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ALTERNATE PROCEDURES FOR THE SEISMIC ANALYSIS OF MULTIPLY SUPPORTED PIPING SYSTEMS

M. Subudhi, P. Bezler, Y.K. Wang, and R. Alforque

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STRUCTURAL ANALYSIS DIVISION
DEPARTMENT OF NUCLEAR ENERGY, BROOKHAVEN NATIONAL LABORATORY
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ABSTRACT

The seismic design of secondary systems such as piping requires knowledge of the motions at various locations of the primary structures. When the structure or buildings are subjected to earthquake-like excitations at the ground level, the responses at different floor levels may be quite different from each other. This difference depends on the building and soil frequency characteristics, the characteristics of the input signals, the damping levels, and soil-structure interaction effects. Hence the secondary systems, supported from the primary structures, may be subjected to independent excitations at each support point. Besides piping, large components such as steam generators and reactor coolant pumps also experience independent seismic excitation.

When multiple independent excitations are considered in the analysis of piping systems, the responses can be considered to have two distinct components. One is due to the inertia of masses alone (dynamic component) and the other is due to the time varying differential motion of the support points (pseudo-static component). Since the dynamic characteristics of every piping system is unique and the input earthquake motions are random in nature, deterministic methods to calculate the above response components are difficult to define. To address this problem, a sample of six piping systems, two of which were subjected to thirty-three earthquakes, were studied to develop a statistical assessment of different methods of predicting the dynamic, pseudo-static and combined response. Both uniform and independent support motion methods were considered.

In addition to the current SRP method using envelope spectra, fourteen different cases, based on the independent support motion method, were considered to establish the combination sequence and procedure between modes, directions and support groups, for the dynamic component of the response. For the static component of response, five different methods constituting nine different cases were evaluated. Finally, the combined response, calculated by combining the time history estimates of the static response with all fourteen dynamic response estimates, were obtained considering both SRSS and absolute combination between the response components.

The results are presented in tabular form. The mean and standard deviation for the two piping systems subjected to thirty-three earthquakes were obtained to allow an assessment of the adequacy and level of conservatism associated with each method. These results are also displayed in graphical form for selected, critical locations in the piping systems. The limitations of each method and recommendations are discussed.

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SUMMARY

When multiple independent excitations are considered in the analysis of piping systems, the responses can be considered to have two distinct components. One is due to the inertia of masses alone (dynamic component) and the other is due to the time varying differential motion of the support points (pseudo-static component). Since the dynamic characteristics of every piping system are unique and the input earthquake motions are random in nature, deterministic methods to calculate the above response components are difficult to define. Therefore, a sample of six piping models, two of which are subjected to thirty-three earthquakes, were analyzed to develop a statistical assessment of different methods of predicting the dynamic and pseudo-static components of response. The present study involves the comparison of pipe response quantities calculated using several candidate methods with the true time history solutions. The mean and standard deviation for each response parameter over the thirty-three responses are obtained to allow an assessment of the adequacy and degree of exceedance associated with each method.

The evaluation of the dynamic component of response follows the standard modal approach adopted for a general second order differential equation in matrix form. Both the uniform and independent support motion response spectrum methods were applied. In addition to the results for the uniform response spectrum method (URS), results corresponding to fourteen different combination sequence options were developed for the independent support motions (ISM).

In the standard modal approach contributions to a response quantity are determined for each mode and for each direction of excitation. These contributions are combined by taking the square root of the sum of the squares (SRSS) over directions followed by SRSS summation with clustering over the modes. In the ISM method the response quantities are determined for each group, for each mode and for each direction. In this study the standard summation over modes and directions were accepted but algebraic (ALG), absolute (ABS) and SRSS summation over the group contributions were investigated. In addition, various permutations of the sequence of these combinations were considered. The combination sequence options then were:

Case No.	Combination Sequence	Case No.	Combination Sequence
1	Group(ALG)-Direction-Modes	8	Direction-Modes-Group(SRSS)
2	Group(ALG)-Modes-Direction	9	Group(ABS)-Direction-Modes
3	Group(SRSS)-Direction-Modes	10	Group(ABS)-Modes-Direction
4	Group(SRSS)-Modes-Direction	11	Modes-Group(ABS)-Direction
5	Modes-Group(SRSS)-Direction	12	Direction-Group(ABS)-Modes
6	Direction-Group(SRSS)-Modes	13	Modes-Direction-Group(ABS)
7	Modes-Direction-Group(SRSS)	14	Direction-Modes-Group(ABS)

Five different approximate methods to predict the pseudo-static component of response were considered in this study. In the first method, a sample of the time history input at the support points is used retaining the true phasing and magnitude between these points. In the remaining four methods only peak support displacements are used and the phasing information is lost. In each of these methods a different support grouping procedure is used to simulate the support phasing. Within a group all supports are assumed to deflect in phase and their affects are combined algebraically.

Methods

- 1 Random sample, Time History data
- 2 Supports considered independently
- 3 Supports grouped by spatial direction
- 4 Supports grouped by attachment point
- 5 Supports grouped by elevation

For Methods 2-5 both absolute and SRSS summation between groups was considered.

The total seismic response is the combination of the dynamic and pseudo-static components of response. In this study both absolute and SRSS combination between the response components were considered.

For the dynamic component of response calculated using ISM, the sequence of combination between modes, directions and groups was found to have only a small effect on the results. The combination procedure used to sum group

contributions has a far greater effect. Algebraic combination was found to yield results similar to those predicted with the URS method with, however, a lower level of conservatism. Absolute combination provided very conservative estimates of response while SRSS combination provided an estimate of response which was statistically equivalent to those developed with the URS method.

For the pseudo-static component of response, Method 1 was determined to require further study prior to useful application; however, no further work is recommended. Method 2, a procedure that corresponds exactly to current SRP requirements when absolute summation is used, was found to yield excessively conservative estimates of response for points away from structural interfaces and reasonable estimates of response for points in the proximity of structure interfaces. Method 3, with both summation procedures yielded many underestimates of true response but this could be improved if some accounting of true support phasing was incorporated into it. Methods 4 and 5, with absolute combination between support groups provided reasonable estimates of static response. As envisioned, Method 5 could be used for preliminary design followed by the use of Method 4 to confirm those results at final design.

Regarding the total response, the SRSS combination between the two response components was found to provide good estimates of the total response and should be adopted in design. Absolute combination, as presently required, provides excessively conservative estimates of total response.

In conclusion, the independent support motion response spectrum method should be allowed as an option in calculating the response of multiply supported piping subjected to non-uniform inputs. In calculating the dynamic component of response SRSS combination between groups coupled with SRSS combination between modes and directions should be used. In calculating the pseudo-static component of response supports should be grouped by common point of attachment and absolute combination between group contributions should be used. Finally, SRSS combination between the dynamic and pseudo-static response components should be used to predict total response. It is felt that adoption of these recommendations would provide conservative estimates for the total response which are reduced by a factor of two or more as compared to those developed using the current SRP methodology.

1.0 INTRODUCTION

The recent increased interest to minimize the number of pipe supports in the nuclear industry has prompted researchers to investigate alternate design methods. Unlike earlier practice, it is current design practice to consider a large portion of piping isolated by terminal anchors in one model. The design [1] of the piping, as well as the supports, are then heavily dependent on the results obtained from finite element analyses developed using general purpose computer codes. The present study addresses the dynamic analysis of piping systems which are subjected to seismic excitations. Hydrodynamic loadings caused by SRV discharge and suppression pool swell, in the case of BWR Systems, could also be included. These loads can produce unidentical responses at various locations in the structure(s) supporting the piping systems. The piping then is excited by multiple independent inputs at each support location. Because of the excitations, the piping response is considered to be composed of an inertial or dynamic component, due to the dynamics of the pipe masses, and a static or pseudo-static component due to the potentially different movement of each support point.

In current practice, the philosophy to piping design is based on a pipe break type of failure which is controlled by the ASME primary stresses. This, together with the inherent large uncertainties existing in the seismic analysis, mandated the use of very conservative design procedures and resulted in very stiff systems. Based on experience gained in the past two decades, it has been found that pipe failures, when they occur, are governed by thermal ratchetting and fatigue which are associated with the ASME secondary stresses and are a direct result of the system stiffness. As a result, the Pressure Vessel Research Committee (PVRC) has currently underway an effort to reduce the existing large conservatism in the seismic analysis of piping systems. Several studies are ongoing at LLNL to investigate the significance of varying the input response spectra and design damping.

A research program supported by the U. S. Nuclear Regulatory Commission (NRC) was initiated in FY 83 at Brookhaven National Laboratory (BNL) to

address some of the questions related to an alternate analytical method based on independent support excitation formulations. The purpose of this study include:

- an evaluation of the combination methods that can be used to predict the dynamic response of systems subjected to independent support excitation
- the development of methods to calculate the pseudo-static or Seismic Anchor Movement (SAM) component of response
- the formulation of a combination procedure between the dynamic and static components of response
- the comparison of the independent support motion method to current standard practice
- the recommendation of changes to the present guidelines
- and an assessment of the impact of the recommended procedures on the overall design of piping systems and the level of conservatism inherent in current analysis methods.

The current state-of-the-art for the seismic design or analysis of piping systems in nuclear power plants is described in the US NRC Standard Review Plan [2] (SRP), Section 3.9.2. The dynamic component of the response can be obtained using either a time history method or the Uniform Response Spectrum (URS) method. In the uniform response spectrum method it is assumed that all supports are excited simultaneously with a single set of prescribed envelope input motions. Because of the prohibitive analysis cost in performing time history analysis, the uniform response spectrum approach has been commonly used in piping design. In this method all peaks in the input spectrum are broadened as specified in Regulatory Guide 1.122 [3] and an envelope of input spectra is used. This analytical approach adopts a modal analysis of a finite

element model of the piping system. The modal responses are combined following the procedures given in Regulatory Guide 1.92 [4]. Each modal response is calculated by multiplying the appropriate modal participation factor with the response spectrum value corresponding to the modal frequency. The response spectrum values represent the maximum response of a single degree-of-freedom system at all frequencies of excitation. The modal participation factors in each direction of excitation, however, include contributions from all supports added algebraically. The resultant product could either over or underpredict true response depending on the exact nature of the true input forcing functions and the magnitudes of the participation factors.

The pseudo-static component of response is obtained by conventional static analysis procedures. This component can be very significant if the motions of the support points are quite different. If all supports of a typical piping system have identical excitation, then this component of the seismic response does not exist at all. According to the SRP, Section 3.9.2, for multiply-supported components with distinct inputs, support displacements obtained either from the structural response calculations or from the floor response spectra are imposed on the piping system in the "most unfavorable combination". If the spectra are used, the maximum displacement of each support is predicted using $S_d = S_a g / \omega^2$, where S_a is the spectral acceleration in g's at the high frequency end of the spectrum curve, g is the gravitational constant, and ω is the fundamental frequency of the primary support structure, in radians per second. The displacement values thus obtained are generally very conservative since the spectrum curves represent the absolute acceleration of floors including ground motion effects. The most unfavorable combination is conservatively recommended because the phasing between support points is assumed to be unknown.

Regarding the combination of the two response components, it is suggested in the SRP that they be added by the absolute sum method. Alternate approaches to predict the total seismic response of the system, such as time history methods, are also acceptable.

The present study focuses primarily in developing procedures to predict both the dynamic as well as the pseudo-static components of the response, and to develop a method for evaluating the total response of piping systems subjected to multiple support excitations [5-13]. The responses are obtained using finite element formulations, as described in Section 2, for a mathematical model with multiple independent support excitations. This procedure allows the calculation of the response quantities due to the excitation of each support in each spatial direction of motion. This method has the advantage of predicting each component of response in a form suitable for use in the current design practice.

The independent time history method is used to predict the true response of the piping systems. Based on previous studies [21,22], it has been established that this method provides reasonable estimates of physical test results. Hence, the responses obtained from these analysis are considered to be the 'true responses' of the piping system.

In the study, both the dynamic and pseudo-static components of response are calculated using the Independent Support Motion method. The input for the pseudo-static calculations are the structure point displacements. The input for the dynamic calculations are the appropriate group response spectra. The method predicts the response when a support point, or a group of supports with identical structure point responses, is excited independently in three spatial directions with all other supports fixed. For the dynamic component, the modal as well as the directional combinations, as prescribed in Regulatory Guide 1.92, are used. The sequence of these combinations, as well as the combination between group responses, are investigated in this study. With three possible combination methods between groups (algebraic, SRSS and absolute sum) and considering all possible sequences between groups, directions and modes, there are fourteen possible combination procedures to predict the dynamic response component. For the pseudo-static component of response, five different calculational procedures were studied. For four of these, the basic difference between each was the way the supports were grouped. For each

of these, both SRSS and absolute combination were considered between group combinations. The remaining method examined involved a time history sampling procedure for which grouping is not necessary. In all then, nine static analysis procedures were studied. Finally, the pseudo-static and dynamic components of the response were combined by both SRSS and absolute sum procedures to obtain total response.

Solutions were developed for six different piping system-structural configurations. For two of these, the data base was enlarged by considering thirty-three variants of the earthquake loading. The time history results for these problems were developed by Lawrence Livermore National Laboratory (LLNL) [14-15] considering the Zion Structure and using the Seismic Safety Margins Research Program (SSMRP) methodology. For the remaining BNL problems, different piping system-reactor structures were considered.

The response quantities evaluated in this study are displacements, accelerations, pipe resultant moments and support forces. Each predicted response is compared with the time history estimate of that response and a percentage of exceedance is calculated. This is done for each parameter and for all methods considered in the study. The results are presented both graphically and in tabular form.

Section 3 of this report presents a description of all the procedures used to compute both the dynamic and pseudo-static responses. Section 4 includes a description of all the piping systems and the earthquake loadings used to excite these. A discussion of the study results, conclusions and recommendations are provided in sections 5, 6 and 7 respectively. The merits and deficiencies of each of the procedures are also discussed. The results are also compared with the results obtained using current SRP methods. The tabular results for the dynamic, pseudo-static and total response are included in three separate appendices.

The Independent Support Motion method is found to be a suitable alternate to current practice for predicting the dynamic component of the response with only minimal additional computer costs. The sequence of combination between modes, direction of excitation and the support groups are found not to have

any significant impact on the final response quantities. Further, a SRSS combination between groups is found to yield a good estimate of response. For the pseudo-static component of the response, supports grouped by floor elevations is a viable procedure for preliminary design. For a better estimate of response, in final design, supports grouped according to their structural attachment points is recommended. For this response, group contributions should be combined by absolute sum. Finally, the SRSS combination between the static and the dynamic components of response is found to provide conservative estimates of the total response when compared with the time history results.

2.0 MATHEMATICAL BACKGROUND

The complete seismic analysis of a typical piping system requires the consideration of the independent input at each support point. The governing equation of motion [16] for such an analysis is given as:

$$\begin{bmatrix} M_P & 0 \\ 0 & 0 \end{bmatrix} \begin{Bmatrix} \ddot{X} \\ \ddot{Z} \end{Bmatrix} + \begin{bmatrix} C_P & C_{PB} \\ C_{BP} & C_B \end{bmatrix} \begin{Bmatrix} \dot{X} \\ \dot{Z} \end{Bmatrix} + \begin{bmatrix} K_P & K_{PB} \\ K_{BP} & K_B \end{bmatrix} \begin{Bmatrix} X \\ Z \end{Bmatrix} = \begin{Bmatrix} 0 \\ F_B \end{Bmatrix} \quad (2.1)$$

where,

M_P	= Pipe mass matrix
C_P	= Pipe damping matrix
K_P	= Pipe stiffness matrix
C_B	= Support damping matrix
K_B	= Support stiffness matrix
C_{PB} or C_{BP}	= Pipe-support coupling damping matrix
K_{PB} or K_{BP}	= Pipe-support coupling stiffness matrix
F_B	= Support Force Vector
X	= Pipe response vector
Z	= Support response vector

The pipe response consists of two components, one due to the inertia or dynamic effects of pipe masses (X_D) and the other, termed the pseudo-static response, due to the differential motions of the support points (X_S).

Hence,

$$X = X_D + X_S \quad (2.2)$$

where X_S , by definition can be written as

$$X_S = K_P^{-1} K_{PB} Z \quad (2.3)$$

The details of these formulations are well explained in the literature. After simplifying Equation (2.1) and neglecting the support damping effects, one can find the following governing equations for the two response components. They are given as:

For inertia or dynamic response:

$$M_P \ddot{X}_D + C_P \dot{X}_D + K_P X_D = M_P K_P^{-1} K_{PB} \ddot{Z} \quad (2.4)$$

$$K_{BP} X_D = F_{BD}$$

For pseudo-static response:

$$K_P X_S + K_{PB} Z = 0 \quad (2.5)$$

$$K_{PB} X_S + K_B Z = F_{BS}$$

In each case, the upper equation governs the motion and the lower equation defines the support reaction forces. Equation (2.4) is identical to the conventional structural dynamic equations except the modal participation factors derived from it differ from those derived for uniform support motion.

2.1 Independent Time History Analysis

The inertia component of the response is obtained by solving equation (2.4) using the modal solution approach. Thus, substituting

$$X_D = \phi q$$

$$\text{where } \phi = \text{modal matrix} \quad (2.6)$$

$$q = \text{modal response vector}$$

One finds that the modal equation for the dynamic response reduces to

$$\ddot{\mathbf{q}} + 2\xi\omega \dot{\mathbf{q}} + \omega^2 \mathbf{q} = \Phi^T M_p K_p^{-1} K_{pB} \ddot{\mathbf{z}} \quad (2.7)$$

In component form it can be rewritten as:

$$\ddot{q}_{ij}^{(k)} + 2\xi_i \omega_i \dot{q}_{ij}^{(k)} + \omega_i^2 q_{ij}^{(k)} = L_{ij}^{(k)} \ddot{z}_j^{(k)} \quad (2.8)$$

where

ξ_i = modal damping coefficient

ω_i = modal frequency

$i = 1, 2 \dots NF$

$j = 1, 2, 3$ (corresponding to the three spatial directions)

$k = 1, 2 \dots NG$

Here NF and NG correspond to the number of frequencies and number of support points, or support groups, in the piping system. Thus, there exists one individual set of modal equations for each support group.

The modified modal participation factors are given as:

$$L = \Phi^T M_p K_p^{-1} K_{pB} \quad (2.9)$$

To determine the modified modal participation factors in Equation (2.9) it is necessary to invert the stiffness matrix K_p . One approach to obtain this from the available modal solutions is to use the properties of the stiffness matrix with the modal frequencies and their mode shapes. That is using the relation,

$$\Phi^T K_p \Phi = \omega^2 \quad (2.10)$$

and taking the inverse on both sides one derives

$$K_p^{-1} = \Phi \omega^{-2} \Phi^T \quad (2.11)$$

provided ϕ^{-1} exists. The modal participation factors given by Equation (2.9) then reduce to

$$L_{ij}^k = \sum_{s=1}^N \frac{\phi_{is} (K_{PB})_{sj}^k}{\omega_i^2} \quad (2.12)$$

where N = number of equations representing the piping model. Equation (2.12) can be used to evaluate the participation factors, without any loss of generality, from the modal solutions, even if the actual model solution has been truncated to a finite number of modes.

If, however, Equation (2.11) is used to obtain the pseudo-static component of the response, erroneous results can be expected due to the truncation of modes. An alternate approach for obtaining K_p^{-1} , where the static solver routines are used with K_{PB} representing the load vector, has been used in the present study. Since no truncation assumption is used in this method, the results obtained via the static solver are perfectly applicable to both the modal participation factor calculations as well as the static component of the response. One should realize that this approach will increase the computer costs somewhat as compared to the other approach.

For time history calculations, all the support effects are first calculated to obtain a resultant modal load vector obtained by summing the load vectors on the right side of the equation from each of the support members. Next, each modal equations is numerically integrated using the Wilson- Method. Once the modal responses are calculated, the pipe dynamic responses for displacement as well as acceleration are obtained using Equation (2.6). The pipe forces and moments, and support forces are then calculated from the pipe dynamic displacements.

The pseudo-static component is then obtained by solving Equation (2.5) through the static solver. It should be noted that, in order to solve Equation (2.5) one must know the support point displacement 'Z'. In general, the support acceleration time history is known to the analyst. In order to obtain the displacement time history, these accelerations are integrated twice

numerically. It has usually been found that the integration scheme [17] introduces large numerical errors in the displacement component unless they are baseline corrected after the integration. For this, BNL has been using the method developed by Professor Trifunac [18] of the University of California at Los Angeles. The results have checked well, although not exactly, when compared with test displacement records.

The two components of the responses are then added together, at each time point, using Equation (2.2). All other parameters, pipe moments, support forces, and so on, are also calculated at each time point. The peak response for each parameter, which is of great interest for design, is stored for future comparison with estimates from other solutions. This analysis is presumed to yield a realistic estimate of the response of a piping system subjected to seismic inputs. Table 2.1 summarizes the calculation of all parameters.

2.2 Independent Support Motion Analysis

Table 2.2 provides the flow diagram for predicting the dynamic component of piping response. This method is also a modal approach and hence, Equation (2.8) is solved. In this analysis, the input accelerations are not time histories. Instead they are the response spectra corresponding to the support point acceleration time histories. The response spectra values at frequency ω_i for the kth group in the jth direction of excitation are obtained by solving the equation for a single oscillator using the Duhamel integral and is given by

$$S_j^{(k)}(\omega_i) = \left| \frac{1}{\omega_j \sqrt{1 - \xi_i^2}} \int_0^t \ddot{z}_j^{(k)}(\tau) e^{-\xi_i \omega_i (t-\tau)} \sin \sqrt{1 - \xi_i^2} \omega_i (t-\tau) d\tau \right|_{\max} \quad (2.13)$$

This is the solution of a single degree-of-freedom system subjected to an acceleration of $\ddot{z}_j^{(k)}$. In fact, this will represent the peak modal response of Equation (2.8) provided the modal participation factor $L_{ij}^{(k)}$ is assumed to be unity. Since this factor is not time dependent, the actual

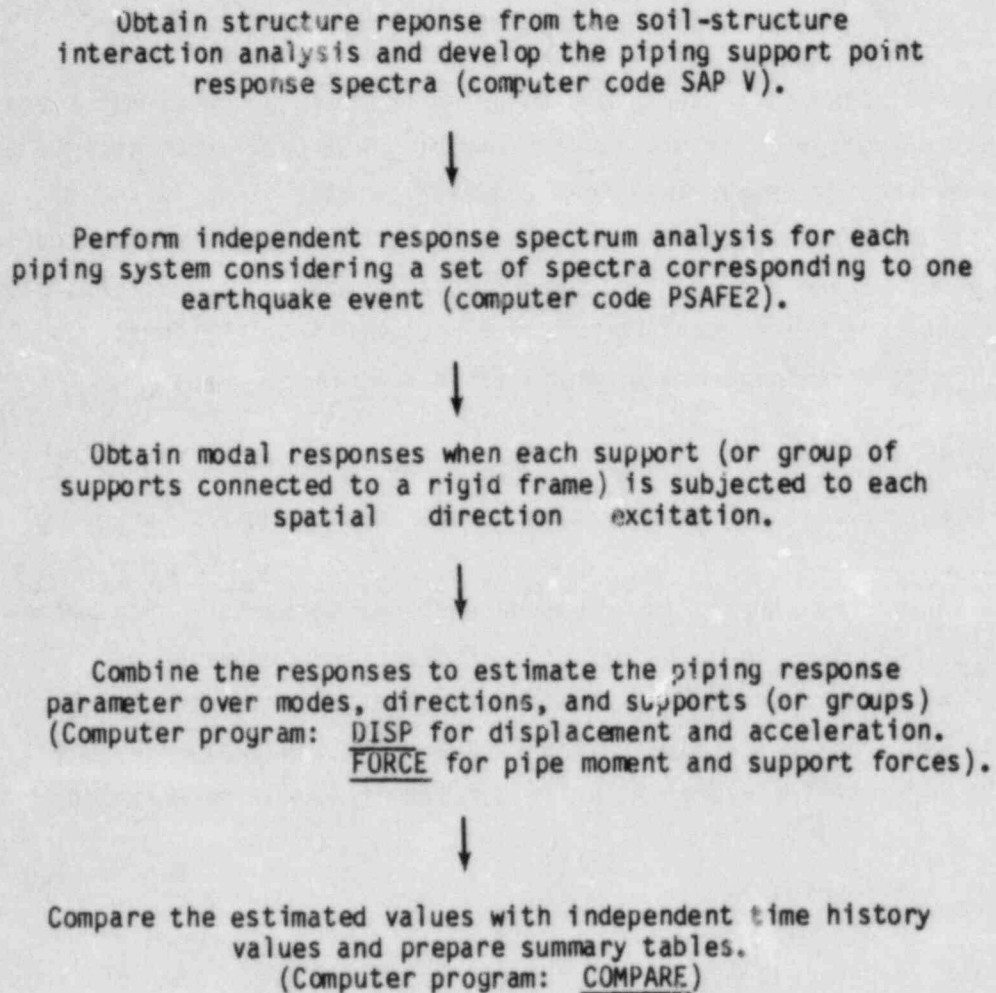
Table 2.1 Independent Time History Analysis

Modal Equation to be Integrated:

$$\ddot{q}_i + 2\xi_i \omega_i \dot{q}_i + \omega_i^2 q_i = \sum_{j=1}^3 \sum_{k=1}^{NG} L_{ij}^k \ddot{z}_j^k$$

<u>Response Parameters</u>	<u>Inertia</u>	<u>Pseudo-Static</u>
Displacement	$X_D = \phi q$	$X_S = -K_p^{-1} K_{PB} Z$
Acceleration	$\ddot{X}_D = \phi \ddot{q}$	$\ddot{X}_S = -K_p^{-1} K_{PB} \ddot{Z}$
Pipe Forces/Moments	$F_D \text{ or } M_D = K_p X_D$	$F_{BS} = K_p X_S$
Support Forces	$F_{BD} = K_{BP} X_D$	$F_{BS} = K_{PB} X_S + K_B Z$
Total response at each time point =	Inertial response + Pseudo-static response	

Table 2.2 Independent Support Motion Analysis - Flow Diagram



solution to Equation (2.8) can be obtained by multiplying $L_{ij}^{(k)}$ with the corresponding response spectrum value. Hence,

$$(q_{ij}^{(k)})_{\max} = L_{ij}^{(k)} S_j^{(k)}(\omega_i) \quad (2.14)$$

It should be noted that during the solution process the phasing between the individual support excitations is lost and only the peak responses due to each support excitation is obtained from Equation (2.14). Thus, a set of modal solution vectors is obtained for each support excitation in each spatial direction. Other parameters, such as pipe displacements, accelerations, pipe forces or moments and the support forces, are obtained from the modal responses. The relationships are given in Table 2.3.

The response quantities are then calculated by combining responses for each mode and each direction of excitation at each support point (or group).

In addition to the inertia (or dynamic) response parameter, this method is also used to calculate the pseudo-static acceleration component of response. Since the zero period acceleration (ZPA) of each input response spectrum represents the peak support structure acceleration response, the pseudo-static acceleration response can be obtained from the relation:

$$\ddot{x}_S = -K_p^{-1} K_{pB}(S)_{ZPA} \quad (2.15)$$

where $(S)_{ZPA}$ is the ZPA value of the response spectrum. These are obtained for each support (or group) in each direction of input motion and they are combined for support groups and directions.

2.3 Seismic Anchor Movement Analysis

Table 2.4 depicts the flow diagram for developing a method for seismic anchor movement analysis. BNL has investigated five different methods to calculate the pseudo-static or SAM response. In order to minimize the computation and cost, for a given piping system with specific supporting

Table 2.3 Independent Support Motion Analysis

Response Parameters

Dynamic Displacements:

Dynamic Accelerations:

Pipe Forces/Moments (Inertia)

Support Forces (Inertia)

Inertia

$$\bar{X}_D = \Phi q$$

$$\ddot{\bar{X}}_D = \omega^2(\Phi q)$$

$$\bar{F}_D \text{ or } \bar{M}_D = \bar{K}_p(\Phi q)$$

$$\bar{F}_{BD} = K_{PB}(\Phi q)$$

Alternately,

$$(\bar{X}_D)_{ij}^k = \phi_{ij}^k q_{ij}^k$$

$$(\ddot{\bar{X}}_D)_{ij}^k = \omega_i^2 \phi_{ij}^k q_{ij}^k$$

$$(\bar{F}_D) \text{ or } \bar{M}_D)_{ij}^k = \sum_{\ell=1}^{ND} (\bar{K}_p)_{\ell} \phi_{\ell ij}^k q_{ij}^k$$

$$(\bar{F}_{BD})_{ij}^k = \sum_{\ell=1}^{ND} (K_{PB})_{\ell} \phi_{\ell ij}^k q_{ij}^k$$

Where,

i : Modes

j : Direction of excitations

k : Support groups

ϕ : (N:4) modal matrix

q : [(Mx3) x k] modal responses

\bar{K}_p : (12x12 or 18x12) individual pipe element stiffness

K_{PB} : (2x6) support stiffness

ND : 12 or 18 depending on pipe elements

Table 2.4 Seismic Anchor Movement Analysis - Flow Diagram

Perform independent seismic anchor movement analysis for each piping system subjected to a unit displacement at each support point (irrespective of direction and attachment to the structure) (computer code PSAFE2).



Obtain influence parameters (displacement, pipe moments and support forces) for each support movement.



Estimate the pseudo-static response of the piping system using the structure point relative displacements (obtained from the soil-structure interaction analysis, computer program: STD, STM, STF).



Compare the predicted results with the time history pseudo-static response and tabulate the percentage of exceedance associated with each method (computer program: TABD, TABM, TABF).

members, a set of influence parameters are calculated using Equation (2.3), and assuming the support displacement 'Z' as a unit vector. These influence parameters are given in Table 2.5. Once these are obtained, the piping responses caused by a given displacement of the supporting structure in any direction can be calculated by just multiplying the influence parameters with the prescribed displacement (see Table 2.6). To predict the piping response due to the prescribed displacements at all the support points, a combination method between these individual responses must be adopted to simulate the actual phasing between the support points. It should be noted that the support point displacements should represent the relative displacement with respect to the structure, thus eliminating the rigid body motion of the building.

Table 2.5 Pseudo-Static Response Influence Parameters

(Influence parameters correspond to a unit displacement at each support point)

$$\text{Displacement: } X_{SI}^k = -K_p^{-1} K_{PB}^k$$

$$\text{Pipe Forces/Moments: } F_{SI}^k \text{ or } M_{SI}^k = \bar{K}_p X_{SI}^k$$

$$\text{Support Forces: } F_{BSI}^k = K_{PB} X_{SI}^k + K_B$$

Or equilibrium of all pipe end forces at the support junction point.

Where k is the support motion numbers resulting pipe responses.

Table 2.6 Seismic Anchor Movement Analysis

Once these influence parameters are obtained for each set of support point displacements (D) corresponding to an earthquake motion, one can estimate:

$$\text{Static Displacement: } \bar{x}_S = \sum^K x_{SI}^k \cdot D^k$$

$$\text{Static Pipe Forces/Moments: } \bar{F}_S \text{ or } \bar{M}_S = \sum^K (F_{SI} \text{ or } M_{SI})^k \cdot D^k$$

$$\text{Static Support Forces: } \bar{F}_{BS} = \sum^k F_{BSI}^k \cdot D^k$$

3.0 DESCRIPTION OF CANDIDATE METHODS

The current guidelines for predicting the seismic response of piping systems are well described in the Standard Review Plan, Regulatory Guides, ASME Code Section III, and other related documents. The dynamic analysis options are either time history or response spectrum methods. In these procedures it is usually assumed that all the support points are excited with identical inputs which may be obtained by enveloping all the support excitations. There is virtually no specific guidance as to how to obtain the pseudo-static component of response. Many organizations have developed their own procedure and consider that their results represent the most conservative one could obtain. According to the SRP, the dynamic and pseudo-static components should be combined by the absolute sum method.

The intent of this study is to develop certain alternate methodologies for evaluating these response components so that:

- a) the results reflect the actual system response without endangering the safety of the design,
- b) the methods are simple enough to be adopted by the industry without major deviations from their current procedures,
- c) the formulations can be programmed into the existing computer codes, and
- d) the additional cost involved in the new procedures should be overcome by the benefit observed in the final design.

3.1 Dynamic (or Inertia) Responses

It is commonly believed that the uniform response spectrum method always yields a conservative estimate of response because the input envelope spectra represent the largest excitation any support can experience. It should however be noted that the excitation level alone does not govern the dynamic

response. The frequency content in the loading function, the dynamic characteristics of the system itself (i.e., natural frequencies and mode shapes), and the independent effect of each support, can influence the overall response of the piping model. In the uniform response spectrum method, the modal responses are calculated by multiplying the spectrum magnitude with the corresponding modal participation factors at the modal frequency. The modal participation factors for this analysis reflect the modal contributions when all supports are excited simultaneously with the identical input. The modal contributions thus calculated could either underpredict or overpredict true response depending on the exact phasing between the individual supports in the system.

In order to overcome this, the independent support motion method has been chosen for this study. This method derives the modal participation factors for each individual support (or group of supports) in each direction of excitation. The effect of each support excitation is obtained by multiplying the participation factors with the corresponding response spectra, thus representing a better estimate of the true response of the system. One of the questions raised in applying this analysis procedure is how to combine the group effects, along with the modal and direction of excitation effects, to predict the dynamic response of the system.

In the present study, the dynamic analysis involves an evaluation of the methods of response combination between modes, directions, and support points (or groups) and the sequence of their combinations. The combination methods used between modes and directions are those specified in the US NRC Regulatory Guide 1.92. Accordingly, the combinations between modes is by SRSS with a cluster factor of 0.1 and the directional combination is SRSS. Since the support group combination method is yet to be established, algebraic (ALG), SRSS and absolute summation (ABS) between groups are considered. Considering all variations and sequences of these procedures, fourteen distinct combination methods could be used to predict the dynamic response of a piping system and are being considered. These are:

Description of the different combinations considered in the dynamic analysis:

Case Number	Combination Sequence
1	Group(ALG)-Direction-Modes
2	Group(ALG)-Modes-Direction
3	Group(SRSS)-Direction-Modes
4	Group(SRSS)-Modes-Direction
5	Modes-Group(SRSS)-Direction
6	Direction-Modes(SRSS)-Modes
7	Modes-Direction-Group(SRSS)
8	Direction-Modes-Group(SRSS)
9	Group(ABS)-Direction-Modes
10	Group(ABS)-Modes-Direction
11	Modes-Group(ABS)-Direction
12	Direction-Group(ABS)-Modes
13	Modes-Direction-Group(ABS)
14	Direction-Modes-Group(ABS)

The first two cases correspond to algebraic group combination, the next six cases to SRSS group combination and the last six cases to absolute group combination. In the first category, algebraic summation, the missing four cases involve changes in the sequence of groups with the mode and direction combinations and have no meaning since the signs of each component are lost during the process.

The response parameters chosen for comparison in the evaluation are displacements, accelerations, resultant pipe moments and support forces for inertia and pseudo-static responses. Each parameter has many components. For the displacements and accelerations, only the translational components for selected nodes of some piping systems are considered. Likewise, the support forces and pipe moments are also considered only for selected elements. Pipe moments are calculated and treated as individual components up until the end of the computation when their three spatial components are combined by SRSS to predict the resultant moment.

It should be noted that, in order to perform each of the above calculations, it is required that the piping response corresponding to each earthquake analysis, for each mode, for each direction and for each support point (or group) excitation, be stored. This results in massive data manipulation even to calculate one single parameter for the evaluation. Moreover, in order to calculate the piping responses corresponding to support group input response spectra, the input spectra data for one earthquake, becomes massive. To facilitate the necessary data handling and to accommodate the LLNL data used in the study, the BNL PSAFE2 [19] code was heavily updated for the study.

In addition, each piping system is also analyzed using a set of envelope spectra developed from the individual support spectra. The results are calculated using the guidelines presently adopted in the nuclear industry. These responses, designated as the 'URS' case, are also compared with the independent time history solutions to obtain a measure of the conservatism inherent in the present methods.

3.2 Pseudo-Static (SAM) Responses

As mentioned earlier, the pseudo-static component of seismic response of piping systems is due to the differential motion of the support points. This is known as the pseudo-static component because it is related to the static load-response behavior of the system. Sometimes it is termed the Seismic Anchor Movement (SAM) response due to its relationship to anchor movements and is also termed the pseudo-static component of response due to its time-dependence without, however, dynamic amplification. The present guidelines require that the support displacements be imposed on the supported system in the most unfavorable combination. The analysis is performed using conventional static analysis procedures.

The calculation of support displacements are obtained either from a time history analysis of the buildings while developing the floor response spectra or from the SRP, recommended procedure, Section 3.9.2, using the floor response spectra. Often times these are available to the pipe stress engineers

for each floor level as well as at other terminal points such as nozzles, penetrations and so on. The application of these displacements at the support points are often left to the intuitive judgement of the stress engineer. Sometimes the stress engineers neglect this analysis entirely if no information is available or if they can justify that the displacements are of negligible magnitude.

Some of the procedures currently used in the industry for this analysis are as follows:

- Apply the displacements at each support point in each direction independently and combine the response quantities by either SRSS or absolute sum. The absolute sum procedure would definitely result in the most conservative responses, as required by the SRP.
- Instead of performing a time history analysis, a random sampling of the displacement time history for all support points is made to obtain the phasing relationship among support points. For each sample a static analysis is performed maintaining the signs of the displacements. An envelope response from all the sampled results is obtained and then multiplied by a factor to take into account the limited size of the sample.
- Only the anchor points are subjected to the support displacements. Engineering judgement is used to decide if anchors are moved simultaneously or separately depending on their locations in the piping systems.
- The total absolute displacements are lumped at the anchor points alone or at the first three supports, in each spatial direction, nearest to the pipe section between the buildings. Sometimes a linear interpolation method is used to prescribe displacements at supports away from the anchor points.

- The displacements between floors of the same building are applied in a out of phase fashion using engineering judgement.
- All displacements in each spatial directions are applied simultaneously and the pipe responses are combined by SRSS or absolute sum.

In addition, there exist many other considerations in imposing displacements at the support points. These depend on the piping layout, the engineer's ability to simulate the worst phase relation and the company guidelines. This present study is primarily focused on the selection of methods to simulate the phasing between the support points. Some of the above procedures are chosen as candidate methods.

Thus, the prediction of pseudo-static response requires the development of a methodology to calculate the piping response, given the maximum or time-history displacement of each support point. If complete input time history records are available these responses may be calculated directly. If, as is often the case, the input time history data is not available, only the peak displacement of each support must be used. The intent of this portion of the study is to develop and evaluate different possible methods to predict the pseudo-static component based on the use of time history and peak displacement inputs.

Five different methods are considered in this study. These are:

- | | |
|----------|---------------------------------------|
| Method 1 | Time history sampling |
| Method 2 | Supports considered independently |
| Method 3 | Supports grouped by spatial direction |
| Method 4 | Supports grouped by attachment point |
| Method 5 | Supports grouped by elevation |

In the first method, the time history predictions of support displacements are considered. For the remaining four methods only the peak relative support displacement magnitudes are considered. For Method 1, no segregation into groups and therefore no summation between groups is required. For the other methods both SRSS and absolute summation between groups are considered. Taken in all nine different procedures to compute the static component are studied. A detailed description of each follows.

Method 1: Random Sampling of Time History Data

In performing the evaluation of pseudo-static response two unknowns exist, the magnitude of support displacements and their phasings. In this method an attempt is made to simulate both the amplitude and phasing of the supports. For the amplitude of the support motions, the time history displacements obtained from the structure analysis are used as input. In order to simulate the true phasing, a random sampling with a uniform distribution over the entire time span is chosen, as illustrated in Figure 3.1. For a particular sample point, the actual displacements, both magnitude and phase, are retained and used for a static analysis of the piping system. Similar operations are repeated for fifteen different sample points and pipe response quantities are calculated for all of these cases. The envelope of the pipe response for the total sample are considered to be the predicted static responses. One should note that if the sample size is increased greatly, then the final results will converge asymptotically to the time history solutions. A limited study for establishing the sample size was carried out and the results are presented in Figure 3.2. A sample size of '15' was chosen for this study because of the seeming asymptotic nature of the sample size versus multiplying factor curve below this limit. It is evident that a sample size of about '40' would have been a better choice, but the computer costs would have increased accordingly.

