-02	-1.267945E-02	1.667674E-01	172	G	2.396454E-02	-7.335807E-04	4.289442E-02
124	G	4.036232E-02	-1.614453E-02	1.667674E-01	173	G	-2.389814E-02	-9.010963E-03	2.951418E-02
125	G	-2.801450E-02	-1.270324E-02	1.696483E-01	174	G	2.243917E-02	8.660520E-04	2.951418E-02
126	G	2.823788E-02	-1.205060E-02	1.696483E-01	175	G	-2.173283E-02	-9.796474E-03	2.084955E-02
129	G	-2.375562E-02	-1.269618E-02	1.738845E-01	176	G	1.888402E-02	5.508168E-04	2.084955E-02
130	G	2.167968E-02	-1.098208E-02	1.738845E-01	177	G	-1.993962E-02	-1.019694E-02	1.507243E-02
133	G	-2.076961E-02	-1.237922E-02	1.769133E-01	178	G	1.654353E-02	1.014993E-03	1.507243E-02
134	G	2.037826E-02	-1.215511E-02	1.769133E-01	179	G	-1.769056E-02	-9.527452E-03	1.124647E-02
135	G	3.046827E-03	-4.591003E-03	4.849626E-02	180	G	1.463229E-02	1.407140E-03	1.124647E-02
137	G	-1.902653E-02	-1.190105E-02	1.777016E-01	181	G	-1.356756E-02	-6.825417E-03	8.871712E-03
138	G	1.951727E-02	-1.491942E-02	1.777016E-01	182	G	1.227299E-02	9.711334E-04	8.871712E-03

CONDENSED MASS MATRIX - 82 X 82
EIGENVALUE # 4.064966E 04

R E A L E I G E N V E C T O R N O . 3

POINT ID.	TYPE	T1	T2	T3
183	G	-5.168881E-03	-1.108294E-03	8.558787E-03
184	G	6.953564E-03	-1.954366E-03	8.558787E-03
185	G	-6.343767E-03	1.000952E-03	-1.328072E-02
186	G	1.608319E-02	4.282065E-03	-1.328072E-02
187	G	-9.549079E-04	5.018417E-03	-3.668209E-02
188	G	1.661073E-02	6.047308E-03	-3.668209E-02
189	G	1.063066E-02	9.261828E-03	-6.499100E-02
190	G	1.147439E-02	7.600751E-03	-6.499100E-02
191	G	0.0	0.0	0.0
192	G	0.0	0.0	0.0
193	G	0.0	0.0	0.0
194	G	0.0	0.0	0.0

CONDENSED MASS MATRIX - 82 X 82
EIGENVALUE # 1.115813E 05

REAL EIGENVECTOR NO. 4

POINT ID.	TYPE	T1	T2	T3	POINT ID.	TYPE	T1	T2	T3
1	G	-3.078031E-02	-4.959562E-02	1.000000E 00	44	G	4.921863E-02	-1.145193E-01	-1.804329E-01
2	G	6.148702E-02	-1.154271E-01	1.000000E 00	45	G	-1.374463E-02	-3.907461E-02	-2.346513E-01
3	G	-3.231627E-02	-3.926399E-02	8.571368E-01	46	G	4.897769E-02	-1.140122E-01	-2.346513E-01
4	G	6.596428E-02	-1.235226E-01	8.571368E-01	47	G	-2.801085E-03	-4.715216E-02	-3.089082E-01
5	G	-3.121956E-02	-2.876300E-02	7.073864E-01	48	G	3.984270E-02	-1.050799E-01	-3.089082E-01
6	G	6.718004E-02	-1.319646E-01	7.073864E-01	49	G	4.673462E-03	-5.656049E-02	-3.795690E-01
7	G	-3.135934E-02	-1.910364E-02	5.538219E-01	50	G	3.224503E-02	-9.782505E-02	-3.795690E-01
8	G	6.878638E-02	-1.400921E-01	5.538219E-01	51	G	1.620593E-02	-6.992471E-02	-4.169646E-01
9	G	-2.932052E-02	-1.567395E-02	3.982557E-01	52	G	2.255112E-02	-8.041078E-02	-4.169646E-01
10	G	6.743389E-02	-1.424958E-01	3.982557E-01	53	G	-1.494206E-02	-4.522547E-02	-1.692894E-01
11	G	-2.807696E-02	-1.822067E-02	2.419528E-01	54	G	3.436271E-02	-9.962600E-02	-1.692894E-01
12	G	6.578469E-02	-1.397276E-01	2.419528E-01	55	G	-9.969607E-03	-4.647312E-02	-1.499303E-01
13	G	-3.508096E-02	-4.201883E-02	5.744377E-01	56	G	3.275178E-02	-9.845978E-02	-1.499303E-01
14	G	6.438684E-02	-1.155130E-01	5.744377E-01	57	G	-3.915790E-03	-4.592591E-02	-1.565993E-01
15	G	-3.280607E-02	-3.653184E-02	5.069307E-01	58	G	3.033602E-02	-9.920919E-02	-1.565993E-01
16	G	6.393111E-02	-1.211033E-01	5.069307E-01	59	G	4.455629E-04	-4.438490E-02	-1.786901E-01
17	G	-2.976694E-02	-3.188954E-02	4.321525E-01	60	G	2.701900E-02	-1.007892E-01	-1.786901E-01
18	G	6.304616E-02	-1.259826E-01	4.321525E-01	61	G	4.728407E-03	-4.310477E-02	-2.137185E-01
19	G	-2.926188E-02	-2.676324E-02	3.507217E-01	62	G	2.413722E-02	-1.018936E-01	-2.137184E-01
20	G	6.450725E-02	-1.313601E-01	3.507217E-01	63	G	1.205298E-02	-4.212261E-02	-2.659571E-01
21	G	-2.700597E-02	-2.556303E-02	2.656189E-01	64	G	1.942886E-02	-1.030192E-01	-2.659570E-01
22	G	6.376916E-02	-1.327516E-01	2.656189E-01	65	G	1.491500E-02	-4.399154E-02	-3.479227E-01
23	G	-2.755953E-02	-2.565477E-02	1.775261E-01	66	G	2.012520E-02	-1.018804E-01	-3.479227E-01
24	G	6.498116E-02	-1.327747E-01	1.775261E-01	67	G	1.908591E-02	-5.229047E-02	-4.052091E-01
25	G	-3.233239E-02	-2.971832E-02	8.639485E-02	68	G	1.595732E-02	-9.386712E-02	-4.052091E-01
26	G	6.879753E-02	-1.286993E-01	8.639485E-02	69	G	2.239281E-02	-5.994437E-02	-4.548318E-01
27	G	-1.101249E-02	-3.350920E-02	-8.073115E-02	70	G	1.632265E-02	-8.793259E-02	-4.548318E-01
28	G	4.774478E-02	-1.231565E-01	-8.073115E-02	71	G	1.975665E-02	-6.923628E-02	-4.813126E-01
29	G	1.432329E-03	-4.691723E-02	-2.333312E-01	72	G	1.647009E-02	-7.579458E-02	-4.813126E-01
30	G	3.566403E-02	-1.135004E-01	-2.333312E-01	73	G	6.987095E-03	-6.848115E-02	-2.690490E-01
31	G	1.412050E-02	-6.681401E-02	-3.192503E-01	74	G	5.965509E-03	-6.124215E-02	-2.690490E-01
32	G	2.328902E-02	-8.459604E-02	-3.192503E-01	75	G	8.312866E-03	-6.900156E-02	-2.636884E-01
33	G	-3.213236E-02	-4.488543E-02	1.343539E-01	76	G	6.821394E-03	-6.180891E-02	-2.636884E-01
34	G	5.787933E-02	-1.083698E-01	1.343539E-01	77	G	8.517530E-03	-7.009912E-02	-2.566925E-01
35	G	-2.554110E-02	-4.051028E-02	6.812251E-02	78	G	9.670477E-03	-6.161166E-02	-2.566925E-01
36	G	5.354887E-02	-1.126680E-01	6.812251E-02	79	G	2.377123E-02	-7.006061E-02	-2.477875E-01
37	G	-2.284370E-02	-3.654533E-02	2.790939E-03	80	G	8.459371E-03	-6.167670E-02	-2.477875E-01
38	G	5.265068E-02	-1.164346E-01	2.790939E-03	81	G	3.956509E-02	-6.947941E-02	-2.369390E-01
39	G	-2.018471E-02	-3.454849E-02	-6.070277E-02	82	G	-2.672221E-03	-6.272548E-02	-2.369390E-01
40	G	5.209882E-02	-1.182837E-01	-6.070277E-02	83	G	3.864159E-02	-7.050174E-02	-2.266876E-01
41	G	-1.581493E-02	-3.638471E-02	-1.221510E-01	84	G	-1.306565E-02	-6.249341E-02	-2.266876E-01
42	G	4.943506E-02	-1.163769E-01	-1.221510E-01	85	G	4.974171E-02	-6.941450E-02	-2.115769E-01
43	G	-1.426111E-02	-3.829573E-02	-1.804329E-01	86	G	-3.270765E-02	-6.249571E-02	-2.115769E-01