It must be realized that only by accident will any sample include the true maximum pseudo-static responses. In order to account for this uncertainty, the results obtained from the sample are amplified by a multiplying

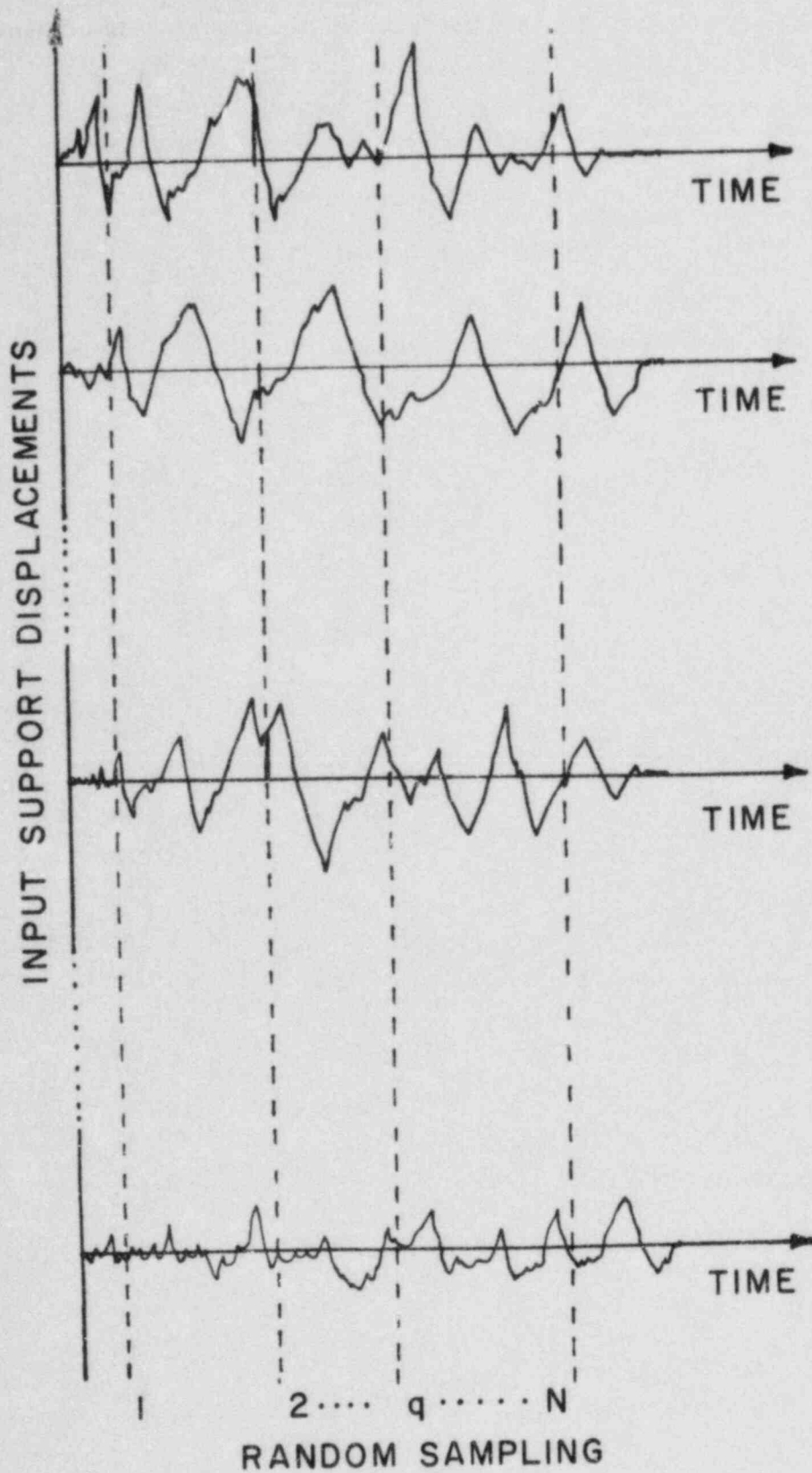


Figure 3.1 - Demonstration of Method 1 for Evaluating Static Response

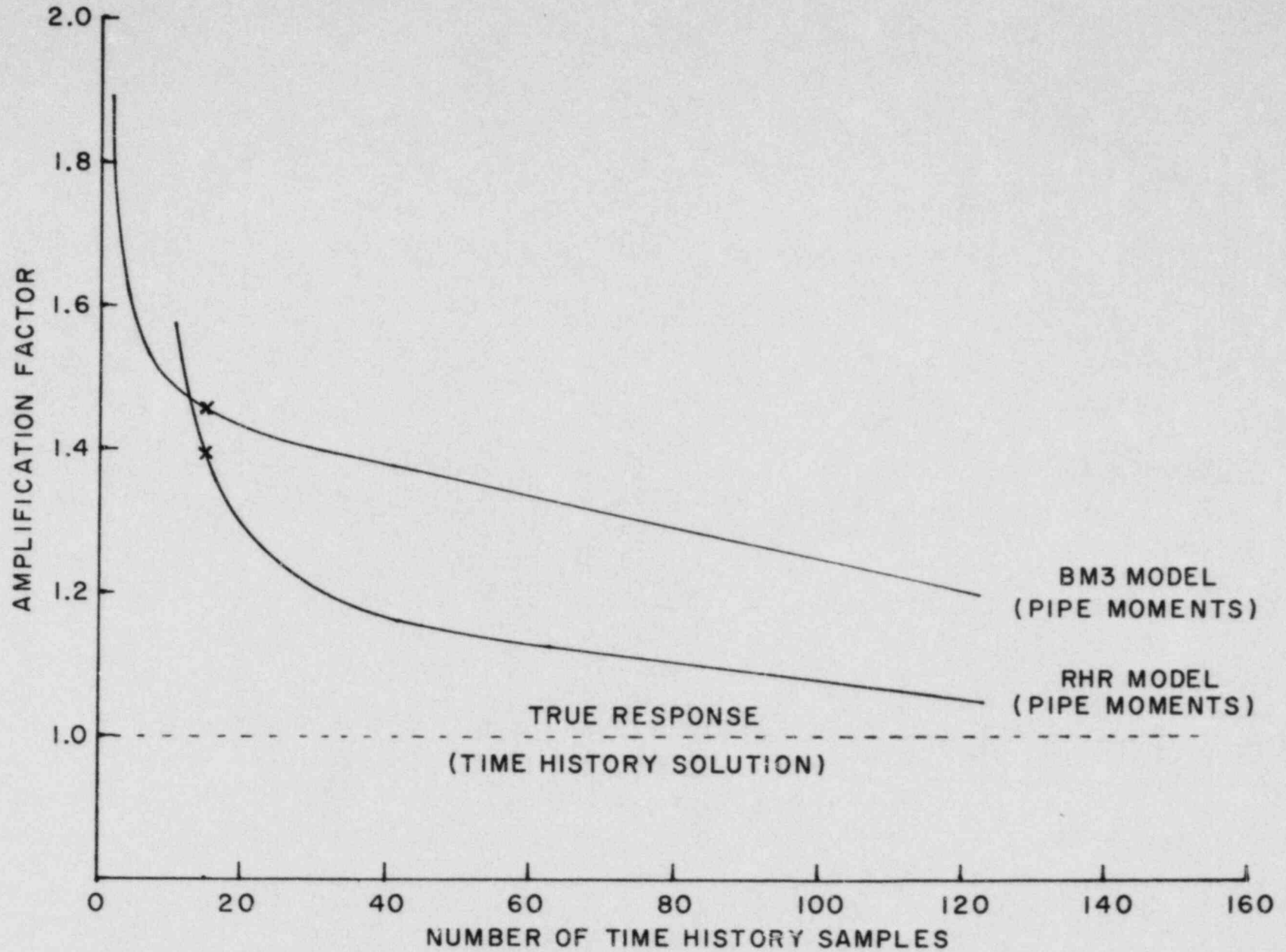


Figure 3.2 - Number of Samples Versus Amplification Factors for Method 1

factor to arrive at the true static responses. In this study, this is achieved by calculating the amplification factor required to increase each parameter to the time history result which is considered to be the true solution. The greatest such factor would then be recommended for use with a sample size of fifteen. It should be noted that since this method retains the actual phasing among support points, either relative or absolute structural displacement time history responses can be used without affecting the final stress results.

Method 2: Supports Considered Independently

The peak displacements of the structural attachment points are required for this and the remaining three methods. Since there is no estimate of the phasing between the support attachment points, only the displacements relative to base mat should be used. If absolute displacements are used, the resultant responses will be overly conservative as they include the rigid body motions of the base mat.

Static analyses are then performed by imposing each displacement one at a time, in each direction of excitation, at each support. In this study, this was achieved by computing influence parameters for unit displacements and making use of the calculations performed for the independent response spectrum method, as described in Section 2. Thus, all the pipe response quantities are calculated for each support point displacement, in each spatial direction.

Since the phasing between the supports is unknown, two possible combinations are considered for predicting the overall static response. These are the SRSS and absolute sum procedures. Their use is based on the assumption that each support is out of phase with all other supports irrespective of their structural attachments. When the absolute sum procedure is used in this method, the results must over estimate the true response, and in fact, the results conform to what the current SRP guidelines meant by the term "the most unfavorable combination". The SRSS combination, on the other hand, should provide conservative estimates of response except at those pipe locations which are supported by supports which exhibit strong out of phase motions (be-

tween different buildings, buried pipes, etc.). Statistically, the SRSS method should yield more reasonable response estimates than the absolute sum method. Thus, the final products of this method represent two distinct procedures for predicting the static component of seismic response.

Method 3: Supports Grouped by Spatial Direction

This method is formulated on the basis that the floor response spectra are derived from a stick model of the structure with characteristics that resemble a cantilever beam. In the fundamental mode of a cantilever beam all mass points displace in phase, in each spatial direction. If the structure responds in a like manner, the grouping of supports by spatial direction is appropriate. Thus, in this method, it is assumed that all supports, in each of the three spatial directions, are in phase and hence, pipe response quantities, corresponding to each support within a spatial direction, are added algebraically. It should be noted that if the structure exhibits dominant three dimensional characteristics, this method is not appropriate and may yield non-conservative results. The final response parameters are calculated by combining the spatial direction results using either the SRSS or absolute sum method, thus providing two more procedures for estimating pipe response.

The above method can be improved for structures not behaving like cantilever beams if the phasing between supports in each spatial direction can be assessed intuitively. This phasing can be introduced, in each of the calculations representing a spatical direction, by assigning the proper sign to the input displacement quantities. The final results could be more realistic than those developed by the above methods. This improvement could not be considered, in general, since the phasing between supports can be building, or even piping system, specific.

Method 4: Supports Grouped by Attachment Point

The basis for this method is that the piping system is excited via support devices mounted on the structure. In this method, all supports raised from the same structural point, or structural points with identical dynamic

responses, are considered as one group of supports. The supports in a piping system are grouped according to these structural attachments. Within each group, all supports acting in a global direction are assumed to be in phase and their response quantities are added algebraically. This is followed by a SRSS combination of the three directional responses within the group. After calculating the group responses due to all excitations, these responses are combined by either SRSS or absolute sum. Thus, the final response parameters are evaluated by two distinct procedures.

If the directional inputs are not in phase, this method with absolute sum should yield conservative results. The SRSS method on the other hand should provide reasonable results if the phasing between structure attachment points is weak. It should be noted that the grouping of supports used in this method is similar to that used in the independent time history analysis used to predict the true solution.

This method provides the best simulation of the actual support inputs. It should provide a reasonable level of conservatism and thus assure a safe design of the piping system. The only problem with this approach is that the structural attachment points are not known to the stress analyst during preliminary design. Also, the final design of supports is strongly dependent on the support design itself as well as on the civil drawings. The piping engineer could make an educated guess as to the structural attachment point, but, he cannot guarantee the final as-built design. Therefore, this method should be used in the final design calculation to establish the final design safety of the piping design.

Method 5: Supports Grouped by Elevation of Floor Levels

This method is an approximation of Method 4, wherein it is assumed that all attachment points are, in fact, the floors. It could be used in the preliminary design of piping systems. Floor response spectra are generally developed for floor elevations and hence, the corresponding displacements of

the floors could also be determined from the same time history analysis and should be available to the piping engineers. In this method all supports are grouped according to their proximity to the floor elevations of the buildings. It is assumed that all supports close to a floor elevation form a group and experience the floor motion as excitation. Within each group, the contributions in each spatial directions are first combined algebraically. This is followed by SRSS combination over the three resultant directional responses to get the group responses. Thus, the response of each group corresponds to the response produced by the motion of one floor while the other floors are fixed. Finally, all group responses are combined by either the SRSS or the absolute sum procedures constituting two different predictions.

Because of its simplicity and consistency with spectra computations, this method could be readily applied during preliminary design. However, it should be noted that this method could underpredict true response if the movements of the actual support points, differ from the movements of the floors.

3.3 Total Seismic Response (Dynamic Plus Static)

The current SRP recommendation (Section 3.9.2) requires that the response due to the inertia effect and that due to relative displacements should be combined by the absolute sum method. The present study has been extended to consider both the SRSS and absolute sum procedures in combining these components. A similar study was also reported [20] by the authors under the load combination program. The independent time history analysis provides a prediction of the total response as well as the two response components. Thus, the total response obtained by combining peak pipe responses calculated using the procedures described in the previous sections, can be compared with the true responses and the level of exceedance determined for each response parameter.

For each pipe response parameter fifteen procedures, including the URS, were considered to compute the dynamic component and nine procedures to compute the static component. Each value is assumed to represent the peak response. If a combination between the fifteen dynamic cases and the nine static cases were established, then 135 estimates based on SRSS and 135 esti-

mates based on SRSS and 135 estimates based on absolute sum, for each response, would be formed. In order to avoid this massive data manipulation, the nine pseudo-static response predictions were not used in this investigation of combination. Instead, the true static component of the response, as predicted in the independent time history analysis was combined with each of the 15 estimates for dynamic response. Thus, 15 estimates for the total response were formed.

The time history estimate of the static component of response represents the lower bound of all the nine procedures used to compute static response (i.e., only a method which provides conservative estimates would be adopted). If the total response parameters thus calculated, remain conservative, then the results based on combination, involving results from the five static methods, would provide even more conservative results.

For the acceleration response parameter, both the static and the dynamic components are calculated using the independent response spectrum method as described earlier. Hence, the final predictions of the static component of acceleration are made in fifteen different ways corresponding to the dynamic cases. The combination of the static and dynamic acceleration components are then formed by case number. In other words, the dynamic component predicted by Case 5 (out of 14 different cases plus UKS) is combined with the static component predicted by Case 5. No cross combinations between the fifteen different predictions of both components are carried out. In the final results, the Case 5 prediction includes individual components computed using the Case 5 procedure only.

4.0 DESCRIPTION OF PIPING SYSTEMS

The seismic analysis of piping systems in nuclear power plants depend on: (a) the characteristics of the input loads and their intensities, (b) the model used to represent the piping system including the discretization, used, the support system and the distribution of mass, (c) the material properties and (d) the analytical procedure. The total response of the system, as mentioned earlier, consists of the inertial or dynamic response and the pseudo-static or static response. In order to accurately predict these responses, all parameters used in the analysis must be properly defined and the analysis method must be established.

In the first three areas, uncertainties exist in the definition of the controlling parameters. Characterizing the input load involves defining the magnitude of the seismic hazard for the plant site, the development of a free field ground acceleration time history, soil-structure interaction analysis, and the development of floor response spectra or time histories. In each of these there exist large uncertainties. In modeling the piping system, the analyst's experience and methods contribute uncertainties. In the material area the analyst can do nothing more than follow the guidelines available to define the material and system properties.

The current study addresses the last issue presenting an investigation of an alternate analysis methodology to calculate both components of response. The multiple independent support excitation method of analysis is presumed to provide a better estimate of the seismic response than current practice reducing the uncertainties associated with analysis. It is imperative that a good number of piping analyses be performed to account for all the uncertainties that exist.

The dynamic characteristics of every piping system are unique while the input earthquake motions are random in nature. The validity of a deterministic method to calculate the dynamic and pseudo-static components of seismic response is difficult to assess. In this study some statistical assessment of the candidate methods to predict the dynamic and pseudo-static components of

response has been performed by using several piping models, with different dynamic characteristics, subjected to a number of different earthquake loadings. It is felt that the sample is large enough to allow the results to serve as a basis for updating the current guidelines in the Standard Review Plan.

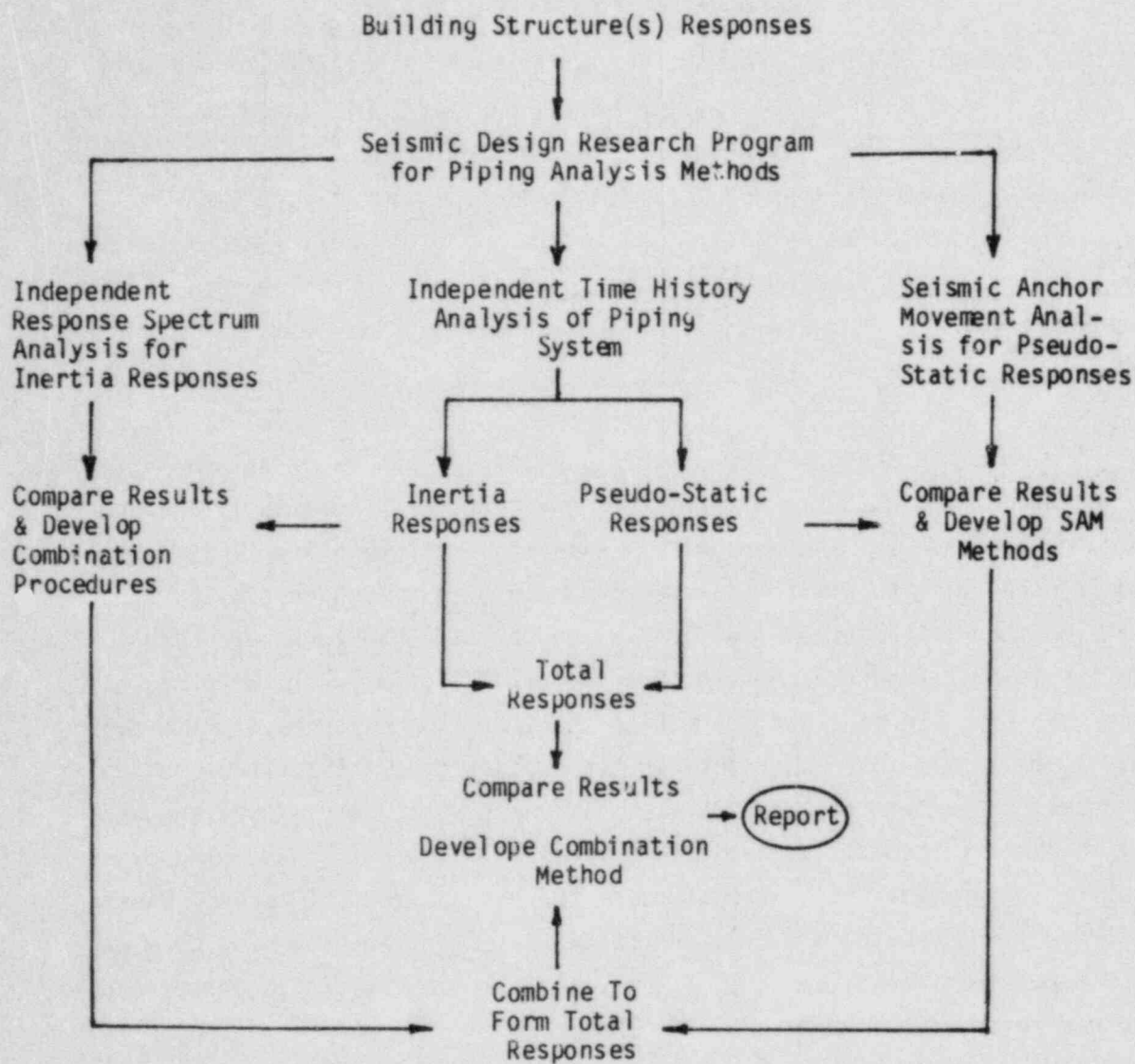
In order to take advantage of the methodologies and results developed under the Seismic Safety Margins Research Program (SSMRP), a cooperative effort with LLNL was initiated to obtain the independent time history responses for three piping systems. One piping system, representing the primary coolant system with NSSS equipment, was discarded because its large size would cause great data manipulation and storage problems without any attendant benefit. The other two are identified as the RHR (or RHR) and the AFW (or AFW) systems. For each of these, independent support motion time history analysis methods were used to determine the system response for thirty-three seismic events. Selected data from these results were provided to BNL for this study. In addition, three other piping models, developed at BNL, each subjected to a single earthquake loading, were included in the study. One of these piping systems was subjected to two different input forcing functions simulating its attachment to two different nuclear structures. In total then, six different piping-structure systems were evaluated for from one to thirty-three seismic events. The study of the four BNL systems are intended to clarify the characteristics of seismic analysis of piping systems and to support the conclusions derived from the evaluations of the two LLNL models. A description of all the piping systems investigated is given in Table 4.1.

One complete analysis involves a particular piping model subjected to a single earthquake loading. Table 4.2 shows a flow diagram depicting the procedures followed to evaluate each of the candidate methods described in Section 3. Each analysis consists of an independent time history and an independent response spectrum analysis of the piping model. The time history analysis yields the true dynamic, pseudo-static and total responses of the piping system. The independent response spectrum analysis, performed per the procedures summarized in Section 2.2, provides estimates of the dynamic component of response as well as the influence parameters required to compute

Table 4.1 Model Parameters

Model	Structure	No. of Equations	Pipe Size	Pipes Frequencies 1st, 2nd	No. of Support Groups	No. of Seismic Events	No. of Modes Used	No. of Moments	No. of Support Forces	No. of Disp./Accel. Parameters
RHR	Zion (3D)	423	8", 12"	3.86, 8.11	9	33	18	22	15	17 x 3
AFW	Zion (3D)	945	3", 16"	2.86, 3.76	15	33	37	23	28	21 x 3
Z-Bend	ANCO Test (3D)	204	4"	8.67, 17.42	3	1	10	39	16	34 x 3
BM 1	PWR (3D)	336	2", 6"	5.05, 14.63	5	1	15	55	32	56 x 3
BM 2	BWR (Stick)	336	2", 6"	5.05, 14.63	4	1	15	55	32	56 x 3
BM 3	Test Reactor	228	3", 4", 8"	2.91, 4.39	2	1	23	37	30	38 x 3

Table 4.2 Multiply-Supported Piping System Research Program



the pseudo-static components of the response per Section 2.3. The comparison of total response with the time history results was performed as summarized in Section 3.3.

4.1 LLNL Piping Models

The RHR and AFW piping systems considered in this study are housed in the containment and the Auxiliary Fuel-Handling Turbine (AFT) building complex of the Zion Nuclear Power Plant in Illinois. The containment structure consists of the containment shell and a separate concrete internal structure supporting a four-loop PWR nuclear steam supply system. The AFT complex has connected buildings housing the turbines, fuel-handling equipment, diesel generators, etc. The details of these structures are described in SSMRP reports.

The multiple support time history analysis procedure described in Section 2, was used in the SSMRP [15] studies. The methodology is included in the computer program (Seismic Methodology Analysis Chain with Statistics) SMACS and is used to calculate the seismic response of a structure considering soil-structure interaction (SSI) and using the sub-structure approach. Once the structural responses, in the form of time histories, are computed, the piping systems are analyzed using the multiple support formulations assuming the piping support motions conform to the motions of the structure. SMACS is programmed to perform repeated deterministic analyses, each simulating an earthquake occurrence. Variability in the seismic input is achieved by considering probabilistic variations of the parameters that control these records. The sampling of these parameters is performed according to a Latin hypercube experimental design. The detail of these calculational procedures are also discussed in the SSMRP reports.

Both LLNL piping systems were analyzed for thirty-three different seismic excitations of the Zion structure using the SMACS computer code. The first thirty simulations used as input combinations of 16 horizontal and 12 vertical time history records obtained from the nuclear industry. The goodness of fit

of these histories to R.G. 1.60 was not assessed; the entire set, however, met the requirement of essentially enveloping the target spectra. Three independent components of motion were used in each earthquake simulation with the peak horizontal accelerations scaled to 0.18g and the peak vertical accelerations scaled to 0.12g. Variability in both the soil and the structures was included in the analyses by applying factors to their frequency and damping characteristics. As part of each analysis, broadened and unbroadened response spectra were calculated and saved for points in the Zion structures that support the piping systems.

In addition to the thirty analyses just described, three more earthquake simulations were run. These input time histories were selected from the set of thirty used above, however, nominal soil and structure properties were used throughout. As before, spectra were calculated for each structural response component. The results of these three analyses were the basis for an SRP analysis of the piping systems.

For the two LLNL problems BNL was provided the following data:

- details of the mathematical model of each system including nodal coordinates, material properties, section properties element connectivity and concentrated mass location and size. In addition, the SAP 4 input and output files, as well as the modal solution for each system, were included in the package.
- responses of the piping system support points from the Zion structure evaluations. These included (a) peak relative displacements in two horizontal and a vertical direction, and (b) a condensed (i.e., 200 time point) time history record of relative displacements and (c) broadened response spectra in digitized form in the three spatial directions.
- time history estimates of the inertia, pseudo-static and combined response of selected points in each, piping system, specifically at potentially high

stress locations such as pipe such as pipe elbows and tees. These included (a) peak displacements in in two horizontal and a vertical directions, (b) peak accelerations in two horizontal and a vertical direction, (c) peak resultant moments in pipe components and (d) peak forces in pipe supports, restraints and snubbers.

Some of the above data were transmitted to BNL via an interlaboratory electronic transfer system known as ARPANET. The files were properly read and stored at the BNL Computing Facility. Some were transmitted via magnetic tapes and for some hard copy were provided. It should be noted that, in the BNL studies, the above information was assumed to be consistent and correct.

4.1.1 RHRSI1 (or RHR) Model

The RHR model, shown in Figure 4.1, consists of a 12 inch, Sch. 40 and Sch. 160, pipe line header running from a wall anchor at the internal structure of the containment building to an anchor in the AFT complex and an 8-inch, Sch. 40, branch line from the Refueling Water Storage Tank (RWST) nozzle to the 12-inch pipe. The pipe material for the entire system is stainless steel. The line is rated at a design temperature of 400°F and a design pressure of 75 psi. One isolation valve exists, at the upper end of the model, near the containment wall. All the system supports are illustrated in Figure 4.1.

Based on the information provided by LLNL, the supports are raised from nine different locations in the Zion model. Table 4.3 summarizes the 9 support groups based on the Zion structure attachment nodal points. This grouping of supports was used in the determination of the dynamic response and in computing pseudo-static response via Method 4. The same grouping was also used in the time history calculations. For the evaluation of static response via floor elevations, Method 5, the supports were grouped based on their elevations, irrespective of the structural attachment points. Table 4.4 summarizes the four floor elevation groups chosen. Supports at pipe node 63 were raised from a different structure and formed support group 4.

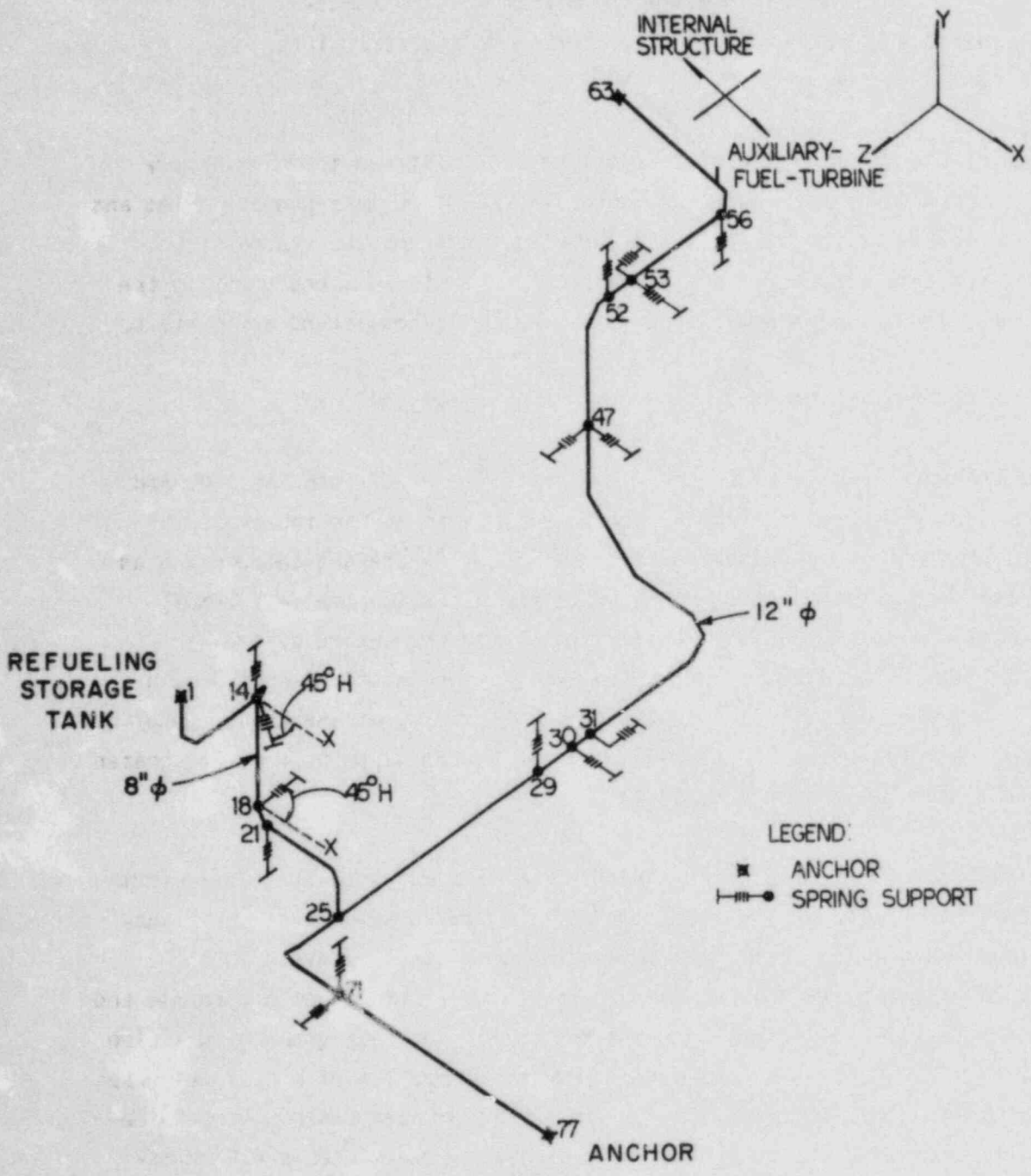


Figure 4.1 - RHR SI Piping Model

Table 4.3 RHR Model, Support Groups Based
On Attachment Point

Group No.	Zion Structure Node Number	Pipe Support Location and Direction
1	708	63X, 63Y, 63Z
2	518	77X, 77Y
3	529	29Y, 30X
4	530	18XZ*, 21Y, 31Z, 47Z, 71Z, 77Z
5	531	71Y
6	540	47X
7	1026	1Z, 14XZ, 14Y, 53Z
8	1027	1X, 1Y
9	1032	52Y, 53X, 56Y

*18XZ refers to a skew support at node 18 in the XZ plane.

Table 4.4 RHR Model, Support Groups Based on Floor Elevations

Group No.	Pipe Support Location and Direction
1	1X, 1Y, 1Z, 14XZ*, 14Y, 18XZ, 21Y
2	29Y, 30X, 31Z, 71Y, 71Z, 77X, 77Y, 77Z
3	47X, 47Z, 52Y, 53X, 53Z, 56Y
4	63X, 63Y, 63Z

*14XZ refers to a skew support at node 14 in the XZ plane.

Since the piping system is composed of 8" and 12" diameter pipe, it exhibits frequencies associated with both pipe sizes. There are eighteen natural frequencies in the range of 3.858 Hz to 33.87 Hz and these were considered in the dynamic analysis. Also, several closely spaced modes exist at frequencies above 12 Hz.

4.1.2 AFWSG1 (or AFW) Model

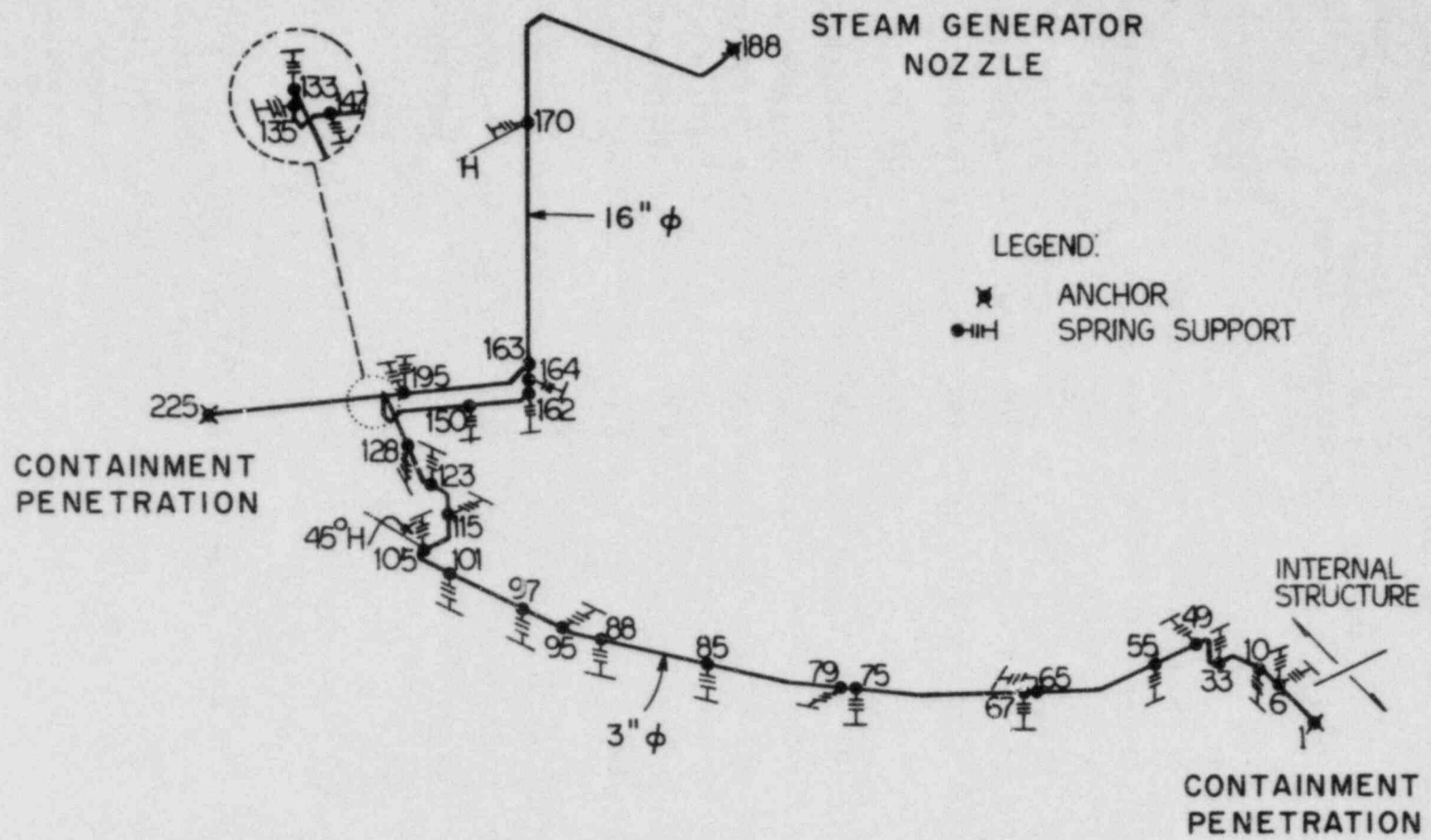
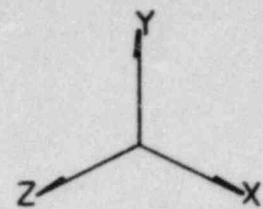
The AFW model, shown in Figure 4.2, consists of a 16", Sch. 120, main feedwater (MFW) line running from a steam generator nozzle to a containment penetration, and a 3-inch, Sch. 160, Auxiliary Feedwater (AFW) branch line running from the 16 inch MFW line to a containment penetration. The entire line, rated for a design temperature of 400°F and a design pressure of 200 psi, is carbon steel. The spring supports and snubbers are shown in the figure.

Supports in this system are mounted at from 15 different structural points, and constitute the 15 support groups summarized in Table 4.5. These groups were used in the time history calculations, the determination of dynamic response and the determination of pseudo-static response by Method 4. Table 4.6 summarizes the grouping of supports, based on floor locations, used to determine pseudo-static response by Method 5.

Thirty-seven natural frequencies, ranging from 2.853 Hz to 33.78 Hz, were considered in the analysis. The frequencies were spaced throughout the entire frequency range and the system can be considered flexible with significant lower frequency content.

4.2 BNL Piping Models

Unlike the LLNL models, the BNL piping models were not associated with a specific plant analysis. Each model was chosen to have characteristics which would substantiate the conclusions obtained from the LLNL model studies. The four different BNL analyses were performed on three piping systems. One of the three piping models was analyzed for two different earthquake motions corresponding to two different support structures. Each piping model represents a true piping system designed for a particular test facility or nuclear



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Figure 4.2 - AFWSGI Piping Model

Table 4.5 AFW Model, Support Groups Based On Attachment Point

Group No.	Zion Structure Node Number	Pipe Support Location and Direction
1	23	225X, 225Y, 225Z
2	24	1X, 1Y, 1Z
3	47C	150Y
4	488	85Y
5	491	6XZ*, 6Y, 10Y, 33Y, 49X, 55Y
6	529	101Y, 105XZ, 115XZ
7	530	162Y
8	544	135Z, 195XZ, 195Y, 147X
9	673	164XZ
10	698	123Y, 128Y, 133Y
11	703	88Y, 95XZ, 97Y
12	704	75XZ, 79Y
13	705	65XZ, 67Y
14	995	170XZ
15	1221	188X, 182Y, 188Z

*6XZ refers to a skew support at node 6 in the XZ plane.

Table 4.6 AFW Model, Support Groups Based on Floor Elevations

Group No.	Pipe Support Location and Direction
1	1X, 1Y, 1Z,
2	225X, 225Y, 225Z
3	162Y, 164XZ*, 170XZ, 188X, 188Y, 188Z
4	6XZ, 6Y, 10Y, 33Y, 49X, 55Y, 65XZ, 67Y, 75Y, 79XZ, 85Y, 88Y, 95XZ, 97Y, 101Y, 105XZ, 115XZ
5	123Y, 128Y, 133Y, 135Z, 147X, 150Y, 195XZ, 195Y

*164XZ refers to a skew support at node 164 in the XZ plane.

power plant. The models are not identified by their plant name because of contractual agreements in other BNL projects. Table 4.1 summarizes the characteristics of the four analyses: Z-Bend, BM1, BM2, and BM3.

For the BNL models, three different structures were considered. These included a three dimensional model of a PWR nuclear structure, a stick model of a BWR-Mark II structure, and a frame model of a test reactor at the BNL facility. In addition for one analysis, a true test input time history (both displacement and acceleration) was used in lieu of any structural analysis. All the structural analyses were performed with the BNL SAP V computer code using true ground motion time history records obtained from different sources. Soil-structure interaction effects were included in these analysis. All calculations were deterministic. The results were the absolute acceleration and relative displacement time history records for the different floors and pipe attachment points.

For each piping model, a time history analysis was first performed using the independent support motion algorithms in the computer code PSAFE2, to determine the 'true' static, dynamic and the combined response. In these, analyses the support grouping did not correspond to structural attachments, but was selected to investigate various parameters under study. Response spectra were then developed for each input earthquake time history and damping level, using the spectrum generator program in the SIM code. Relative displacements at the support points, consistent with the time history records, were also obtained. From this point onwards, all other calculations were performed in a fashion similar to those used for the LLNL models.

4.2.1 Z-Bend Model

The Z-Bend piping model, shown in Figure 4.3, is a simple planar configuration. It was used in a test program conducted by ANCO Engineers, under joint EPRI/MRC sponsorship. BNL was involved in that effort, comparing the test results to analytical predictions developed using the independent support motion time history analysis procedure. The results of these physical benchmarks were published in NUREG reports [21-22]. This model represents a

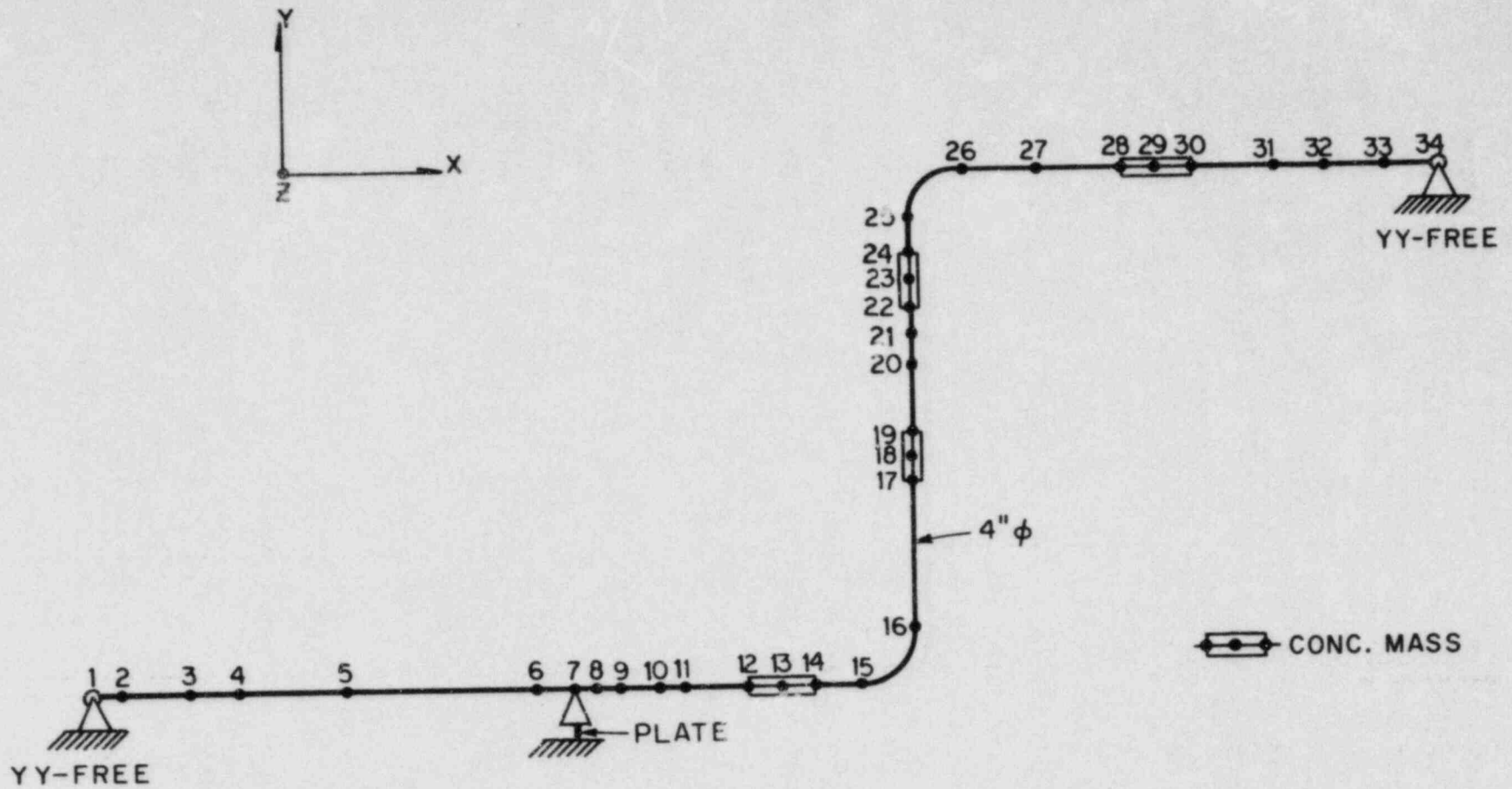


Figure 4.3 - Z Bend Finite Element Model

very simple piping system, with well defined supports, and measured seismic inputs and responses. The measured responses consist of accelerations and displacements at selected locations.

The system is a planar configuration of 4 in., Sch. 40, steel pipe, consisting of three straight lengths, two elbows and four concentrated masses simulating components. The pipe was supported from and excited by three independently acting hydraulic actuators designed to drive the pipe in the outplane direction. The supports at the two terminal ends were free to rotate about the vertical (or y) axis. The center actuator was attached to the pipe through a bolted collar-welded flex plate arrangement designed to have low resistance to motion in the longitudinal direction and rotation about the y axis. The instrumentation provided the displacement and acceleration time history responses at the support points, as well as intermediate points, on the pipe. In the present study, the measured input time histories were used as input, while the BNL predictions of response were used for response. A comparison of the predicted and measured responses are provided in the referenced reports.

This simple model was used to verify all the pre- and post-processors developed for this study. A ten mode approximation was used in the calculations with the frequencies ranging from 8.673 Hz to 159.6 Hz. As such, the system can be considered a stiff system. Each of the three support points constitute a support group for the time history, dynamic response and Method 4 static response calculations. For the Method 5 static response evaluation, the supports at nodes 1 and 7 were considered to form one group. The support at node 34 constituted a second support group. Since the inputs in this model do not reflect any building characteristic, the inputs are uncorrelated and it was expected that the Method 5 static response estimates would be unconservative.

4.2.2 BM1 and BM2 Models

The BM1 and BM2 evaluations involve the same piping model, shown in Figure 4.4 with the same support system. Hence, the dynamic characteristics of the piping are the same in each evaluation. Only the input acceleration time histories and the grouping of supports was varied between the two evaluations.

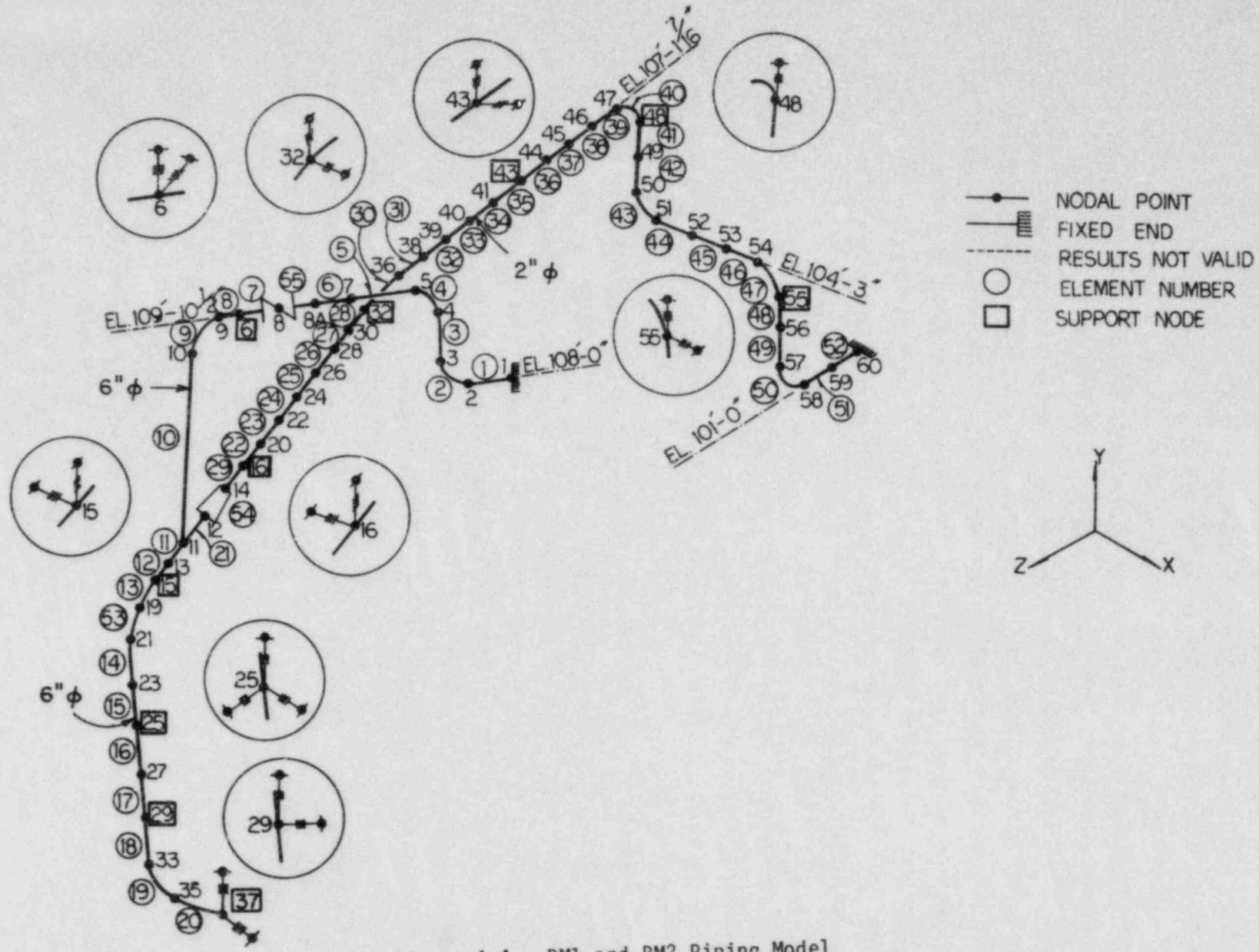


Figure 4.4 - BM1 and BM2 Piping Model

For the BM1 evaluation, the piping system was considered to be a part of a PWR Nuclear Steam Supply System. The structural responses at the pipe support points were obtained from a time history analysis of a three dimensional model of the containment and internal structure of a PWR. The three components of seismic response at the support attachment points were calculated separately. The key characteristic of this building analysis is that some of the support attachment locations exhibit peak accelerations an order of magnitude greater than at other points. This occurs because the floors are raised from different types of structural members. The support grouping used in the time history, response spectrum and Method 4 static response calculations are given in Table 4.7. This table also includes the support grouping based on elevations used to calculate the pseudo-static response by Method 5.

In the BM2 evaluation, the piping system is assumed to be part of a BWR (Mark II) nuclear steam supply system. The structural responses were obtained from the time history analysis of a stick model of a BWR nuclear structure, each mass point representing a floor level in the building. This corresponds to the conventional approach used in the nuclear industry to develop the floor response spectra. Only a horizontal analysis of the model was performed, and the acceleration and relative displacement responses of different mass points were obtained in that horizontal direction. The same input was used in the other horizontal direction, while 2/3 of that response was used in the vertical direction. The three input components of the acceleration used in the piping analysis are then statistically correlated.

The support groups used for the time history, dynamic and Method 4 static response calculations are given in Table 4.8. For the Method 5 static response calculation, the grouping by elevation was taken identical to that used in the BM1 evaluation, Table 4.7.

The piping for both evaluations consisted of 6 in. and 2 in., Sch. 40, carbon steel pipe. The configuration corresponded to an actual piping system in a nuclear power plant. For the evaluations, all supports were taken as rigid.

Table 4.7 BM1 Model, Support Groups

Group No.	Pipe Support Location and Direction	
	For T.H., Dynamic and Method 4 Static Calculations (by attachment point)	For Method 5 Static Calculations (by elevation)
1	29XZ*, 29Y, 37XZ, 37Y	6XZ, 6Y
2	16XZ, 16Y, 25X, 25Y, 25Z	1X, 1Y, 1Z
3	6XZ, 6Y, 15XZ, 15Y, 55X, 55Y	15XZ, 15Y, 16XZ, 16Y, 25X, 25Y, 25Z, 29XZ, 29Y, 32XZ, 32Y, 37XZ, 37Y, 43XZ, 43Y, 48Y
4	1X, 1Y, 1Z, 32XZ, 32Y, 60X, 60Y, 60Z	55X, 55Y
5	43XZ, 43Y, 48Y	60X, 60Y, 60Z

*29XZ refers to a skew support at node 29 in XZ plane.

Table 4.8 BM2 Model, Support Groups Based on Assumed Attachments Points

Group No.	Pipe Support Location and Direction
1	1X, 1Y, 1Z, 6XZ*, 6Y, 16XZ, 16Y
2	15XZ, 15Y, 25X, 25Y, 25Z, 29XZ, 29Y, 37XZ, 37Y
3	32XZ, 32Y, 43XZ, 43Y, 48Y
4	55X, 55Y, 60X, 60Y, 60Z

*6XZ refers to a skew support at node 6 in XZ plane.

The first fifteen natural frequencies of this system range from 5.052 Hz to 48.01 Hz. Therefore this system could be characterized as a rigid system, when compared to the other models considered in this study. The frequencies are evenly spaced with nine modes occurring below 33 Hz.

4.2.3 BM3 Model

The BM3 piping model, shown in Figure 4.5, is a modified configuration of a true piping system in the HFBR Test Reactor Facility at BNL. It consists of 3 in., 4 in. and 8 in., Sch. 40, stainless steel pipe. It is a very simple model exhibiting 23 natural frequencies in the range 2.907 Hz to 39.82 Hz. From the distribution of these natural frequencies one could categorize this as a moderately stiff system with most frequencies widely spaced.

The structural input for this model was derived from, a two-dimensional frame model with soil springs of the HFBR reactor internal structure. The effect of mass from the contained structure was included in the structural model. Each floor was assumed to be rigid, and hence, all masses attached to the floor have identical motions. The ground motion to this model was an artificial acceleration time history developed from a R.G. 1.60 design spectrum for a 0.2g peak g-level. Only the horizontal responses of the floor levels were obtained from the time history analysis. In the piping analysis, the same input was used in the two horizontal directions with 2/3 of it imposed in the vertical direction.

The grouping of supports for this model are summarized in Table 4.9. Unlike the other models, only two groups were formed in this evaluation and used in the time history, response spectrum and the Method 4 static response calculations. For estimates for the Method 5 pseudo-static calculation, four groups were formed conforming to the number of floor elevations spanned.

It should be noted that, since in the time history analysis of this system only two support groups were used, all supports in each group were subjected to the same relative displacements irrespective of their grouping in the different methods of evaluating the static response. However, the phasing between supports were simulated, as described in Section 3.2, for the different methods.

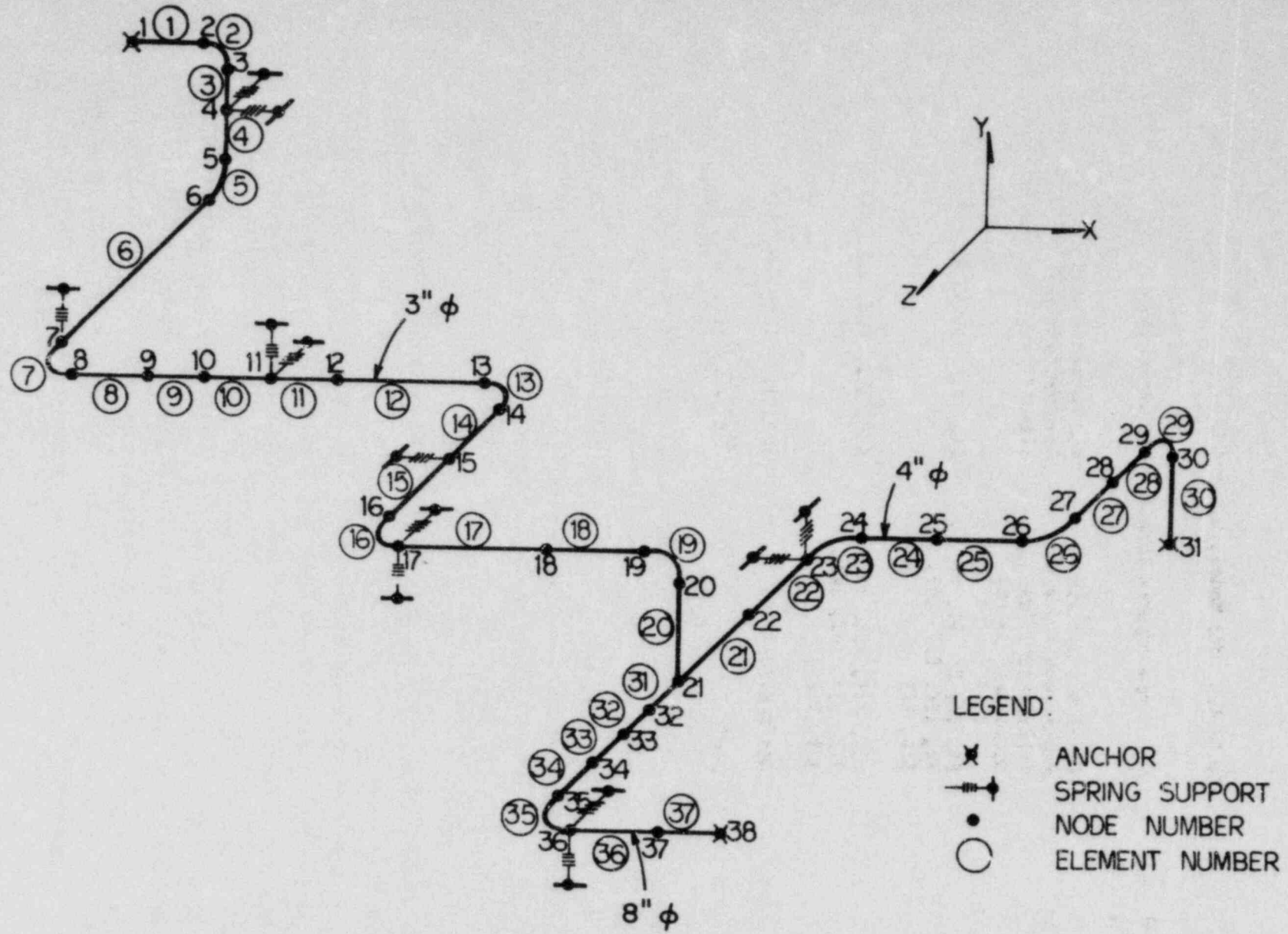


Figure 4.5 - BM3 Piping Model

Table 4.9 BM3 Model, Support Groups

Group No.	Pipe Support Location and Direction	
	For T.H., Dynamic and Method 4 Static Calculations (by attachment point)	For Method 5 Static Calculations (by elevation)
1	1X, 1Y, 1Z, 4X, 4Z, 7Y, 11Y, 11Z, 15X, 17Y, 17Z	1X, 1Y, 1Z, 4X, 4Z, 7Y
2	23X, 23Y, 31X, 31Y, 31Z, 36Y, 36Z, 38X, 38Y, 38Z	11Y, 11Z, 15X, 17Y, 17Z
3	Don't Exist	36Y, 36Z, 38X, 38Y, 38Z ,
4	Don't Exist	23X, 23Y, 31X, 31Y, 31Z

4.3 Response Evaluation, All Models

All models were assumed to be linearly elastic. Supports were modeled as either rigid or with a linear spring to simulate their stiffness. Constant and variable spring hangers were not included in any of the models. The stiffness formulation for curved pipe (elbow or bend) included the stiffening effect of internal pressure. The pipe elements used in the BNL computer program 'PSAFE2' are similar to those used in SAP V, a well recognized, all purpose finite element code for structural analysis. Valves were modeled as pipe elements with 2 times the pipe wall thickness and a lumped mass at the valve center of gravity.

The PSAFE2 computer code for piping analysis has been used extensively at BNL under the Piping Benchmark program. The basic algorithms in this program are updated versions of the SAP IV algorithms developed at the University of California, Berkley. The independent multiple support motion formulations, as described in Section 2, were implemented into this program by BNL. The validity of these methods has been demonstrated by comparison to test results, as well as analytical results, under the Piping Benchmark program.

The pipe response quantities considered in the study of each piping model are summarized in Table 4.10. Static displacement responses for the LLNL models were excluded, because the time history calculations performed by LLNL for these include the rigid body motions of the structure and as such, were inappropriate for the static response calculations. For the same reason the LLNL estimates for total displacement were also excluded. The pipe resultant moment considered is the vector sum of the three component moments at each location.

In order to perform the fourteen combination sequences, as described in Section 3.1, for predicting the dynamic component of the response, the modal responses given in Equation (2.14) for each support group, for each direction of excitation, were extracted from the piping analysis (PSAFE2 analysis) for further manipulations. These responses included the displacements, both static and dynamic accelerations, pipe resultant moments and support forces. The computer program 'DISP' was used to process the displacement and accelera-

Table 4.10 Pipe Response Parameters Considered in the Study

Response Parameters	LLNL Model [†]		ZBEND*	BNL MODELS		
	RHR	AFW		BM1	BM2*	BM3*
<u>Dynamic Responses</u>						
Displacements	yes	yes	yes	yes	yes	yes
Accelerations	yes	yes	yes	yes	yes	yes
Pipe Moments	yes	yes	yes	yes	yes	yes
Support Forces	yes	yes	yes	yes	yes	yes
<u>Static Responses</u>						
Displacements	no	no	yes	yes	yes	yes
Accelerations	yes	yes	yes	yes	yes	yes
Pipe Moments	yes	yes	yes	yes	yes	yes
Support Forces	yes	yes	yes	yes	yes	yes
<u>Total (Combined) Response</u>						
Displacements	no	no	no	no	no	no
Accelerations	yes	yes	yes	yes	yes	yes
Pipe Moments	yes	yes	yes	yes	yes	yes
Support Forces	yes	yes	yes	yes	yes	yes

† Responses at selected pipe locations.

* The dynamic response calculations do not include the URS analysis.

tion data from PSAFE2 and provided as output the displacements, static and dynamic accelerations, and combined acceleration responses calculated for the 14 different dynamic cases. In a similar fashion the pipe moments and the support forces were processed with the program 'FORCE'. It is to be noted that in all these summations, the modal combinations and the directional combinations were performed according to R.G. 1.92 with a modal clustering factor of 0.1. The computer files obtained from these two programs were then processed with the program 'COMPARE' to calculate the percentage of exceedance of the predicted responses using the relation:

$$\% \text{ of Exceedance} = \frac{\text{Predicted Value} - \text{True (T.H.) Value}}{\text{True (T.H.) Value}} \times 100 \quad (4.1)$$

The final results were then printed in tabular form (see Appendix I). Thus, the calculation of one response parameter for the RHR and AFW models, using one combination sequence, required the post-processing of 486 and 1620 modal response quantities respectively.

To calculate the pseudo-static component of response, influence parameters, given in Table 2.5, were obtained for each model, from the independent response spectrum analysis. These were determined for the displacements, pipe resultant moments, and support forces. Using the actual structure point relative displacements, computer programs 'STD' for displacement, 'STM' for pipe moments, and 'STF' for support forces were used to develop the predicted static response for the five methods described in Section 3.2. These outputs were then processed with the programs, 'TABD' for displacement, 'TABM' for pipe moments, and 'TABF' for support forces, to compute the percentage of exceedance per Equation 4.1. The final results were displayed in tabular form (see Appendix II).

The combined responses were next obtained using the procedures described in Section 3.3. The predicted values were compared with the true time history values and the percentage of exceedance calculated using Equation (4.1). A modified version of the 'COMPARE' was then used to print the results in tabular form (see Appendix III).

It is to be noted that for the LLNL models, only the predicted pipe response quantities were calculated by BNL, whereas, for the BNL models both the structure and piping analyses were performed at BNL. The final tables in the appendices include a column denoting the time history (or true) response of each piping system, as well as the percentage of exceedance over the true value for all cases studied.

5.0 DISCUSSION OF RESULTS

The independent support motion analysis method, in which each support or group of supports is excited by an independent set of time history or response spectra inputs, was chosen for this study. It was selected, since it was presumed to provide a better estimate of the true response than that predicted with the accepted uniform support motion method, while also permitting a separate calculation of, and a clear delineation between, the inertial (dynamic), pseudo-static (SAM) and combined (total) response components.

The objectives of the study were:

Considering the dynamic component of response, spectrum method,

- to establish a group combination strategy
- to establish a strategy for the sequence of combination between groups, modes and directions
- and compare the results obtained to those developed using current SRP guidelines.

Considering the pseudo-static component of response

- to develop a procedure to compute the SAM component of response
- and compare the results obtained to those developed using current SRP guidelines

And considering the total response

- to evaluate the total response using SRSS combination between the dynamic and pseudo-static response components
- and compare the results obtained to those developed using current SRP guidelines.

The formulations presented in Section 2 of this report were used to separately determine the inertial and pseudo-static components of response. The dynamic component of response is due to the inertia of pipe masses with all supports considered fixed to the supporting structure. It produces stresses categorized as ASME primary stresses and can be used directly in the design equations. The pseudo-static component of response is due to the motion of the supports only, with no dynamic amplification due to mass inertia. It produces stresses categorized as ASME secondary stresses and can readily be used in the design equations. Because the independent support motion method provides separate predictions of each response component, its use allows the convenient evaluation of each analysis option studied.

The independent response spectrum method was used to calculate the dynamic component of response and to predict the influence coefficients used to evaluate the pseudo-static component of response. With this method, unlike the methods used in current practice, both components of response can be calculated in one analysis, and the results exhibit a uniform level of conservatism over the entire piping systems. Since each support is subjected to a true estimate of structural motion at that support attachment point, this procedure could yield more accurate and hence less conservative estimates of response. The additional computational cost involved in the use of this method of analysis compared to current methods is trivial.

The results presented in this section are discussed under three separate headings for the dynamic, pseudo-static, and combined response. The response parameters are the displacements, accelerations, resultant pipe moments and the support forces. All LLNL models were analysed for thirty-three earthquakes and statistical parameters, such as the mean and the standard deviations of these response quantities, are presented. For the BNL models, only the results of one seismic analysis for each are discussed. All predicted results are compared with those developed in accordance with current SRP recommendations.

5.1 Candidate Method Evaluation Criteria

The current design of piping in the nuclear industry is primarily based on the ASME stress equations available in ASME Section III of the Boiler and

Pressure Vessel Code. The ASME design philosophy requires that every point in a piping system must satisfy the stress allowable limits in the stress equations. If one point is found to have a resultant stress level greater than the allowables, then the piping system has to be redesigned in order to reduce or redistribute the stress levels to below the allowable limits. The redesign process may involve a rearrangement of the support locations and/or a re-routing of the piping. The same single point failure criteria has been used to evaluate the results of this study.

The basic results of the study are presented in table form in the appendices. These tables include a listing of the time history estimate of a response quantity, as well as percentage values for that quantity, for all the cases studies. The tabulated percentage values presented are the measure of the exceedance of the predicted response over the independent time history (true) result. If this value is equal to zero, then the predicted value is identical to the true response. If the value is negative, the results corresponding to the candidate method or procedure underpredict the true response. In each category of response (displacement, acceleration, resultant pipe moment or support force), the lower level of exceedance values predicted by the different cases or methods govern the overall design of the particular piping system under investigation. This is in agreement with the ASME design principle of control by a single point failure criteria. The level of acceptability of any candidate procedure is governed by those predicted values near the true response (lower order of magnitude values in the tables). Some of these results are depicted graphically in this section.

The figures in this section depict only the results for the LLNL models. Tabulated results for the BNL models are presented in the appendices. The abscissae of each figure represents the different cases for the dynamic or the total response and the different methods of evaluation for the static response. The ordinate represents the degree of exceedance associated with each of the candidate procedures. The dashed horizontal line corresponds to the time history (TH) solution and is assumed to represent the true response. Only two to four response estimates for different points on the model are plotted. These data exhibit the least degree of exceedance for all points on the model. All other data for the respective response parameter would fall

above the plotted values. The data plotted then define the lower bound of the response parameter. Each plot entry shows a vertical line. The center of the line is the mean value, and the line extends one standard deviation above and below this value.

5.2 Dynamic Response Component

The dynamic component of response was predicted by 14 different procedures. A tabulated listing of all these results are presented in Appendix I. The prediction based on current practice as specified in the SRP is denoted "URS" and was based on a uniform response spectrum analysis using the envelope spectrum over all support groups designated for each model. The modal and directional combination adopted for these analyses were as given in the R.G. 1.92. The envelope spectra for the LLNL models was developed by enveloping all the broadened individual support spectra were not available. This may lead to some overprediction for the URS cases for the LLNL models. The envelope spectra for the BNL models was developed by enveloping all the raw spectra data followed by broadening per RG 1.122.

The results for the RHR model are shown in figures 5.1 to 5.4 while those for the AFW model are shown in figures 5.5 to 5.8. These include the displacement, acceleration, resultant pipe moment and support force response quantities. One should note that these results represent the mean value over thirty-three different earthquake analyses. Although the mean predicted responses are always above the time history results, the standard deviation associated with each mean shows the probability of underpredicting the true response. As can be noted, the URS method, and Case 1 and 2 corresponding to algebraic group combination, show a greater chance of underprediction, sometimes by a large margin. Cases 3 to 8, corresponding to the SRSS group combination, on the other hand, show less likelihood of underpredicting the true response. The results based on absolute group combination, cases 9-14, show no instances of underprediction. These result trends apply equally as well to the BNL models. As a further observation, for the RHR model, the URS results are comparable to those developed using SRSS group combination. This correspondence of results however, is not as evident for the AFW model.