CONDENSED MASS MATRIX - 82 X 82
EIGENVALUE # 1.115813E 05

REAL EIGENVECTOR NO. 4

POINT ID.	TYPE	T1	T2	T3	POINT ID.	TYPE	T1	T2	T3
87	G	4.998259E-02	-6.902295E-02	-2.057325E-01	139	G	-5.971413E-03	-8.658405E-03	5.068972E-01
88	G	-1.381353E-02	-6.161826E-02	-2.057325E-01	141	G	5.221693E-04	-6.184490E-02	4.211243E-01
89	G	4.640936E-02	-6.817842E-02	-1.957417E-01	142	G	-1.529050E-02	4.497240E-02	4.211243E-01
90	G	-3.805415E-03	-6.147292E-02	-1.957417E-01	143	G	-2.502670E-02	-6.149891E-02	5.068972E-01
91	G	3.546353E-02	-6.616539E-02	-1.888272E-01	144	G	7.452250E-03	4.418210E-02	5.068972E-01
92	G	1.882961E-02	-6.431705E-02	-1.888272E-01	145	G	6.833892E-03	-4.892158E-02	6.085425E-01
93	G	3.011427E-02	-3.864545E-02	-1.256951E-01	146	G	2.441556E-03	3.086016E-02	6.085425E-01
94	G	7.035457E-03	-9.478199E-02	-1.256951E-01	147	G	8.051790E-03	-3.294580E-02	7.040377E-01
95	G	1.911887E-02	-7.331401E-02	-1.726907E-01	148	G	8.277960E-03	1.883001E-02	7.040377E-01
96	G	-1.467188E-02	-1.727247E-02	-1.726907E-01	149	G	8.696988E-03	-1.540716E-02	7.609137E-01
97	G	2.177150E-02	-7.667273E-02	-1.131999E-01	150	G	1.149673E-02	-5.786553E-03	7.609137E-01
98	G	-3.420665E-03	-1.109806E-02	-1.131999E-01	151	G	1.193909E-02	-2.400590E-02	8.060545E-03
101	G	3.125457E-02	-7.978636E-02	-5.074514E-02	152	G	-1.908842E-02	3.231035E-02	8.060545E-03
102	G	-2.487939E-03	-5.515829E-03	-5.074514E-02	153	G	1.167940E-02	-3.001102E-02	6.927907E-02
103	G	1.777596E-02	-4.912254E-02	1.706444E-02	154	G	-1.095432E-02	3.595135E-02	6.927907E-02
105	G	3.037040E-02	-8.477157E-02	1.608885E-02	155	G	1.135782E-02	-3.544560E-02	1.304426E-01
106	G	3.258277E-03	-2.624394E-02	1.608885E-02	156	G	-5.821992E-03	3.979865E-02	1.304426E-01
107	G	8.906417E-03	-2.820170E-02	1.057315E-01	157	G	8.687831E-03	-4.030062E-02	1.920342E-01
108	G	8.517027E-03	-6.595510E-02	-2.115769E-01	158	G	-1.475262E-03	4.303493E-02	1.920342E-01
109	G	4.323694E-02	-8.481598E-02	1.001559E-01	159	G	2.119310E-03	-4.475567E-02	2.539123E-01
110	G	-3.142703E-03	-2.215908E-02	1.001559E-01	160	G	9.811680E-04	4.491935E-02	2.539123E-01
111	G	1.860110E-02	-2.506711E-02	2.939552E-01	161	G	-5.870339E-03	-4.715023E-02	3.160453E-01
113	G	6.659138E-02	-8.108294E-02	2.002658E-01	162	G	5.170833E-03	4.596286E-02	3.160453E-01
114	G	-1.422257E-02	3.211775E-02	2.002658E-01	163	G	-2.318843E-02	-5.461101E-02	3.804632E-01
115	G	7.760268E-02	-7.882410E-02	2.939552E-01	164	G	1.714138E-02	5.256759E-02	3.804632E-01
116	G	-4.201779E-02	2.368985E-02	2.939552E-01	165	G	-1.403333E-02	-4.342821E-02	4.617016E-01
117	G	5.093043E-02	-6.506258E-02	3.932709E-01	166	G	9.538572E-03	4.189809E-02	4.617016E-01
118	G	-1.928939E-02	1.332361E-02	3.932709E-01	167	G	-7.607553E-03	-3.068836E-02	5.427222E-01
119	G	4.641497E-02	-4.964466E-02	4.822536E-01	168	G	9.556998E-03	3.085640E-02	5.427222E-01
120	G	-5.153488E-03	8.430271E-04	4.822536E-01	169	G	3.926267E-04	-4.848249E-03	6.236383E-01
121	G	3.135642E-02	-3.297126E-02	5.345325E-01	170	G	5.002197E-03	5.923338E-03	6.236383E-01
122	G	1.713253E-02	-2.229946E-02	5.345325E-01	171	G	9.073708E-03	-1.920472E-02	5.731560E-03
123	G	1.436631E-02	-5.509418E-02	-2.222580E-02	172	G	-1.450720E-02	2.584828E-02	5.731560E-03
124	G	-1.892504E-02	2.201958E-02	-2.222580E-02	173	G	5.938847E-03	-2.236688E-02	4.232715E-02
125	G	1.720930E-02	-5.881509E-02	6.605226E-02	174	G	-6.846651E-03	3.921939E-02	4.232715E-02
126	G	-1.287487E-02	3.199029E-02	6.605226E-02	175	G	2.746519E-03	-2.547407E-02	7.488137E-02
129	G	1.836756E-02	-6.395048E-02	1.567100E-01	176	G	-3.049576E-04	3.306190E-02	7.488137E-02
130	G	-1.371109E-02	4.129562E-02	1.567100E-01	177	G	-3.122170E-03	-2.946549E-02	1.030399E-01
133	G	2.178568E-02	-6.632787E-02	2.469069E-01	178	G	6.381828E-03	3.506858E-02	1.030399E-01
134	G	-4.073896E-03	4.662161E-02	2.469069E-01	179	G	-1.161895E-02	-3.326564E-02	1.263097E-01
135	G	-3.023523E-03	-1.021710E-03	3.804632E-01	180	G	1.309253E-02	3.568428E-02	1.263097E-01
137	G	1.861930E-02	-6.479728E-02	3.352726E-01	181	G	-1.866097E-02	-3.313570E-02	1.435886E-01
138	G	-3.576993E-03	4.719966E-02	3.352726E-01	182	G	1.728900E-02	3.258908E-02	1.435886E-01

CONDENSED MASS MATRIX - 82 X 82
EIGENVALUE # 1.115813E 05

REAL EIGENVECTOR NO. 4

POINT ID.	TYPE	T1	T2	T3
183	G	-8.347832E-03	-1.856774E-02	1.550515E-01
184	G	5.828068E-03	1.734731E-02	1.550515E-01
185	G	-1.120150E-02	-4.142259E-02	2.581474E-01
186	G	9.407900E-03	4.212425E-02	2.581474E-01
187	G	-8.823760E-03	-3.597856E-02	3.687867E-01
188	G	7.364664E-03	3.759835E-02	3.687867E-01
189	G	-1.283065E-03	-3.334381E-03	4.936810E-01
190	G	3.614493E-04	5.577940E-03	4.936810E-01
191	G	0.0	0.0	0.0
192	G	0.0	0.0	0.0
193	G	0.0	0.0	0.0
194	G	0.0	0.0	0.0

APPENDIX D

DAMAGED WING: 17 DEGREES OF FREEDOM SOLUTION

```
00000000011111111112222222223333333334444444445555555556666666667777777778
12345670901234567890123456789012345678901234567890123456789012345678901234567890

$     ********************************************************************
$     *                    ADDITIONAL BULK DATA FOR                      *
$     *                F 84 WING PROJECT - DAMAGED WING                  *
$     *                 CONDENSED MASS MATRIX - 17 X 17                  *
$     ********************************************************************
$
$
$     ********************************************************************
$     *                    OMITTED DEGREES OF FREEDOM                    *
$     ********************************************************************
$
OMIT1   3       3       5       7       9       11      15      17
OMIT1   3       19      21      23      27      29      31      35
OMIT1   3       37      39      41      43      47      49      51
OMIT1   3       67      69      71      75      77      79      81
OMIT1   3       83      87      89      91      93      97      101
OMIT1   3       105     109     113     117     119     121     125
OMIT1   3       129     133     137     141     145     147     149
OMIT1   3       153     155     157     159     161     165     167
OMIT1   3       169     173     175     177     179     181     185
OMIT1   3       187     189
ENDDATA
```

CONDENSED MASS MATRIX - 17 X 17

REAL EIGENVALUES

MODE NO.	EXTRACTION ORDER	EIGENVALUE	RADIANS	CYCLES	GENERALIZED MASS	GENERALIZED STIFFNESS
1	17	1.557646E 03	3.946703E 01	6.281373E 00	5.451390E-01	8.491335E 02
2	16	2.003036E 04	1.415287E 02	2.252498E 01	3.993199E-01	7.998520E 03
3	15	4.103475E 04	2.025703E 02	3.224007E 01	7.370928E-01	3.024641E 04
4	14	1.155514E 05	3.396343E 02	5.405447E 01	4.335516E-01	5.001080E 04
5	13	2.607762E 05	5.106626E 02	8.127449E 01	0.0	0.0
6	12	2.723871E 05	5.219072E 02	8.306412E 01	0.0	0.0
7	11	5.050648E 05	7.106792E 02	1.131081E 02	0.0	0.0
8	10	7.705458E 05	8.778074E 02	1.397074E 02	0.0	0.0
9	9	1.081225E 06	1.039820E 03	1.654925E 02	0.0	0.0
10	8	1.567418E 06	1.251966E 03	1.992565E 02	0.0	0.0
11	7	2.009187E 06	1.417458E 03	2.255955E 02	0.0	0.0
12	6	2.902416E 06	1.703648E 03	2.711440E 02	0.0	0.0
13	5	3.179189E 06	1.783028E 03	2.837776E 02	0.0	0.0
14	4	5.557883E 06	2.357516E 03	3.752104E 02	0.0	0.0
15	3	6.905027E 06	2.627742E 03	4.182180E 02	0.0	0.0
16	2	9.021029E 06	3.003503E 03	4.780222E 02	0.0	0.0
17	1	8.705170E 07	9.330148E 03	1.484939E 03	0.0	0.0