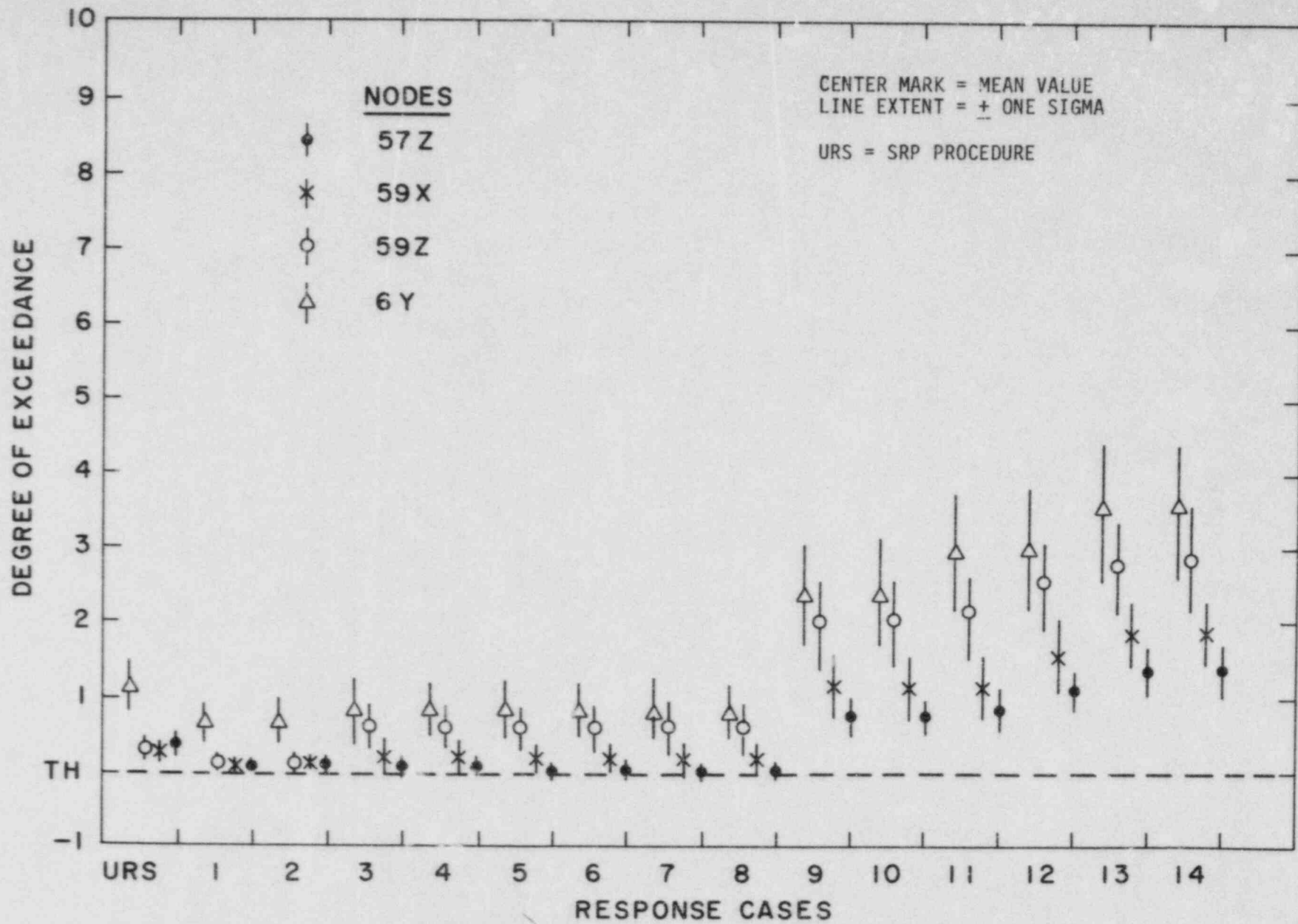


Figure 5.1 - Dynamic Displacement Response for RHR Model

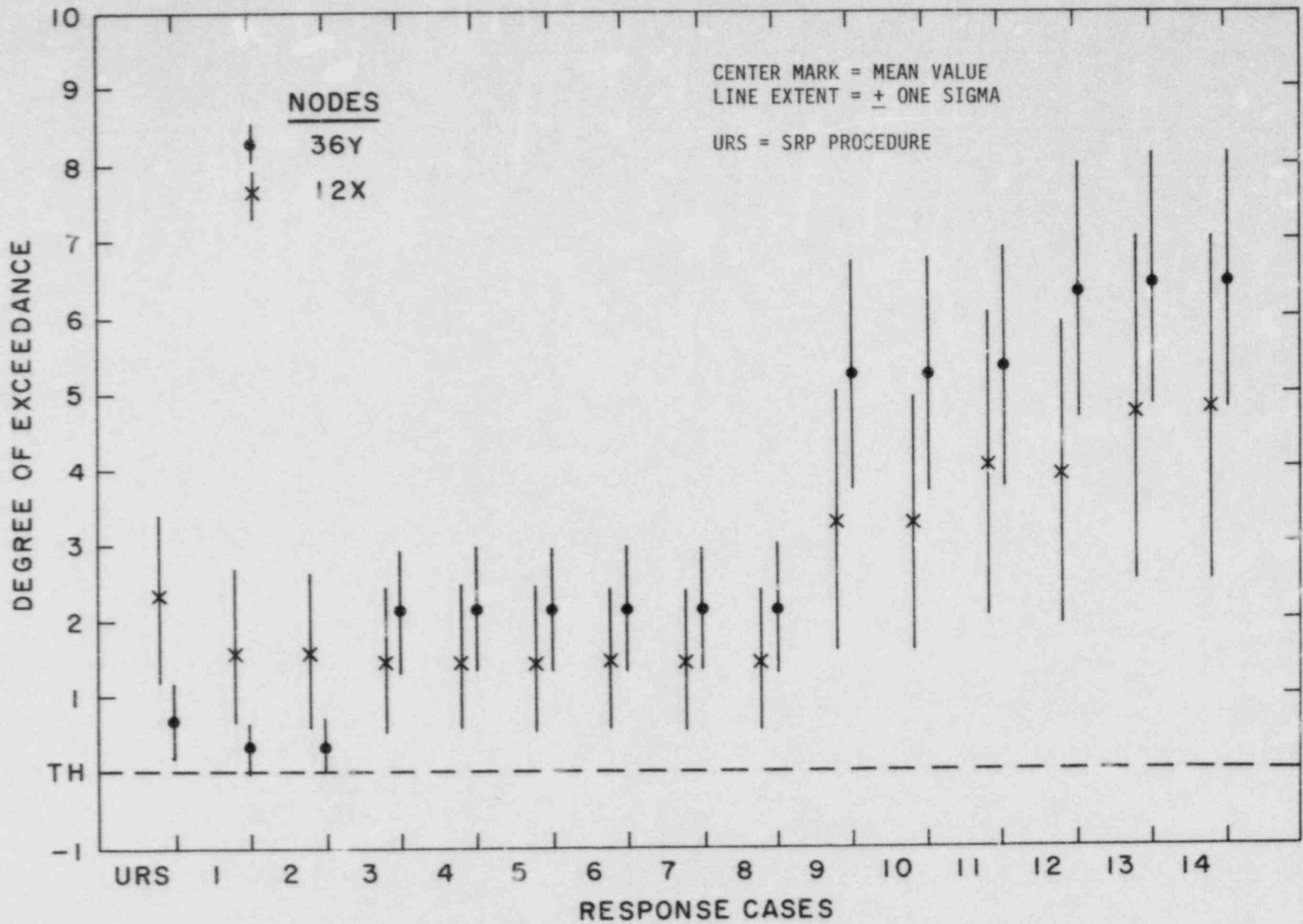


Figure 5.2 - Dynamic Acceleration Response for RHR Model

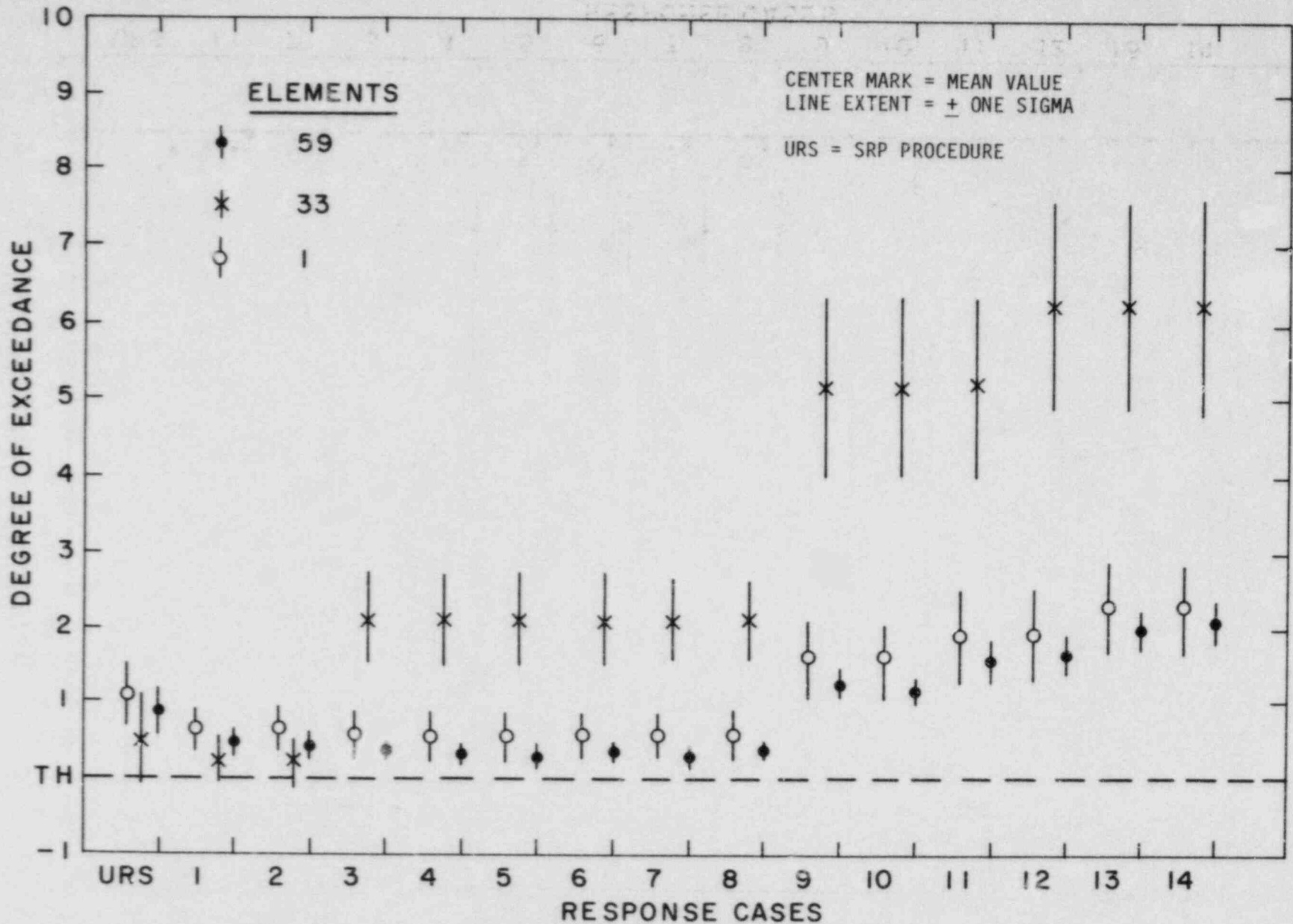


Figure 5.3 - Dynamic Pipe Resultant Moment Responses for RHR Model

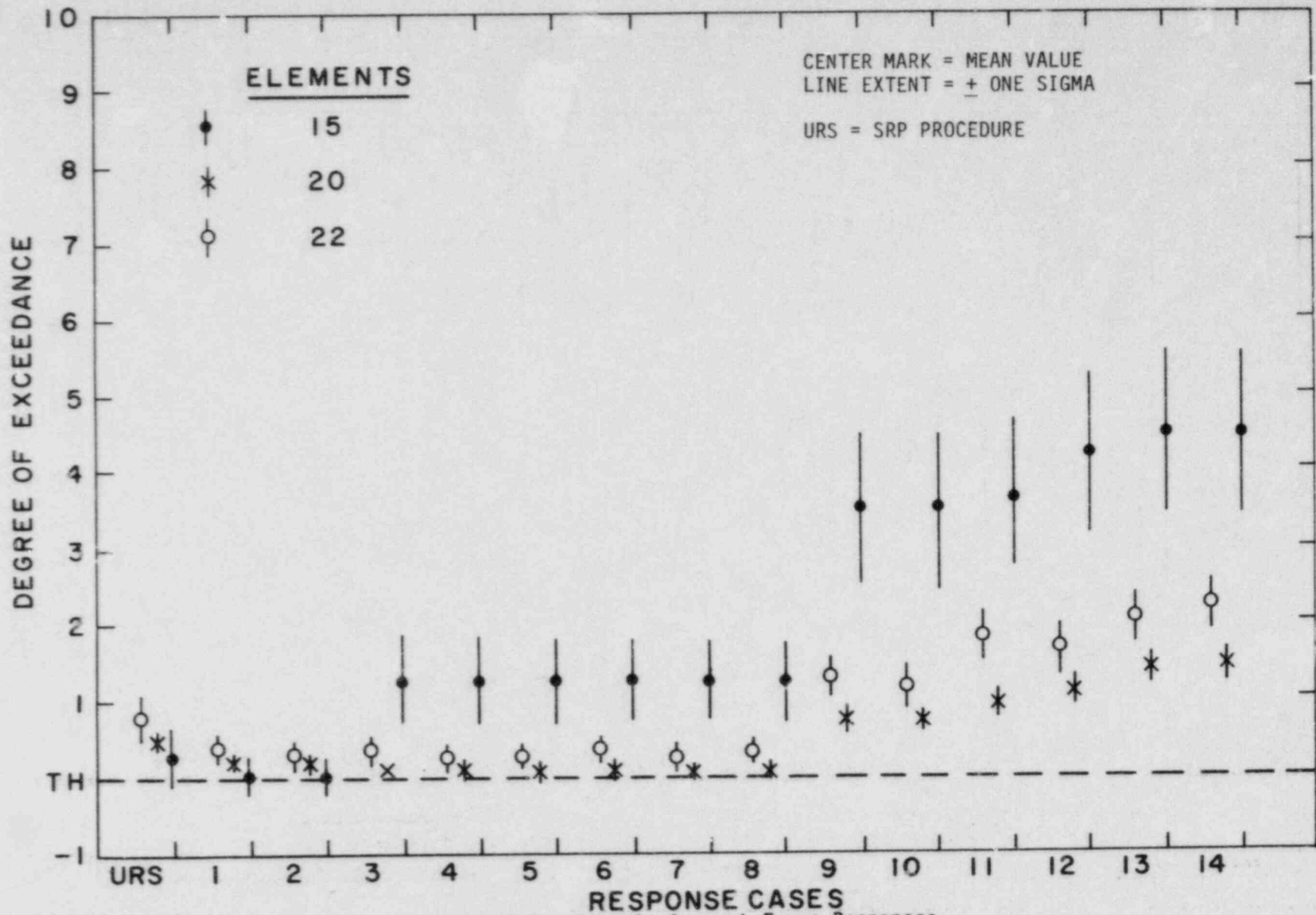


Figure 5.4 - Dynamic Support Force Responses for RHR Model

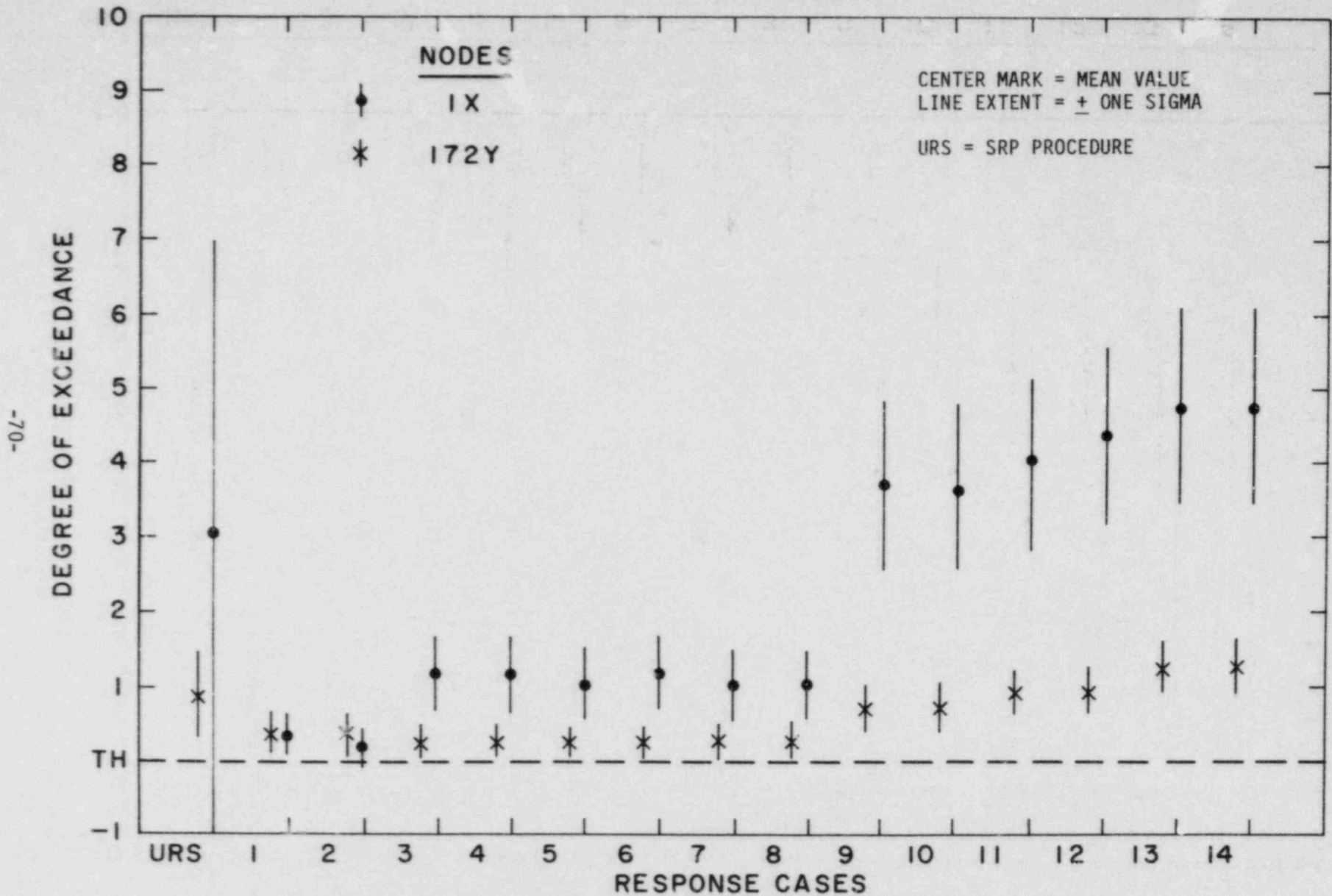


Figure 5.5 - Dynamic Displacement Responses for AFW Model

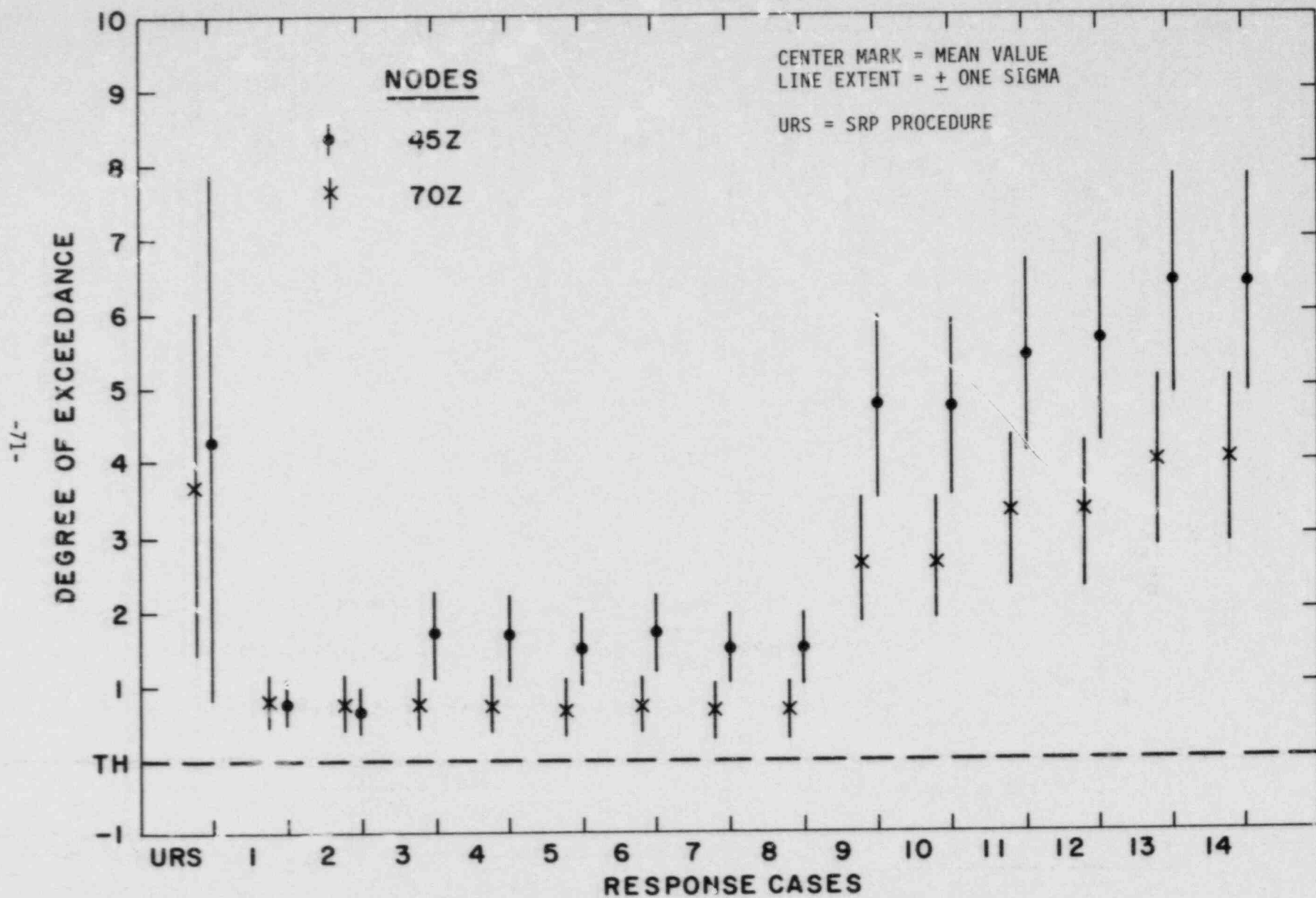


Figure 5.6 - Dynamic Acceleration Responses for AFW Model

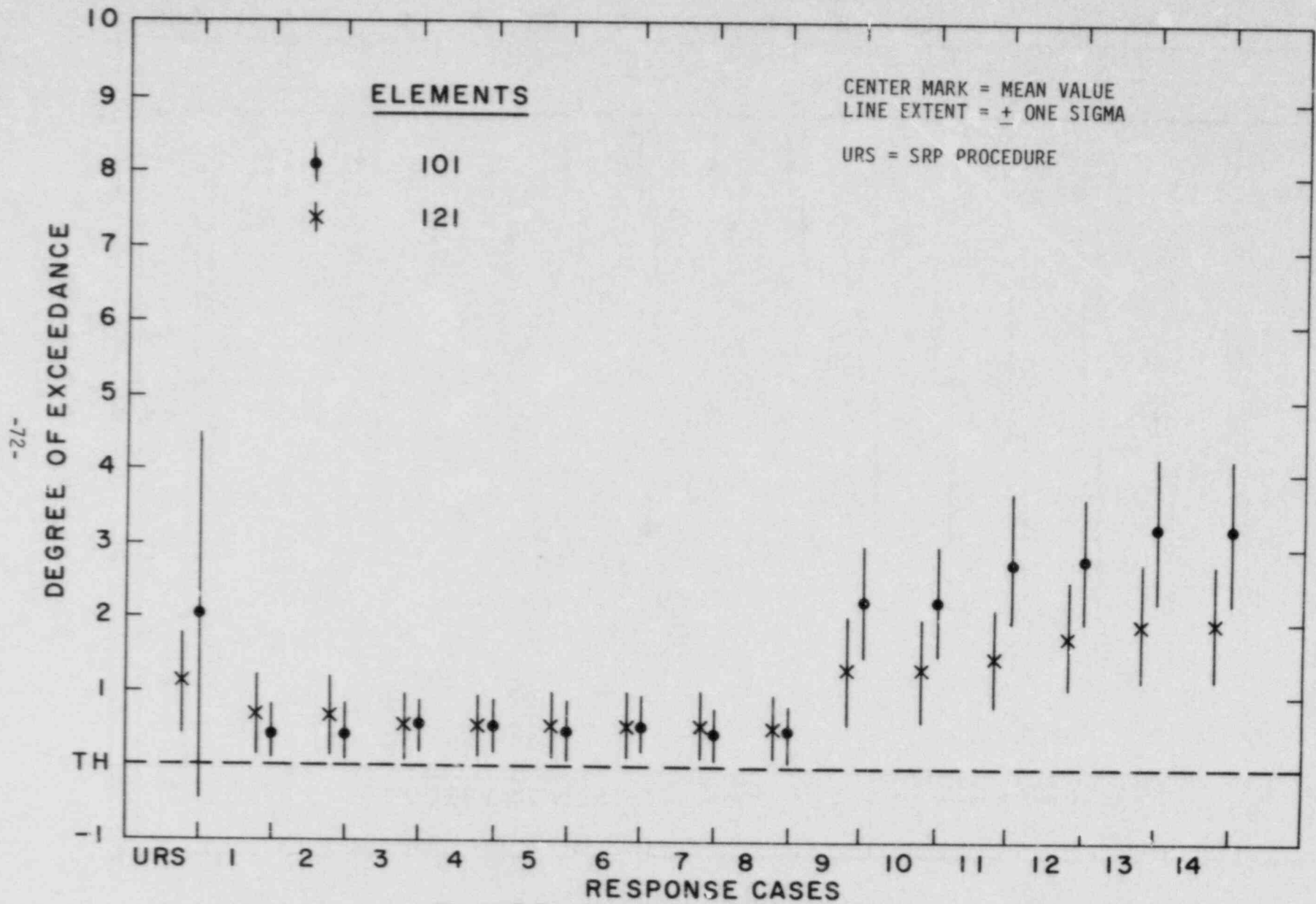


Figure 5.7 - Dynamic Pipe Resultant Moment Responses for AFW Model

REF ID: A60920 07013

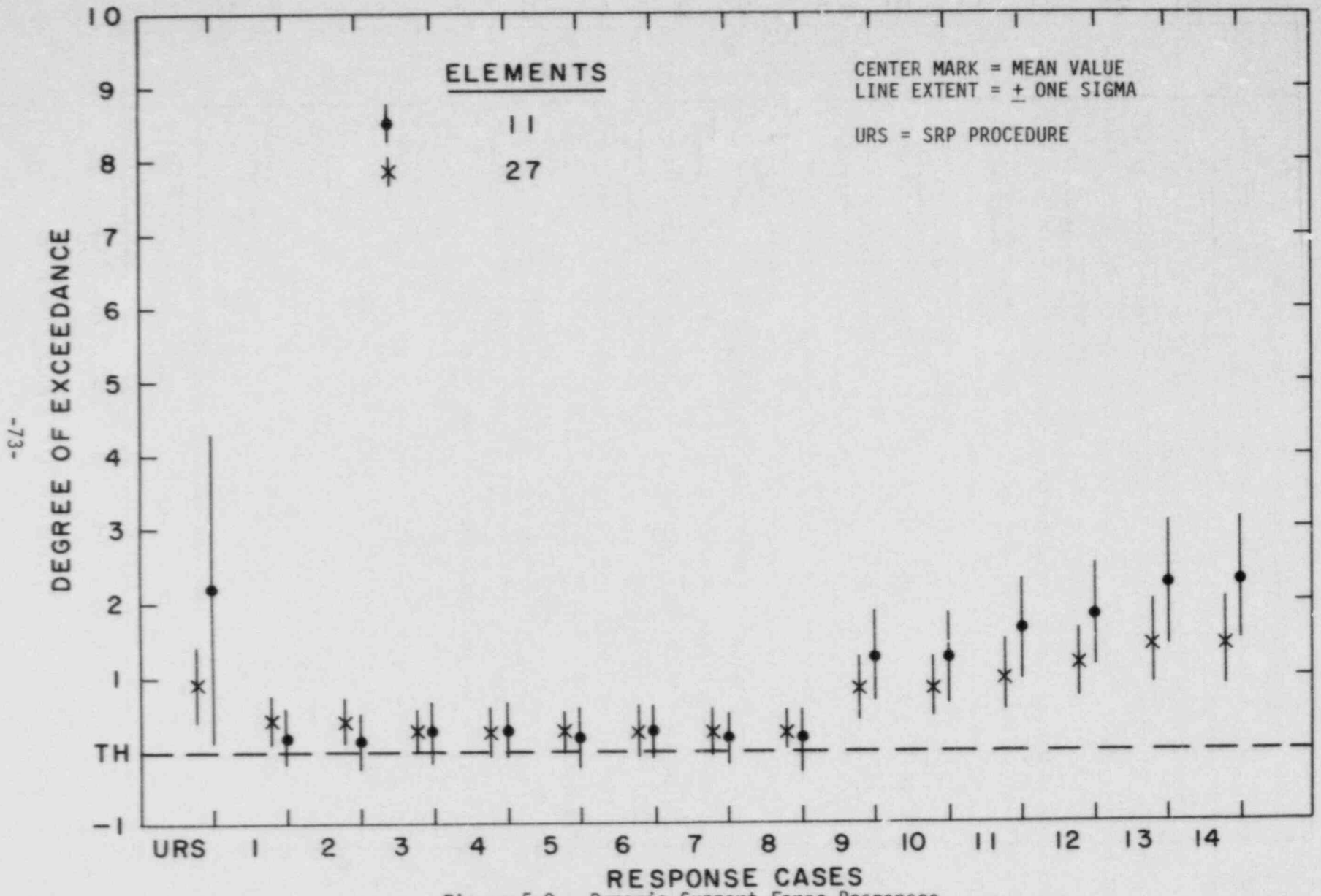


Figure 5.8 - Dynamic Support Force Responses for AFW Model

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In order to further assess the results, the distribution of all data in all models, both LLNL and BNL, are summarized in Table 5.1. Although fourteen different cases were considered to compute the dynamic response, in this study, the sequence of combination was found to have little effect on the resultant response. This table was therefore segregated into only the four grouping categories, namely, URS, algebraic, SRSS and absolute. The entries in the table signify the number of response predictions for each model-response parameter within the exceedance band signified. The number at the head of each table indicates the total number of predictions for each response parameter.

For the AFW and RHR models, the entries correspond to the means of the response parameters. The center vertical line at 0% exceedance level represents the time history estimate for a parameter. Any entry to the left of this line signifies underprediction of the response quantity, while any entry to the right signifies overprediction. As mentioned earlier in this report, one should keep in mind that there exists a large span of uncertainties of various levels associated with the seismic design of a piping system. Therefore, in our opinion, a 20% underprediction by any method does not disqualify the procedure. It is evident from this table that all methods, including the current SRP method, will generally provide a conservative estimate of a response quantity.

Based on an overall review of all the results for the dynamic component of response, the following observations were made:

- The sequence of combination between the modes, groups and direction of excitations is relatively unimportant
- The conservatism associated with the group combination methods was
 - algebraic combination: nonconservative at times
 - SRSS combination : nonconservative at times,
more conservative than ALG
 - ABS combination : always conservative

Table 5.1. Distribution of Response Estimates for the Dynamic Component of Response

EXCEEDED LEVEL		FREQUENCY OF OCCURRENCE																								DYNAMIC COMPONENT OF RESPONSE																													
		< -20%						-20% to -10%						-10% to 0%						0% to 100%						100% to 200%						>200%																							
		RHR		AFW		ZBEND		BM1		BM2		BM3		RHR		AFW		ZBEND		BM1		BM2		BM3		RHR		AFW		ZBEND		BM1		BM2		BM3		RHR		AFW		ZBEND		BM1		BM2		BM3							
MODEL		51	63	102	168	168	114	51	63	102	168	168	114	51	63	102	168	168	114	51	63	102	168	168	114	51	63	102	168	168	114	51	63	102	168	168	114	51	63	102	168	168	114	51	63	102	168	168	114						
DISPLACEMENTS	TOTAL NO.	0	0	-	0	-	-	0	0	-	0	-	-	0	0	-	0	-	-	45	5	-	43	-	-	6	9	-	56	-	-	0	49	-	69	-	-	0	49	-	69	-	-	0	49	-	69	-	-	0	49	-	69	-	-
	URS	0	0	-	0	-	-	0	0	-	0	-	-	0	0	-	0	-	-	51	60	88	87	18	71	0	3	14	38	19	33	0	0	0	38	131	10	0	0	0	38	131	10	0	0	0	38	131	10						
	ALGEBRAIC	0	0	0	3	0	0	0	0	0	2	2	0	0	0	0	0	0	0	14	53	93	55	9	54	22	17	0	60	29	47	15	0	0	53	128	13	15	0	0	53	128	13	15	0	0	53	128	13						
	SRSS	0	0	0	0	0	0	0	0	9	0	2	0	0	0	0	0	0	0	0	6	56	20	5	40	1	7	46	19	3	40	50	50	0	129	160	34	50	50	0	129	160	34	50	50	0	129	160	34						
ABSOLUTE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	-	9	0	0	15	0	-	23	-	-	31	63	-	136	-	-	31	63	-	136	-	-	31	63	-	136	-	-							
ACCELERATION	TOTAL NO.	0	0	-	0	-	-	0	0	-	0	-	-	0	0	-	0	-	-	17	16	53	24	2	5	13	22	16	41	33	19	21	25	32	101	133	90	21	25	32	101	133	90	21	25	32	101	133	90						
	URS	0	0	-	0	-	-	0	0	-	0	-	-	0	0	-	0	-	-	0	0	3	2	0	0	0	9	66	7	0	6	17	27	8	50	38	12	34	27	29	111	130	96	34	27	29	111	130	96						
	ALGEBRAIC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	34	6	0	3	51	63	36	162	168	106	51	63	36	162	168	106												
	SRSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32	0	0	5	0	0	34	6	0	3	51	63	36	162	168	106	51	63	36	162	168	106												
ABSOLUTE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32	0	0	5	0	0	34	6	0	3	51	63	36	162	168	106	51	63	36	162	168	106													
RESULTANT MOMENTS	TOTAL NO.	22	23	39	55	55	37	22	23	39	55	55	37	22	23	39	55	55	37	22	23	39	55	55	37	22	23	39	55	55	37	22	23	39	55	55	37	22	23	39	55	55	37												
	URS	0	0	-	0	-	-	0	0	-	0	-	-	0	0	-	0	-	-	14	0	-	8	-	-	8	5	-	16	-	-	0	18	-	31	-	-	0	18	-	31	-	-												
	ALGEBRAIC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	19	39	22	0	19	0	4	0	25	4	16	0	0	0	8	51	2	0	0	0	8	51	2												
	SRSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	19	39	12	1	12	13	4	0	23	1	17	7	0	0	20	53	8	7	0	0	20	53	8												
ABSOLUTE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	3	0	5	1	5	19	7	1	19	21	18	0	45	54	13	21	18	0	45	54	13													
SUPPORT FORCES	TOTAL NO.	15	28	16	32	32	30	15	28	16	32	32	30	15	28	16	32	32	30	15	28	16	32	32	30	15	28	16	32	32	30	15	28	16	32	32	30	15	28	16	32	32	30												
	URS	0	0	-	0	-	-	0	0	-	0	-	-	0	0	-	0	-	-	15	1	-	9	-	-	0	4	-	14	-	-	0	23	-	9	-	-	0	23	-	9	-	-												
	ALGEBRAIC	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	15	25	16	23	4	22	0	3	0	3	3	8	0	0	0	6	24	0	0	0	0	6	24	0												
	SRSS	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	3	27	15	14	3	21	8	1	0	14	6	9	4	0	0	4	22	0	4	0	0	4	22	0												
ABSOLUTE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5	5	5	1	14	2	1	11	6	0	12	13	22	0	21	28	4	13	22	0	21	28	4													

Note: (1) A hyphen indicates that the case was not included in the evaluation.
 (2) For the RHR and AFW models the mean responses are presented.

- Uniform Response Spectrum (URS) method results vary from very conservative to nonconservative, but within an acceptable range
- All methods are conservative if the piping system is contained in a single structure
- The degree of exceedance (conservatism) for displacements, pipe moments and support forces is markedly reduced at the interface between structures
- The dynamic accelerations are not significantly affected by structural interfaces
- The degree of exceedance varies inversely with the overall rigidity of the piping system
- The degree of exceedance varies directly with the degree of correlation of the inputs
- The degree of exceedance becomes smaller for large response quantities.

5.3 Pseudo-Static Response Component

The evaluation of the pseudo-static component of seismic response depends on the magnitude of the support displacements and their phasing. With respect to the magnitude, the SKP procedure allows one to obtain the support displacements either from time history analyses of building structures or from the floor response spectra of individual buildings. It is recognized that the latter method would provide very conservative estimates of the support motions. This is due to the fact that the ZPA Spectrum Value corresponds to

the floor motion plus the rigid body motion of the building structure. The rigid body effects lead to large overpredictions of SAM response. In this study, the support displacements were relative displacements obtained from the time-history analysis of the structures and exclude the rigid body effects. In order to account for the phasing between supports, nine different methods were evaluated. The results of this study are presented in tabular form in Appendix II.

In a format similar to that used for the dynamic component of response, figures 5.9 to 5.14 show the lower bound estimates of the pseudo-static component of response for the RHR and AFW models. As mentioned earlier, the pseudo-static displacements for these two models were not calculated. It is to be noted that the pseudo-static acceleration response estimates were calculated using the independent response spectrum method with the ZPA values of the individual group spectra. As such, the calculation of this response component corresponds to the 14 cases used to predict dynamic response and not to the five candidate static response evaluation procedures. These results are depicted in figures 5.9 and 5.12. The remaining figures (5.10, 5.11, 5.13 and 5.14) show the resultant pipe moment and the support force response for the two models. With the exception of the column designated 'MAX. F' (2nd from left), all other data represent the predicted percentage of exceedance for the candidate analysis methods described earlier. The 'MAX.F' column denotes the amplification factor which must be applied to the response predicted with the time history sampling procedure (Method 1) to increase the response estimate to the time history value.

The predictions of static acceleration based on the algebraic and SRSS group combinations (cases 1-9) were found to be unconservative while the predictions based on the absolute sum method were found to be always conservative. The 'URS' method, was found to provide generally conservative estimates of this response component with a slight chance of underprediction. These estimates seem most affected by the ZPA value of the response spectra. Since the envelope spectra is used in the URS method, the ZPA value used is an envelope value and provides conservative results. In all of the other cases, the use of the individual spectra ZPA values reduce the level of conservatism.

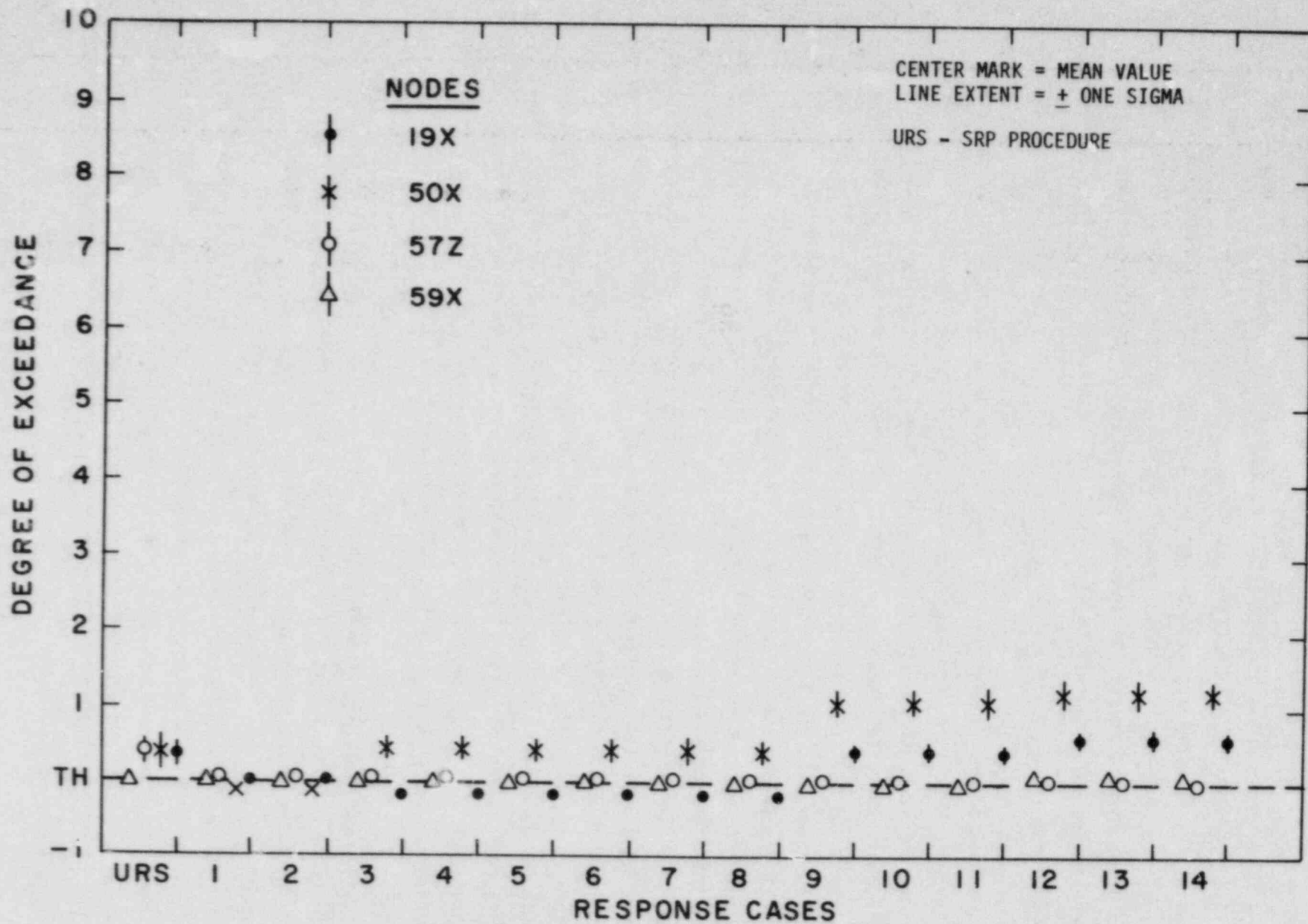


Figure 5.9 - Static Acceleration Response for RHR Model

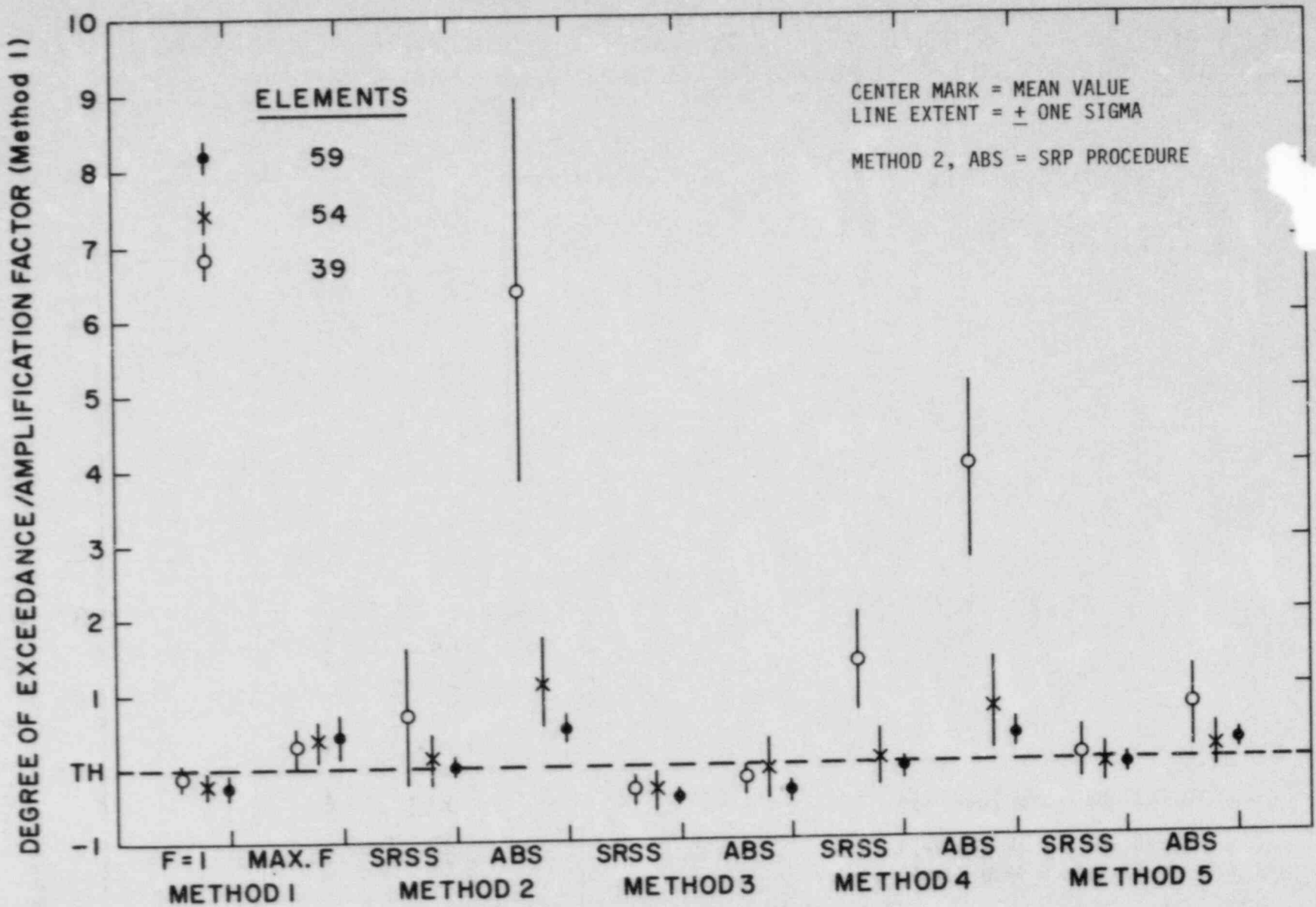


Figure 5.10 - Static Pipe Resultant Moment Responses for RHR Model

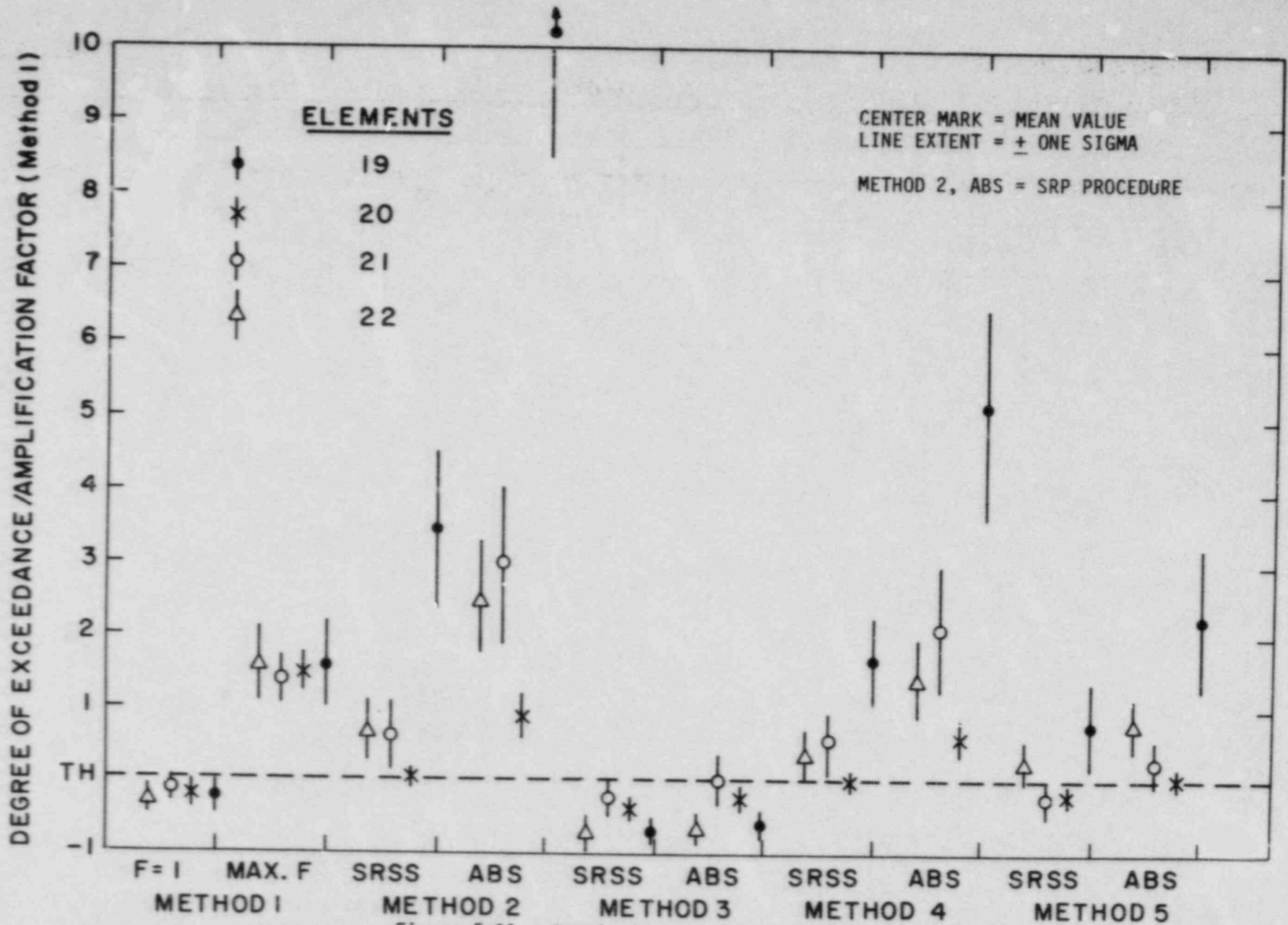


Figure 5.11 - Static Support Force Responses for RHR Model

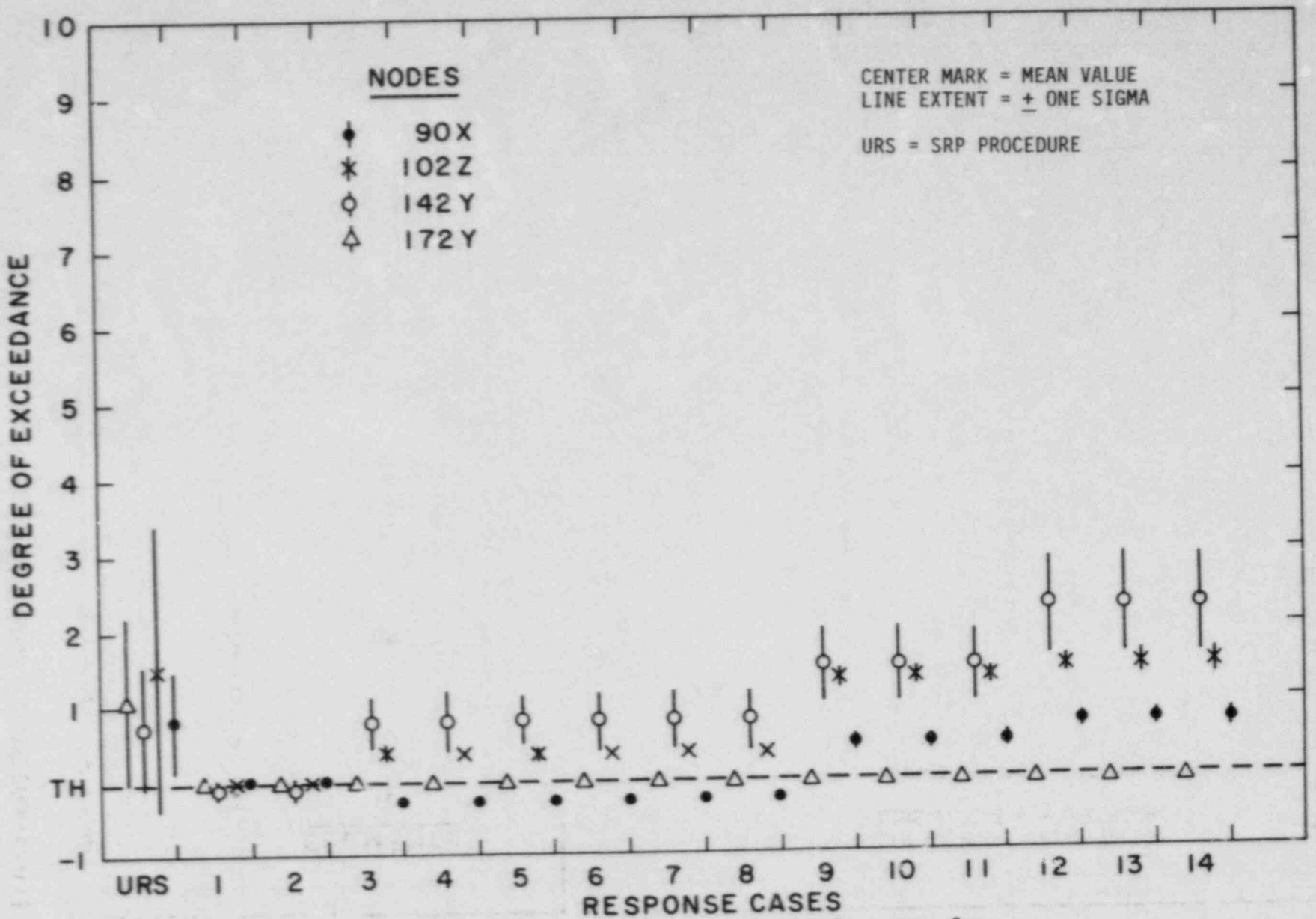


Figure 5.12 - Static Acceleration Responses for AFW Model

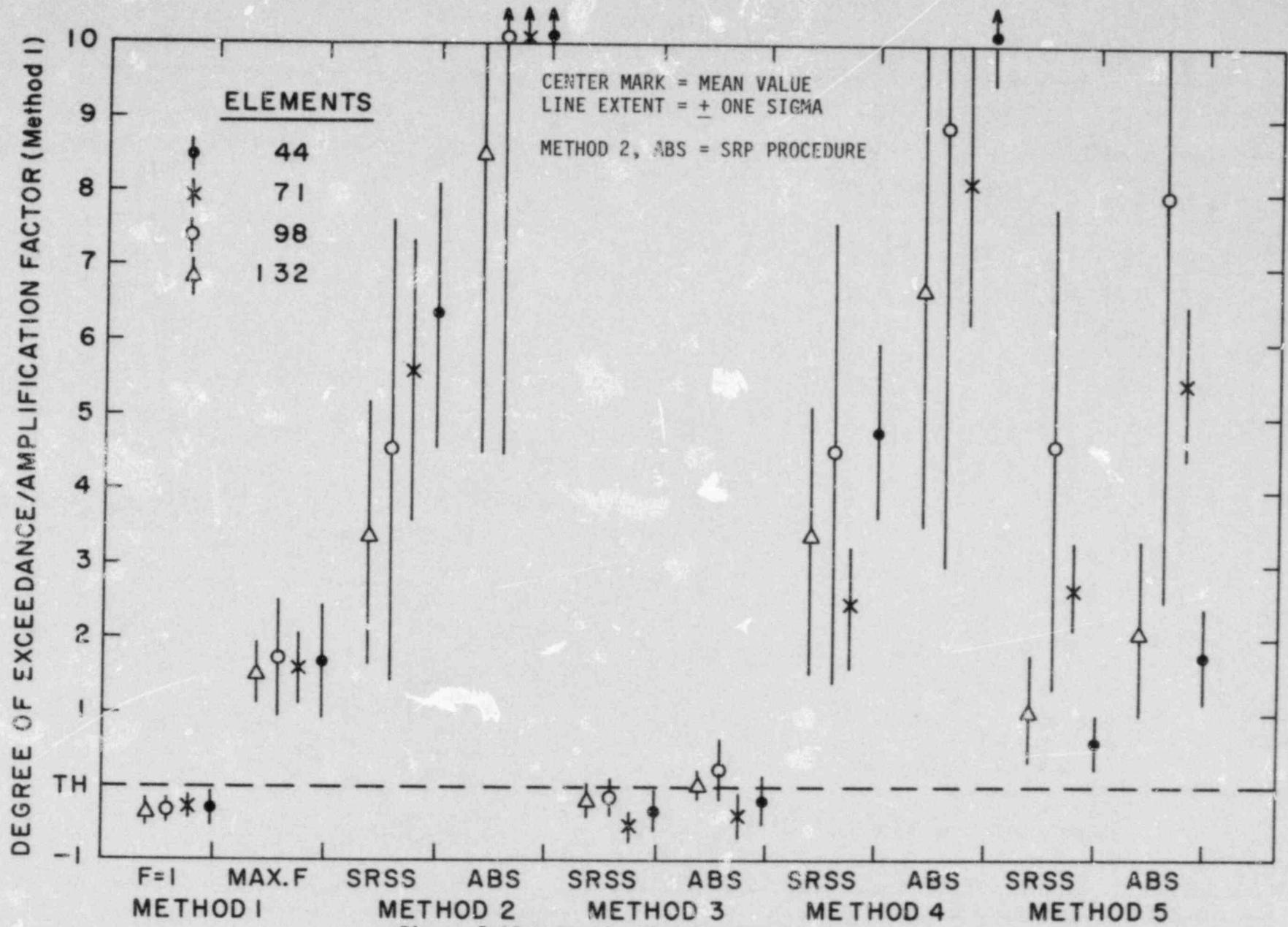


Figure 5.13 - Static Pipe Resultant Moment Responses for AFW Model

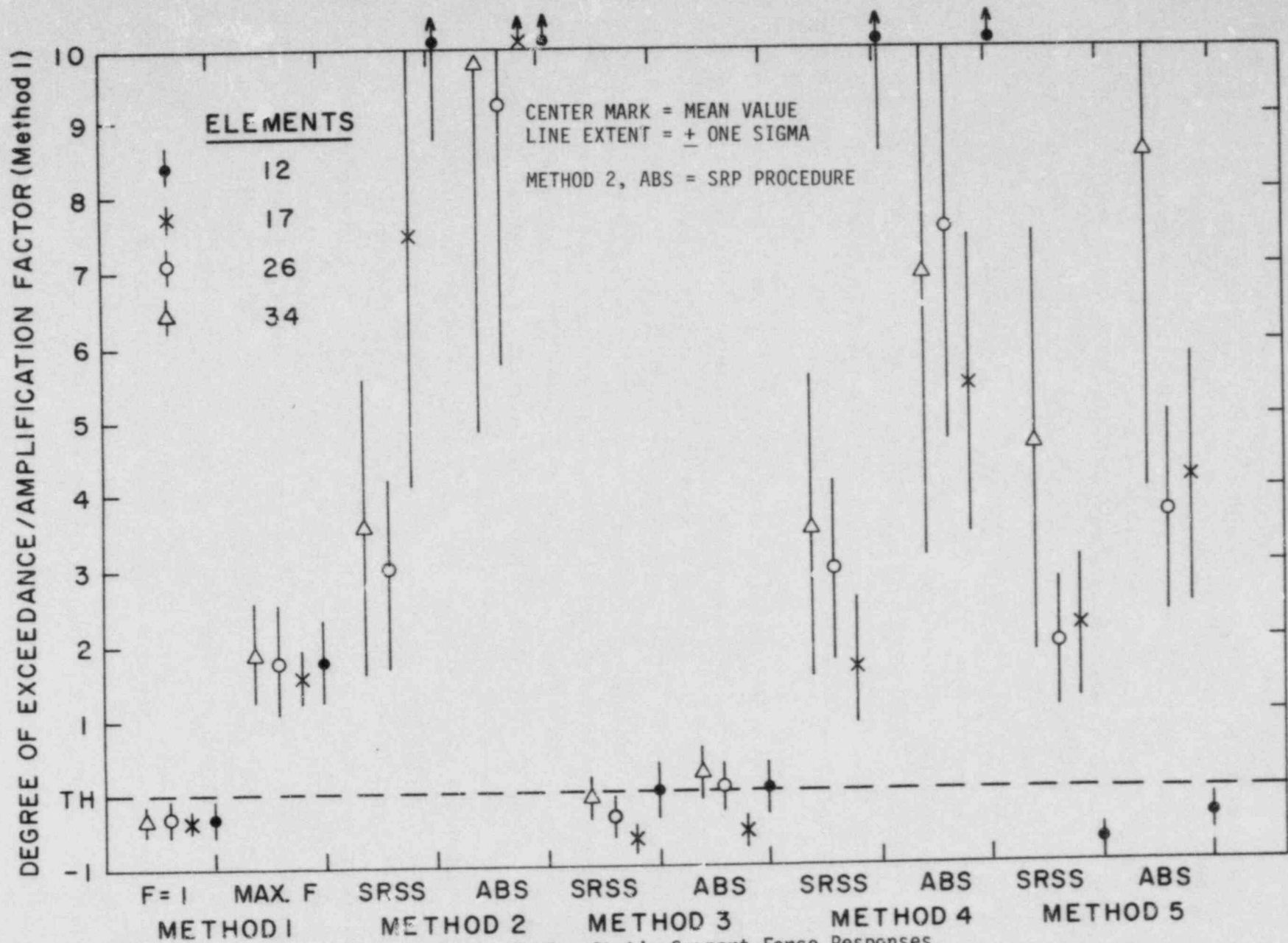


Figure 5.14 - Static Support Force Responses for AFW Model

Considering the other response components, the results based on time history sampling, Method 1 ($F=1$), should, and did, underestimate the true response. This was expected since only a limited sample of the time history record was used. Table 5.2 provides the ranges of the factor 'F', for all models, with which the estimated value must be amplified to correctly predict the time history response with this method.

Of the other four methods, Method 2 provides the most conservative estimates of pseudo-static response. When used with the absolute sum option, this method meets the SRP requirement and always provides very conservative response estimates. Adoption of this calculational mode presumes all the support motions to be out of phase. If the SRSS combination procedure is used, the exceedance levels are at times reduced by half.

The response estimates developed, using Method 3 for the two LLNL models, are below the true value. As discussed earlier, this method is based on the assumption that a simplified stick model of a building structure, with a first mode similar to a cantilever beam, would adequately simulate the structure. In that case, all support points would be in phase in each spatial direction. The LLNL models do not conform to this assumption and the results were consequentially poor. However, for the EM2 and 3M3 models, this procedure with the absolute sum option, provides reasonable estimates of static response.

The response estimates based on Method 4 are predominately conservative. The response estimates based on Method 5 show the same trends but are less conservative. As noted earlier, the former method is felt to be the most appropriate, and the results substantiate this. Method 5 is felt to provide a preliminary estimate of the Method 4 results and again the results substantiate this. As envisioned, these two methods would be used in conjunction with each other, Method 5 for preliminary design and Method 4 for final design. In this mode they would provide the most appropriate results.

Table 5.3 provides the distribution of the predicted responses for all models in the study, in six different exceedance level ranges. From the table it should be evident that the response predicted with Method 3 or 5 with the

Table 5.2 Multiplication Factor Range, Method 1, Static Component

Response Parameter	RHR	AFW	ZBEND	BM1	BM2	BM3
Displacements:	-	-	1.1-3.22	1.4-3.5	1.9-2.4	1.4
Resultant Pipe Moments:	1.18-1.39	1.5-1.72	1.1-1.8	1.7-3.4	2.0-2.5	1.5
Support Forces:	1.17-1.56	1.51-1.82	1.1-1.65	1.6-3.8	2.1-2.4	1.4-1.9

Note: A hyphen indicates that the case was not included in the evaluation.

Table 5.3. Distribution of Response Estimates for the Static Component of Response.

		FREQUENCY OF OCCURRENCE															STATIC COMPONENT OF RESPONSE																				
EXCEEDENCE LEVEL		< -20%					-20% to -10%					-10% to 0%					0% to 100%					100% to 200%					>200%										
MODEL		RHR	AFW	ZBEND	BM1	BM2	BM3	RHR	AFW	ZBEND	BM1	BM2	BM3	RHR	AFW	ZBEND	BM1	BM2	BM3	RHR	AFW	ZBEND	BM1	BM2	BM3	RHR	AFW	ZBEND	BM1	BM2	BM3	RHR	AFW	ZBEND	BM1	BM2	BM3
ACCELERATION	TOTAL NO.	51	63	102	168	168	114	51	63	102	168	168	114	51	63	102	168	168	114	51	63	102	168	168	114	51	63	102	168	168	114	51	63	102	168	168	114
	METHOD 2: SRSS	-	-	0	15	2	16	-	-	7	23	30	16	-	-	18	26	25	10	-	-	77	102	89	72	-	-	0	2	21	0	-	-	0	0	1	0
	ABS	-	-	0	0	0	0	-	-	0	0	0	0	-	-	0	0	0	0	-	-	102	80	76	105	-	-	0	42	32	9	-	-	0	46	60	0
	METHOD 3: SRSS	-	-	0	4	9	0	-	-	0	1	2	0	-	-	0	35	26	9	-	-	102	128	131	105	-	-	0	0	0	0	-	-	0	0	0	0
	ABS	-	-	0	4	0	0	-	-	0	1	0	0	-	-	0	3	0	0	-	-	99	160	154	114	-	-	3	0	14	0	-	-	0	0	0	0
	METHOD 4: SRSS	-	-	0	12	12	6	-	-	7	21	10	3	-	-	18	30	25	7	-	-	77	104	121	104	-	-	0	1	0	0	-	-	0	0	0	0
	ABS	-	-	0	0	0	0	-	-	0	0	0	0	-	-	0	0	0	0	-	-	99	124	148	114	-	-	3	37	20	0	-	-	0	7	0	0
	METHOD 5: SRSS	-	-	15	3	2	13	-	-	16	18	17	13	-	-	4	18	15	6	-	-	67	108	88	82	-	-	0	21	33	0	-	-	0	10	13	0
	ABS	-	-	0	0	0	0	-	-	0	0	0	0	-	-	10	0	1	0	-	-	92	110	96	114	-	-	0	36	44	0	-	-	0	19	28	0
	URS	0	0	-	21	-	-	0	0	-	11	-	-	0	0	-	26	-	-	51	42	-	76	-	-	0	21	-	4	-	-	0	0	-	30	-	-
ALGEBRAIC	0	0	0	18	0	0	1	0	0	13	0	0	1	6	0	14	4	0	49	57	98	123	153	94	0	0	4	0	11	20	0	0	0	0	0	0	
SRSS	0	4	1	7	0	0	3	6	8	17	0	0	9	11	5	23	5	0	37	41	88	118	152	87	2	1	0	3	11	27	0	0	0	0	0	0	
ABSOLUTE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36	50	97	137	148	85	7	9	5	28	19	29	8	4	0	3	1	0	
RESULTANT MOMENTS	TOTAL NO.	22	23	39	55	55	37	22	23	39	55	55	37	22	23	39	55	55	37	22	23	39	55	55	37	22	23	39	55	55	37	22	23	39	55	55	37
	METHOD 2: SRSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	21	18	6	0	3	0	18	27	11	3	17	23	0	10	38	34
	ABS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	10	0	0	0	0	0	7	7	0	0	20	23	22	48	55	37
	METHOD 3: SRSS	13	4	39	0	15	2	2	8	0	2	2	18	4	7	0	6	1	2	3	3	0	47	31	15	0	1	0	0	4	0	0	0	0	0	2	0
	ABS	6	2	39	0	1	0	3	1	0	0	0	0	1	1	0	0	4	12	10	17	0	50	25	25	2	2	0	5	19	0	0	0	0	0	6	0
	METHOD 4: SRSS	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	21	26	23	0	4	0	18	21	9	9	16	23	0	8	23	28
ABS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	11	0	5	0	0	0	7	23	18	0	20	23	21	32	32	37	
METHOD 5: SRSS	0	0	13	6	0	0	0	0	2	0	0	0	2	0	5	1	0	0	3	2	19	22	0	0	2	4	0	14	13	4	15	17	0	12	42	33	
ABS	0	0	5	2	0	0	0	0	0	0	0	0	0	0	0	3	0	0	4	0	34	11	0	0	1	2	0	11	0	0	17	21	0	28	55	37	
SUPPORT FORCES	TOTAL NO.	15	28	16	32	32	30	15	28	16	32	32	30	15	28	16	32	32	30	15	28	16	32	32	30	15	28	16	32	32	30	15	28	16	32	32	30
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	ABS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	9	0	0	0	0	0	0	3	0	0	14	28	7	29	32	30
	METHOD 3: SRSS	11	9	14	2	14	4	3	8	2	0	1	9	1	5	0	7	0	6	0	6	0	23	13	9	0	0	0	0	1	1	0	0	0	0	3	1
	ABS	6	4	11	1	3	0	2	1	5	0	0	1	2	2	0	0	2	5	5	19	0	30	14	20	0	2	0	1	8	2	0	0	0	0	5	2
	METHOD 4: SRSS	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	0	7	9	8	0	1	1	7	14	8	9	11	27	1	9	15	21
ABS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	9	2	2	0	1	0	0	5	7	0	13	28	7	25	23	30	
METHOD 5: SRSS	1	2	6	7	0	0	1	1	2	1	0	0	0	0	1	1	0	0	3	1	7	3	3	0	1	1	0	10	6	2	9	23	0	10	23	28	
ABS	0	2	5	4	0	0	0	0	0	0	0	0	0	0	1	1	0	0	3	1	9	6	1	0	1	0	1	3	0	0	11	25	0	18	29	30	

Note: (1) A hyphen indicates that the case was not included in the evaluation.
 (2) For the RHR and AFW models the mean responses are presented.

SRSS option are unacceptable. Considering displacement response, Methods 3, 4 and 5 with SRSS combination result in many underpredictions. Lastly, the inadequacy of Method 3, for highly uncorrelated building responses, is demonstrated by the results for the Z-Bend model.

Based on a review of the results for the pseudo-static component of response, the following observations were noted:

Pseudo-Static Acceleration

- The results are very sensitive to the spectral ZPA values
- The ZPA value of the envelope spectrum, as per the SRP method, typically yields conservative results
- If computed using the independent support motion procedure, absolute summation between groups provides conservative results. Algebraic and SRSS summation can result in underpredictions.

For displacements, pipe moments and support forces:

- The SRP definition of peak input displacements, $X = S_{ay}/\omega^2$, is very conservative. Time history predictions of relative support point displacements would be more appropriate.
- The amplification factor to be used with the time history sampling procedure ranges from 2.0 to 4.0.
- Method 2, with absolute combination as recommended in the SRP, always yields conservative results. Either combination yields conservative results for piping within one building structure. Between structures the degree of exceedance decreases with possible underprediction for the SRSS sum.

- Method 3, with absolute combination, yields reasonable results for buildings which can be simulated with a stick model. With SRSS summation, the method typically underpredicts true response.
- Method 4, with SRSS group combination, may underpredict response. Absolute combination yields good results provided the structural attachment points are properly defined.
- Method 5, with absolute combination, yields acceptable results for preliminary design. With SRSS summation, the method underpredicts true response for many points.
- The degree of exceedance increases for small response quantities.

5.4 Combined Seismic Response

To complete the study, the combination between the dynamic and pseudo-static peak response components predicted by any of the candidate methods or procedures was investigated. The present SRP procedure requires the absolute summation between these two components. In this study both SRSS and absolute summation between the components were considered. Tabulations of the study results are presented in Appendix III.

All the results for the combined response presented in this report correspond to the cases considered for the dynamic response predictions combined with time history estimates of the static component. None of the methods to predict static response, discussed in the previous sections, were used in this part of the study. It is presumed that this procedure yields the lower bound estimate of total response for either the SRSS or absolute summation procedures. The tables in Appendix III show the results for both summation procedures. The results for the SRSS summation procedure are also shown in figures 5.15 to 5.20.

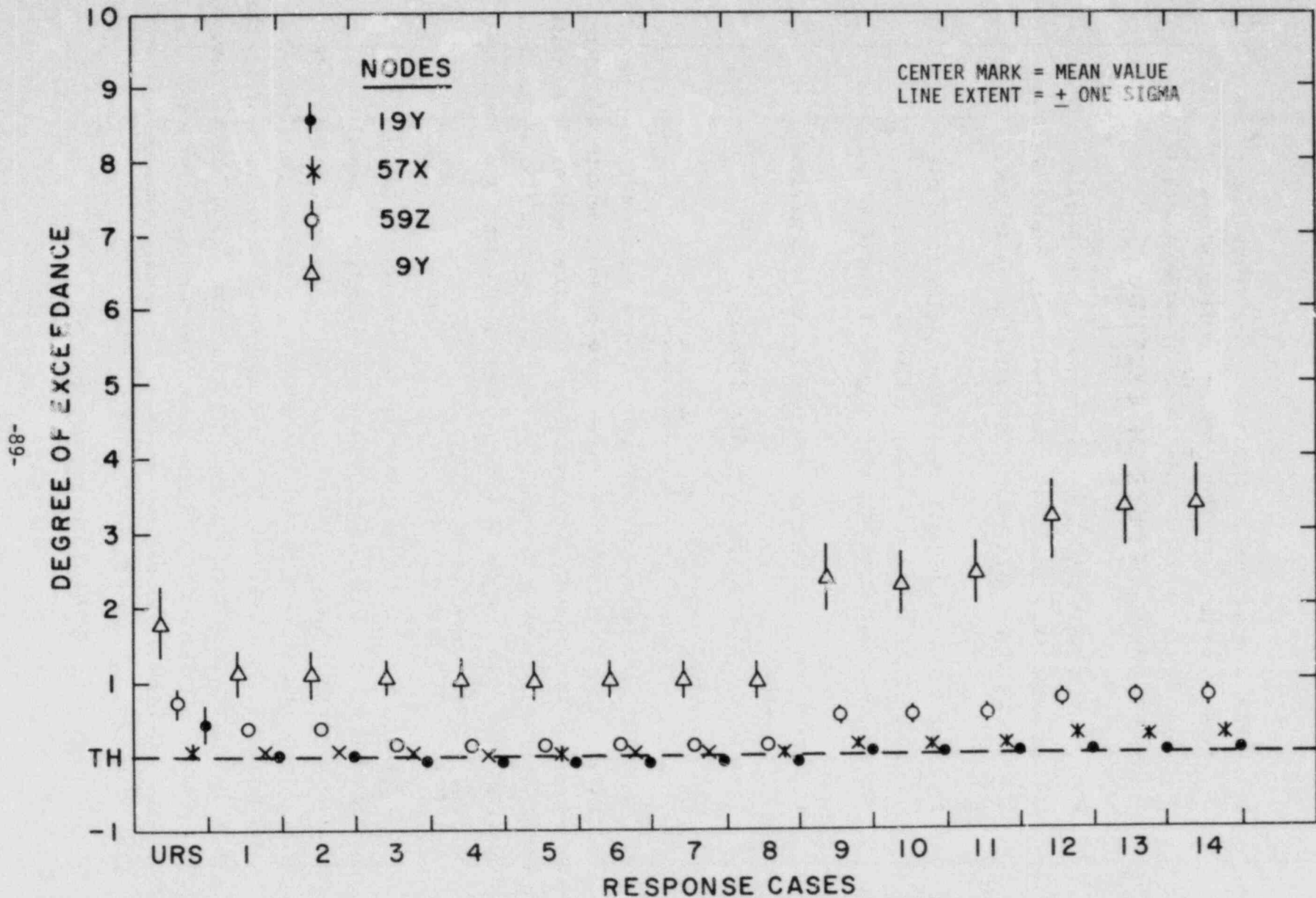


Figure 5.15 - Total Acceleration Responses for RHR Model Using SRSS Combination

-06-

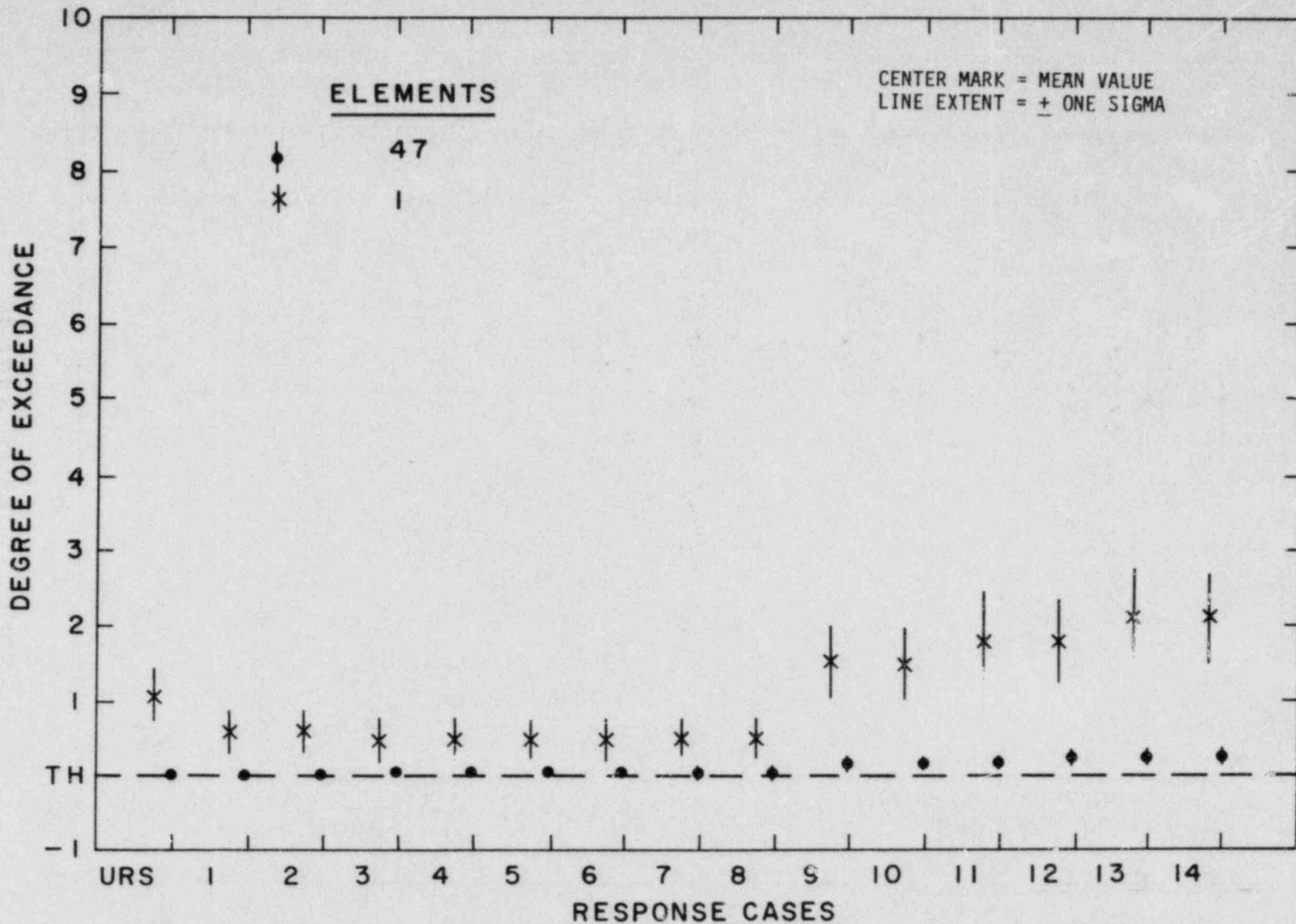


Figure 5.16 - Total Pipe Resultant Moment Responses for RHR Model Using SRSS Combination

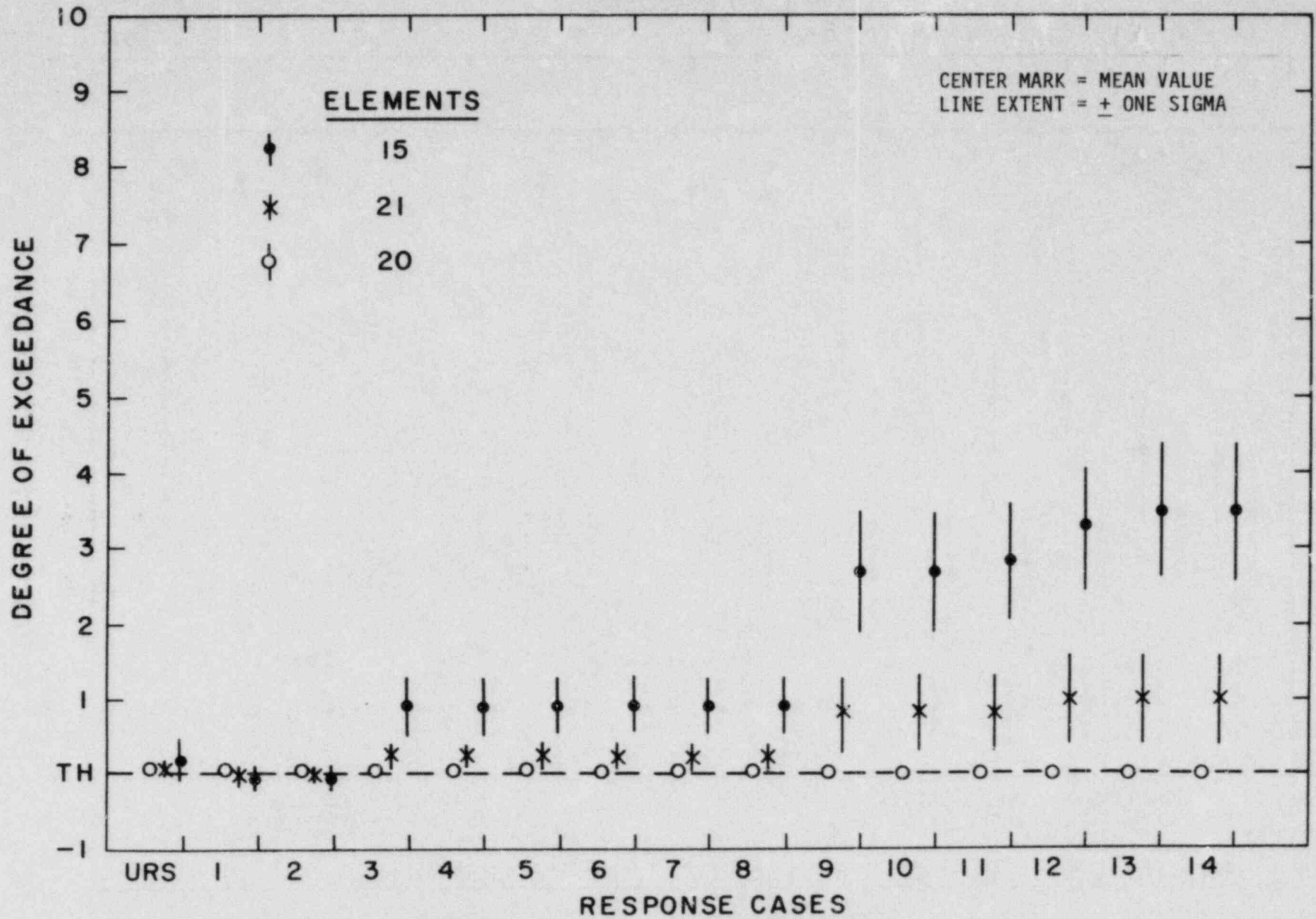


Figure 5.17 - Total Support Force Responses
for RHR Model Using SRSS Combination

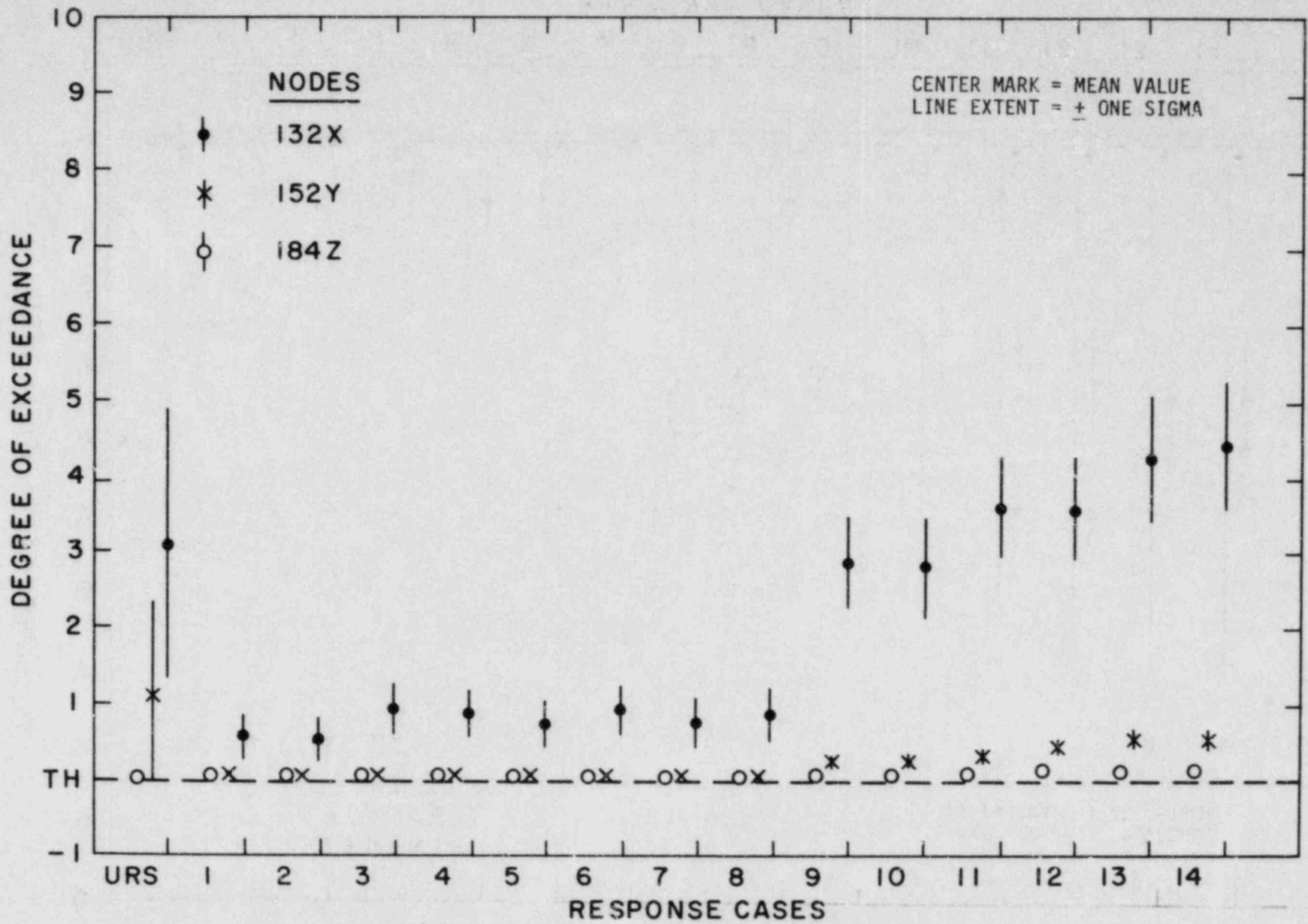


Figure 5.18 - Total Acceleration Responses for AFW Model Using SRSS Combination

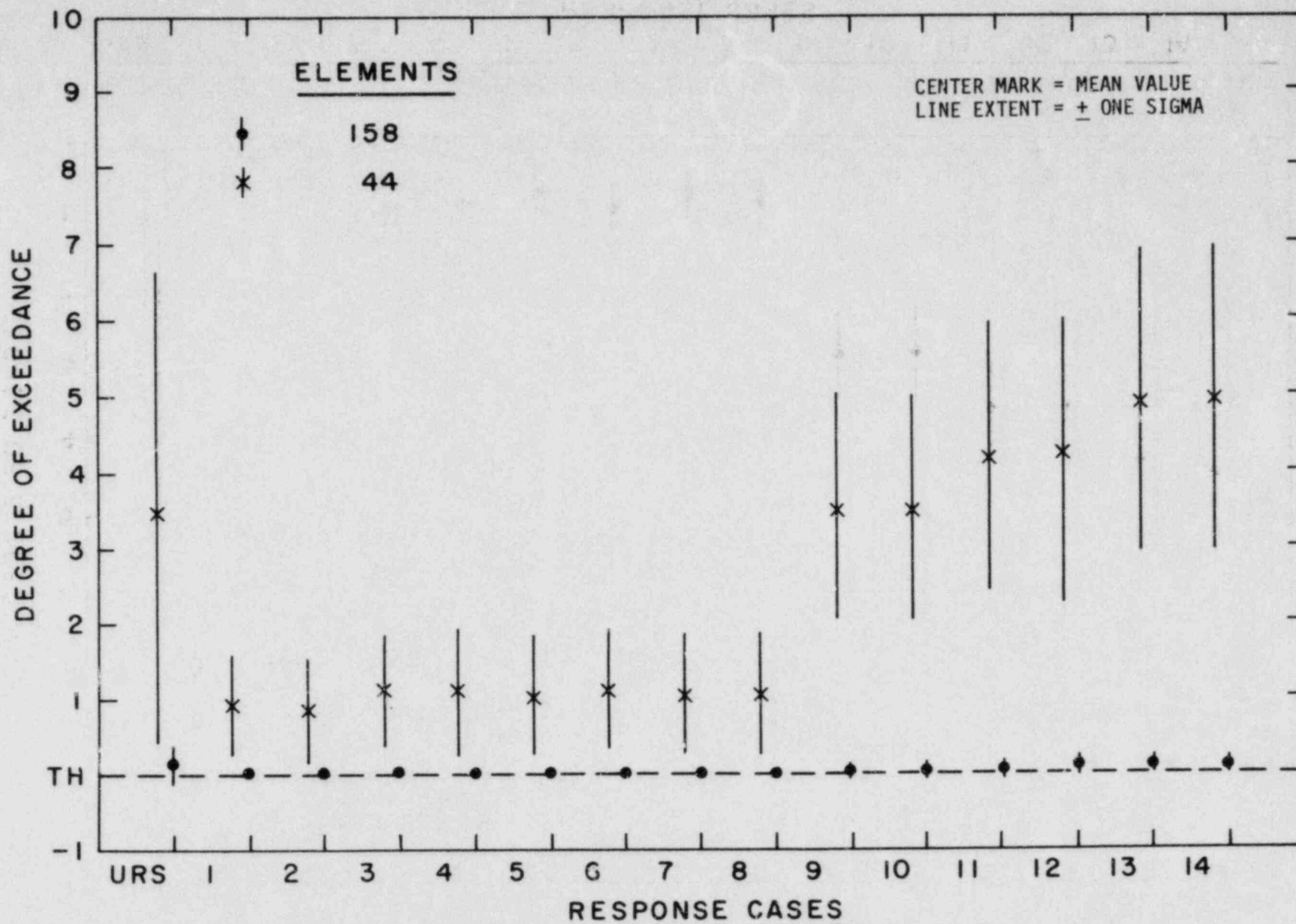


Figure 5.19 - Total Pipe Resultant Moment Responses for AFW Model Using SRSS Combination

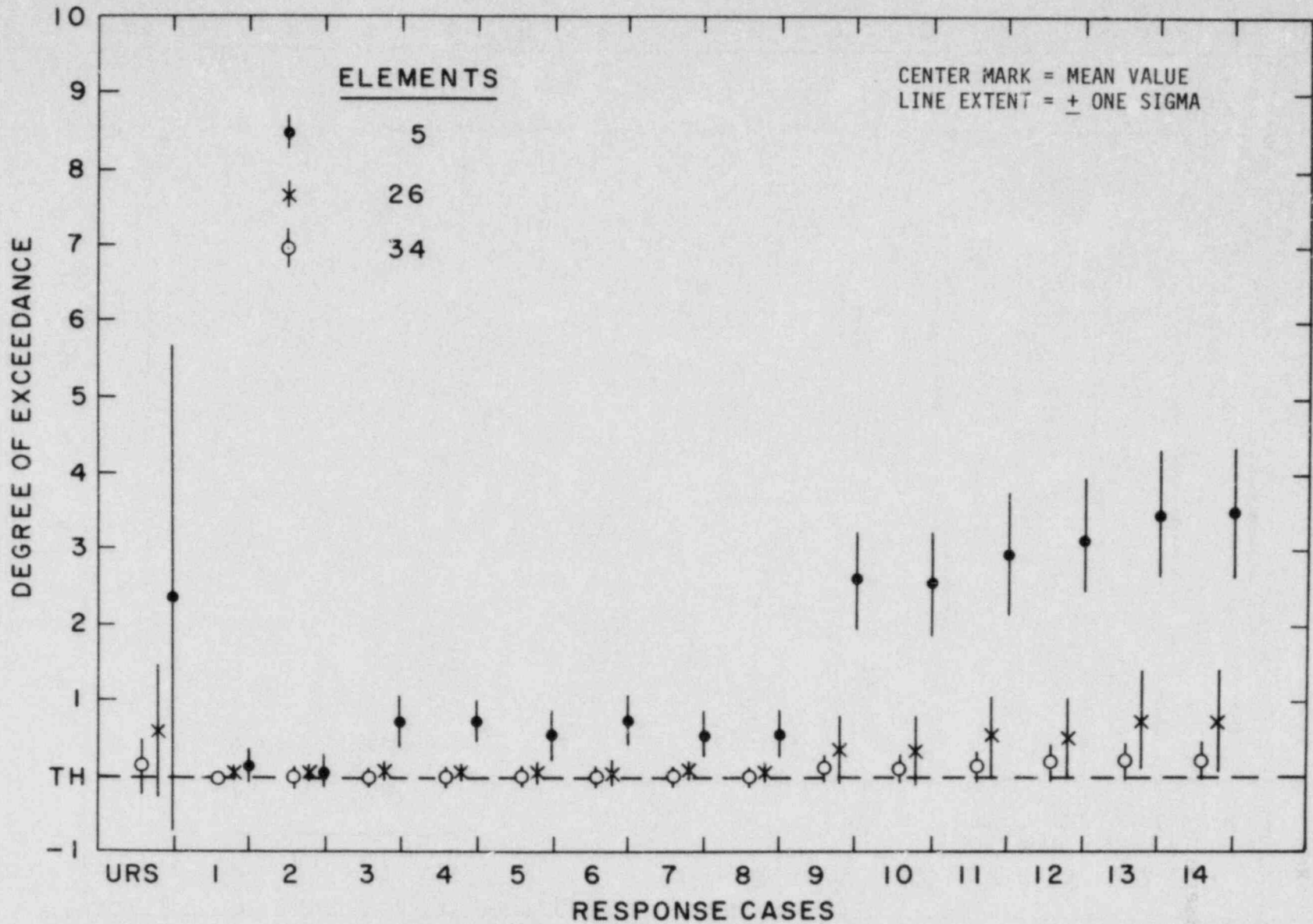


Figure 5.20 - Total Support Force Responses for AFW Model Using SRSS Combination

Reviewing the results, it was found that the SRSS combination between the dynamic and the static components of response provides a conservative estimate of total response for all the dynamic cases. Further, the following observations were noted from all results:

- Absolute combination between the dynamic and static components, as recommended in the SRP, yields very conservative estimates of total response.
- SRSS combination provides acceptable estimates of total response with some underpredictions. However, it is felt that this the degree of underprediction will be overcome by the conservatism associated with the computation of the static component of response.
- SRSS combination of the dynamic and pseudo-static responses coupled with absolute group combination for the dynamic response calculations (cases 9-14) always yields conservative results.

6.0 SUMMARY OF CONCLUSIONS

The methods and procedures presented in this report represent alternate approaches for calculating the seismic response of multiply-supported subsystems such as piping. They are based on mathematical formulations developed for systems subjected to multiple independent excitations. It is believed that this method, known as the independent (or multiple) support motion method, has already been implemented into many of the finite element piping codes currently used in the nuclear industry. These computer codes are programmed to calculate only the dynamic component of the response by the independent response spectrum method. Additional minor modifications will allow the computation of the static and the total response quantities as well.

From the point of view of the stress analyst, the following additional efforts, versus the uniform response spectrum method, must be undertaken to apply the method:

- The analyst must segregate the piping supports into groups having identical or similar motions.
- Instead of one set of input response spectra constituting three spatial directions, a separate response spectrum set must be developed for each support group.
- Since the approach yields the dynamic, pseudo-static and combined response components in one analysis, the relative displacements of each support (or group) with respect to the base mat must be included in the input.

The additional cost in applying this method, both in computer and engineer's time, is trivial as compared to the total cost of design.

The following advantages are attributed to this alternate methodology:

(1) The predicted response results represent a more realistic estimate of true response since each support is excited with its true input instead of an envelope magnitude.

(2) For the dynamic component of response, if algebraic combination between groups is used, the degree of conservatism will be reduced versus that inherent in the current URS procedure. In some cases that reduction will be small as evidenced in the RHR analysis while in other cases (AFW) it will be large. Since both of these procedures utilize the modal participation factors in a similar fashion, the general trend or characteristic of the response quantities will remain unchanged. Further, responses calculated using reduced magnitude uniform response spectra (center of mass spectra) will provide results which approximate those predicted with the algebraic group combination procedure.

(3) Unlike the uniform support motion method where all supports are assumed to be in phase, use of the independent support motion procedures allow the stress analyst to account for the true phasing between supports, if known at the time of analysis.

(4) The methods investigated for the computation of the pseudo-static component of response are simple and straight forward to apply. If one of these is adopted, a uniform procedure with acceptable conservatism can be established for the computation of this component in the design guidelines. The resultant estimates of this response component will exhibit a large reduction as compared to the current SRP procedure.

(5) The methods can readily be implemented into any finite element computer code without significant code modifications.

(6) The predicted total seismic response of piping systems can, at times, be reduced by a factor of two or more as compared with those predicted using current industry methods without introducing nonconservatism. The resulting piping support systems will be simpler and less costly than those required by current methodology.

(7) In one analysis, the dynamic, static and combined responses can be predicted without appreciable additional cost.

(8) The mathematical models of the piping and support systems, used in these methods, are more appropriate. In particular, the support stiffnesses are simulated in the pseudo-static calculations, and the input displacements are applied at the structural attachment points rather than at the pipe nodal points.

(9) The proposed method of analysis provides a uniform level of conservatism in the entire piping system. The URS method provides less conservatism at high load locations and greater conservatisms at low load locations.

6.1 Dynamic Analysis Using the Independent Response Spectrum Method

Fourteen different cases for the computation of the dynamic component of response were considered in this study. It was found that the sequence of combination between modes, directions and groups caused only a minor variation on the final results. The combination procedure between groups had a much greater affect on the results and the discussions below address only these.