CONDENSED MASS MATRIX - 17 X 17
EIGENVALUE # 1.557646E 03

REAL EIGENVECTOR NO. 1

POINT ID.	TYPE	T1	T2	T3	POINT ID.	TYPE	T1	T2	T3
1	G	-1.308899E-02	1.419563E-02	1.000000E 00	44	G	2.371991E-02	1.430378E-02	7.027165E-01
2	G	1.962062E-02	1.876656E-02	1.000000E 00	45	G	-2.275523E-02	7.821634E-03	7.082310E-01
3	G	-1.616377E-02	1.349259E-02	9.789493E-01	46	G	2.231200E-02	1.412767E-02	7.082310E-01
4	G	2.158561E-02	1.861895E-02	9.789493E-01	47	G	-1.809349E-02	8.609418E-03	7.139544E-01
5	G	-1.855792E-02	1.287709E-02	9.572507E-01	48	G	1.606657E-02	1.330591E-02	7.139544E-01
6	G	2.288603E-02	1.835995E-02	9.572507E-01	49	G	-1.385628E-02	9.376097E-03	7.192490E-01
7	G	-2.098725E-02	1.229074E-02	9.355517E-01	50	G	1.049589E-02	1.269453E-02	7.192490E-01
8	G	2.417294E-02	1.809262E-02	9.355517E-01	51	G	-5.473886E-03	1.043862E-02	7.221885E-01
9	G	-2.186173E-02	1.185593E-02	9.138314E-01	52	G	1.100125E-03	1.131810E-02	7.221885E-01
10	G	2.388532E-02	1.762465E-02	9.138314E-01	53	G	-1.550652E-02	5.692836E-03	5.116214E-01
11	G	-2.189318E-02	1.144906E-02	8.920634E-01	54	G	2.283056E-02	1.032974E-02	5.116214E-01
12	G	2.269175E-02	1.708711E-02	8.920634E-01	55	G	-1.784866E-02	5.136799E-03	5.204105E-01
13	G	-1.388238E-02	1.139079E-02	8.413971E-01	56	G	2.400599E-02	1.091648E-02	5.204105E-01
14	G	2.085563E-02	1.619272E-02	8.413971E-01	57	G	-2.047580E-02	4.712701E-03	5.276706E-01
15	G	-1.689700E-02	1.104253E-02	8.462521E-01	58	G	2.540670E-02	1.142411E-02	5.276706E-01
16	G	2.268270E-02	1.654073E-02	8.462521E-01	59	G	-2.259972E-02	4.568070E-03	5.340768E-01
17	G	-1.895687E-02	1.084425E-02	8.510910E-01	60	G	2.653991E-02	1.166033E-02	5.340766E-01
18	G	2.353544E-02	1.674003E-02	8.510910E-01	61	G	-2.284135E-02	4.744526E-03	5.398523E-01
19	G	-2.111940E-02	1.065491E-02	8.559023E-01	62	G	2.558478E-02	1.153693E-02	5.398521E-01
20	G	2.451734E-02	1.693196E-02	8.559023E-01	63	G	-2.320759E-02	5.005747E-03	5.448932E-01
21	G	-2.172324E-02	1.068426E-02	8.607064E-01	64	G	2.411914E-02	1.133141E-02	5.448931E-01
22	G	2.389244E-02	1.690597E-02	8.607064E-01	65	G	-2.357930E-02	5.196311E-03	5.486533E-01
23	G	-2.215061E-02	1.074645E-02	8.654599E-01	66	G	2.304665E-02	1.120165E-02	5.486533E-01
24	G	2.303347E-02	1.685061E-02	8.654599E-01	67	G	-1.837535E-02	5.885974E-03	5.542390E-01
25	G	-2.145764E-02	1.096820E-02	8.702616E-01	68	G	1.625255E-02	1.048739E-02	5.542390E-01
26	G	2.104603E-02	1.663301E-02	8.702616E-01	69	G	-1.426532E-02	6.624892E-03	5.596347E-01
27	G	-1.780355E-02	1.118222E-02	8.435999E-01	70	G	1.036734E-02	9.911951E-03	5.596347E-01
28	G	1.593532E-02	1.553103E-02	8.435999E-01	71	G	-5.386770E-03	7.688805E-03	5.627649E-01
29	G	-1.355764E-02	1.091476E-02	8.189902E-01	72	G	7.456820E-04	8.493554E-03	5.627649E-01
30	G	1.028053E-02	1.394980E-02	8.189902E-01	73	G	-1.565125E-02	2.245172E-03	3.605663E-01
31	G	-5.342629E-03	1.237142E-02	8.043209E-01	74	G	2.176630E-02	8.724201E-03	3.605663E-01
32	G	1.053629E-03	1.316570E-02	8.043209E-01	75	G	-1.786375E-02	1.865289E-03	3.637547E-01
33	G	-1.495901E-02	8.247547E-03	6.754755E-01	76	G	2.427903E-02	9.044293E-03	3.637547E-01
34	G	2.227272E-02	1.361259E-02	6.754755E-01	77	G	-1.989213E-02	1.515182E-03	3.667930E-01
35	G	-1.766874E-02	7.879462E-03	6.809431E-01	78	G	2.629470E-02	9.342089E-03	3.667930E-01
36	G	2.374174E-02	1.398253E-02	6.809431E-01	79	G	-2.101014E-02	1.299568E-03	3.698671E-01
37	G	-2.057571E-02	7.528193E-03	6.863957E-01	80	G	2.537080E-02	9.372808E-03	3.698671E-01
38	G	2.546243E-02	1.433986E-02	6.863957E-01	81	G	-2.241514E-02	1.222870E-03	3.729242E-01
39	G	-2.266381E-02	7.323597E-03	6.918222E-01	82	G	2.462499E-02	9.291980E-03	3.729242E-01
40	G	2.624955E-02	1.456274E-02	6.918222E-01	83	G	-2.206582E-02	1.283966E-03	3.762669E-01
41	G	-2.279699E-02	7.453401E-03	6.972531E-01	84	G	2.397911E-02	9.192658E-03	3.762669E-01
42	G	2.506991E-02	1.446251E-02	6.972531E-01	85	G	-2.260484E-02	1.312707E-03	3.797176E-01
43	G	-2.271229E-02	7.634979E-03	7.027165E-01	86	G	2.223947E-02	8.761398E-03	3.797176E-01