The first cases studied correspond to the algebraic combination between groups. As noted before, the currently accepted uniform response spectrum method is a special case of algebraic combination wherein each response group is excited by the same envelope spectra set. Given this, the algebraic combination cases should have, and did, provide response estimates that were below those developed by the URS method. These estimates ranged from conservative to nonconservative, with a 2% occurrence rate of nonconservative estimates of an unacceptable level noted for three BNL problems. It is felt that this procedure can provide acceptable results for systems where the supports are known to respond in phase but it is not acceptable for the general case.

Absolute combination between groups was studied in cases 9 to 14. This procedure was found to provide very conservative estimates of the dynamic component of response, with many estimates showing a degree of exceedance above 100%. This level of conservatism is greater than that inherent in the currently accepted URS procedure. For systems exhibiting out of phase motions

between the support points, only this method can be relied upon to provide conservative estimates of response. It is felt that the level of conservatism inherent in this method is excessive and inconsistent with the current efforts to update piping design procedures.

The last procedure considered, SRSS combination between groups, cases 3 to 8, is a compromise between the other two procedures. It provides results which are statistically equivalent to those developed with the URS method. For systems which exhibit large out of phase support motions, this method may provide underestimates of the true response. Overall, it is felt that the level of conservatism inherent in this method is acceptable and consistent with current design practice.

In addition to the dynamic component of the seismic response, the response spectrum analysis also provides an estimate of the static acceleration of the piping system. The results indicate that use of both the algebraic and SRSS combination methods provides underestimates of this response quantity. The absolute sum method provides the only reasonable estimate of static acceleration.

6.2 Pseudo-Static Analysis Using Multiple Support Excitation Methods

Nine different procedures, based on five different methods were studied for the evaluation of the static component of response. One of these was based on the use of the time history records for the supporting structure. The remaining eight were based only on the use of peak support point displacements. The overall assessment of these procedures follows.

Method 1 is a time history sampling method. The results, based on a sampling size of 15, show the required amplification factor to range from 2-4. In our opinion this is too wide to be of general use. Additional research into the method, considering variations in the sample size, may show the method to have useful application, however, such an undertaking is not recommended.

Method 2, supports taken to act independently, provides results which correspond to the requirements of the SRP guidelines when absolute combination is used. These results were found to be very conservative for pipe supported within a single structure. In that case, the predicted values were sometimes several hundred times greater than the time history response (see RHR support forces). For locations in the proximity of structure interfaces, on the other hand, this method provides reasonable estimates of the true response. Because of this large variation in the degree of exceedance for this method it is not recommended. However, it should be noted that only this method provides consistently conservative estimates of the static component of response.

Method 3, supports grouped by spatial direction, was found to underestimate response for all but the simplest of structures. The method could be improved if the true phasing between supports groups were accounted for. However adopting such a procedure would be equivalent to using methods 4 or 5 below. The method is not recommended for general application.

Method 4, grouping by attachment point and Method 5, grouping by elevation, are similar procedures. For both methods, SRSS combination between the groups may provide an underprediction of time history results, and is not recommended. With absolute combination between the groups, Method 5 provides a reasonable estimate of response, while Method 4 provides a good estimate of response. As envisioned, Method 5 could be used at the preliminary design stage and Method 4 would be used to confirm those results at final design.

6.3 Combined Response

The true total response of a system is provided by the algebraic combination of the dynamic and static components of response. In this study only approximations of the two response components were developed and consequentially consideration of algebraic combination was not appropriate. Instead both SRSS and absolute combination between the components were considered. The absolute combination procedure, which is currently required in the SRP, was found to yield excessively conservative estimates of the true response. In contrast, the SRSS combination procedure was found to yield conservative, but not excessively conservative results with all fourteen dynamic evaluation methods studied. It is the recommended procedure.

The procedures developed in this study are also applicable to piping systems supported from equipment nozzles or branched from larger size pipes. For these it is advisable to treat each such terminal point as one single group. The analysis then follows the procedures outlined.

6.4 Future Studies

We believe that the present study provides a data base with which the present guidelines for performing the seismic analysis of piping systems may be assessed. Based on the results, some recommendations have been advanced in Section 7. However, owing to the fact that many factors influence piping design, it is recommended that some investigation of the sensitivity of the results to the following parameters be undertaken.

- Pipe size
- Pipe frequency distributions
- Large g -level differences in the input spectra
- Correlation of pipe and building frequencies
- Correlation of seismic inputs
- Multiple building inputs

7.0 RECOMMENDATIONS

These recommendations are based on the BNL evaluation of all the piping system results including those developed for the BNL models. Although the discussions in Section 5 were directed primarily to the LLNL models, the results for the BNL models exhibited the same trends and support the recommendations. It is felt that adoption of these recommendations would provide estimates for the total response which are reduced by a factor of two or more as compared to those developed using the current SRP methodology.

● Dynamic Component of Response

- The independent support motion response spectrum method should be certified as acceptable for the evaluation of the dynamic component of response.
- SRSS combination between support group contributions should be adopted in the independent support motion response spectrum analysis.

● Pseudo-Static Component of Response

For displacements, pipe moments and support forces

- Method 5 (grouping by elevations) with absolute combination between groups should be used for preliminary design.
- Method 4 (grouping by attachment points) with absolute combination between groups should be used for final design.

For accelerations

- Absolute combination between support groups should be adopted.

- Combined Response

- SRSS combination between the dynamic and static components of the response should be adopted.

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DESCRIPTORS USED IN DYNAMIC RESPONSE TABLES

DESCRIPTION OF THE DIFFERENT COMBINATIONS
CONSIDERED IN THE DYNAMIC ANALYSIS:

CASE NUMBER COMBINATION SEQUENCE

1	:GROUP(ALG)-DIRECTION-MODES
2	:GROUP(ALG)-MODES-DIRECTION
3	:GROUP(SRSS)-DIRECTION-MODES
4	:GROUP(SRSS)-MODES-DIRECTION
5	:MODES-GROUP(SRSS)-DIRECTION
6	:DIRECTION-GROUP(SRSS)-MODES
7	:MODES-DIRECTION-GROUP(SRSS)
8	:DIRECTION-MODES-GROUP(SRSS)
9	:GROUP(ABS)-DIRECTION-MODES
10	:GROUP(ABS)-MODES-DIRECTION
11	:MODES-GROUP(ABS)-DIRECTION
12	:DIRECTION-GROUP(ABS)-MODES
13	:MODES-DIRECTION-GROUP(ABS)
14	:DIRECTION-MODES-GROUP(ABS)

• ABBREVIATIONS,
• AND SYMBOLS
•

• T.H.

• TIME HISTORY DATA FROM
• LAWRENCE LIVERMORE LABORATORY

• DISP.

• DISPLACEMENT (INERTIA COMPONENT)

• ACC(ST)

• ACCELERATION (PSEUDO-STATIC COMPONENT)

• ACC(DY)

• ACCELERATION (INERTIA COMPONENT)

• ACC(TL)

• TOTAL ACCELERATION

• URS

• UNIFORM RESPONSE SPECTRUM

• FORCE CODES

• 1

• SUPPORT FORCE (INERTIA COMPONENT)

• 6

• I-END MOMENT (INERTIA COMPONENT)

• 12

• J-END MOMENT (INERTIA COMPONENT)

NOTES:

FOR ALL OF THE ABOVE CASES:

- 1) COMBINATION OF MODAL RESPONSES
IS BY SRSS WITH A CLUSTERING
FACTOR OF 0.1.
- 2) COMBINATION OF DIRECTIONAL
COMPONENTS IS BY SRSS.

 * RHRSI1 MODEL *

 ** MEAN VALUES **

TOTAL NO. OF EARTHQUAKES: 33

*DISPLACEMENT (INERTIA COMPONENT)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
6	1	118	66	65	112	111	110	112	110	111	308	306	367	387	452	453
6	2	118	66	66	85	84	84	85	84	84	242	241	301	299	360	360
6	3	107	58	57	44	44	43	44	43	44	145	144	176	171	205	205
9	1	89	42	42	107	107	107	107	107	107	302	302	354	372	421	421
9	2	84	39	39	146	146	145	146	145	146	388	387	432	476	523	523
9	3	106	57	57	46	45	45	46	45	46	149	148	180	176	205	209
12	1	93	45	45	93	93	93	93	93	93	271	271	324	334	384	384
12	2	78	34	34	154	154	154	154	154	154	406	405	443	497	540	541
12	3	108	57	57	65	65	65	65	65	65	200	200	249	245	295	295
16	1	111	60	60	48	48	48	48	48	48	155	155	193	187	229	229
16	2	70	31	31	206	206	206	206	206	206	508	508	522	607	622	622
16	3	93	45	45	93	93	93	93	93	93	272	272	325	335	385	385
19	1	61	22	21	155	155	155	155	155	155	411	411	436	503	536	537
19	2	70	31	31	206	206	206	206	206	206	508	508	522	607	622	622
19	3	59	21	20	154	154	154	154	154	154	408	407	433	498	531	531
22	1	61	22	21	155	155	155	155	155	155	410	410	435	503	536	536
22	2	68	28	28	187	187	187	187	187	187	470	470	488	564	586	586
22	3	63	29	29	222	221	221	222	221	222	542	542	553	649	658	658
23	1	61	22	21	154	154	154	154	154	154	409	409	434	501	535	535
23	2	68	28	28	187	187	187	187	187	187	470	470	487	563	586	586
23	3	62	28	28	217	217	217	217	217	217	533	533	546	639	650	650
35	1	50	21	21	216	216	216	216	216	216	514	514	534	641	642	642
35	2	52	23	23	221	221	221	221	221	221	513	513	544	653	653	653
35	3	50	47	41	122	116	115	122	115	118	231	273	305	351	394	399
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36	3	52	22	22	218	218	218	218	218	218	537	537	538	646	646	646
39	1	49	20	20	212	212	212	212	212	212	525	525	526	631	632	632
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39	3	52	23	21	179	178	178	179	178	179	446	445	454	539	551	552
42	1	50	20	20	204	204	204	204	204	204	508	508	511	612	615	615
42	2	48	19	19	208	208	208	208	208	208	517	517	520	621	623	623
42	3	55	26	24	174	172	172	174	172	173	430	428	440	520	535	536
45	1	52	20	20	203	203	203	203	203	203	505	505	510	608	613	613
45	2	48	19	17	188	188	188	188	188	188	476	475	491	574	581	582
45	3	54	25	24	189	188	188	189	188	189	465	464	473	561	571	572
50	1	58	26	25	216	216	216	216	216	216	532	532	538	639	645	645
50	2	50	17	16	136	135	135	136	135	135	365	365	402	446	471	472
50	3	53	21	20	167	167	167	167	167	167	429	429	457	520	538	539
57	1	46	16	16	168	168	168	168	168	168	434	433	444	524	538	539
57	2	60	23	20	26	23	22	26	22	26	117	117	169	154	195	201
57	3	33	9	8	4	2	0	4	0	1	77	77	83	111	131	134

I-4

 * RHR511 MODEL *

 ** MEAN VALUES **

TOTAL NO. OF EARTHQUAKES: 33

*DISPLACEMENT (INERTIA COMPONENT)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
59	1	29	5	4	20	19	17	20	17	18	117	114	127	156	183	187
59	2	67	28	24	19	14	12	19	12	18	94	87	143	128	164	173
59	3	29	4	3	57	56	55	57	55	56	200	198	212	251	279	281
67	1	73	25	24	93	93	93	93	93	93	296	295	323	385	410	410
67	2	79	33	33	170	170	170	170	170	170	434	434	459	520	551	551
67	3	59	23	21	175	175	175	175	175	175	448	448	467	542	565	565
68	1	82	30	30	88	87	87	88	87	88	281	280	308	366	392	392
68	2	84	36	36	168	168	168	168	168	168	428	428	456	513	546	546
68	3	60	22	21	166	166	166	166	166	166	429	429	452	519	546	546

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 * RHR511 MODEL *

TOTAL NO. OF EARTHQUAKES: 33

** STANDARD DEVIATION **

*DISPLACEMENT (INERTIA COMPONENT)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	
6	1	42	28	28	38	38	38	38	38	38	38	77	77	83	88	96	96
6	2	39	30	30	37	37	37	37	37	37	37	74	74	82	84	94	94
6	3	38	30	31	28	28	28	28	28	28	28	50	50	57	54	62	62
9	1	35	22	22	43	43	43	43	43	43	43	88	88	91	98	102	102
9	2	33	20	20	46	46	46	46	46	46	46	92	92	93	102	105	105
9	3	39	31	31	29	29	29	29	29	29	29	53	52	60	57	64	64
12	1	36	24	24	41	41	41	41	41	41	41	34	84	88	94	99	99
12	2	34	19	19	44	44	44	44	44	44	44	88	88	89	99	101	101
12	3	41	31	31	32	32	32	32	32	32	32	63	63	72	72	81	81
16	1	38	31	31	28	28	28	28	28	28	28	51	51	60	57	66	66
16	2	49	28	28	75	75	75	75	75	75	75	148	148	149	168	168	168
16	3	36	24	24	41	41	41	41	41	41	41	84	84	88	94	99	99
19	1	29	14	14	37	37	37	37	37	37	37	73	73	73	81	81	81
19	2	49	28	28	75	75	75	75	75	75	75	148	148	149	168	168	168
19	3	27	13	13	37	37	37	37	37	37	37	73	73	73	80	81	81
22	1	29	14	14	36	36	36	36	36	36	36	72	72	72	80	81	81
22	2	39	22	22	59	59	59	59	59	59	59	116	116	117	128	129	129
22	3	53	29	29	77	77	77	77	77	77	77	151	151	151	170	171	171
23	1	29	14	14	36	36	36	36	36	36	36	72	72	72	80	80	90
23	2	39	22	22	59	59	59	59	59	59	59	116	116	116	127	129	129
23	3	50	27	27	72	72	72	72	72	72	72	142	142	142	159	159	159
35	1	60	29	29	70	70	70	70	70	70	70	140	140	140	161	161	161
35	2	63	30	30	71	71	71	71	71	71	71	141	141	141	165	165	165
35	3	23	13	12	23	23	23	23	23	23	23	52	52	54	53	53	53
36	1	59	29	29	70	70	70	70	70	70	70	138	138	138	159	159	159
36	2	63	30	30	70	70	70	70	70	70	70	141	141	141	165	165	165
36	3	62	29	29	69	69	69	69	69	69	69	138	138	138	161	161	161
39	1	58	28	28	69	69	69	69	69	69	69	137	137	137	157	157	157
39	2	60	29	29	68	68	68	68	68	68	68	135	135	135	157	157	157
39	3	39	22	22	63	63	63	63	63	63	63	126	126	125	140	139	139
42	1	54	28	28	69	69	69	69	69	69	69	137	137	137	156	156	156
42	2	56	26	26	61	61	61	61	61	61	61	122	122	122	141	141	141
42	3	36	20	20	59	59	59	59	59	59	59	120	120	120	134	132	132
45	1	53	28	28	70	70	70	70	70	70	70	138	138	138	157	157	157
45	2	51	21	21	47	47	47	47	47	47	47	94	94	95	113	113	113
45	3	42	22	22	62	62	62	62	62	62	62	125	126	125	141	140	140
50	1	57	30	30	73	73	73	73	73	73	73	145	145	146	167	167	167
50	2	40	16	16	31	31	31	31	31	31	31	63	63	64	75	75	75
50	3	41	17	17	37	37	37	37	37	37	37	76	76	76	89	89	89
57	1	40	21	21	53	53	53	53	53	53	53	104	104	105	117	116	116
57	2	32	17	16	11	11	11	11	11	11	11	20	19	23	25	26	27
57	3	12	8	8	12	11	11	11	12	11	11	24	23	26	27	30	30

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 * RHRS11 MODEL *

TOTAL NO. OF EARTHQUAKES: 33

** STANDARD DEVIATION **

*DISPLACEMENT (INERTIA COMPONENT)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
59	1	12	8	8	19	19	19	19	19	19	40	40	42	43	45	45
59	2	32	17	16	12	11	11	12	11	12	17	17	21	22	23	24
59	3	15	10	10	30	30	31	30	31	31	62	62	63	65	65	66
67	1	42	16	16	31	31	31	31	31	31	70	70	75	82	85	85
67	2	35	21	21	54	54	54	54	54	54	107	107	109	117	121	121
67	3	36	20	20	54	54	54	54	54	54	107	107	107	119	120	120
68	1	43	18	17	34	34	34	34	34	34	75	75	82	86	92	92
68	2	36	22	22	55	55	55	55	55	55	108	108	111	118	123	123
68	3	32	18	18	49	49	49	49	49	49	96	96	97	104	105	105

 * RHRS1: MODEL *

 ** MEAN VALUES **

TOTAL NO. OF EARTHQUAKES: 33

*ACCELERATION (INERTIA COMPONENT)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
6	1	1578	1267	1251	1173	1140	1091	1173	1091	1115	2109	2038	2102	2683	2689	2729
6	2	1013	805	794	737	717	687	737	687	701	1358	1315	1400	1728	1758	1781
6	3	451	337	333	299	293	284	299	284	288	585	572	673	718	790	798
9	1	316	229	227	218	213	207	218	207	210	461	452	543	575	660	666
9	2	939	740	730	694	674	646	694	646	659	1290	1249	1321	1645	1696	1720
9	3	516	393	388	352	343	332	352	332	337	678	661	766	841	909	919
12	1	231	153	153	144	143	142	144	142	142	330	328	406	395	477	479
12	2	871	683	674	651	632	606	651	606	618	1219	1180	1256	1552	1621	1644
12	3	252	168	168	147	147	146	147	146	146	324	323	385	374	442	443
16	1	324	229	227	201	198	195	201	195	197	412	406	489	486	562	566
16	2	182	112	110	220	219	217	220	217	218	511	509	556	609	669	671
16	3	211	136	136	128	128	127	128	127	127	302	301	367	355	427	427
19	1	139	73	69	160	156	156	160	156	157	406	401	449	502	552	555
19	2	182	112	110	220	219	217	220	217	218	511	508	555	608	668	670
19	3	140	73	68	158	153	152	158	152	154	397	391	444	489	538	541
22	1	141	75	71	160	156	156	160	156	157	406	401	450	504	557	560
22	2	140	75	73	193	193	193	193	193	193	469	468	504	557	595	595
22	3	181	97	92	222	218	214	222	214	216	528	523	637	611	702	707
23	1	142	75	71	160	156	156	160	156	157	406	401	451	504	557	561
23	2	140	74	73	193	192	192	193	192	192	468	467	502	556	594	595
23	3	200	110	100	232	223	219	232	219	223	542	531	650	628	721	730
35	1	75	36	36	220	219	219	220	219	220	538	538	557	646	661	661
35	2	72	33	33	212	212	211	212	211	212	523	523	534	631	643	643
35	3	416	309	284	360	337	328	360	328	339	633	597	729	789	964	992
36	1	76	36	36	214	214	214	214	214	214	526	526	540	632	646	646
36	2	73	34	34	213	213	212	213	212	213	525	525	537	633	646	646
36	3	186	119	104	246	241	238	246	238	240	583	577	662	700	764	770
39	1	92	45	45	205	205	205	205	205	205	508	507	528	611	635	635
39	2	102	57	52	233	231	230	233	230	232	557	555	594	668	692	701
39	3	223	161	151	250	237	236	250	236	241	431	413	463	539	608	619
42	1	138	72	71	179	179	179	179	179	179	452	452	489	551	596	596
42	2	272	188	173	257	242	239	257	239	253	529	510	655	637	755	789
42	3	247	181	169	265	251	249	265	249	255	449	428	495	563	649	662
45	1	162	89	88	183	182	182	183	182	183	455	453	504	557	617	621
45	2	574	422	402	369	351	341	369	341	361	692	667	893	835	1019	1056
45	3	319	237	220	311	295	291	311	291	299	537	512	623	670	802	825
50	1	418	274	241	347	327	323	347	323	335	697	673	806	854	1006	1031
50	2	611	452	432	384	368	358	384	358	374	714	692	900	867	1069	1102
50	3	639	471	445	429	412	399	429	399	413	820	795	1026	1002	1252	1286
57	1	1373	1090	1074	929	905	878	929	878	891	1544	1492	1604	1890	2051	2081
57	2	597	448	430	338	312	306	338	306	334	541	500	573	655	677	721
57	3	2084	1678	1664	1390	1361	1317	1390	1317	1333	2262	2185	2191	2764	2746	2778

 * RHR511 MODEL *

 ** MEAN VALUES **

TOTAL NO. OF EARTHQUAKES: 33

*ACCELERATION (INERTIA COMPONENT)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
59	1	2029	1630	1615	1352	1323	1280	1352	1280	1297	2201	2124	2141	2689	2684	2723
59	2	641	479	452	369	334	326	369	326	362	607	556	664	734	790	847
59	3	1954	1569	1554	1305	1275	1234	1305	1234	1251	2125	2051	2080	2596	2611	2651
67	1	286	177	161	210	201	197	210	197	202	511	500	602	654	736	749
67	2	163	88	84	198	196	195	198	195	196	477	474	536	565	621	623
67	3	554	389	328	374	342	336	374	336	342	680	637	771	864	985	998
68	1	268	164	147	202	193	190	202	190	194	490	478	591	616	707	719
68	2	171	92	88	201	198	197	201	197	198	481	477	547	569	629	632
68	3	215	129	112	197	185	184	197	184	188	439	425	505	535	606	616

 * RHRS11 MODEL *

TOTAL NO. OF EARTHQUAKES: 33

** STANDARD DEVIATION **

*ACCELERATION (INERTIA COMPONENT)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
6	1	704	601	591	583	565	540	583	540	554	1031	997	1008	1304	1288	1312
6	2	605	524	515	510	495	473	510	473	485	908	880	902	1147	1137	1157
6	3	388	329	324	323	315	305	323	305	310	575	560	628	705	738	748
9	1	153	129	128	132	129	125	132	125	127	240	234	262	297	318	322
9	2	323	273	268	267	259	248	267	248	254	478	463	470	604	601	612
9	3	455	390	384	383	373	360	383	360	367	684	665	732	846	872	885
12	1	111	88	88	92	91	90	92	90	90	168	167	199	198	228	229
12	2	260	215	211	211	204	195	211	195	200	378	366	373	477	475	484
12	3	141	109	109	109	109	108	109	108	108	194	193	227	219	253	254
16	1	229	185	183	184	181	177	184	177	180	324	318	372	382	423	427
16	2	77	58	57	91	91	90	91	90	90	175	174	187	197	214	215
16	3	100	78	77	80	80	80	80	80	80	148	148	175	169	197	197
19	1	55	30	29	51	51	51	51	51	51	102	102	112	117	126	127
19	2	77	58	57	91	91	90	91	90	90	175	174	186	197	213	214
19	3	55	31	30	52	52	51	52	51	52	104	103	113	117	126	127
22	1	56	31	30	52	51	51	52	51	51	103	102	112	117	128	128
22	2	61	41	41	76	76	76	76	76	76	148	148	157	164	174	175
22	3	53	42	41	82	82	80	82	80	81	165	164	195	181	207	208
23	1	56	31	30	52	51	51	52	51	51	103	102	113	118	128	129
23	2	61	41	41	76	76	76	76	76	76	148	148	157	164	175	175
23	3	59	43	41	77	76	75	77	75	75	155	154	184	171	196	198
35	1	55	31	31	80	80	80	80	80	80	158	158	159	179	179	179
35	2	49	29	29	77	77	77	77	77	77	152	152	152	170	170	170
35	3	171	145	135	150	142	137	150	137	141	267	256	307	324	385	397
36	1	51	30	30	79	79	79	79	79	79	157	157	157	177	177	177
36	2	50	30	30	77	77	77	77	77	77	153	153	154	172	172	172
36	3	72	44	42	83	83	83	83	83	83	166	165	182	186	198	198
39	1	47	31	31	81	81	81	81	81	81	160	160	161	180	180	180
39	2	62	34	33	77	77	77	77	77	77	153	153	157	175	177	178
39	3	84	70	67	100	96	96	100	96	97	173	168	188	205	225	229
42	1	46	35	35	80	80	80	80	80	80	159	159	165	175	181	182
42	2	80	67	62	90	86	86	90	86	89	170	167	202	194	217	225
42	3	93	78	74	101	97	96	101	96	98	171	166	195	205	236	241
45	1	54	42	42	83	83	83	83	83	83	165	165	175	183	196	197
45	2	240	202	193	189	181	177	189	177	185	326	316	413	386	465	481
45	3	121	102	96	118	113	111	118	111	114	213	207	255	256	302	311
50	1	145	125	113	146	140	138	146	138	143	263	255	297	309	362	370
50	2	254	218	209	197	190	186	197	186	193	340	330	418	407	487	502
50	3	260	220	209	208	202	195	208	195	201	376	366	459	451	539	553
57	1	468	353	349	289	283	276	289	276	278	456	441	462	551	587	593
57	2	270	233	224	189	177	174	189	174	188	275	266	291	326	336	357
57	3	799	608	603	498	487	473	498	473	478	788	761	762	955	949	958

 * RHRS11 MODEL *

TOTAL NO. OF EARTHQUAKES: 33

** STANDARD DEVIATION **

*ACCELERATION(INERTIA COMPONENT)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
59	1	765	573	568	465	455	443	465	443	447	735	710	714	888	886	897
59	2	305	262	247	215	198	194	215	194	211	323	299	353	383	413	441
59	3	728	547	542	444	434	423	444	423	427	700	676	683	846	850	860
67	1	105	63	58	69	66	65	69	65	67	140	136	164	169	188	192
67	2	69	48	47	83	83	82	83	82	83	161	161	180	178	196	196
67	3	167	122	107	114	106	105	111	105	106	188	178	211	236	268	271
68	1	91	64	59	70	68	67	70	67	68	140	137	165	167	189	192
68	2	68	48	47	82	81	81	82	81	81	159	158	180	175	194	195
68	3	68	51	46	60	57	57	60	57	58	109	106	124	127	143	146

 * RHRS11 MODEL *

 ** MEAN VALUES **

TOTAL NO. OF EARTHQUAKES: 33

*MOMENTS AND FORCES (INERTIA COMPONENT)

ELEM. NO.	FORCE CODE	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	6	109	59	59	48	48	48	48	48	48	155	154	187	184	218	219
2	6	121	68	67	138	138	137	138	137	137	359	358	410	436	486	486
3	12	96	48	47	124	124	123	124	123	124	337	337	387	414	464	464
6	12	104	54	54	108	108	108	108	108	108	299	299	348	367	416	416
9	12	94	49	48	130	129	129	130	129	130	345	344	386	417	456	457
16	12	121	63	63	130	130	130	130	130	130	353	352	398	440	480	480
19	12	90	43	42	185	184	184	185	184	185	465	464	496	562	596	597
20	12	87	44	43	212	212	212	212	212	212	520	520	543	624	649	649
21	12	75	32	31	171	170	170	171	170	171	443	442	475	541	578	578
22	6	117	61	60	205	204	204	205	204	204	503	502	525	607	632	633
32	12	51	22	21	212	212	212	212	212	212	524	524	525	630	632	632
33	12	50	20	20	207	207	207	207	207	207	513	513	517	618	621	621
36	12	115	63	62	237	236	236	237	236	236	566	566	581	682	701	702
39	12	59	26	26	220	220	220	220	220	220	542	542	545	651	655	655
42	12	51	22	22	216	216	216	216	216	216	533	533	534	641	642	642
47	12	75	34	33	179	178	178	179	178	179	453	453	474	550	571	573
54	12	94	51	49	177	176	176	177	176	177	443	442	477	537	567	570
59	12	89	47	42	34	29	26	34	26	32	120	112	154	160	194	204
60	6	102	47	46	140	139	139	140	139	139	375	374	408	465	505	506
61	12	74	32	32	183	182	182	183	182	182	465	465	490	567	596	596
62	12	68	27	27	171	171	171	171	171	171	441	441	465	537	567	568
70	12	140	75	68	184	181	181	184	181	181	447	444	496	536	583	585

 * RHR511 MODEL *

TOTAL NO. OF EARTHQUAKES: 33

** STANDARD DEVIATION **

*MOMENTS AND FORCES (INERTIA COMPONENT)

ELEM. NO.	FORCE CODE	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	6	38	30	30	29	29	28	29	28	29	52	52	60	57	65	65
2	6	38	26	26	49	49	49	49	49	49	100	100	103	111	116	116
3	12	34	22	22	45	45	45	45	45	45	91	91	93	101	106	106
6	12	38	25	25	45	45	45	45	45	45	93	93	97	103	108	108
9	12	32	22	22	43	43	43	43	43	43	87	87	87	94	96	96
16	12	45	26	26	33	33	33	33	33	33	68	68	73	76	81	81
19	12	28	16	16	47	47	47	47	47	47	93	93	95	102	104	104
20	12	38	23	23	65	65	65	65	65	65	128	128	128	142	143	143
21	12	34	21	21	51	51	51	51	51	51	101	101	101	109	112	112
22	6	33	18	18	51	51	51	51	51	51	101	101	103	108	110	110
32	12	57	27	27	65	65	65	65	65	65	130	130	130	151	151	151
33	12	54	25	25	61	61	61	61	61	61	122	122	122	140	140	140
36	12	49	28	28	63	63	63	63	63	63	126	126	126	144	145	145
39	12	61	29	29	68	68	68	68	68	68	135	135	135	159	159	159
42	12	61	29	29	69	69	69	69	69	69	137	137	137	159	159	159
47	12	42	20	20	43	43	43	43	43	43	87	87	88	101	101	101
54	12	34	17	16	34	34	34	34	34	34	68	68	69	76	77	77
59	12	29	15	14	11	10	10	10	10	10	16	15	18	20	21	22
60	6	37	17	17	36	36	36	36	36	36	74	74	78	80	85	85
61	12	32	16	16	39	39	39	39	39	39	77	77	77	87	87	87
62	12	30	15	15	40	40	40	40	40	40	80	80	80	89	90	90
70	12	48	30	29	51	51	51	51	51	51	101	100	110	113	123	123

 * RHRSI1 MODEL *

 ** MEAN VALUES **

TOTAL NO. OF EARTHQUAKES: 33

*MOMENTS AND FORCES (INERTIA COMPONENT)

ELEM. NO.	FORCE CODE	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
10	1	70	31	31	205	205	205	205	205	205	506	506	521	605	620	620
11	1	98	51	51	57	57	57	57	57	57	178	177	210	210	239	240
12	1	84	38	36	100	99	98	100	98	99	281	280	333	338	382	383
13	1	70	31	31	204	204	204	204	204	204	503	503	518	601	617	617
14	1	49	15	15	171	171	171	171	171	171	441	441	453	532	545	545
15	1	28	0	0	126	126	126	126	126	126	351	351	368	427	448	449
16	1	79	40	37	202	200	200	202	200	201	493	491	513	594	617	618
17	1	66	24	23	148	148	148	148	148	148	395	395	417	481	508	508
18	1	62	32	29	151	148	148	151	148	149	361	358	377	441	465	468
19	1	61	23	20	157	156	156	157	156	157	412	411	444	501	526	529
20	1	50	22	21	11	8	5	11	5	7	77	71	96	113	139	144
21	1	64	29	28	210	210	210	210	210	210	520	520	530	626	636	637
22	1	75	34	26	31	23	21	31	21	29	124	114	179	164	206	220
23	1	59	22	19	156	155	155	156	155	155	406	405	426	493	516	517
24	1	63	20	18	121	121	121	121	121	121	334	334	364	404	435	436

 * RHRS11 MODEL *

TOTAL NO. OF EARTHQUAKES: 33

** STANDARD DEVIATION **

*MOMENTS AND FORCES (INERTIA COMPONENT)

ELEM. NO.	FORCE CODE	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
10	1	51	29	29	77	77	77	77	77	77	153	153	153	173	174	174
11	1	39	29	29	34	34	34	34	34	34	66	66	72	72	77	77
12	1	31	20	20	40	40	40	40	40	40	82	82	86	89	92	92
13	1	48	27	27	72	72	72	72	72	72	144	144	144	162	163	163
14	1	44	21	21	46	46	46	46	46	46	93	93	94	109	109	109
15	1	28	17	17	50	50	50	50	50	50	98	98	98	106	106	106
16	1	43	22	22	55	55	55	55	55	55	109	109	110	124	124	124
17	1	33	21	21	54	54	54	54	54	54	108	108	108	118	118	118
18	1	30	18	17	49	49	49	49	49	49	105	105	105	115	112	112
19	1	40	18	18	38	38	38	38	38	38	77	77	79	90	90	90
20	1	9	6	6	8	8	7	8	7	7	15	14	17	18	20	21
21	1	52	29	29	72	72	72	72	72	72	143	143	144	164	164	164
22	1	24	15	13	14	13	13	14	13	14	25	25	31	30	34	35
23	1	30	17	17	50	50	50	50	50	50	98	98	99	108	108	108
24	1	26	16	16	35	35	35	35	35	35	69	69	73	74	79	79

* AFWSG1 MODEL *

** MEAN VALUES **

TOTAL NO. OF EARTHQUAKES: 33

*DISPLACEMENT (INERTIA COMPONENT)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
20	1	299	31	18	118	116	100	118	100	101	371	366	401	438	471	475
20	2	395	97	90	88	84	75	88	75	78	293	286	348	364	436	445
20	3	299	31	18	117	115	100	117	100	101	370	365	400	437	471	474
30	1	299	31	18	118	116	100	118	100	101	372	367	401	439	472	475
30	2	268	68	66	61	59	56	61	56	57	258	256	289	320	358	362
30	3	302	31	18	123	121	105	123	105	105	381	376	407	450	480	483
40	1	257	58	54	91	91	84	91	84	84	328	326	385	394	444	445
40	2	449	100	91	106	100	86	106	86	90	308	295	379	392	476	489
40	3	303	31	18	123	122	105	123	105	106	383	378	409	452	482	485
45	1	228	66	65	67	67	65	67	65	65	282	282	311	346	369	369
45	2	424	102	94	99	94	82	99	82	86	309	299	369	390	467	479
45	3	283	33	22	120	118	104	120	104	104	378	374	416	446	483	485
60	1	223	68	68	64	64	63	64	63	63	277	277	292	341	352	352
60	2	460	87	81	126	121	108	126	108	115	349	335	405	459	522	540
60	3	284	34	23	119	118	104	119	104	104	378	374	417	446	484	486
70	1	231	63	62	64	64	63	64	63	63	273	272	301	335	358	359
70	2	498	109	96	129	122	103	129	103	109	335	319	392	453	521	538
70	3	229	67	66	64	64	63	64	63	63	275	275	300	338	360	360
80	1	216	67	67	59	59	59	59	59	59	267	267	270	330	333	333
80	2	325	73	69	71	68	61	71	61	63	261	255	311	335	405	413
80	3	219	67	67	61	61	61	61	61	61	269	269	279	333	341	341
90	1	216	67	67	59	59	59	59	59	59	268	268	270	331	332	332
90	2	326	57	55	53	51	46	53	46	48	210	205	256	278	343	351
90	3	224	67	67	64	64	64	64	64	64	274	274	295	338	355	355
102	1	216	67	67	59	59	59	59	59	59	268	268	269	331	332	332
102	2	215	62	61	56	55	55	56	55	55	257	257	268	318	326	327
102	3	214	66	66	58	58	58	58	58	58	264	264	267	327	329	329
110	1	211	61	60	55	55	54	55	54	54	255	255	266	316	325	325
110	2	212	60	60	54	54	53	54	53	53	254	254	265	314	322	323
110	3	214	65	65	58	58	58	58	58	58	264	264	268	326	329	329
111	1	209	56	55	52	52	50	52	50	51	247	247	266	306	322	322
111	2	203	47	45	46	46	43	46	43	43	233	232	257	288	306	307
111	3	214	65	65	58	58	58	58	58	58	264	264	268	326	329	329
120	1	247	71	69	85	85	80	85	80	80	309	308	354	376	413	414
120	2	222	69	69	62	61	61	62	61	61	271	271	281	335	345	346
120	3	205	55	54	50	50	49	50	49	49	244	244	259	302	313	313
125	1	254	77	75	86	85	81	86	81	82	314	313	358	383	417	418
125	2	218	67	67	60	60	59	60	59	59	267	267	275	331	339	339
125	3	227	67	67	61	60	60	61	60	60	269	269	280	332	344	344
132	1	199	28	25	46	45	39	46	39	39	220	218	261	272	308	310
132	2	264	34	30	63	61	48	63	48	50	249	246	293	308	350	354
132	3	266	77	76	75	74	70	75	70	70	287	286	334	353	405	406

 * AFMSG1 MODEL *

 ** MEAN VALUES **

TOTAL NO. OF EARTHQUAKES: 33

*DISPLACEMENT (INERTIA COMPONENT)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
137	1	191	33	31	44	43	38	44	38	38	218	216	257	270	305	306
137	2	234	44	41	50	48	42	50	42	42	216	214	272	278	350	351
137	3	237	68	66	67	66	61	67	61	61	255	253	323	315	390	331
142	1	200	38	35	47	46	41	47	41	41	223	221	269	276	320	321
142	2	234	42	38	57	55	47	57	47	48	239	237	293	297	346	349
142	3	222	68	65	71	69	62	71	62	62	228	226	320	288	384	385
152	1	109	51	51	44	44	43	44	43	43	127	127	175	169	223	224
152	2	270	63	61	71	70	66	71	66	66	277	275	330	343	404	406
152	3	229	82	78	80	78	64	80	64	65	225	221	287	281	353	356
163	1	119	50	50	46	45	44	46	44	44	131	130	169	177	222	223
163	2	84	35	35	25	25	24	25	24	24	78	78	99	113	138	138
163	3	129	65	65	55	55	54	55	54	54	141	141	162	193	221	221
172	1	76	39	39	35	35	35	35	35	35	107	107	115	150	160	160
172	2	83	34	33	23	22	22	23	22	22	68	68	88	97	123	123
172	3	161	95	94	83	83	82	83	82	82	181	180	196	234	252	252
183	1	87	36	35	25	24	24	25	24	24	67	67	85	93	119	119
183	2	112	52	52	37	37	36	37	36	36	66	65	75	85	101	102
183	3	113	50	50	43	42	41	43	41	41	118	117	135	158	179	180
184	1	81	33	33	24	24	24	24	24	24	76	75	94	107	131	131
184	2	92	37	37	25	25	24	25	24	24	57	56	75	76	105	105
184	3	104	42	42	37	36	34	37	34	34	106	106	126	144	168	169

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 * AFWSG1 MODEL *

TOTAL NO. OF EARTHQUAKES: 33

** STANDARD DEVIATION **

*DISPLACEMENT (INERTIA COMPONENT)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
20	1	398	27	24	51	51	48	51	48	48	112	111	115	125	131	132
20	2	246	34	34	32	32	31	32	31	31	71	71	79	82	94	95
20	3	397	27	24	51	51	48	51	48	48	112	111	115	124	131	131
30	1	400	27	24	51	51	48	51	48	48	113	112	116	125	132	132
30	2	211	39	39	35	35	35	35	35	35	83	83	84	95	97	96
30	3	413	28	25	52	52	49	52	49	49	115	113	118	127	134	135
40	1	242	39	40	40	40	38	40	38	38	89	89	99	102	111	111
40	2	240	31	30	26	27	25	28	25	26	56	54	64	71	78	81
40	3	416	28	25	52	52	49	52	49	49	115	114	119	128	135	135
45	1	220	52	52	47	47	47	47	47	47	109	109	111	125	127	127
45	2	225	34	33	31	31	29	31	29	29	66	66	73	80	87	89
45	3	404	26	24	49	48	46	49	46	46	106	105	110	118	124	125
60	1	224	54	55	49	49	49	49	49	49	115	115	116	132	133	133
60	2	295	34	32	37	36	33	37	33	35	74	69	77	95	98	104
60	3	402	27	24	49	48	46	49	46	46	106	105	110	118	124	125
70	1	278	52	52	47	47	47	47	47	47	110	110	112	126	128	128
70	2	283	38	35	38	36	34	38	34	35	71	67	78	92	103	106
70	3	229	52	52	46	46	46	46	46	46	107	107	106	123	123	123
80	1	235	55	55	50	50	50	50	50	50	116	116	116	133	133	133
80	2	204	30	30	26	26	25	26	25	25	60	60	64	70	77	78
80	3	249	56	56	51	51	51	51	51	51	118	118	118	136	136	136
90	1	236	56	56	50	50	50	50	50	50	117	117	117	135	135	135
90	2	233	26	26	21	21	21	21	21	21	51	51	55	58	67	67
90	3	250	54	54	47	47	47	47	47	47	111	111	110	127	127	127
102	1	236	56	56	50	50	50	50	50	50	117	117	117	135	135	135
102	2	241	53	53	47	47	47	47	47	47	109	109	108	125	125	125
102	3	236	55	55	49	49	49	49	49	49	115	115	115	132	132	132
110	1	241	53	53	47	47	47	47	47	47	109	109	109	125	125	125
110	2	242	53	53	46	46	46	46	46	46	108	108	107	124	123	123
110	3	237	54	54	49	49	49	49	49	49	114	114	114	131	131	131
111	1	249	51	51	44	44	44	44	44	44	104	104	103	119	119	119
111	2	252	43	44	36	36	37	36	37	37	87	87	89	99	100	100
111	3	237	54	54	49	49	49	49	49	49	114	114	114	131	131	131
120	1	224	55	55	51	51	51	51	51	51	117	117	117	130	134	143
120	2	234	56	56	51	51	51	51	51	51	119	119	119	137	137	137
120	3	245	51	51	44	44	44	44	44	44	103	103	102	118	117	117
125	1	228	63	63	57	57	57	57	57	57	132	132	144	151	160	160
125	2	235	55	55	50	50	50	50	50	50	115	115	115	133	133	133
125	3	217	58	58	51	51	51	51	51	51	120	120	120	138	138	138
132	1	221	27	27	27	27	26	27	26	26	61	61	71	68	77	77
132	2	191	24	24	26	26	24	26	24	24	58	58	66	65	73	74
132	3	183	64	64	54	54	54	54	54	54	127	128	133	146	154	154

 * AFWSG1 MODEL *

TOTAL NO. OF EARTHQUAKES: 33

** STANDARD DEVIATION **

*DISPLACEMENT (INERTIA COMPONENT)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
137	1	259	31	31	30	30	29	30	29	29	68	68	78	77	85	85
137	2	184	32	32	33	32	32	33	32	32	73	72	83	85	97	97
137	3	190	49	50	41	41	41	41	41	41	98	98	106	113	122	122
142	1	265	32	32	31	31	31	31	31	31	71	71	82	80	90	90
142	2	205	32	32	28	28	27	28	27	27	65	65	76	74	84	84
142	3	109	37	37	32	31	31	32	31	31	68	68	87	79	100	100
152	1	57	33	33	28	28	28	28	28	28	41	41	48	48	57	57
152	2	163	49	49	39	39	39	39	39	39	93	94	98	107	115	115
152	3	110	44	44	39	39	36	39	36	36	67	67	78	77	89	90
163	1	72	33	33	29	29	29	29	29	29	39	39	44	47	54	54
163	2	49	24	24	21	21	21	21	21	21	29	29	32	34	38	38
163	3	78	40	40	35	35	35	35	35	35	48	48	51	59	65	65
172	1	66	36	36	33	33	33	33	33	33	46	46	47	56	58	58
172	2	55	26	26	22	22	22	22	22	22	29	29	31	33	37	37
172	3	88	51	51	47	47	47	47	47	47	67	67	71	81	86	86
183	1	65	29	29	24	24	24	24	24	24	32	32	35	37	41	41
183	2	82	33	33	29	29	29	29	29	29	33	33	33	33	35	35
183	3	72	36	36	34	34	34	34	34	34	51	51	55	63	67	67
184	1	61	29	29	26	26	26	26	26	26	35	35	38	42	45	45
184	2	71	30	30	26	26	26	26	26	26	31	30	33	32	38	38
184	3	66	31	31	30	30	30	30	30	30	46	45	49	56	61	61

 * AFWSG1 MODEL *

 ** MEAN VALUES **

TOTAL NO. OF EARTHQUAKES: 33

*ACCELERATION (INERTIA COMPONENT)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
20	1	647	161	142	193	182	149	193	149	155	480	463	556	579	657	671
20	2	1070	466	448	409	396	385	409	365	370	700	677	841	850	1033	1054
20	3	647	160	142	190	180	147	190	147	153	475	458	550	573	651	665
30	1	645	159	141	190	179	147	190	147	153	475	457	550	573	650	664
30	2	1031	450	435	395	384	359	395	359	363	666	646	816	806	1013	1032
30	3	616	143	126	155	147	124	155	124	129	411	397	474	498	564	577
40	1	823	342	328	541	515	424	541	424	432	1120	1089	1224	1308	1463	1485
40	2	898	379	361	337	324	299	337	299	303	581	558	733	721	911	929
40	3	614	143	126	156	148	125	156	125	130	411	397	474	498	564	577
45	1	483	156	144	188	182	160	188	160	162	485	476	630	588	757	764
45	2	859	331	310	287	273	245	287	245	251	545	521	682	681	843	864
45	3	425	78	65	170	168	148	170	148	150	479	474	540	566	637	641
60	1	282	89	87	101	101	97	101	97	97	356	356	411	430	483	483
60	2	662	170	160	210	202	182	210	182	189	478	458	557	635	713	737
60	3	437	84	70	175	172	152	175	152	154	488	482	551	578	651	657
70	1	369	76	71	83	80	71	83	71	73	288	282	358	357	430	436
70	2	686	208	181	213	201	170	213	170	176	490	469	570	650	753	771
70	3	361	74	70	72	70	63	72	63	65	265	261	332	331	400	405
80	1	273	94	92	90	89	86	90	86	87	330	329	367	405	447	449
80	2	665	218	192	208	195	167	208	167	174	489	467	599	646	792	813
80	3	273	84	83	84	84	81	84	81	81	314	313	357	385	430	432
90	1	263	90	89	84	84	82	84	82	82	322	321	342	394	414	414
90	2	503	137	130	143	139	125	143	125	129	343	334	454	459	619	631
90	3	319	98	94	117	116	107	117	107	108	378	376	461	459	543	547
102	1	262	90	89	84	84	82	84	82	82	321	321	341	393	413	413
102	2	389	122	116	143	140	128	143	128	130	387	381	513	478	620	628
102	3	279	94	92	90	89	86	90	86	86	327	326	379	402	461	463
110	1	383	121	113	135	131	116	135	116	117	387	381	497	481	611	617
110	2	367	122	117	149	146	134	149	134	136	402	397	527	493	629	635
110	3	295	96	94	95	94	88	95	88	89	332	329	396	409	484	486
111	1	442	141	130	165	160	139	165	139	141	434	425	563	542	693	701
111	2	603	273	258	378	372	339	378	339	343	795	785	948	964	1130	1142
111	3	295	96	94	95	94	88	95	88	89	332	329	396	409	484	486
120	1	412	141	125	166	161	137	166	137	139	439	431	527	539	637	644
120	2	548	220	205	277	271	242	277	242	245	621	611	779	765	950	961
120	3	360	117	110	145	142	129	145	129	130	402	397	520	494	626	631
125	1	416	144	129	169	164	139	169	139	141	442	434	535	543	646	652
125	2	474	160	153	204	200	180	204	180	182	494	487	632	613	785	792
125	3	398	114	105	134	131	114	134	114	116	375	370	464	463	575	580
132	1	398	92	83	129	125	106	129	106	109	368	360	462	454	552	562
132	2	465	81	73	123	119	95	123	95	99	355	348	413	449	524	535
132	3	735	363	342	458	450	400	458	400	404	932	916	1119	1119	1333	1346

 * AFWSG1 MODEL *

 ** MEAN VALUES **

TOTAL NO. OF EARTHQUAKES: 33

*ACCELERATION(INERTIA COMPONENT)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
137	1	492	158	143	185	180	155	185	155	157	445	437	565	556	705	713
137	2	894	371	347	454	443	397	454	397	400	935	916	1102	1173	1388	1397
137	3	626	323	306	420	414	369	420	369	372	867	856	1044	1034	1231	1242
142	1	653	278	252	313	307	265	313	265	268	665	654	787	822	977	987
142	2	585	200	190	280	275	251	280	251	253	624	616	771	776	934	941
142	3	544	255	239	332	326	291	332	291	294	720	710	870	866	1035	1044
152	1	263	154	148	186	184	167	186	167	168	370	366	442	449	534	538
152	2	1044	529	509	728	718	652	728	652	657	1528	1511	1798	1831	2139	2158
152	3	492	248	231	297	291	256	297	256	259	614	604	725	745	871	879
163	1	520	304	299	414	412	395	414	395	397	768	763	853	912	1019	1024
163	2	996	664	663	554	553	551	554	551	551	847	846	910	1132	1191	1191
163	3	359	191	189	187	186	176	187	176	177	362	360	428	453	534	536
172	1	301	194	193	184	183	180	184	180	180	297	296	349	366	432	433
172	2	849	572	571	483	483	480	483	480	480	719	719	787	946	1017	1017
172	3	256	169	168	159	159	155	159	155	156	296	295	322	368	401	401
183	1	488	337	335	298	298	295	298	295	295	392	391	435	462	526	526
183	2	541	385	384	342	342	338	342	338	338	428	427	461	494	541	542
183	3	386	265	259	335	332	303	335	303	306	555	548	593	642	695	700
184	1	467	315	314	281	281	278	281	278	278	385	384	437	462	535	535
184	2	540	379	377	356	355	348	356	348	348	485	483	560	566	670	671
184	3	431	306	299	389	386	352	389	352	355	628	621	670	720	785	791

 * AFWSG1 MODEL *

TOTAL NO. OF EARTHQUAKES: 33

** STANDARD DEVIATION **

*ACCELERATION(INERTIA COMPONENT)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
20	1	365	49	46	75	72	63	75	63	65	156	152	173	179	198	201
20	2	505	349	343	333	327	312	333	312	314	487	475	555	580	688	701
20	3	365	49	45	73	71	62	73	62	64	154	150	171	177	195	199
30	1	364	48	45	73	71	62	73	62	64	153	150	170	176	195	198
30	2	453	313	309	297	293	284	297	284	285	419	411	482	495	606	615
30	3	353	45	42	59	58	54	59	54	55	128	126	142	147	165	168
40	1	360	145	141	237	228	190	237	190	193	460	450	473	520	554	561
40	2	387	224	219	216	210	202	216	202	203	317	306	375	388	471	481
40	3	359	45	42	60	59	54	60	54	55	129	127	143	148	166	169
45	1	226	59	56	83	81	73	83	73	74	167	164	203	193	235	237
45	2	395	216	207	208	201	189	208	189	192	329	316	394	405	489	502
45	3	351	30	28	56	56	53	56	53	53	121	120	130	135	149	150
60	1	230	69	69	65	65	64	65	64	64	149	149	160	172	182	182
60	2	352	100	95	118	115	107	118	107	110	218	209	247	285	312	323
60	3	343	30	28	54	54	51	54	51	51	117	116	126	131	145	146
70	1	268	33	33	37	37	35	37	35	35	81	81	96	93	109	110
70	2	361	134	122	135	130	116	135	116	119	259	249	292	342	381	393
70	3	236	36	36	40	39	38	40	38	38	87	87	102	100	116	116
80	1	230	68	68	61	61	61	61	61	61	142	142	145	164	169	169
80	2	326	150	136	153	146	130	153	130	135	300	288	354	387	456	470
80	3	247	62	62	56	56	56	56	56	56	131	132	134	152	156	156
90	1	239	73	73	65	65	65	65	65	65	152	153	154	176	178	178
90	2	264	97	93	107	104	98	107	98	100	199	194	250	253	329	335
90	3	250	56	56	54	53	52	54	52	52	121	121	135	140	156	157
102	1	238	73	73	65	66	66	65	66	65	153	153	154	176	178	178
102	2	218	47	47	52	51	49	52	49	49	105	105	129	122	147	148
102	3	224	65	66	61	61	60	61	60	60	140	140	149	162	174	174
110	1	212	48	48	50	50	47	50	47	47	107	107	127	125	151	152
110	2	220	51	51	54	54	52	54	52	52	111	111	135	128	153	154
110	3	216	62	62	58	58	57	58	57	57	132	132	143	153	168	168
111	1	219	45	44	52	51	47	52	47	48	104	103	128	122	147	149
111	2	297	107	105	125	123	118	125	118	119	211	210	243	243	271	274
111	3	216	62	62	58	58	57	58	57	57	132	132	143	153	168	168
120	1	220	55	52	57	56	51	57	51	51	116	114	138	134	158	160
120	2	241	89	84	113	111	103	113	103	104	208	205	240	245	277	280
120	3	222	51	51	51	50	49	51	49	49	108	108	131	125	153	154
125	1	214	56	52	58	57	52	58	52	52	118	116	141	137	161	163
125	2	222	77	73	101	100	92	101	92	93	189	187	225	226	264	267
125	3	185	61	60	61	60	57	61	57	57	129	128	152	151	181	182
132	1	206	42	41	44	43	40	44	40	40	91	90	112	106	127	128
132	2	238	37	36	46	45	39	46	39	40	99	98	110	116	127	130
132	3	268	116	113	138	136	128	136	128	129	246	244	288	286	331	334

 * AFWSG1 MODEL *

TOTAL NO. OF EARTHQUAKES: 33

** STANDARD DEVIATION **

*ACCELERATION (INERTIA COMPONENT)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
137	1	256	53	50	59	58	53	59	53	54	108	107	132	126	149	150
137	2	465	268	256	354	351	323	354	323	325	667	660	777	794	923	929
137	3	257	117	113	141	140	131	141	131	131	259	256	301	301	348	350
142	1	273	89	85	101	100	91	101	91	92	175	174	198	203	223	225
142	2	220	69	67	91	91	84	91	84	84	182	180	214	215	249	250
142	3	250	100	97	120	119	112	120	112	112	221	219	256	254	293	295
152	1	142	97	95	114	113	109	114	109	110	170	169	190	196	222	224
152	2	393	216	212	312	311	286	312	286	287	633	631	731	732	843	849
152	3	199	96	92	109	108	99	109	99	100	202	200	232	240	274	276
163	1	262	154	153	187	186	184	187	184	184	280	279	299	324	345	346
163	2	760	377	376	330	330	329	330	329	329	463	463	472	595	608	608
163	3	243	109	108	110	109	107	110	107	107	164	163	184	195	218	219
172	1	198	121	120	117	117	116	117	116	116	151	150	166	171	192	192
172	2	597	341	341	303	303	302	303	302	302	418	418	433	538	557	557
172	3	144	113	113	111	111	110	111	110	110	169	169	181	202	217	218
183	1	255	180	180	170	170	168	170	168	168	207	206	224	241	266	266
183	2	290	236	235	225	225	223	225	223	223	264	264	285	307	336	336
183	3	184	154	154	185	185	178	185	178	180	256	254	267	284	299	301
184	1	258	166	166	157	156	157	156	156	156	193	193	210	223	247	247
184	2	304	238	237	239	238	234	239	234	234	308	307	349	360	413	413
184	3	185	168	167	206	205	197	206	197	198	289	286	300	321	338	340

 * AFWSG1 MODEL *

TOTAL NO. OF EARTHQUAKES: 33

** MEAN VALUES **

*MOMENTS AND FORCES (INERTIA COMPONENT)

ELEM. NO.	FORCE CODE	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
10	12	285	82	79	97	95	90	97	90	91	329	327	367	398	436	439
14	12	268	85	83	100	99	95	100	95	96	342	340	387	412	449	450
18	12	236	85	84	90	89	88	90	88	88	321	321	347	389	408	408
23	12	234	89	88	88	88	87	88	87	87	317	316	329	385	397	397
34	12	244	82	80	93	92	89	93	89	90	327	326	366	395	426	427
44	12	350	89	85	112	111	104	112	104	105	349	346	419	425	490	494
52	12	242	73	72	75	74	73	75	73	73	284	284	317	348	376	378
62	12	251	84	83	87	87	84	87	84	85	313	312	345	382	413	415
71	12	234	84	84	85	85	84	85	84	84	311	311	334	379	400	401
76	12	308	94	92	95	93	89	95	89	90	320	317	353	394	431	436
82	12	244	90	90	90	90	89	90	89	89	322	322	340	392	409	410
86	12	286	94	92	98	97	94	98	94	94	334	333	374	407	445	447
93	12	237	66	65	70	69	67	70	67	67	274	273	305	336	367	368
98	12	303	90	88	99	98	93	99	93	94	324	322	385	397	464	466
101	12	203	44	41	53	52	47	53	47	47	227	225	274	281	324	325
108	12	335	103	97	119	117	106	119	106	100	336	333	434	417	521	523
110	12	272	85	83	91	90	85	91	85	86	296	294	377	364	456	458
121	12	110	68	68	55	55	54	55	54	54	135	135	148	180	196	196
132	12	156	108	108	91	91	90	91	90	91	191	191	207	246	265	265
133	12	159	103	102	87	86	85	87	85	85	178	178	197	230	253	253
134	12	122	83	83	70	70	69	70	69	69	159	158	176	213	234	234
157	6	389	104	97	130	127	117	130	117	119	395	390	432	474	522	528
158	12	147	87	87	70	70	69	70	69	69	159	159	174	207	222	222

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 * AFWSG1 MODEL *

TOTAL NO. OF EARTHQUAKES: 33

** STANDARD DEVIATION **

*MOMENTS AND FORCES (INERTIA COMPONENT)

ELEM. NO.	FORCE CODE	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
10	12	233	49	48	63	62	61	63	61	61	120	119	131	138	148	149
14	12	250	51	51	64	63	62	64	62	62	126	126	139	145	157	158
18	12	227	56	56	65	65	65	65	65	65	129	129	139	149	157	157
23	12	222	61	60	69	69	69	69	69	69	137	136	143	158	164	164
34	12	221	56	56	66	66	66	66	66	66	131	131	142	150	161	162
44	12	312	67	67	84	84	82	84	82	82	155	153	174	179	201	202
52	12	230	49	49	54	54	54	54	54	54	108	108	114	124	131	131
62	12	245	55	55	61	61	60	61	60	60	124	124	132	144	152	153
71	12	234	57	57	62	62	62	62	62	62	127	126	130	146	151	151
76	12	219	58	57	63	63	61	63	61	62	125	124	135	145	158	160
82	12	232	59	59	65	65	65	65	65	65	131	131	135	151	156	156
86	12	246	51	51	55	55	54	55	54	54	113	113	119	131	137	138
93	12	214	45	45	46	46	46	46	46	46	96	96	101	111	117	117
98	12	181	54	54	53	53	52	53	52	52	114	114	127	133	148	148
101	12	246	33	33	37	36	35	37	35	35	75	75	85	87	98	98
108	12	199	47	47	50	49	46	50	46	47	98	98	123	117	143	143
110	12	200	44	44	43	43	42	43	42	42	91	91	108	106	125	126
121	12	66	52	52	46	46	46	46	46	46	65	65	68	75	79	79
132	12	85	78	78	69	69	69	69	69	69	99	99	104	114	120	120
133	12	83	74	74	66	66	66	66	66	66	95	95	101	110	117	117
134	12	63	63	63	56	56	56	56	56	56	81	81	85	95	101	101
157	6	308	46	46	62	61	59	62	59	60	125	123	135	143	155	157
158	12	74	65	65	58	58	58	58	58	58	83	83	88	96	100	100

 * AFWSG1 MODEL *

 ** MEAN VALUES **

TOTAL NO. OF EARTHQUAKES: 33

*MOMENTS AND FORCES (INERTIA COMPONENT)

ELEM. NO.	FORCE CODE	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
4	1	289	82	89	86	84	80	86	80	81	299	296	329	367	410	415
5	1	292	31	20	97	95	80	97	80	81	322	318	362	383	424	427
6	1	490	128	117	128	122	107	128	107	110	354	343	425	435	522	532
7	1	244	44	41	57	56	50	57	50	51	222	219	284	279	351	354
8	1	235	73	71	84	84	80	84	80	81	307	306	350	372	407	408
9	1	430	102	94	91	86	75	91	75	78	273	266	333	357	436	445
10	1	302	47	44	64	62	55	64	55	57	241	238	317	299	381	386
11	1	220	19	13	28	25	17	28	17	17	125	121	161	181	226	229
12	1	381	108	86	80	69	50	80	50	53	250	234	281	334	386	395
13	1	262	33	31	66	65	60	66	60	61	247	245	305	302	356	357
14	1	267	66	55	92	87	73	92	73	74	276	266	348	364	472	476
15	1	359	78	75	64	61	54	64	54	56	203	197	251	277	337	345
16	1	240	58	57	68	67	64	68	64	64	266	265	312	326	366	367
17	1	302	73	70	82	81	73	82	73	74	265	262	355	333	445	448
18	1	217	75	74	74	74	73	74	73	73	288	288	301	352	361	361
19	1	224	49	48	53	52	49	53	49	49	230	229	271	288	334	336
20	1	218	52	51	54	53	51	54	51	51	236	236	272	293	332	333
21	1	230	79	79	80	79	78	80	78	78	294	293	331	361	403	405
22	1	238	88	87	87	87	86	87	86	86	314	313	335	382	411	411
23	1	232	53	51	59	58	53	59	53	53	235	233	289	299	371	372
24	1	253	73	72	77	77	75	77	75	75	284	283	334	349	405	406
25	1	208	41	38	57	56	50	57	50	50	224	222	298	280	356	357
26	1	270	66	63	85	82	74	85	74	75	256	252	357	328	434	435
27	1	84	37	36	26	26	25	26	25	25	81	80	100	118	142	142
28	1	132	56	56	39	39	39	39	39	39	111	116	139	156	180	181
29	1	147	61	61	33	33	33	33	33	33	105	105	125	148	171	171
33	1	133	87	86	71	71	70	71	70	70	160	159	177	216	238	239
34	1	118	62	61	63	62	59	63	59	60	160	159	196	207	246	247

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 * AFWSG1 MODEL *

TOTAL NO. OF EARTHQUAKES: 33

** STANDARD DEVIATION **

*MOMENTS AND FORCES (INERTIA COMPONENT)

ELEM. NO.	FORCE CODE	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
4	1	211	62	61	67	66	64	67	64	65	125	123	138	145	160	163
5	1	362	26	25	43	43	41	43	41	41	89	87	94	100	108	108
6	1	317	78	74	81	78	73	81	73	76	150	144	173	175	198	203
7	1	214	24	24	30	30	29	30	29	29	59	59	70	69	80	81
8	1	217	49	49	59	59	58	59	58	58	115	115	127	132	144	144
9	1	261	59	57	53	51	48	53	48	49	101	99	118	124	142	145
10	1	223	35	35	41	41	39	41	39	40	79	78	95	94	112	113
11	1	207	36	35	39	38	36	39	36	36	64	63	70	74	83	84
12	1	253	82	73	62	57	53	62	53	54	110	103	115	133	144	147
13	1	316	32	32	41	41	40	41	40	40	74	74	84	86	96	96
14	1	163	40	39	54	53	49	54	49	49	101	99	121	122	151	152
15	1	230	78	77	72	71	68	72	68	69	121	118	137	144	164	168
16	1	290	43	43	47	47	46	47	46	46	96	96	105	111	121	121
17	1	237	51	51	53	52	50	53	50	51	103	103	128	122	150	151
18	1	242	50	51	53	53	53	53	53	53	109	109	111	126	128	128
19	1	271	38	38	43	42	42	43	42	42	83	83	91	96	106	106
20	1	240	43	43	44	44	44	44	44	44	93	93	98	107	114	115
21	1	218	53	53	59	59	58	59	58	59	116	116	129	134	148	149
22	1	224	62	62	68	68	67	68	67	67	136	136	145	158	169	169
23	1	188	42	41	48	48	46	48	46	46	95	94	112	112	133	134
24	1	180	48	48	48	48	47	48	47	47	103	103	114	120	132	132
25	1	219	29	29	32	31	30	32	30	30	66	65	82	77	94	94
26	1	173	38	37	40	39	38	40	38	38	77	77	101	93	117	117
27	1	49	35	35	32	32	32	32	32	32	44	44	49	52	58	58
28	1	75	47	47	42	42	41	42	41	41	60	60	66	70	76	76
29	1	93	45	45	38	38	38	38	38	38	55	55	60	65	71	71
33	1	78	64	64	56	56	56	56	56	56	77	77	82	91	96	96
34	1	63	52	51	50	50	50	50	50	50	76	76	88	90	102	102

 * ZBEND MODEL *

EARTHQUAKE NO. 1

*DISPLACEMENT(INERTIA COMPONENT)

NODE NO.	COMP. NO.	DISP. (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	.57644E-06	29	28	2	2	1	2	1	1	40	40	43	62	74	74
1	2	.26596E-06	90	89	66	66	64	66	64	64	117	117	120	137	142	142
1	3	.29555E-05	25	25	31	31	31	31	31	31	102	102	103	102	103	103
2	1	.72935E-06	29	28	2	2	1	2	1	1	40	40	43	62	74	74
2	2	.97888E-06	89	88	65	65	64	65	64	64	116	115	119	135	140	140
2	3	.46632E-02	22	22	28	28	28	28	28	28	97	97	97	97	97	97
3	1	.21806E-05	29	28	2	2	1	2	1	1	40	40	43	62	74	74
3	2	.21803E-04	87	87	65	64	63	65	63	63	114	114	117	133	137	138
3	3	.12819E-01	22	22	28	28	28	28	28	28	97	97	97	97	97	97
4	1	.34934E-05	29	28	2	2	1	2	1	1	40	40	43	62	74	74
4	2	.65133E-04	87	86	64	64	63	64	63	63	114	114	116	133	137	137
4	3	.20107E-01	22	22	28	28	28	28	28	28	97	97	97	97	97	97
5	1	.25280E-04	29	28	2	2	1	2	1	1	40	40	43	62	74	74
5	2	.10824E-02	85	85	64	64	63	64	63	63	112	112	114	131	134	134
5	3	.51495E-01	21	21	27	27	27	27	27	27	96	96	97	96	97	97
6	1	.46913E-04	28	28	2	2	1	2	1	1	40	40	43	62	74	74
6	2	.18414E-03	87	87	66	66	66	66	66	66	115	115	116	133	134	134
6	3	.61264E-02	21	21	26	26	26	26	26	26	95	95	95	95	95	95
7	1	.47457E-04	28	28	2	2	1	2	1	1	40	40	43	62	74	74
7	2	.16472E-04	81	81	60	60	60	60	60	60	108	108	109	126	129	129
7	3	.72897E-04	19	19	24	24	24	24	24	24	92	92	92	92	92	92
8	1	.48024E-04	28	28	2	2	1	2	1	1	40	40	43	62	74	74
8	2	.23095E-03	86	85	65	65	65	65	65	65	113	113	114	131	133	133
8	3	.64823E-02	20	20	26	26	26	26	26	26	95	95	95	95	95	95
9	1	.50353E-04	28	28	2	2	1	2	1	1	40	40	43	62	74	74
9	2	.67772E-03	86	86	66	66	65	66	65	66	114	114	115	132	133	133
9	3	.18609E-01	20	20	26	26	26	26	26	26	94	94	95	94	95	95
10	1	.52844E-04	28	28	2	2	1	2	1	1	40	40	43	62	74	74
10	2	.12657E-02	87	87	66	66	66	66	66	66	115	115	115	133	134	134
10	3	.32985E-01	20	20	26	26	26	26	26	26	94	94	95	94	95	95
11	1	.64254E-04	28	28	2	2	1	2	1	1	40	40	43	62	74	74
11	2	.49861E-02	91	91	70	70	70	70	70	70	119	119	120	138	138	138
11	3	.11173E+00	20	20	25	25	25	25	25	25	94	94	94	94	94	94
12	1	.73112E-04	28	28	2	2	1	2	1	1	40	40	43	62	74	74
12	2	.83589E-02	95	95	73	73	73	73	73	73	124	124	124	143	143	143
12	3	.17843E+00	20	20	25	25	25	25	25	25	94	94	94	94	94	94
13	1	.73313E-04	28	28	2	2	1	2	1	1	40	40	43	62	74	74
13	2	.93273E-02	96	96	75	75	75	75	75	75	126	126	126	145	145	145
13	3	.19760E+00	20	20	25	25	25	25	25	25	93	93	94	93	94	94
14	1	.73506E-04	28	28	2	2	1	2	1	1	40	40	43	62	74	74
14	2	.10295E-01	97	97	76	76	76	76	76	76	127	127	127	146	146	146
14	3	.21676E+00	20	20	25	25	25	25	25	25	93	93	94	93	94	94

 * ZBEND MODEL *

EARTHQUAKE NO. 1

*DISPLACEMENT (INERTIA COMPONENT)

NODE NO.	COMP. NO.	DISP. (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
15	1	.78345E-04	28	28	2	2	1	2	1	1	40	40	43	62	74	74
15	2	.12125E-01	100	100	78	78	78	78	78	78	129	129	130	149	149	149
15	3	.25314E+00	20	20	25	25	25	25	25	25	93	93	94	93	94	94
16	1	.13747E-02	95	95	72	72	72	72	72	72	123	123	124	143	148	148
16	2	.13483E-01	104	104	82	82	82	82	82	82	135	135	135	154	154	154
16	3	.30893E+00	20	20	24	24	24	24	24	24	92	92	92	92	92	92
17	1	.20606E-02	94	94	71	71	71	71	71	71	121	121	123	141	147	147
17	2	.13483E-01	104	104	82	82	82	82	82	82	135	135	135	154	154	154
17	3	.34843E+00	21	21	23	23	23	23	23	23	92	92	92	92	92	92
18	1	.21716E-02	94	94	71	71	71	71	71	71	121	121	123	142	148	148
18	2	.13483E-01	104	104	82	82	82	82	82	82	135	135	135	154	154	154
18	3	.36206E+00	21	21	24	24	24	24	24	24	92	92	92	92	92	92
19	1	.22806E-02	94	94	71	71	71	71	71	71	122	122	123	142	148	148
19	2	.13483E-01	104	104	82	82	82	82	82	82	135	135	135	154	154	154
19	3	.37567E+00	22	22	24	24	24	24	24	24	93	93	93	93	93	93
20	1	.23332E-02	95	95	71	71	71	71	71	71	122	122	123	142	148	148
20	2	.13481E-01	104	104	82	82	82	82	82	82	135	135	135	154	154	154
20	3	.38580E+00	22	22	24	24	24	24	24	24	93	93	93	93	93	93
21	1	.22995E-02	95	95	72	72	72	72	72	72	123	123	124	143	149	149
21	2	.13479E-01	104	104	82	82	82	82	82	82	135	135	135	154	154	154
21	3	.40053E+00	22	22	24	24	24	24	24	24	94	94	94	94	94	94
22	1	.21786E-02	96	96	73	73	73	73	73	73	124	124	126	145	149	149
22	2	.13477E-01	104	104	82	82	82	82	82	82	135	135	135	154	154	154
22	3	.41154E+00	23	23	25	25	25	25	25	25	94	94	94	94	94	94
23	1	.19904E-02	98	98	75	75	75	75	75	75	126	126	128	146	151	151
23	2	.13477E-01	104	104	82	82	82	82	82	82	135	135	135	154	154	154
23	3	.42385E+00	23	23	25	25	25	25	25	25	95	95	95	95	95	95
24	1	.18002E-02	100	100	77	77	77	77	77	77	129	129	130	149	152	152
24	2	.13476E-01	104	104	82	82	82	82	82	82	135	135	135	154	154	154
24	3	.43615E+00	23	23	26	26	26	26	26	26	95	95	95	95	95	95
25	1	.15900E-02	102	102	79	79	79	79	79	79	132	132	133	152	154	154
25	2	.13473E-01	104	104	82	82	82	82	82	82	135	135	135	154	154	154
25	3	.44667E+00	24	24	26	26	26	26	26	26	96	96	96	96	96	96
26	1	.26784E-04	8	8	-19	-19	-20	-20	-20	-20	13	13	14	34	36	36
26	2	.11464E-01	100	100	78	78	78	78	78	78	130	130	130	150	150	150
26	3	.42527E+00	24	24	27	27	27	27	27	27	97	97	97	97	97	97
27	1	.19983E-04	9	8	-19	-19	-20	-20	-20	-20	13	13	14	35	36	36
27	2	.75866E-02	98	98	76	76	76	76	76	76	127	127	127	147	147	147
27	3	.34389E+00	24	24	27	27	27	27	27	27	97	97	97	97	97	97
28	1	.14108E-04	9	8	-19	-19	-20	-20	-20	-20	13	13	14	35	36	36
28	2	.51493E-02	97	97	75	75	75	75	75	75	126	126	126	145	145	145
28	3	.28276E+00	24	24	27	27	27	27	27	27	97	97	98	97	98	98

 * ZBEND MODEL *

EARTHQUAKE NO. 1

*DISPLACEMENT (INERTIA COMPONENT)

NODE NO.	COMP. NO.	DISP. (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
29	1	.13877E-04	9	8	-19	-19	-20	-19	-20	-20	13	13	14	35	36	36
29	2	.40390E-02	96	96	75	75	75	75	75	75	126	126	126	145	145	145
29	3	.25101E+00	25	25	27	27	27	27	27	27	98	98	98	98	98	98
30	1	.13645E-04	9	8	-19	-19	-20	-19	-20	-20	13	13	14	35	36	36
30	2	.29310E-02	96	96	74	74	74	74	74	74	125	125	125	144	144	144
30	3	.21924E+00	25	25	27	27	27	27	27	27	98	98	98	98	98	98
31	1	.39887E-05	9	9	-19	-19	-20	-19	-20	-20	13	13	14	35	36	36
31	2	.43653E-03	93	93	72	72	72	72	72	72	122	122	122	140	141	141
31	3	.11145E+00	25	25	27	27	27	27	27	27	98	98	98	98	98	98
32	1	.14640E-05	9	9	-19	-19	-20	-19	-20	-20	13	13	14	35	36	36
32	2	.31094E-04	90	90	69	69	69	69	69	69	119	119	119	137	138	139
32	3	.42937E-01	25	25	27	27	27	27	27	27	98	98	98	98	98	98
33	1	.83273E-06	9	9	-19	-19	-20	-19	-20	-20	13	13	14	35	36	36
33	2	.53284E-05	88	88	67	67	67	67	67	67	116	116	117	134	136	136
33	3	.25756E-01	25	25	27	27	27	27	27	27	98	98	98	98	98	98
34	1	.65815E-06	9	9	-19	-19	-20	-19	-20	-20	13	13	14	35	36	36
34	2	.12795E-05	84	84	64	64	64	64	64	64	112	112	114	131	134	134
34	3	.46620E-05	30	30	33	33	33	33	33	33	106	106	107	106	107	107

 * ZBEND MODEL *

EARTHQUAKE NO. 1

*ACCELERATION(INERTIA COMPONENT)

NODE NO.	COMP. NO.	ACC(DY) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	.65118E-01	278	263	217	215	187	217	187	189	335	331	336	398	397	400
1	2	.28597E-01	593	570	435	430	383	435	383	387	640	632	633	718	711	718
1	3	.36790E-01	397	397	260	260	260	260	260	260	473	473	492	473	492	492
2	1	.82391E-01	278	263	217	215	187	217	187	189	335	331	336	398	397	400
2	2	.98150E-01	590	567	434	429	382	434	382	385	638	630	631	716	709	717
2	3	.34985E+02	251	251	152	152	152	152	152	152	301	301	317	301	317	317
3	1	.24633E+00	278	263	217	215	187	217	187	189	335	331	336	398	397	400
3	2	.19384E+01	586	563	431	426	379	431	379	383	635	627	627	712	706	713
3	3	.96153E+02	250	250	152	152	152	152	152	152	301	301	317	301	317	317
4	1	.39463E+00	278	263	217	215	187	217	187	189	335	331	336	398	397	400
4	2	.55869E+01	584	561	430	426	378	430	378	382	634	625	626	711	705	712
4	3	.15053E+03	249	249	151	151	151	151	151	151	299	299	315	299	315	315
5	1	.28558E+01	277	263	217	214	187	217	187	189	335	330	336	397	396	399
5	2	.67350E+02	570	547	422	418	371	422	371	374	622	614	615	700	694	701
5	3	.35923E+03	193	193	114	114	114	114	114	114	240	240	255	240	255	255
6	1	.53000E+01	274	260	214	211	185	214	185	186	331	326	332	393	392	395
6	2	.54950E+01	338	322	259	256	226	259	226	228	396	391	395	458	458	462
6	3	.36058E+02	62	62	50	50	50	50	50	50	127	127	140	127	140	140
7	1	.53615E+01	274	260	214	211	184	214	184	186	331	326	332	393	392	395
7	2	.94488E+00	422	417	290	288	277	290	277	278	448	446	450	505	511	513
7	3	.30897E+00	600	600	579	579	579	579	579	579	923	923	939	923	939	939
8	1	.54255E+01	274	259	214	211	184	214	184	186	331	326	332	393	391	395
8	2	.74118E+01	127	123	107	106	99	107	99	99	190	189	196	237	245	246
8	3	.37438E+02	47	47	47	47	47	47	47	47	119	119	132	119	132	132
9	1	.56887E+01	273	259	213	210	184	213	184	186	330	325	331	392	391	394
9	2	.21153E+02	126	121	105	104	97	105	97	97	187	186	192	233	241	242
9	3	.10613E+03	40	40	45	45	45	45	45	45	116	116	128	116	128	128
10	1	.59702E+01	272	258	213	210	183	213	183	185	329	324	330	391	390	393
10	2	.38945E+02	100	98	85	84	80	85	80	80	159	158	165	202	212	212
10	3	.18474E+03	30	30	44	44	44	44	44	44	113	113	124	113	124	124
11	1	.72598E+01	269	255	210	207	181	210	181	183	325	321	327	387	386	389
11	2	.13544E+03	65	63	48	48	46	48	46	46	107	107	111	140	151	151
11	3	.58102E+03	4	4	43	43	43	43	43	43	107	107	113	107	113	113
12	1	.82610E+01	266	253	208	205	179	208	179	181	322	318	323	384	382	386
12	2	.18697E+03	46	46	28	28	27	28	27	27	75	74	78	98	110	110
12	3	.88153E+03	-2	-2	43	43	43	43	43	43	106	106	109	106	109	109
13	1	.82838E+01	266	253	207	205	179	207	179	181	322	317	323	383	382	385
13	2	.19422E+03	42	41	24	24	23	24	23	23	66	66	69	87	99	99
13	3	.96338E+03	-3	-3	43	43	43	43	43	43	107	107	109	107	109	109
14	1	.83057E+01	266	252	207	205	179	207	179	181	322	317	323	383	382	385
14	2	.20132E+03	40	40	22	22	22	22	22	22	62	62	64	80	91	91
14	3	.10451E+04	-2	-2	44	44	44	44	44	44	108	108	110	108	110	110

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 * ZBEND MODEL *

EARTHQUAKE NO. 1

*ACCELERATION (INERTIA COMPONENT)

NODE NO.	COMP. NO.	ACC(DY) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
15	1	.88535E+01	260	247	202	199	174	202	174	176	315	310	316	375	374	377
15	2	.20458E+03	48	47	30	30	30	30	30	30	69	69	71	84	90	90
15	3	.11964E+04	0	0	47	47	47	47	47	47	111	111	114	111	114	114
16	1	.80199E+02	66	66	23	23	23	23	23	23	73	73	76	105	111	111
16	2	.21165E+03	58	58	41	41	40	41	40	40	82	82	83	98	100	100
16	3	.12808E+04	5	5	37	37	37	37	37	37	101	101	103	101	103	103
17	1	.13143E+03	69	69	25	25	24	25	24	25	77	76	80	109	114	114
17	2	.21164E+03	58	58	41	41	41	41	41	41	82	82	84	98	101	101
17	3	.12421E+04	7	7	19	19	19	19	19	19	81	81	83	81	83	83
18	1	.13833E+03	70	69	26	26	25	26	25	25	77	77	80	110	115	115
18	2	.21164E+03	58	58	41	41	41	41	41	41	82	82	84	98	101	101
18	3	.12279E+04	10	10	17	17	17	17	17	17	79	79	80	79	80	80
19	1	.14519E+03	70	69	27	26	25	27	25	25	78	78	81	111	116	116
19	2	.21164E+03	58	58	41	41	41	41	41	41	82	82	84	98	101	101
19	3	.12137E+04	13	13	17	17	17	17	17	17	81	81	82	81	82	82
20	1	.14762E+03	69	68	26	26	25	26	25	25	78	78	80	111	116	116
20	2	.21162E+03	58	58	41	41	41	41	41	41	82	82	84	98	101	101
20	3	.12305E+04	14	14	17	17	17	17	17	17	81	81	82	81	82	82
21	1	.14131E+03	67	66	25	25	24	25	24	24	76	76	78	109	114	114
21	2	.21160E+03	58	58	41	41	41	41	41	41	82	82	84	98	101	101
21	3	.12679E+04	15	15	18	18	18	18	18	18	83	83	83	83	83	83
22	1	.12843E+03	64	64	23	23	23	23	23	23	74	74	75	106	112	112
22	2	.21158E+03	58	58	41	41	41	41	41	41	82	82	84	98	101	101
22	3	.12943E+04	17	17	21	21	21	21	21	21	87	87	88	87	88	88
23	1	.11007E+03	61	61	21	21	21	21	21	21	72	72	72	103	110	110
23	2	.21158E+03	58	58	41	41	41	41	41	41	82	82	84	98	101	101
23	3	.13224E+04	20	20	26	26	26	26	26	26	94	94	95	94	95	95
24	1	.91524E+02	59	59	21	21	21	21	21	21	71	71	72	103	110	110
24	2	.21158E+03	58	58	41	41	41	41	41	41	82	82	84	98	101	101
24	3	.13548E+04	23	23	32	32	32	32	32	32	103	103	104	103	104	104
25	1	.71869E+02	57	57	23	23	23	23	23	23	73	73	76	104	113	113
25	2	.21155E+03	58	58	41	41	41	41	41	41	82	82	84	98	100	101
25	3	.13902E+04	25	25	38	38	38	38	38	38	110	110	111	110	111	111
26	1	.35132E+01	129	125	82	81	72	82	72	73	154	152	157	195	197	198
26	2	.18055E+03	58	58	42	42	42	42	42	42	85	85	87	102	108	108
26	3	.13717E+04	22	22	43	43	43	43	43	43	115	115	117	115	117	117
27	1	.24355E+01	131	126	83	82	74	83	74	74	156	154	159	198	199	200
27	2	.13767E+03	78	76	62	62	58	62	58	58	115	114	131	142	165	166
27	3	.11505E+04	18	18	38	38	38	38	38	38	107	107	110	107	110	110
28	1	.17166E+01	132	128	85	84	75	85	75	75	158	156	161	201	201	202
28	2	.99555E+02	117	111	98	97	88	98	88	88	164	162	181	199	224	225
28	3	.96607E+03	18	18	37	37	37	37	37	37	105	105	109	105	109	105

 * ZBEND MODEL *

EARTHQUAKE NO. 1

*ACCELERATION(INERTIA COMPONENT)