CONDENSED MASS MATRIX - 17 X 17
EIGENVALUE # 1.557646E 03

REAL EIGENVECTOR NO. 1

POINT ID.	TYPE	T1	T2	T3	POINT ID.	TYPE	T1	T2	T3
87	G	-1.865930E-02	2.241368E-03	3.862861E-01	139	G	1.120250E-03	-1.028710E-03	5.032878E-02
88	G	1.536779E-02	7.663056E-03	3.862861E-01	141	G	-9.865277E-03	-3.339946E-03	4.723505E-02
89	G	-1.406322E-02	3.185597E-03	3.923084E-01	142	G	1.204161E-02	1.109549E-03	4.723505E-02
90	G	9.429947E-03	6.867640E-03	3.923084E-01	143	G	-8.224450E-03	-3.134603E-03	5.032878E-02
91	G	-5.836994E-03	4.375335E-03	3.959156E-01	144	G	1.141530E-02	1.077187E-03	5.032878E-02
92	G	-1.308672E-04	5.251195E-03	3.959156E-01	145	G	-9.739514E-03	-2.543787E-03	5.402591E-02
93	G	-1.996336E-02	-3.674497E-03	2.576909E-01	146	G	8.954611E-03	5.769059E-04	5.402591E-02
94	G	2.514168E-02	5.132295E-03	2.576909E-01	147	G	-6.780785E-03	-1.947935E-03	5.755153E-02
95	G	-1.295139E-02	-1.180021E-03	1.488399E-01	148	G	5.769085E-03	1.344460E-04	5.755153E-02
96	G	1.594986E-02	4.433241E-03	1.488399E-01	149	G	-2.104672E-03	-1.261995E-03	5.979103E-02
97	G	-1.420890E-02	-1.556395E-03	1.547388E-01	150	G	4.988371E-04	-8.307511E-04	5.979103E-02
98	G	1.679933E-02	5.095877E-03	1.547388E-01	151	G	-5.807422E-03	-1.187563E-03	1.177470E-02
101	G	-1.673699E-02	-1.972227E-03	1.608935E-01	152	G	6.666650E-03	-4.055041E-04	1.177470E-02
102	G	1.668180E-02	5.611826E-03	1.608935E-01	153	G	-1.016264E-02	-3.172582E-03	1.123498E-02
103	G	-5.051100E-04	9.143490E-04	2.052256E-01	154	G	9.343540E-03	1.031697E-03	1.123498E-02
105	G	-1.842733E-02	-2.312587E-03	1.668392E-01	155	G	-1.210516E-02	-4.064247E-03	1.145019E-02
106	G	2.005875E-02	1.908179E-03	1.668392E-01	156	G	9.894975E-03	1.641705E-03	1.145019E-02
107	G	-2.577016E-04	-9.995313E-05	1.026043E-01	157	G	-1.227262E-02	-4.100952E-03	1.182121E-02
108	G	-1.826875E-04	5.037051E-03	3.797176E-01	158	G	9.744436E-03	1.653234E-03	1.182121E-02
109	G	-1.897413E-02	-2.307488E-03	1.718341E-01	159	G	-1.069415E-02	-3.372131E-03	1.202546E-02
110	G	1.699686E-02	1.578338E-03	1.718341E-01	160	G	9.187024E-03	1.279054E-03	1.202546E-02
111	G	-2.873135E-03	6.949033E-04	1.803362E-01	161	G	-7.977620E-03	-2.121831E-03	1.182710E-02
113	G	-2.213435E-02	-2.204465E-03	1.757833E-01	162	G	7.681206E-03	2.882401E-04	1.182710E-02
114	G	1.777161E-02	3.547101E-03	1.757833E-01	163	G	-4.992805E-03	-5.979569E-04	1.062707E-02
115	G	-2.277265E-02	-2.109643E-03	1.803362E-01	164	G	6.064527E-03	-1.091221E-03	1.062707E-02
116	G	1.731912E-02	3.499450E-03	1.803362E-01	165	G	-3.227902E-03	-6.285072E-04	7.894967E-03
117	G	-1.626017E-02	-1.450227E-03	1.854298E-01	166	G	4.925713E-03	-9.277893E-04	7.894967E-03
118	G	1.236276E-02	2.843626E-03	1.854298E-01	167	G	-2.461051E-03	-8.872580E-04	5.419623E-03
119	G	-1.225083E-02	-6.572239E-04	1.903740E-01	168	G	3.742210E-03	-7.848032E-04	5.419623E-03
120	G	7.567690E-03	2.271708E-03	1.903740E-01	169	G	2.852450E-04	-8.088767E-04	3.074396E-03
121	G	-4.807431E-03	2.964421E-04	1.934472E-01	170	G	1.300445E-03	-7.741794E-04	3.074396E-03
122	G	-3.332293E-04	9.359012E-04	1.934472E-01	171	G	-4.413638E-03	-9.500540E-04	7.401500E-03
123	G	-7.642109E-03	-2.556960E-03	3.085010E-02	172	G	5.066505E-03	-3.244034E-04	7.401500E-03
124	G	8.637343E-03	5.987631E-04	3.085010E-02	173	G	-8.295722E-03	-4.977528E-03	5.396251E-03
125	G	-1.128917E-02	-2.771145E-03	3.382857E-02	174	G	7.396411E-03	2.499539E-03	5.396251E-03
126	G	9.894993E-03	7.218237E-04	3.382857E-02	175	G	-9.747285E-03	-6.147090E-03	4.067052E-03
129	G	-1.374029E-02	-3.141047E-03	3.699535E-02	176	G	7.936560E-03	3.273735E-03	4.067052E-03
130	G	1.203912E-02	1.044918E-03	3.699535E-02	177	G	-9.769272E-03	-5.916439E-03	2.732094E-03
133	G	-1.487048E-02	-3.423223E-03	4.034872E-02	178	G	7.725265E-03	3.242102E-03	2.732094E-03
134	G	1.019190E-02	1.256673E-03	4.034872E-02	179	G	-8.438725E-03	-4.668422E-03	1.398731E-03
135	G	5.358607E-04	-8.445901E-04	1.062707E-02	180	G	6.822072E-03	2.628022E-03	1.398731E-03
137	G	-1.422725E-02	-3.489079E-03	4.378348E-02	181	G	-5.938452E-03	-2.763050E-03	2.813423E-04
138	G	9.955499E-03	1.208710E-03	4.378348E-02	182	G	5.074155E-03	1.436361E-03	2.813423E-04

CONDENSED MASS MATRIX - 17 X 17
EIGENVALUE # 1.557646E 03

REAL EIGENVECTOR NO. 1

POINT ID.	TYPE	T1	T2	T3
183	G	-1.797410E-03	-2.033061E-04	3.518161E-05
184	G	2.061939E-03	-3.601029E-04	3.518161E-05
185	G	-3.072117E-03	-7.053681E-04	-6.506633E-03
186	G	3.890962E-03	4.760725E-04	-6.506633E-03
187	G	-1.681136E-03	1.663312E-04	-1.339936E-02
188	G	3.258314E-03	2.007347E-04	-1.339936E-02
189	G	9.724554E-04	7.182683E-04	-2.177971E-02
190	G	1.195051E-03	1.552451E-04	-2.177971E-02
191	G	0.0	0.0	0.0
192	G	0.0	0.0	0.0
193	G	0.0	0.0	0.0
194	G	0.0	0.0	0.0

CONDENSED MASS MATRIX - 17 X 17
EIGENVALUE # 2.003036E 04

REAL EIGENVECTOR NO. 2

POINT ID.	TYPE	T1	T2	T3	POINT ID.	TYPE	T1	T2	T3
1	G	6.435454E-03	4.741192E-03	-1.000000E 00	44	G	-4.102362E-02	1.587586E-01	7.238722E-02
2	G	-3.782976E-02	1.331633E-01	-1.000000E 00	45	G	1.201959E-02	-1.562999E-02	2.124619E-01
3	G	1.157056E-02	-6.051444E-03	-8.311007E-01	46	G	-4.016088E-02	1.548622E-01	2.124619E-01
4	G	-4.103782E-02	1.438851E-01	-8.311007E-01	47	G	5.277097E-03	4.389673E-03	3.695694E-01
5	G	1.340948E-02	-1.432367E-02	-6.621567E-01	48	G	-3.295125E-02	1.332611E-01	3.695694E-01
6	G	-4.304345E-02	1.519778E-01	-6.621567E-01	49	G	-3.706368E-04	2.499814E-02	5.179718E-01
7	G	1.530635E-02	-2.245845E-02	-4.936665E-01	50	G	-2.642100E-02	1.168739E-01	5.179718E-01
8	G	-4.478188E-02	1.601451E-01	-4.936665E-01	51	G	-1.046639E-02	5.446343E-02	6.000767E-01
9	G	1.525312E-02	-2.380840E-02	-3.256731E-01	52	G	-1.717513E-02	7.855201E-02	6.000767E-01
10	G	-4.450708E-02	1.615510E-01	-3.256731E-01	53	G	1.151384E-02	1.389268E-03	-4.723514E-01
11	G	1.441712E-02	-2.078125E-02	-1.584540E-01	54	G	-3.876118E-02	1.392488E-01	-4.723514E-01
12	G	-4.336260E-02	1.586178E-01	-1.584540E-01	55	G	1.185685E-02	-7.341448E-03	-3.393989E-01
13	G	1.030641E-02	1.665282E-03	-8.294693E-01	56	G	-3.991944E-02	1.478198E-01	-3.393989E-01
14	G	-3.961505E-02	1.368074E-01	-8.294693E-01	57	G	1.140073E-02	-1.652734E-02	-2.034083E-01
15	G	1.256574E-02	-8.681215E-03	-6.895261E-01	58	G	-3.967232E-02	1.565797E-01	-2.034082E-01
16	G	-4.134343E-02	1.471533E-01	-6.895261E-01	59	G	1.117366E-02	-2.246776E-02	-6.518680E-02
17	G	1.364812E-02	-1.517086E-02	-5.500205E-01	60	G	-4.081284E-02	1.620466E-01	-6.518680E-02
18	G	-4.277574E-02	1.536346E-01	-5.500205E-01	61	G	9.553716E-03	-2.202159E-02	7.582158E-02
19	G	1.514347E-02	-2.166545E-02	-4.103315E-01	62	G	-3.642759E-02	1.612601E-01	7.582158E-02
20	G	-4.451223E-02	1.601200E-01	-4.103315E-01	63	G	7.312045E-03	-1.931414E-02	2.217171E-01
21	G	1.477908E-02	-2.170036E-02	-2.706693E-01	64	G	-3.608986E-02	1.586627E-01	2.217171E-01
22	G	-4.370460E-02	1.601266E-01	-2.706693E-01	65	G	7.784009E-03	-1.424276E-02	3.770546E-01
23	G	1.459136E-02	-2.037948E-02	-1.319242E-01	66	G	-3.481112E-02	1.541982E-01	3.770546E-01
24	G	-4.354153E-02	1.587852E-01	-1.319242E-01	67	G	-4.519403E-04	6.409883E-03	5.310836E-01
25	G	1.413995E-02	-1.386769E-02	8.366462E-03	68	G	-2.699578E-02	1.330231E-01	5.310836E-01
26	G	-4.225169E-02	1.521969E-01	8.366462E-03	69	G	-4.747313E-03	2.719726E-02	6.764200E-01
27	G	6.542206E-03	1.531332E-03	2.078868E-01	70	G	-2.260537E-02	1.167913E-01	6.764200E-01
28	G	-3.428116E-02	1.356000E-01	2.078868E-01	71	G	-1.099468E-02	5.607775E-02	7.608579E-01
29	G	7.875294E-05	2.374202E-02	3.963438E-01	72	G	-1.536135E-02	7.839102E-02	7.608579E-01
30	G	-2.716373E-02	1.191242E-01	3.963438E-01	73	G	1.309874E-02	2.783433E-03	-3.214798E-01
31	G	-9.828337E-03	5.310467E-02	5.036768E-01	74	G	-3.333663E-02	1.342269E-01	-3.214798E-01
32	G	-1.703334E-02	7.888359E-02	5.036768E-01	75	G	1.106056E-02	-5.585447E-03	-1.877970E-01
33	G	1.163730E-02	-6.408808E-04	-6.461842E-01	76	G	-4.060045E-02	1.415352E-01	-1.877970E-01
34	G	-4.042456E-02	1.404452E-01	-6.461842E-01	77	G	1.076011E-02	-1.371008E-02	-5.426286E-02
35	G	1.276219E-02	-1.058760E-02	-5.010991E-01	78	G	-4.787576E-02	1.491491E-01	-5.426286E-02
36	G	-4.145723E-02	1.503347E-01	-5.010991E-01	79	G	4.153650E-03	-1.909913E-02	7.891673E-02
37	G	1.451187E-02	-2.035942E-02	-3.564191E-01	80	G	-3.916787E-02	1.550372E-01	7.891673E-02
38	G	-4.346177E-02	1.599779E-01	-3.564191E-01	81	G	-1.465097E-03	-1.922618E-02	2.116271E-01
39	G	1.519123E-02	-2.628993E-02	-2.127146E-01	82	G	-3.386653E-02	1.552166E-01	2.116271E-01
40	G	-4.364409E-02	1.657647E-01	-2.127146E-01	83	G	-1.186900E-03	-1.537059E-02	3.442340E-01
41	G	1.371633E-02	-2.348416E-02	-6.970143E-02	84	G	-1.653634E-02	1.520830E-01	3.442340E-01
42	G	-4.292545E-02	1.628471E-01	-6.970143E-02	85	G	-4.274290E-03	-1.093471E-02	4.740154E-01
43	G	1.282972E-02	-1.947609E-02	7.238722E-02	86	G	-1.143955E-02	1.458877E-01	4.740154E-01

CONDENSED MASS MATRIX - 17 X 17
EIGENVALUE # 2.003036E 04

REAL EIGENVECTOR NO. 2

POINT ID.	TYPE	T1	T2	T3	POINT ID.	TYPE	T1	T2	T3
87	G	-9.536006E-03	8.733232E-03	6.135842E-01	139	G	-7.528972E-03	1.094881E-02	1.893696E-01
88	G	-1.353041E-02	1.241660E-01	6.135842E-01	141	G	-1.960829E-02	-1.073406E-02	1.551557E-01
89	G	-1.677606E-02	2.861818E-02	7.438297E-01	142	G	3.033355E-02	3.157159E-02	1.551557E-01
90	G	-1.661573E-02	1.078984E-01	7.438297E-01	143	G	-2.889507E-02	-1.002809E-02	1.893696E-01
91	G	-2.123239E-02	5.424436E-02	8.219720E-01	144	G	1.853140E-02	3.192572E-02	1.893696E-01
92	G	-2.016869E-02	7.303011E-02	8.219720E-01	145	G	-3.726611E-02	-5.263913E-03	2.276068E-01
93	G	2.023746E-03	-3.403153E-02	1.380641E-01	146	G	8.994780E-03	2.719362E-02	2.276068E-01
94	G	-4.151455E-02	1.690024E-01	1.380641E-01	147	G	-3.182055E-02	6.597103E-04	2.655467E-01
95	G	9.867407E-03	-1.372325E-02	-1.190428E-01	148	G	7.174787E-05	2.273750E-02	2.655467E-01
96	G	-2.378196E-02	7.661462E-02	-1.190428E-01	149	G	-2.129747E-02	7.920519E-03	2.897077E-01
97	G	6.071050E-03	-1.885847E-02	-2.752367E-02	150	G	-1.321196E-02	1.236335E-02	2.897077E-01
98	G	-2.162273E-02	8.309597E-02	-2.752367E-02	151	G	1.927552E-03	-2.264387E-03	-6.706014E-04
101	G	1.694381E-03	-2.342346E-02	6.455916E-02	152	G	-9.333607E-03	1.164754E-02	-6.706014E-04
102	G	-2.138026E-02	8.798963E-02	6.455916E-02	153	G	-4.378661E-04	-4.115686E-03	1.622351E-02
103	G	-8.398835E-03	2.695482E-02	2.245421E-01	154	G	-1.342630E-03	1.531814E-02	1.622351E-02
105	G	9.286087E-04	-2.916078E-02	1.551321E-01	155	G	-3.229563E-03	-5.648240E-03	3.295802E-02
106	G	-2.354839E-02	3.922764E-02	1.551321E-01	156	G	5.568586E-03	1.796919E-02	3.295802E-02
107	G	-2.802538E-03	1.477968E-02	9.494442E-02	157	G	-6.491564E-03	-6.638002E-03	4.890979E-02
108	G	-7.856917E-03	6.747645E-02	4.740154E-01	158	G	1.106449E-02	1.929804E-02	4.890979E-02
109	G	-2.145213E-03	-2.864934E-02	2.413930E-01	159	G	-1.092491E-02	-7.212084E-03	6.349629E-02
110	G	-7.355805E-03	3.683683E-02	2.413930E-01	160	G	1.459542E-02	1.914597E-02	6.349629E-02
111	G	-5.049536E-03	2.533368E-02	4.041497E-01	161	G	-1.409534E-02	-6.365184E-03	7.629031E-02
113	G	-1.381044E-02	-2.617316E-02	3.210509E-01	162	G	1.170606E-02	1.607424E-02	7.629031E-02
114	G	7.835999E-03	7.722765E-02	3.210509E-01	163	G	-1.872230E-02	-5.795408E-03	8.613700E-02
115	G	-2.195207E-02	-2.460478E-02	4.041497E-01	164	G	9.812742E-03	1.332599E-02	8.613700E-02
116	G	1.563982E-02	7.527208E-02	4.041497E-01	165	G	-1.745265E-02	-4.646644E-03	9.498423E-02
117	G	-3.237616E-02	-1.253149E-02	4.932150E-01	166	G	3.864147E-03	1.089634E-02	9.498423E-02
118	G	2.956693E-03	6.305134E-02	4.932150E-01	167	G	-1.907642E-02	-3.949311E-03	1.042033E-01
119	G	-3.205018E-02	1.715200E-03	5.776402E-01	168	G	-1.596122E-03	8.198906E-03	1.042033E-01
120	G	-6.011140E-03	5.244492E-02	5.776402E-01	169	G	-1.448462E-02	2.272388E-04	1.140144E-01
121	G	-2.810442E-02	1.826799E-02	6.301848E-01	170	G	-1.172172E-02	2.376140E-03	1.140144E-01
122	G	-2.007116E-02	2.942915E-02	6.301848E-01	171	G	1.464939E-03	-1.811509E-03	-1.497255E-04
123	G	3.308482E-03	-9.187523E-03	-1.464974E-02	172	G	-7.093541E-03	9.318035E-03	-1.497255E-04
124	G	-1.201533E-02	2.513127E-02	-1.464974E-02	173	G	-1.070660E-03	-3.322745E-03	9.893689E-03
125	G	1.332157E-03	-1.065697E-02	2.007027E-02	174	G	-3.054990E-04	1.434897E-02	9.893689E-03
126	G	-4.104845E-03	2.542679E-02	2.007027E-02	175	G	-3.816457E-03	-4.922993E-03	1.780673E-02
129	G	-9.421811E-04	-1.249405E-02	5.360457E-02	176	G	5.902112E-03	1.747430E-02	1.780673E-02
130	G	3.077122E-03	2.742244E-02	5.360457E-02	177	G	-6.956637E-03	-6.476875E-03	2.317575E-02
133	G	-4.375722E-03	-1.326383E-02	8.697766E-02	178	G	1.078570E-02	1.855525E-02	2.317575E-02
134	G	1.132708E-02	2.939125E-02	8.697766E-02	179	G	-1.008366E-02	-7.549897E-03	2.602713E-02
135	G	-4.454780E-03	3.765289E-03	8.613700E-02	180	G	1.286994E-02	1.682386E-02	2.602713E-02
137	G	-5.364347E-03	-1.240689E-02	1.206592E-01	181	G	-1.141901E-02	-6.863292E-03	2.659355E-02
138	G	1.711563E-02	3.062580E-02	1.206592E-01	182	G	1.119033E-02	1.224358E-02	2.659355E-02

CONDENSED MASS MATRIX - 17 X 17
EIGENVALUE # 2.003036E 04

REAL EIGENVECTOR NO. 2

POINT ID.	TYPE	T1	T2	T3
183	G	-6.740026E-03	-1.970439E-03	2.611093E-02
184	G	3.336333E-03	4.397575E-03	2.611093E-02
185	G	-1.571305E-02	-1.062044E-02	2.335735E-02
186	G	4.702702E-03	5.333435E-03	2.335735E-02
187	G	-1.585753E-02	-1.106591E-02	2.046640E-02
188	G	-7.592936E-04	4.114080E-04	2.046640E-02
189	G	-1.204430E-02	-8.471552E-03	1.676582E-02
190	G	-1.017018E-02	-7.208139E-03	1.676582E-02
191	G	0.0	0.0	0.0
192	G	0.0	0.0	0.0
193	G	0.0	0.0	0.0
194	G	0.0	0.0	0.0

CONDENSED MASS MATRIX - 17 X 17
EIGENVALUE # 4.103475E 04

REAL EIGENVECTOR NO. 3

POINT ID.	TYPE	T1	T2	T3	POINT ID.	TYPE	T1	T2	T3
1	G	4.249356E-02	-6.741476E-02	-5.938963E-01	44	G	-5.097851E-02	-2.186062E-01	-3.850476E-01
2	G	-4.943971E-02	-2.105587E-01	-5.938963E-01	45	G	6.842756E-02	-2.989306E-02	-5.428699E-01
3	G	4.861851E-02	-5.724076E-02	-6.657284E-01	46	G	-5.201177E-02	-2.132725E-01	-5.428699E-01
4	G	-5.269194E-02	-2.187356E-01	-6.657284E-01	47	G	5.630219E-02	-5.243243E-02	-7.099527E-01
5	G	5.308886E-02	-5.025526E-02	-7.350805E-01	48	G	-3.424941E-02	-1.892067E-01	-7.099527E-01
6	G	-5.424746E-02	-2.234355E-01	-7.350805E-01	49	G	4.603346E-02	-7.456297E-02	-8.651874E-01
7	G	5.880247E-02	-4.279511E-02	-8.035452E-01	50	G	-2.070188E-02	-1.714079E-01	-8.651874E-01
8	G	-5.646716E-02	-2.284000E-01	-8.035452E-01	51	G	2.476607E-02	-1.056083E-01	-9.513065E-01
9	G	6.187554E-02	-4.112873E-02	-8.708367E-01	52	G	5.368337E-03	-1.311169E-01	-9.513065E-01
10	G	-5.537792E-02	-2.270995E-01	-8.708367E-01	53	G	2.896558E-02	-5.375080E-02	8.127726E-01
11	G	6.445205E-02	-4.201672E-02	-9.362155E-01	54	G	-3.218184E-02	-1.729856E-01	8.127726E-01
12	G	-5.327128E-02	-2.228258E-01	-9.362155E-01	55	G	2.896510E-02	-4.041439E-02	6.072066E-01
13	G	4.429485E-02	-5.736715E-02	-9.217173E-02	56	G	-2.966536E-02	-1.861767E-01	6.072066E-01
14	G	-5.204575E-02	-2.043164E-01	-9.217173E-02	57	G	3.309476E-02	-2.897507E-02	4.306630E-01
15	G	4.929499E-02	-4.623606E-02	-2.448664E-01	58	G	-3.039491E-02	-1.973439E-01	4.306630E-01
16	G	-5.374406E-02	-2.153656E-01	-2.448664E-01	59	G	3.818650E-02	-2.308075E-02	2.702055E-01
17	G	5.274000E-02	-3.972926E-02	-3.967549E-01	60	G	-3.096886E-02	-2.031120E-01	2.702054E-01
18	G	-5.399805E-02	-2.218513E-01	-3.967549E-01	61	G	4.495525E-02	-2.510791E-02	1.206205E-01
19	G	5.794753E-02	-3.330660E-02	-5.479893E-01	62	G	-3.791079E-02	-2.010542E-01	1.206204E-01
20	G	-5.539440E-02	-2.282152E-01	-5.479893E-01	63	G	5.023243E-02	-2.939732E-02	-1.814460E-02
21	G	6.083004E-02	-3.380463E-02	-6.990126E-01	64	G	-3.774353E-02	-1.969602E-01	-1.814460E-02
22	G	-5.471298E-02	-2.276660E-01	-6.990126E-01	65	G	6.296706E-02	-3.379481E-02	-1.415831E-01
23	G	6.488323E-02	-3.551461E-02	-8.486971E-01	66	G	-4.439753E-02	-1.932644E-01	-1.415831E-01
24	G	-5.402606E-02	-2.259395E-01	-8.486971E-01	67	G	5.122467E-02	-5.267360E-02	-2.890222E-01
25	G	6.897956E-02	-4.249028E-02	-1.000000E 00	68	G	-2.831936E-02	-1.740497E-01	-2.890222E-01
26	G	-5.310281E-02	-2.189028E-01	-1.000000E 00	69	G	4.304532E-02	-7.246333E-02	-4.304181E-01
27	G	5.695056E-02	-6.110713E-02	-1.074240E 00	70	G	-1.517930E-02	-1.588475E-01	-4.304181E-01
28	G	-3.594605E-02	-1.962203E-01	-1.074240E 00	71	G	2.226616E-02	-1.003801E-01	-5.123715E-01
29	G	4.568056E-02	-8.053046E-02	-1.145619E 00	72	G	7.050037E-03	-1.216842E-01	-5.123715E-01
30	G	-2.026791E-02	-1.750436E-01	-1.145619E 00	73	G	1.181604E-04	-3.896716E-02	9.809849E-01
31	G	2.338809E-02	-1.116517E-01	-1.183670E 00	74	G	-6.347948E-04	-1.696895E-01	9.809849E-01
32	G	5.518798E-03	-1.371431E-01	-1.183670E 00	75	G	3.397951E-03	-3.044931E-02	8.471009E-01
33	G	4.333955E-02	-4.446687E-02	4.142148E-01	76	G	6.878074E-03	-1.770595E-01	8.471009E-01
34	G	-5.021932E-02	-1.993204E-01	4.142148E-01	77	G	6.473470E-03	-2.204851E-02	7.137073E-01
35	G	4.418659E-02	-3.348832E-02	2.527171E-01	78	G	7.526159E-03	-1.854483E-01	7.137073E-01
36	G	-4.792657E-02	-2.102411E-01	2.527171E-01	79	G	1.269356E-02	-1.672259E-02	5.806389E-01
37	G	4.884816E-02	-2.284556E-02	9.201509E-02	80	G	-1.053937E-03	-1.914250E-01	5.806389E-01
38	G	-4.921875E-02	-2.207485E-01	9.201509E-02	81	G	1.405569E-02	-1.755811E-02	4.481088E-01
39	G	5.460273E-02	-1.649267E-02	-6.743276E-02	82	G	4.842930E-03	-1.902319E-01	4.481088E-01
40	G	-5.194821E-02	-2.269701E-01	-6.743276E-02	83	G	3.009596E-02	-1.961606E-02	3.183033E-01
41	G	5.717136E-02	-1.985072E-02	-2.263697E-01	84	G	-1.900974E-02	-1.885276E-01	3.183033E-01
42	G	-4.944290E-02	-2.235431E-01	-2.263697E-01	85	G	3.581293E-02	-2.388784E-02	1.899853E-01
43	G	6.252277E-02	-2.474179E-02	-3.850476E-01	86	G	-3.056034E-02	-1.824873E-01	1.899853E-01

CONDENSED MASS MATRIX - 17 X 17
EIGENVALUE # 4.103475E 04

REAL EIGENVECTOR NO. 3

POINT ID.	TYPE	T1	T2	T3	POINT ID.	TYPE	T1	T2	T3
87	G	3.708630E-02	-4.402013E-02	4.930340E-02	139	G	-9.915917E-04	-1.683586E-02	1.976112E-01
88	G	-1.363306E-02	-1.600294E-01	4.930340E-02	141	G	-3.432896E-02	-1.302468E-02	2.054193E-01
89	G	3.781075E-02	-6.404305E-02	-8.124703E-02	142	G	2.581030E-02	-1.917550E-02	2.054193E-01
90	G	-1.769725E-04	-1.435248E-01	-8.124703E-02	143	G	-2.746402E-02	-1.293794E-02	1.976112E-01
91	G	2.994302E-02	-8.972979E-02	-1.595274E-01	144	G	-2.971424E-02	-2.076378E-02	1.976112E-01
92	G	1.955465E-02	-1.085719E-01	-1.595274E-01	145	G	4.897475E-03	-1.360694E-02	1.894652E-01
93	G	-1.670152E-03	-2.294166E-02	5.596453E-01	146	G	2.630538E-02	-2.069380E-02	1.894652E-01
94	G	1.273583E-02	-1.497174E-01	5.596453E-01	147	G	1.117723E-02	-1.477664E-02	1.799116E-01
95	G	-4.470119E-02	-2.278457E-02	7.303572E-01	148	G	2.851646E-02	-2.008498E-02	1.799116E-01
96	G	4.790942E-02	-9.050036E-02	7.303572E-01	149	G	2.062655E-02	-1.647220E-02	1.739115E-01
97	G	-2.866424E-02	-1.873619E-02	6.643147E-01	150	G	2.522514E-02	-1.758648E-02	1.739115E-01
98	G	2.115970E-02	-9.667182E-02	6.643147E-01	151	G	-3.515985E-02	-5.152911E-03	8.012551E-02
101	G	-1.782448E-02	-1.447386E-02	5.959540E-01	152	G	3.767956E-02	-1.201905E-03	8.012551E-02
102	G	1.755333E-02	-1.011957E-01	5.959540E-01	153	G	-3.281605E-02	-8.135941E-03	7.273895E-02
103	G	2.766603E-03	-5.356262E-02	4.328738E-01	154	G	3.198006E-02	-1.508632E-03	7.273895E-02
105	G	-1.257450E-02	-9.472191E-03	5.246993E-01	155	G	-2.936749E-02	-9.584606E-03	6.904334E-02
106	G	1.693708E-02	-6.217223E-02	5.246993E-01	156	G	2.739087E-02	-1.754242E-03	6.904334E-02
107	G	6.024854E-05	-3.147532E-02	3.826444E-01	157	G	-2.673291E-02	-1.007318E-02	6.712258E-02
108	G	2.626297E-03	-1.031876E-01	1.899853E-01	158	G	2.486521E-02	-2.055121E-03	6.712258E-02
109	G	-6.741248E-03	-9.090494E-03	4.578633E-01	159	G	-2.524798E-02	-9.707965E-03	6.564379E-02
110	G	1.468376E-02	-5.931737E-02	4.578633E-01	160	G	2.375743E-02	-2.750290E-03	6.564379E-02
111	G	6.603546E-03	-4.824145E-02	3.450106E-01	161	G	-2.037837E-02	-7.069886E-03	6.340480E-02
113	G	-6.348740E-03	-1.024917E-02	3.991997E-01	162	G	2.226119E-02	-4.443485E-03	6.340480E-02
114	G	4.296679E-03	-8.697158E-02	3.991997E-01	163	G	-1.747633E-02	-3.641698E-03	5.815914E-02
115	G	9.809989E-03	-1.036522E-02	3.450106E-01	164	G	2.391243E-02	-6.324727E-03	5.815914E-02
116	G	6.605804E-03	-8.611763E-02	3.450106E-01	165	G	-1.056187E-02	-3.467464E-03	4.727256E-02
117	G	2.398233E-02	-1.840387E-02	2.755802E-01	166	G	2.315214E-02	-4.722785E-03	4.727256E-02
118	G	1.182903E-02	-7.763600E-02	2.755802E-01	167	G	5.432644E-04	-2.388311E-03	3.728842E-02
119	G	3.034274E-02	-2.925385E-02	2.072496E-01	168	G	2.238284E-02	-2.911260E-03	3.728842E-02
120	G	1.955816E-02	-6.984615E-02	2.072496E-01	169	G	1.289985E-02	-1.716378E-03	2.801346E-02
121	G	3.335988E-02	-4.245185E-02	1.646832E-01	170	G	1.068848E-02	-1.595444E-03	2.801346E-02
122	G	2.864693E-02	-5.134351E-02	1.646832E-01	171	G	-2.672149E-02	-4.122328E-03	5.132474E-02
123	G	-4.346480E-02	-1.335733E-02	1.995759E-01	172	G	2.863649E-02	-9.615242E-04	5.132474E-02
124	G	4.825629E-02	-1.973554E-02	1.995759E-01	173	G	-2.878644E-02	-1.051201E-02	3.527958E-02
125	G	-3.406131E-02	-1.334431E-02	1.991770E-01	174	G	2.717396E-02	1.462055E-03	3.527958E-02
126	G	3.434275E-02	-1.472026E-02	1.991770E-01	175	G	-2.622754E-02	-1.152429E-02	2.500865E-02
129	G	-2.900293E-02	-1.350484E-02	2.017174E-01	176	G	2.311637E-02	1.334426E-03	2.500865E-02
130	G	2.680917E-02	-1.288420E-02	2.017174E-01	177	G	-2.406608E-02	-1.201899E-02	1.815428E-02
133	G	-2.543902E-02	-1.351176E-02	2.043456E-01	178	G	2.032572E-02	1.918587E-03	1.815428E-02
134	G	2.509246E-02	-1.340304E-02	2.043456E-01	179	G	-2.133761E-02	-1.122336E-02	1.356710E-02
135	G	3.217798E-03	-4.983209E-03	5.815914E-02	180	G	1.790165E-02	2.281365E-03	1.356710E-02
137	G	-2.333144E-02	-1.331666E-02	2.059079E-01	181	G	-1.638323E-02	-8.031890E-03	1.068455E-02
138	G	2.376760E-02	-1.572063E-02	2.059079E-01	182	G	1.482944E-02	1.587194E-03	1.068455E-02

CONDENSED MASS MATRIX - 17 X 17
EIGENVALUE # 4.103475E 04

REAL EIGENVECTOR NO. 3

POINT ID.	TYPE	T1	T2	T3
183	G	-6.291658E-03	-1.238177E-03	1.032279E-02
184	G	8.130226E-03	-2.087160E-03	1.032279E-02
185	G	-7.826459E-03	6.960179E-04	-1.425866E-02
186	G	1.837180E-02	5.177189E-03	-1.425866E-02
187	G	-1.725357E-03	5.188391E-03	-4.000198E-02
188	G	1.869381E-02	7.004924E-03	-4.000198E-02
189	G	1.152026E-02	1.023870E-02	-7.123399E-02
190	G	1.241596E-02	8.230049E-03	-7.123399E-02
191	G	0.0	0.0	0.0
192	G	0.0	0.0	0.0
193	G	0.0	0.0	0.0
194	G	0.0	0.0	0.0

CONDENSED MASS MATRIX – 17 X 17
EIGENVALUE # 1.153514E 05

REAL EIGENVECTOR NO. 4

POINT ID.	TYPE	T1	T2	T3	POINT ID.	TYPE	T1	T2	T3
1	G	-3.181658E-02	-4.165550E-02	1.000000E 00	44	G	4.882964E-02	-1.063282E-01	-1.801271E-01
2	G	6.190086E-02	-1.109771E-01	1.000000E 00	45	G	-1.495761E-02	-3.673768E-02	-2.322358E-01
3	G	-3.381353E-02	-3.134545E-02	8.436943E-01	46	G	4.866654E-02	-1.048784E-01	-2.322358E-01
4	G	6.664145E-02	-1.190933E-01	8.436943E-01	47	G	-3.692349E-03	-4.442996E-02	-2.954180E-01
5	G	-3.285796E-02	-2.252753E-02	6.884894E-01	48	G	3.903190E-02	-9.655619E-02	-2.954180E-01
6	G	6.785387E-02	-1.259349E-01	6.884894E-01	49	G	3.886732E-03	-5.272382E-02	-3.557375E-01
7	G	-3.266187E-02	-1.473455E-02	5.360873E-01	50	G	3.117809E-02	-9.002393E-02	-3.557375E-01
8	G	6.920850E-02	-1.321852E-01	5.360873E-01	51	G	1.523206E-02	-6.468552E-02	-3.891118E-01
9	G	-3.054452E-02	-1.273783E-02	3.856695E-01	52	G	2.142994E-02	-7.444966E-02	-3.891118E-01
10	G	6.742668E-02	-1.332563E-01	3.856695E-01	53	G	-1.493668E-02	-4.207686E-02	-1.798739E-01
11	G	-2.898859E-02	-1.585912E-02	2.373459E-01	54	G	3.353078E-02	-9.210658E-02	-1.798739E-01
12	G	6.531161E-02	-1.299617E-01	2.373459E-01	55	G	-1.014857E-02	-4.366533E-02	-1.556679E-01
13	G	-3.593458E-02	-3.658295E-02	5.687577E-01	56	G	3.202634E-02	-9.061247E-02	-1.556679E-01
14	G	6.462771E-02	-1.097244E-01	5.687577E-01	57	G	-4.234578E-03	-4.343178E-02	-1.587084E-01
15	G	-3.408442E-02	-3.055271E-02	4.888384E-01	58	G	2.963597E-02	-9.107918E-02	-1.587084E-01
16	G	6.445086E-02	-1.157727E-01	4.888384E-01	59	G	3.324436E-05	-4.211680E-02	-1.783326E-01
17	G	-3.123358E-02	-2.657987E-02	4.095131E-01	60	G	2.626183E-02	-9.246707E-02	-1.783326E-01
18	G	6.359786E-02	-1.197858E-01	4.095131E-01	61	G	4.174989E-03	-4.100163E-02	-2.119383E-01
19	G	-3.065950E-02	-2.256618E-02	3.299959E-01	62	G	2.377803E-02	-9.343630E-02	-2.119383E-01
20	G	6.481838E-02	-1.238272E-01	3.299959E-01	63	G	1.142805E-02	-4.024491E-02	-2.636851E-01
21	G	-2.823152E-02	-2.231463E-02	2.504689E-01	64	G	1.877480E-02	-9.432507E-02	-2.636850E-01
22	G	6.380475E-02	-1.240714E-01	2.504689E-01	65	G	1.445876E-02	-4.282793E-02	-3.456908E-01
23	G	-2.854309E-02	-2.306729E-02	1.713865E-01	66	G	1.909941E-02	-9.239525E-02	-3.456908E-01
24	G	6.460476E-02	-1.232702E-01	1.713865E-01	67	G	1.797047E-02	-5.021068E-02	-3.887379E-01
25	G	-3.302274E-02	-2.705479E-02	9.140062E-02	68	G	1.525320E-02	-8.540112E-02	-3.887379E-01
26	G	6.805670E-02	-1.192024E-01	9.140062E-02	69	G	2.111075E-02	-5.634429E-02	-4.262984E-01
27	G	-1.190928E-02	-3.093982E-02	-6.723577E-02	70	G	1.547967E-02	-8.044207E-02	-4.262984E-01
28	G	4.696207E-02	-1.138861E-01	-6.723577E-02	71	G	1.887197E-02	-6.417626E-02	-4.485296E-01
29	G	5.509269E-04	-4.327798E-02	-2.107385E-01	72	G	1.755531E-02	-7.021999E-02	-4.485296E-01
30	G	3.466468E-02	-1.050859E-01	-2.107385E-01	73	G	7.646475E-03	-6.550270E-02	-2.751545E-01
31	G	1.312967E-02	-6.166387E-02	-2.919755E-01	74	G	4.734594E-03	-5.369830E-02	-2.751545E-01
32	G	2.234830E-02	-7.821614E-02	-2.919755E-01	75	G	8.498147E-03	-6.627911E-02	-2.618770E-01
33	G	-3.269935E-02	-4.059793E-02	1.242495E-01	76	G	5.435899E-03	-5.430007E-02	-2.618770E-01
34	G	5.769655E-02	-1.017206E-01	1.242495E-01	77	G	8.431077E-03	-6.706017E-02	-2.499719E-01
35	G	-2.621457E-02	-3.639577E-02	5.990932E-02	78	G	8.142006E-03	-5.468130E-02	-2.499719E-01
36	G	5.339621E-02	-1.058268E-01	5.990932E-02	79	G	2.361736E-02	-6.638908E-02	-2.387777E-01
37	G	-2.359103E-02	-3.268773E-02	-3.101892E-03	80	G	6.954931E-03	-5.559829E-02	-2.387777E-01
38	G	5.248381E-02	-1.092956E-01	-3.101892E-03	81	G	3.962759E-02	-6.527829E-02	-2.274839E-01
39	G	-2.095892E-02	-3.092245E-02	-6.427246E-02	82	G	-4.824281E-03	-5.738184E-02	-2.274839E-01
40	G	5.188531E-02	-1.108732E-01	-6.427246E-02	83	G	3.859798E-02	-6.606704E-02	-2.198496E-01
41	G	-1.667222E-02	-3.294780E-02	-1.236792E-01	84	G	-1.363074E-02	-5.795035E-02	-2.198496E-01
42	G	4.907979E-02	-1.087047E-01	-1.236792E-01	85	G	4.932379E-02	-6.539398E-02	-2.088597E-01
43	G	-1.516415E-02	-3.524317E-02	-1.801271E-01	86	G	-3.249500E-02	-5.767191E-02	-2.088597E-01

CONDENSED MASS MATRIX - 17 X 17
EIGENVALUE # 1.153514E 05

REAL EIGENVECTOR NO. 4

POINT ID.	TYPE	T1	T2	T3	POINT ID.	TYPE	T1	T2	T3
87	G	4.850272E-02	-6.517136E-02	-1.995994E-01	139	G	-6.138049E-03	-8.793145E-03	4.990118E-01
88	G	-1.372975E-02	-5.695778E-02	-1.995994E-01	141	G	-2.665739E-03	-5.763015E-02	4.118909E-01
89	G	4.372402E-02	-6.408083E-02	-1.869901E-01	142	G	-1.359415E-02	4.047372E-02	4.118909E-01
90	G	-3.914136E-03	-5.701994E-02	-1.869901E-01	143	G	-2.561521E-02	-5.512331E-02	4.990118E-01
91	G	3.235332E-02	-6.186272E-02	-1.794140E-01	144	G	-8.006085E-03	3.753701E-02	4.990118E-01
92	G	1.702148E-02	-6.015887E-02	-1.794140E-01	145	G	5.316343E-03	-4.332441E-02	5.795664E-01
93	G	3.002185E-02	-3.528694E-02	-1.092896E-01	146	G	3.368970E-03	2.508592E-02	5.795664E-01
94	G	5.240206E-03	-9.006912E-02	-1.092896E-01	147	G	7.526584E-03	-3.021041E-02	6.541186E-01
95	G	1.939185E-02	-7.202834E-02	-1.700894E-01	148	G	8.927826E-03	1.467869E-02	6.541186E-01
96	G	-1.537577E-02	-1.352388E-02	-1.700894E-01	149	G	9.557463E-03	-1.531634E-02	7.019713E-01
97	G	2.183458E-02	-7.556713E-02	-1.040280E-01	150	G	1.215693E-02	-6.156158E-03	7.019713E-01
98	G	-4.173595E-03	-6.426331E-03	-1.040280E-01	151	G	1.120242E-02	-2.310451E-02	9.283904E-03
101	G	3.106092E-02	-7.846034E-02	-3.632108E-02	152	G	-1.856278E-02	3.177918E-02	9.283904E-03
102	G	-3.277183E-03	-6.679201E-04	-3.632108E-02	153	G	1.122620E-02	-2.876887E-02	6.991071E-02
103	G	1.732726E-02	-4.785649E-02	2.864325E-02	154	G	-1.104140E-02	3.516714E-02	6.991071E-02
105	G	3.002369E-02	-8.304012E-02	3.347627E-02	155	G	1.087162E-02	-3.366536E-02	1.301246E-01
106	G	2.180791E-03	-2.474388E-02	3.347627E-02	156	G	-6.012157E-03	3.852466E-02	1.301246E-01
107	G	8.495539E-03	-2.710890E-02	1.090320E-01	157	G	8.005120E-03	-3.767322E-02	1.902244E-01
108	G	8.414391E-03	-6.153297E-02	-2.086597E-01	158	G	-1.494527E-03	4.093887E-02	1.902244E-01
109	G	4.275966E-02	-8.215445E-02	1.163879E-01	159	G	8.732267E-04	-4.086770E-02	2.498392E-01
110	G	-3.655552E-03	-2.258671E-02	1.163879E-01	160	G	1.456080E-03	4.154041E-02	2.498392E-01
111	G	1.910218E-02	-2.803288E-02	2.942894E-01	161	G	-7.992651E-03	-4.124750E-02	3.086930E-01
113	G	6.528085E-02	-7.764238E-02	2.082496E-01	162	G	6.794058E-03	4.062373E-02	3.086930E-01
114	G	-1.361171E-02	2.306601E-02	2.082496E-01	163	G	-2.764122E-02	-4.553395E-02	3.665924E-01
115	G	7.728267E-02	-7.428575E-02	2.942894E-01	164	G	2.124488E-02	4.405176E-02	3.665924E-01
116	G	-4.056780E-02	1.822003E-02	2.942894E-01	165	G	-1.947724E-02	-3.468710E-02	4.244559E-01
117	G	4.897955E-02	-6.163938E-02	3.734210E-01	166	G	1.499905E-02	3.380758E-02	4.244559E-01
118	G	-1.854143E-02	4.517574E-03	3.734210E-01	167	G	-1.204321E-02	-2.394241E-02	4.802209E-01
119	G	4.410211E-02	-4.894349E-02	4.433149E-01	168	G	1.402278E-02	2.477516E-02	4.802209E-01
120	G	-4.949126E-03	-6.099734E-03	4.433149E-01	169	G	-7.547170E-04	-3.778586E-03	5.369715E-01
121	G	2.946919E-02	-3.500431E-02	4.866796E-01	170	G	5.846117E-03	5.429290E-03	5.369715E-01
122	G	1.612604E-02	-2.538016E-02	4.866796E-01	171	G	8.513534E-03	-1.848361E-02	6.578911E-03
123	G	1.362590E-02	-5.229112E-02	-1.951393E-02	172	G	-1.410771E-02	2.542334E-02	6.578911E-03
124	G	-1.860441E-02	2.237666E-02	-1.951393E-02	173	G	5.575959E-03	-2.117876E-02	4.254364E-02
125	G	1.664600E-02	-5.587680E-02	6.471425E-02	174	G	-6.837863E-03	2.927888E-02	4.254364E-02
126	G	-1.304390E-02	3.143740E-02	6.471425E-02	175	G	2.464011E-03	-2.377682E-02	7.407331E-02
129	G	1.770005E-02	-6.087272E-02	1.514292E-01	176	G	-4.773561E-04	3.160477E-02	7.407331E-02
130	G	-1.381797E-02	4.005450E-02	1.514292E-01	177	G	-3.285074E-03	-2.712229E-02	1.007810E-01
133	G	2.079459E-02	-6.320506E-02	2.387177E-01	178	G	6.043758E-03	3.295596E-02	1.007810E-01
134	G	-3.758075E-03	4.488077E-02	2.387177E-01	179	G	-1.158846E-02	-3.018938E-02	1.223093E-01
135	G	-3.198173E-03	-7.410960E-04	3.665924E-01	180	G	1.257782E-02	3.284285E-02	1.223093E-01
137	G	1.731757E-02	-6.147633E-02	3.258274E-01	181	G	-1.863488E-02	-2.949616E-02	1.377695E-01
138	G	-2.576726E-03	4.462746E-02	3.258274E-01	182	G	1.690654E-02	2.922843E-02	1.377695E-01

CONDENSED MASS MATRIX - 17 X 17
EIGENVALUE # 1.153514E 05

REAL EIGENVECTOR NO. 4

POINT ID.	TYPE	T1	T2	T3
183	G	-9.950839E-03	-1.548154E-02	1.473206E-01
184	G	7.223256E-03	1.453708E-02	1.473206E-01
185	G	-2.101436E-02	-3.142046E-02	1.848248E-01
186	G	1.906805E-02	3.249527E-02	1.848248E-01
187	G	-1.763404E-02	-2.649720E-02	2.253788E-01
188	G	1.601705E-02	2.848393E-02	2.253788E-01
189	G	-3.124314E-03	-3.156249E-03	2.744863E-01
190	G	2.171549E-03	5.871423E-03	2.744863E-01
191	G	0.0	0.0	0.0
192	G	0.0	0.0	0.0
193	G	0.0	0.0	0.0
194	G	0.0	0.0	0.0

VITA

Thomas Denny Jordan

Candidate for the Degree of

Doctor of Philosophy

Thesis: AN ANALYTICAL AND EXPERIMENTAL STUDY OF THE DYNAMIC RESPONSE OF A SEMI-MONOCOQUE AIRCRAFT WING STRUCTURE

Major Field: Civil Engineering

Biographical:

Personal Data: Born in Evansville, Indiana, September 20, 1944, the son of Mr. and Mrs. G. F. Jordan

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