NODE NO.	COMP. NO.	ACC(DY) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
29	1	.16884E+01	132	128	85	84	75	85	75	76	158	156	161	201	201	202
29	2	.80007E+02	135	128	115	114	102	115	102	153	187	185	204	226	250	251
29	3	.86521E+03	18	18	36	36	36	36	36	36	105	105	110	105	110	110
30	1	.16601E+01	132	128	85	84	75	85	75	76	158	156	161	201	201	202
30	2	.60445E+02	167	158	145	143	128	145	128	129	227	224	242	272	293	295
30	3	.76416E+03	19	19	36	36	36	36	36	36	105	105	110	105	110	110
31	1	.48520E+00	133	128	85	84	75	85	75	76	158	156	161	201	202	203
31	2	.11484E+02	251	236	221	218	193	221	193	195	329	325	338	390	402	405
31	3	.39784E+03	21	21	37	37	37	37	37	37	106	106	113	106	113	113
32	1	.17808E+00	133	128	85	84	75	85	75	76	158	157	161	201	202	203
32	2	.11547E+01	262	246	231	228	200	231	200	202	343	338	346	405	410	414
32	3	.15364E+03	21	21	37	37	37	37	37	37	106	106	114	106	114	114
33	1	.10129E+00	133	128	85	84	75	85	75	76	158	157	161	201	202	203
33	2	.25398E+00	269	252	237	234	205	237	205	207	351	346	352	414	417	421
33	3	.92130E+02	21	21	37	37	37	37	37	37	106	106	114	106	114	114
34	1	.80057E-01	133	128	85	84	75	85	75	76	158	157	161	201	202	203
34	2	.80146E-01	275	258	243	240	209	243	209	212	358	353	358	423	424	427
34	3	.46795E-01	245	245	212	212	212	2.2	212	212	367	367	420	367	420	420

 * ZBEND MODEL *

EARTHQUAKE NO. 1

*MOMENTS, AND FORCES (INERTIA COMPONENT)

ELEM. NO.	FORCE CODE	FORCE (T.H.)	CASE NUMBERS PERCENTAGE OVER TIME HISTORY (T.H.) VALUES													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	12	.14969E+04	46	46	45	45	44	45	44	44	111	111	112	117	118	118
2	12	.92753E+03	29	29	34	34	34	34	34	34	104	104	105	105	106	106
3	12	.17577E+04	30	30	35	35	35	35	35	35	105	105	105	106	107	107
4	12	.13476E+04	26	26	32	32	32	32	32	32	102	102	103	102	105	103
5	12	.26391E+04	26	26	32	32	32	32	32	32	102	102	103	103	103	103
6	12	.13836E+05	22	22	28	28	28	28	28	28	98	98	98	98	98	98
7	12	.23809E+05	20	20	25	25	25	25	25	25	92	92	93	92	93	93
8	12	.79110E+04	19	19	24	24	24	24	24	24	92	92	93	92	93	93
9	12	.16493E+05	19	19	24	24	24	24	24	24	92	92	93	92	93	93
10	12	.80823E+04	21	21	27	27	27	27	27	27	96	96	96	96	97	97
11	12	.17172E+05	21	21	27	27	27	27	27	27	96	96	96	96	97	97
12	12	.19989E+05	22	22	28	28	28	28	28	28	98	98	98	98	98	98
13	12	.10139E+05	29	29	39	39	39	39	39	39	113	113	114	113	114	114
14	12	.11466E+05	28	28	38	38	38	38	38	38	111	111	112	111	112	112
15	12	.13378E+05	26	26	34	34	34	34	34	34	106	106	107	106	107	107
16	12	.19233E+05	23	23	28	28	28	28	28	28	98	98	98	98	98	98
17	18	.22440E+05	21	21	25	25	25	25	25	25	93	93	93	93	93	93
18	12	.21994E+05	22	22	24	24	24	24	24	24	92	92	92	92	92	92
19	12	.22231E+05	21	21	23	23	23	23	23	23	92	92	92	92	92	92
20	12	.22589E+05	22	22	23	23	23	23	23	23	92	92	92	92	92	92
21	12	.22989E+05	22	22	25	25	25	25	25	25	93	93	94	94	94	94
22	12	.23130E+05	22	22	25	25	25	25	25	25	94	94	95	95	95	95
23	12	.23081E+05	22	22	26	26	26	26	26	26	94	94	95	94	95	95
24	18	.20977E+05	22	22	28	28	28	28	28	28	97	97	97	97	97	97
25	12	.13177E+05	24	24	31	31	31	31	31	31	102	102	102	102	102	102
26	12	.16239E+05	26	26	35	35	35	35	35	35	106	106	107	107	107	107
27	12	.15106E+05	28	28	37	37	37	37	37	37	109	109	110	109	110	110
28	12	.96308E+04	37	37	50	50	50	50	50	50	118	118	119	121	123	123
29	12	.27103E+04	49	49	60	60	60	60	60	60	123	123	125	130	132	132
30	12	.57239E+04	47	47	59	59	59	59	59	59	123	123	124	129	131	131
31	12	.27062E+04	51	51	61	61	61	61	61	61	123	123	125	131	133	133
32	12	.56719E+04	50	50	60	60	60	60	60	60	123	123	125	131	132	132
33	12	.85082E+04	53	53	62	62	62	62	62	62	123	123	125	132	133	133
34	12	.15314E+05	25	25	32	32	32	32	32	32	103	103	103	103	103	103
35	12	.22452E+05	21	21	23	23	23	23	23	23	92	92	92	92	92	92
36	12	.23160E+05	22	22	25	25	25	25	25	25	94	94	95	94	95	95
37	12	.13729E+05	29	29	39	39	39	39	39	39	111	111	112	111	112	112
38	12	.22680E+05	22	22	28	28	28	28	28	28	97	97	97	97	97	97
39	12	.22810E+05	22	22	24	24	24	24	24	24	93	93	93	93	93	93

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 * ZBEND MODE1 *

EARTHQUAKE NO. 1

*MOMENTS, AND FORCES (INERTIA COMPONENTS)

ELEM. NO.	FORCE CODE	FORCE (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	.57644E+02	29	28	2	2	1	2	1	1	40	40	43	62	74	74
2	1	.26596E+02	90	89	66	66	64	66	64	64	117	117	120	137	142	142
3	1	.29555E+03	25	25	31	31	31	31	31	31	102	102	103	102	103	103
4	1	.92015E+03	30	30	42	42	42	42	42	42	117	117	118	117	118	118
5	1	.85941E+03	87	87	64	64	63	64	63	63	114	114	117	133	137	138
6	1	.23729E+01	28	28	2	2	1	2	1	1	40	40	43	62	74	74
7	1	.82358E+02	81	81	60	60	60	60	60	60	106	108	109	126	129	129
8	1	.10934E+04	19	19	24	24	24	24	24	24	92	92	92	92	92	92
9	1	.84093E+04	30	30	42	42	42	42	42	42	117	117	118	117	118	118
10	1	.62915E+03	20	20	26	26	26	26	26	26	95	95	95	95	95	95
11	1	.82118E+03	86	86	66	66	66	66	66	66	114	114	115	132	134	134
12	1	.65815E+02	9	9	-19	-19	-20	-19	-20	-20	13	13	14	25	36	36
13	1	.12795E+03	84	84	64	64	64	64	64	64	112	112	114	131	134	134
14	1	.46620E+03	30	30	33	33	33	33	33	33	106	106	107	106	107	107
15	1	.63926E+04	14	14	54	54	54	54	54	54	125	125	127	125	127	127
16	1	.56146E+04	92	92	71	71	71	71	71	71	121	121	122	140	141	141

 * BM1 MODEL *

EARTHQUAKE NO. 1

*DISPLACEMENT (INERTIA COMPONENT)

NODE NO.	COMP. NO.	DISP. (T.H.)	URS	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
				1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	.17473E-09	62	23	21	13	12	10	13	10	12	93	90	109	106	117	122
1	2	.38344E-10	108	61	59	83	79	76	83	76	80	215	209	231	242	247	257
1	3	.15615E-09	85	44	42	27	25	24	27	24	26	120	118	139	133	147	151
2	1	.19530E-03	72	15	8	11	8	4	11	4	8	68	63	69	88	82	92
2	2	.58820E-03	51	14	13	6	4	3	6	3	5	81	79	102	94	107	111
2	3	.17253E-03	85	26	19	17	14	10	17	10	14	79	75	86	100	99	108
3	1	.15688E-02	63	18	15	12	11	9	12	9	11	84	82	103	100	110	115
3	2	.19576E-02	56	20	19	5	4	4	5	4	4	81	80	103	92	108	109
3	3	.14436E-02	63	38	37	20	19	18	20	18	19	106	104	128	119	134	138
4	1	.24739E-02	58	17	14	9	8	6	9	6	8	82	80	100	96	107	112
4	2	.19581E-02	56	20	19	5	4	4	5	4	4	81	80	103	92	108	109
4	3	.22670E-02	80	36	35	19	18	17	19	17	18	105	103	127	118	132	136
5	1	.39546E-02	58	16	13	9	7	6	9	6	8	81	79	100	95	106	111
5	2	.32322E-02	56	19	18	7	6	5	7	6	6	85	84	107	96	112	113
5	3	.35977E-02	80	36	34	19	18	17	19	17	19	106	104	128	119	134	138
6	1	.36149E-02	57	22	21	7	7	6	7	6	7	87	86	108	97	113	114
6	2	.29148E-09	88	53	53	65	65	63	65	63	64	188	187	206	209	220	221
6	3	.34942E-02	57	22	21	7	7	6	7	6	7	87	86	108	97	113	114
7	1	.38503E-02	59	17	15	10	8	7	10	7	9	83	81	102	97	109	113
7	2	.33380E-02	55	12	11	24	22	20	24	20	23	113	109	135	131	142	148
7	3	.36510E-02	77	34	33	19	18	17	19	17	18	105	103	128	118	133	136
8A	1	.37423E-02	56	17	15	8	7	6	8	6	7	82	80	102	95	108	111
8A	2	.25210E-02	55	9	8	35	32	30	35	30	34	132	126	153	153	161	169
8A	3	.36075E-02	73	31	30	17	16	15	17	15	16	102	101	124	114	129	132
8	1	.36389E-02	55	19	18	6	5	5	6	5	6	82	82	104	94	109	111
8	2	.10650E-02	61	10	8	53	49	46	53	46	51	162	154	162	187	192	203
8	3	.34878E-02	66	28	27	13	12	12	13	12	13	97	96	119	109	124	126
9	1	.36268E-02	63	26	25	11	10	10	11	10	11	93	92	115	105	120	122
9	2	.69859E-03	77	21	18	81	76	72	72	72	79	210	200	229	242	243	257
9	3	.34846E-02	56	20	19	6	6	5	6	5	6	84	83	105	95	110	112
10	1	.38872E-02	77	31	30	38	37	37	38	37	37	142	142	171	158	177	178
10	2	.14689E-02	136	51	46	157	150	145	157	145	154	342	329	373	387	389	408
10	3	.34662E-02	70	25	24	33	32	32	33	32	33	132	131	160	148	166	168
11	1	.40335E-02	162	76	75	161	160	159	161	159	160	360	357	404	396	420	424
11	2	.14896E-02	136	51	46	156	149	144	156	144	153	340	327	371	385	387	406
11	3	.38399E-02	164	79	78	163	161	160	163	160	163	364	361	407	401	422	428
12	1	.32876E-02	171	83	82	172	170	169	172	169	171	379	377	424	416	441	445
12	2	.16017E-02	116	44	40	137	130	125	137	125	134	307	294	329	349	346	365
12	3	.31085E-02	175	88	87	175	173	172	175	172	175	386	382	429	424	445	451
13	1	.45279E-02	130	55	53	107	106	105	107	105	106	259	257	302	288	313	316
13	2	.29321E-02	104	45	35	44	40	36	44	36	39	117	111	143	151	163	171
13	3	.43214E-02	128	54	52	106	104	103	106	103	105	257	255	298	286	309	314

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 * BM1 MODEL *
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EARTHQUAKE NO. 1

*DISPLACEMENT (INERTIA COMPONENT)

NODE NO.	COMP. NO.	DISP. (T.H.)	URS	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
				1	2	3	4	5	6	7	8	9	10	11	12	13	14
14	1	.20555E-02	177	90	90	176	175	175	176	175	176	388	386	434	425	451	454
14	2	.14213E-02	109	50	47	124	118	113	124	113	121	285	274	301	324	320	337
14	3	.18985E-02	185	100	99	184	182	180	184	180	183	402	308	444	440	461	467
15	1	.16168E-03	155	70	69	127	122	118	127	118	124	282	273	322	321	338	351
15	2	.76673E-10	87	26	22	32	30	27	32	27	30	94	90	116	127	137	145
15	3	.79988E-04	156	77	69	128	122	119	128	119	124	284	275	324	322	339	352
19	1	.97228E-04	149	74	66	137	130	125	137	125	133	300	288	332	342	351	369
19	2	.97612E-04	83	36	23	44	40	38	44	38	39	96	91	115	146	156	159
19	3	.16195E-03	174	92	85	129	125	123	129	123	126	286	281	333	322	346	355
21	1	.92794E-04	282	193	187	194	188	184	194	184	191	404	393	445	444	467	483
21	2	.19564E-03	185	107	91	132	125	121	132	121	125	241	232	290	305	329	341
21	3	.21593E-03	205	118	111	145	142	140	145	140	142	313	308	364	350	380	386
23	1	.12464E-02	328	238	228	166	161	159	166	159	161	331	327	385	367	404	409
23	2	.39689E-02	109	56	43	70	65	63	70	63	65	123	118	138	187	195	198
23	3	.25058E-02	338	245	235	172	167	165	172	165	166	341	337	397	378	416	420
25	1	.83477E-10	143	92	90	102	100	97	102	97	101	247	242	270	276	292	300
25	2	.56525E-10	111	57	44	71	67	64	71	64	66	129	125	153	191	204	207
25	3	.39662E-10	305	208	196	219	210	204	219	204	212	429	415	478	483	507	525
27	1	.36869E-03	247	175	168	111	107	105	111	105	107	240	237	280	268	296	300
27	2	.92423E-03	129	70	56	87	82	80	87	80	82	143	138	154	215	217	222
27	3	.76538E-03	247	175	168	111	107	105	111	105	107	240	237	280	268	296	300
29	1	.31666E-05	209	145	139	86	83	82	86	82	83	201	198	233	225	248	252
29	2	.20041E-10	122	62	51	84	80	77	84	77	80	170	165	211	223	246	251
29	3	.19552E-05	212	147	141	88	85	83	88	83	85	204	201	236	228	252	255
33	1	.10321E-03	231	162	155	100	96	95	100	95	98	223	220	259	249	275	279
33	2	.24666E-03	166	96	81	130	125	122	130	122	125	218	211	261	296	321	327
33	3	.20369E-03	232	163	156	101	97	95	101	95	97	224	221	260	250	276	280
35	1	.11701E-03	230	162	155	100	96	94	100	94	96	222	219	259	249	274	278
35	2	.31095E-03	150	85	69	111	106	103	111	103	105	182	176	213	259	275	281
35	3	.26855E-03	231	162	155	100	97	95	100	95	96	223	220	259	249	275	279
37	1	.11999E-03	229	161	154	99	96	94	99	94	95	221	218	257	248	273	277
37	2	.37553E-11	144	69	63	121	117	115	121	115	119	266	260	313	309	330	340
37	3	.50812E-04	229	161	154	99	96	94	99	94	95	221	218	257	248	273	277
16	1	.17826E-03	101	56	52	89	85	82	89	82	87	224	217	241	255	260	271
16	2	.29370E-09	126	86	85	107	106	104	107	104	105	262	260	281	289	298	301
16	3	.17506E-03	102	58	54	90	86	83	90	83	88	226	219	243	257	262	272
20	1	.12102E-01	252	145	143	275	270	267	275	267	274	559	550	610	613	632	645
20	2	.22053E-01	113	68	67	110	106	103	110	103	108	264	257	278	296	297	306
20	3	.11875E-01	254	147	145	277	272	269	277	269	275	562	552	613	617	635	649
22	1	.28611E-01	257	154	152	285	280	277	285	277	284	574	564	627	630	650	664
22	2	.56558E-01	110	66	65	107	104	101	107	101	105	259	253	273	291	292	301
22	3	.28110E-01	258	155	153	285	281	278	285	278	284	575	565	628	631	651	665

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 . BM1 MODEL .
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EARTHQUAKE NO. 1

*DISPLACEMENT (INERTIA COMPONENT)

NODE NO.	COMP. NO.	DISP. (T.H.)	URS	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
				1	2	3	4	5	6	7	8	9	10	11	12	13	14
24	1	.42601E-01	268	168	166	303	299	296	303	296	302	601	592	659	660	684	697
24	2	.85937E-01	105	62	61	105	102	99	105	99	103	254	249	269	287	288	297
24	3	.41868E-01	268	169	167	304	299	296	304	290	303	602	593	660	661	684	697
26	1	.49097E-01	291	197	195	339	335	332	339	332	338	657	648	719	721	747	760
26	2	.97166E-01	99	56	54	103	100	97	103	97	101	250	244	264	283	284	293
26	3	.48257E-01	291	197	195	340	335	333	340	333	339	657	648	719	721	748	760
28	1	.46494E-01	342	256	254	411	408	406	411	406	411	769	762	831	843	870	881
28	2	.83980E-01	90	47	46	100	97	95	100	95	99	244	238	257	279	279	288
28	3	.45711E-01	342	256	254	411	408	406	411	406	411	769	762	831	843	870	881
30	1	.41285E-01	402	332	331	491	489	488	491	488	491	891	887	930	973	990	996
30	2	.47638E-01	80	36	35	98	95	93	98	93	97	238	232	250	276	274	284
30	3	.40551E-01	402	332	331	492	490	489	492	489	492	892	888	931	974	991	997
32	1	.42047E-01	398	345	345	485	484	484	485	484	485	873	872	881	951	955	956
32	2	.84045E-10	184	134	134	146	144	138	146	138	140	326	324	345	354	363	367
32	3	.41339E-01	398	345	345	485	484	484	485	484	485	873	872	881	951	955	956
36	1	.41646E-01	406	354	354	492	492	492	492	492	492	885	885	890	963	968	969
36	2	.12648E-01	35	-8	-10	84	81	80	84	80	83	204	198	213	248	245	253
36	3	.41079E-01	403	351	351	489	489	489	489	489	489	880	880	886	958	963	964
38	1	.37499E-01	517	423	422	588	587	586	588	588	588	1068	1065	1132	1157	1201	1205
38	2	.90952E-01	16	-27	-28	77	75	74	77	74	77	187	184	194	234	231	236
38	3	.38045E-01	448	387	387	530	530	530	530	530	530	953	953	972	1034	1052	1052
39	1	.43742E-01	430	295	293	485	480	477	485	477	484	919	910	995	1003	1037	1049
39	2	.14073E+00	17	-25	-27	79	77	76	79	76	78	190	187	195	237	234	239
39	3	.34656E-01	467	391	391	546	546	545	546	545	546	988	987	1031	1073	1103	1104
40	1	.34675E-01	414	219	215	483	475	470	493	470	481	934	918	990	1028	1037	1059
40	2	.13061E+00	21	-22	-23	82	80	79	82	79	82	196	192	200	243	240	245
40	3	.29443E-01	455	375	374	541	540	539	541	539	541	981	979	1028	1067	1095	1098
41	1	.15076E-01	502	180	170	601	587	579	601	579	598	1163	1137	1153	1288	1257	1293
41	2	.69956E-01	27	-16	-17	88	86	84	88	84	87	206	201	209	254	249	256
41	3	.23287E-01	418	354	354	507	507	507	507	507	507	916	915	941	997	1012	1013
43	1	.88856E-02	399	348	347	485	485	485	485	485	485	874	874	880	951	956	957
43	2	.12719E-09	58	8	8	84	84	83	84	83	83	205	205	235	244	259	259
43	3	.18383E-01	399	348	348	486	485	485	486	485	485	874	874	880	952	956	957
44	1	.20906E-01	377	275	274	403	401	400	403	400	403	777	773	844	842	883	888
44	2	.27883E-01	74	26	25	121	118	116	121	116	120	268	262	279	317	315	324
44	3	.19747E-01	367	315	315	442	440	439	442	439	441	819	816	866	889	921	926
45	1	.41976E-01	341	242	241	311	309	308	311	308	311	640	636	685	684	711	717
45	2	.36931E-01	104	53	51	135	132	129	135	129	134	297	290	315	344	345	354
45	3	.28026E-01	338	258	258	343	341	340	343	340	342	672	668	726	724	761	767
46	1	.62255E-01	322	233	232	267	266	265	267	265	266	570	568	602	603	622	626
46	2	.30041E-01	128	74	72	141	138	135	141	135	140	313	307	334	356	360	369
46	3	.36081E-01	328	249	248	305	300	302	305	302	305	618	615	667	660	695	700

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 * BM1 MODEL *

EARTHQUAKE NO. 1

*DISPLACEMENT (INERTIA COMPONENT)

NODE NO.	COMP. NO.	DISP. (T.H.)	URS	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
				1	2	3	4	5	6	7	8	9	10	11	12	13	14
47	1	.76313E-01	317	233	233	246	246	245	246	245	246	538	537	563	564	579	581
47	2	.66742E-02	165	104	103	156	153	150	156	150	154	346	340	369	383	390	399
47	3	.42709E-01	321	245	245	285	284	283	285	283	284	566	584	631	623	657	661
48	1	.69740E-01	316	232	232	245	244	243	245	243	244	535	533	559	561	575	577
48	2	.58864E-10	124	40	35	151	144	139	151	139	148	331	318	351	377	374	393
48	3	.39251E-01	309	232	232	292	291	291	292	291	292	591	590	645	633	673	675
49	1	.41828E-01	302	222	221	242	240	236	242	238	242	525	520	550	554	566	574
49	2	.76059E-05	225	129	127	202	200	199	202	199	201	445	442	472	481	492	496
49	3	.47560E-01	200	120	118	244	239	235	244	235	242	484	474	542	538	560	574
50	1	.2379E-01	219	159	158	201	197	190	201	190	196	420	412	452	458	470	483
50	2	.15212E-04	225	129	127	202	200	199	202	199	201	445	442	472	481	492	496
50	3	.80443E-01	179	115	114	178	175	173	178	173	177	382	376	425	420	439	448
51	1	.20926E-01	173	123	122	166	163	155	166	155	159	345	341	379	383	397	406
51	2	.55110E-02	339	262	261	245	244	243	245	243	245	543	541	555	563	569	573
51	3	.88479E-01	186	122	121	174	171	169	174	169	173	378	373	417	413	431	439
52	1	.15745E-01	186	137	136	161	159	153	161	153	155	346	343	376	378	395	401
52	2	.21295E-01	317	248	248	224	223	221	224	221	223	504	502	513	520	525	529
52	3	.83293E-01	199	126	125	181	178	176	181	176	180	396	391	429	429	443	452
53	1	.86251E-02	189	138	138	159	157	152	159	152	154	347	345	379	377	395	400
53	2	.17273E-01	298	235	234	205	204	203	205	203	205	469	467	476	484	487	492
53	3	.71455E-01	205	118	117	191	188	187	191	187	190	413	408	441	448	459	468
54	1	.11076E-02	277	191	190	226	223	221	226	221	224	492	488	516	523	531	538
54	2	.23878E-02	265	207	207	183	181	180	183	180	182	422	420	433	436	441	445
54	3	.66112E-01	166	76	76	162	161	158	162	158	160	356	353	378	390	403	408
55	1	.79734E-10	255	177	177	197	196	195	197	195	197	445	443	466	470	479	483
55	2	.91383E-10	255	183	183	200	199	195	200	195	197	445	443	466	470	479	483
55	3	.59271E-01	162	73	72	160	159	155	160	155	157	350	348	373	385	399	403
56	1	.50012E-02	332	260	259	242	238	234	242	234	239	526	519	535	550	551	563
56	2	.33503E-04	161	72	71	159	157	154	159	154	156	350	347	371	384	397	401
56	3	.30328E-01	162	72	72	159	158	155	159	155	157	350	348	372	384	397	402
57	1	.86587E-02	318	249	248	231	228	224	231	224	229	505	499	515	529	532	543
57	2	.67002E-04	161	72	71	159	157	154	159	154	156	350	347	371	384	397	401
57	3	.35277E-02	161	72	71	159	157	155	159	155	157	350	347	372	384	397	401
58	1	.71903E-02	320	250	249	232	228	225	232	225	229	507	500	516	530	532	543
58	2	.24895E-02	161	72	71	159	157	155	159	155	157	350	347	372	384	397	401
58	3	.70114E-04	160	73	72	158	156	154	158	154	157	351	348	373	386	395	402
59	1	.20347E-02	331	259	257	239	235	231	239	231	236	521	514	528	544	544	556
59	2	.23886E-02	161	72	71	159	157	155	159	155	157	350	347	372	384	397	402
59	3	.35059E-04	160	72	72	158	156	154	158	154	157	351	348	373	386	395	402
60	1	.14732E-10	308	227	223	228	225	221	228	221	223	493	489	511	519	525	530
60	2	.10218E-09	161	72	72	159	158	155	159	155	157	350	347	372	384	397	402
60	3	.10300E-09	160	72	72	158	156	154	158	154	157	351	348	373	386	395	402

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 * BM1 MODEL *

EARTHQUAKE NO. 1

*ACCELERATION(INERTIA COMPONENT)

NODE NO.	COMP. NO.	ACC(DY) (T.H.)	URS	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
				1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	.27528E-05	485	319	305	293	286	278	293	278	288	525	514	546	582	584	607
1	2	.72568E-06	314	205	193	162	155	147	162	147	153	319	310	345	358	370	384
1	3	.21929E-05	553	396	386	300	294	289	300	289	296	556	549	594	603	626	642
2	1	.53437E+01	438	260	241	236	227	216	236	216	227	408	395	400	468	442	471
2	2	.71244E+01	550	400	394	302	298	294	302	294	298	564	559	603	610	636	645
2	3	.51479E+01	420	251	235	215	207	197	215	197	208	378	367	373	434	413	438
3	1	.30587E+02	459	286	269	276	267	258	276	258	270	487	475	495	547	534	561
3	2	.20999E+02	636	472	467	353	350	348	353	348	350	653	649	701	702	738	744
3	3	.25720E+02	422	284	275	202	196	190	202	190	197	385	378	408	424	434	450
4	1	.43230E+02	473	302	286	284	276	268	284	268	279	504	493	518	563	556	582
4	2	.21017E+02	636	471	467	353	350	347	353	347	350	652	648	701	702	738	743
4	3	.42238E+02	446	304	294	222	216	210	222	210	217	419	412	445	460	472	488
5	1	.69587E+02	470	300	284	281	273	265	281	265	276	499	489	513	558	551	576
5	2	.34845E+02	624	462	458	343	340	338	343	338	340	637	633	686	685	722	727
5	3	.68695E+02	438	297	288	216	210	204	216	204	211	410	402	434	450	461	477
6	1	.35057E+02	687	516	512	382	379	378	382	378	379	704	701	761	755	801	803
6	2	.39504E-05	293	189	179	175	169	162	175	162	167	347	340	376	386	402	416
6	3	.33887E+02	687	516	512	382	379	378	382	378	379	704	701	761	755	800	803
7	1	.65440E+02	487	313	297	296	288	280	296	280	291	524	513	538	584	578	603
7	2	.43008E+02	471	338	333	246	241	238	246	238	242	474	469	514	512	540	550
7	3	.66023E+02	442	303	294	217	212	206	217	206	213	415	408	443	454	468	484
8A	1	.54436E+02	530	354	340	323	316	308	323	308	319	574	564	597	635	637	660
8A	2	.33819E+02	411	290	285	209	205	200	209	200	205	413	407	451	448	474	485
8A	3	.57261E+02	473	331	323	241	235	230	241	230	236	458	451	490	498	516	531
8	1	.39432E+02	641	461	453	377	373	369	377	369	375	680	675	725	739	767	780
8	2	.14778E+02	351	243	236	175	170	165	175	165	170	355	348	392	388	413	424
8	3	.42805E+02	573	418	411	308	304	300	308	300	305	577	571	620	621	651	662
9	1	.40223E+02	618	456	451	338	332	330	336	330	333	626	621	675	673	709	717
9	2	.10109E+02	284	190	183	142	137	132	142	132	135	298	292	336	331	345	364
9	3	.35470E+02	669	491	485	386	383	380	386	380	384	701	698	753	758	794	802
10	1	.49412E+02	486	353	348	240	237	235	240	235	238	474	471	526	507	546	553
10	2	.21617E+02	501	175	159	208	199	190	208	190	199	394	382	441	446	465	486
10	3	.37888E+02	597	430	423	337	332	329	337	329	334	621	616	676	672	708	720
11	1	.49024E+02	356	223	219	224	222	220	224	220	222	456	453	523	494	535	542
11	2	.21946E+02	301	175	160	207	198	190	207	190	198	394	381	440	445	464	485
11	3	.44680E+02	376	241	239	235	232	230	235	230	233	479	475	545	516	558	565
12	1	.36534E+02	360	227	223	229	227	225	229	225	228	471	468	536	508	548	554
12	2	.18486E+02	260	155	144	202	194	185	202	185	194	400	388	442	447	464	483
12	3	.34403E+02	390	253	251	246	243	242	246	242	244	505	501	569	542	582	588
13	1	.77286E+02	332	199	187	223	219	215	223	215	220	413	408	474	464	503	516
13	2	.83580E+02	399	250	233	199	191	183	199	183	189	340	330	361	405	409	426
13	3	.72745E+02	331	198	187	223	219	215	223	215	220	415	409	476	465	504	517

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 * BM1 MODEL *

EARTHQUAKE NO. 1

*ACCELERATION (INERTIA COMPONENT)

NODE NO.	COMP. NO.	ACC (DY) (T.H.)	URS	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)															
				1	2	3	4	5	6	7	8	9	10	11	12	13	14		
14	1	.22212E+02	375	240	237	243	241	240	243	240	242	502	499	565	539	577	582		
14	2	.14012E+02	248	164	158	209	202	192	209	193	201	425	415	457	468	480	497		
14	3	.8533E+02	438	297	295	280	270	276	280	276	279	576	573	638	613	652	658		
15	1	.23961E+01	474	335	311	293	281	274	293	274	280	508	496	572	577	613	631		
15	2	.21088E-05	436	262	245	242	234	224	242	224	234	408	396	421	479	472	497		
15	3	.11864E+01	476	337	313	293	282	275	293	275	281	509	497	573	579	614	632		
19	1	.13643E+01	438	310	285	280	267	259	280	259	266	491	477	551	560	592	611		
19	2	.16414E+01	457	311	280	304	292	286	304	286	289	438	426	476	578	595	605		
19	3	.26178E+01	485	344	322	292	282	276	292	276	281	509	499	574	576	613	629		
21	1	.18551E+01	571	436	424	304	297	294	304	294	296	554	548	624	605	656	663		
21	2	.57467E+01	462	296	269	292	281	272	292	272	281	458	444	494	564	570	595		
21	3	.38149E+01	514	375	353	297	287	282	297	282	286	519	510	581	584	623	636		
23	1	.33171E+02	687	527	512	366	358	354	366	354	358	652	644	721	711	762	770		
23	2	.57854E+02	592	411	371	452	438	431	452	431	436	622	606	661	829	835	851		
23	3	.68726E+02	680	522	507	362	354	350	362	350	353	644	637	713	703	753	762		
25	1	.12081E-05	574	416	409	347	342	338	347	338	343	633	627	688	688	734	748		
25	2	.88304E-06	558	388	353	407	395	388	407	388	393	566	553	612	754	767	779		
25	3	.10437E-05	530	405	388	281	271	266	281	266	270	506	498	566	562	601	610		
27	1	.79554E+01	728	554	540	399	391	387	399	387	391	706	698	772	769	816	827		
27	2	.15779E+02	571	387	348	445	432	424	445	424	431	622	606	666	818	824	843		
27	3	.16505E+02	728	555	540	399	392	387	399	387	392	706	699	772	769	816	827		
29	1	.61723E-01	742	560	545	416	409	404	416	404	409	733	726	795	799	841	854		
29	2	.36338E-06	524	355	328	344	334	326	344	326	344	326	332	510	498	570	652		
29	3	.38143E-01	747	564	550	418	411	406	418	406	411	737	729	799	803	846	858		
33	1	.21179E+01	740	561	547	409	402	397	409	397	402	722	715	787	787	832	844		
33	2	.49106E+01	521	350	316	432	421	416	432	416	420	610	598	661	799	816	828		
33	3	.41932E+01	739	561	546	408	401	397	408	397	401	721	714	786	786	831	843		
35	1	.23986E+01	740	561	547	409	402	397	409	397	402	722	715	787	787	833	844		
35	2	.56187E+01	567	382	344	463	450	443	463	443	449	649	634	698	849	860	877		
35	3	.55124E+01	740	561	547	409	402	397	409	397	402	722	715	787	787	832	844		
37	1	.24516E+01	741	562	547	410	403	398	410	398	403	724	716	788	789	834	845		
37	2	.90641E-07	397	251	234	227	219	211	227	211	218	383	373	426	458	474	492		
37	3	.10381E+01	741	562	547	410	403	398	410	398	403	724	716	788	789	834	845		
16	1	.20850E+01	359	261	244	219	210	202	219	202	207	412	402	457	464	490	503		
16	2	.27422E-05	300	232	231	225	222	216	225	216	219	476	473	497	505	517	522		
16	3	.20566E+01	360	263	246	219	210	203	219	203	208	414	404	458	465	491	504		
20	1	.13387E+03	272	159	157	237	233	230	237	230	235	503	496	537	544	555	567		
20	2	.19382E+03	277	210	209	225	221	214	225	214	225	514	472	466	493	506	513		
20	3	.13201E+03	274	160	158	238	234	231	238	231	236	506	498	538	546	556	569		
22	1	.31562E+03	258	153	152	226	222	220	226	220	225	486	478	516	525	535	547		
22	2	.49966E+03	268	203	202	217	214	207	217	207	211	458	453	479	492	499	508		
22	3	.31038E+03	258	154	152	227	223	220	227	220	226	487	479	516	526	536	548		

 * BM1 MODEL *

EARTHQUAKE NO. 1

*ACCELERATION (INERTIA COMPONENT)

NODE NO.	COMP. NO.	ACC(DY) (T.H.)	URS	i	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
					2	3	4	5	6	7	8	9	10	11	12	13	14	
24	1	.46679E+03	240	141	140	216	211	209	216	209	214	466	458	494	505	513	526	
24	2	.75808E+03	257	194	193	209	206	200	209	200	204	445	440	466	478	486	495	
24	3	.45898E+03	241	142	140	216	212	209	216	209	215	467	459	494	506	514	526	
26	1	.53100E+03	215	119	118	201	196	193	201	193	200	439	430	463	478	483	497	
26	2	.85266E+03	243	181	181	200	197	192	200	192	196	430	425	451	463	471	479	
26	3	.52208E+03	215	120	118	201	196	194	201	194	200	439	430	463	478	483	497	
28	1	.48569E+03	175	82	80	178	173	170	178	170	177	396	387	417	437	437	452	
28	2	.73082E+03	224	165	164	190	187	183	190	183	187	410	405	431	445	452	460	
28	3	.47748E+03	175	82	80	178	173	170	178	170	177	397	387	417	437	437	452	
30	1	.34519E+03	120	26	23	145	139	135	145	135	143	331	320	352	373	371	387	
30	2	.40981E+03	198	142	141	177	174	171	177	171	175	386	380	407	423	429	437	
30	3	.33930E+03	120	26	23	145	139	135	145	135	143	331	320	352	373	371	387	
32	1	.32969E+03	88	46	46	57	55	54	57	54	57	179	176	199	196	209	214	
32	2	.13794E-05	211	157	155	151	148	137	151	137	141	331	327	343	356	362	370	
32	3	.32414E+03	88	46	46	57	55	54	57	54	57	179	176	199	196	209	214	
36	1	.33205E+03	119	80	80	67	66	66	67	66	67	202	201	220	213	230	231	
36	2	.10636E+03	91	40	39	128	126	124	128	124	127	283	277	302	331	334	341	
36	3	.32589E+03	108	69	69	62	61	60	62	60	61	192	190	210	203	219	222	
38	1	.38047E+03	347	255	255	271	269	268	271	268	271	585	581	605	614	623	630	
38	2	.74821E+03	49	-4	-5	114	112	110	114	110	113	247	243	262	302	302	307	
38	3	.30692E+03	236	180	180	159	159	159	159	159	159	380	380	398	393	409	409	
39	1	.47281E+03	344	222	220	306	301	299	306	299	305	643	634	660	690	692	706	
39	2	.11801E+04	49	-2	-3	112	110	108	112	108	110	244	240	256	297	297	302	
39	3	.25084E+03	351	259	258	276	274	273	276	273	276	595	592	615	625	636	641	
40	1	.36526E+03	354	180	176	356	348	343	356	343	354	723	708	739	792	789	810	
40	2	.11050E+04	57	6	5	116	114	112	116	112	114	251	247	263	305	303	309	
40	3	.19664E+03	327	217	216	287	284	283	287	283	287	610	604	631	659	661	669	
41	1	.16237E+03	445	185	177	482	470	462	482	462	479	940	917	948	1040	1030	1063	
41	2	.59602E+03	72	23	21	126	123	121	126	121	124	269	264	281	323	322	329	
41	3	.15406E+03	143	67	66	142	140	139	142	139	141	338	335	356	371	378	382	
43	1	.69831E+02	97	58	57	57	56	55	57	55	56	180	178	199	193	209	212	
43	2	.15034E-05	101	44	43	88	87	86	88	86	86	215	214	245	247	266	268	
43	3	.14447E+03	97	58	58	57	56	55	57	55	56	180	178	199	193	209	212	
44	1	.23879E+03	327	236	235	259	256	254	259	254	257	560	556	577	590	596	603	
44	2	.24836E+03	173	118	116	188	184	181	188	181	185	384	377	409	437	445	454	
44	3	.18695E+03	302	223	222	226	223	221	226	221	224	499	494	516	524	533	541	
45	1	.54382E+03	356	271	271	262	261	259	262	259	261	572	569	587	594	600	604	
45	2	.36710E+03	203	144	142	192	188	184	192	184	188	400	393	426	445	455	464	
45	3	.29644E+03	370	286	285	271	269	268	271	268	270	589	585	603	611	618	624	
46	1	.81841E+03	366	285	284	261	260	260	261	260	261	573	572	587	591	598	600	
46	2	.31550E+03	227	164	163	196	192	188	196	188	192	415	410	441	453	465	473	
46	3	.41715E+03	376	295	294	269	268	267	269	267	268	587	585	600	606	612	616	

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 * BM1 MODEL *

EARTHQUAKE NO. 1

*ACCELERATION (INERTIA COMPONENT)

NODE NO.	COMP. NO.	ACC(DY) (T.H.)	URS	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
				1	2	3	4	5	6	7	8	9	10	11	12	13	14
47	1	10065E+04	376	296	296	264	264	263	264	263	264	580	579	594	595	603	604
47	2	76919E+02	252	182	182	198	196	192	198	192	195	430	426	453	460	472	479
47	3	50016E+03	364	304	304	271	270	269	271	269	270	592	591	604	608	614	617
48	1	92302E+03	374	295	295	262	262	261	262	261	262	576	576	590	592	599	601
48	2	71727E-06	308	218	197	249	237	223	249	223	231	450	433	472	515	520	538
48	3	43235E+03	366	282	282	267	267	266	267	266	267	581	580	599	601	610	612
49	1	55078E+03	355	278	277	248	247	246	248	246	248	549	546	560	565	570	574
49	2	10062E+00	488	347	317	384	363	341	364	341	355	678	653	693	753	728	762
49	3	56132E+03	149	60	58	158	154	148	158	148	154	343	335	368	383	391	404
50	1	32704E+03	237	174	173	172	168	157	172	157	161	373	367	382	398	401	411
50	2	20124E+00	488	347	317	384	363	341	384	341	355	678	653	693	753	728	762
50	3	88624E+03	245	168	167	194	192	188	194	188	191	423	419	444	453	464	471
51	1	30500E+03	209	148	147	158	154	137	158	137	143	328	328	324	337	359	370
51	2	75635E+02	406	329	328	280	279	278	280	278	279	609	608	619	623	629	631
51	3	98821E+03	262	186	185	201	199	196	201	196	199	440	437	460	467	478	484
52	1	21344E+03	251	186	185	180	177	163	180	163	167	379	375	388	406	410	420
52	2	29166E+03	402	325	323	277	275	272	277	272	274	595	592	604	612	615	620
52	3	96054E+03	269	188	187	212	211	210	212	210	212	464	461	483	491	499	505
53	1	11446E+03	260	193	192	184	180	169	184	169	172	392	388	404	417	425	433
53	2	23618E+03	398	320	316	276	271	267	276	267	270	583	578	591	602	603	611
53	3	92524E+03	231	148	148	197	195	194	197	194	196	428	426	448	458	468	472
54	1	15561E+02	457	338	319	348	333	317	348	317	327	648	631	666	703	691	716
54	2	32627E+02	376	297	291	265	260	253	265	253	257	552	546	563	576	576	585
54	3	88539E+03	188	104	103	175	173	167	175	167	169	371	369	392	406	424	428
55	1	10881E-05	298	224	224	208	207	206	208	206	207	468	467	483	486	493	495
55	2	13194E-05	307	230	228	239	236	229	239	229	231	496	494	514	524	539	544
55	3	79523E+03	186	102	101	175	173	166	175	166	168	368	366	389	403	422	427
56	1	69281E+02	527	414	396	376	362	346	376	346	356	717	699	722	763	751	774
56	2	44605E+00	183	99	98	172	170	164	172	164	166	366	363	386	400	417	422
56	3	40508E+03	184	100	99	173	171	165	173	165	167	367	364	387	401	419	424
57	1	12071E+03	514	403	385	367	353	336	367	336	346	696	678	701	743	733	755
57	2	89205E+00	183	99	98	172	170	164	172	164	166	366	363	386	400	417	422
57	3	50992E+02	183	99	99	172	170	164	172	164	167	366	364	387	400	418	422
58	1	10608E+03	522	408	388	374	358	341	374	341	351	702	683	707	752	740	764
58	2	33172E+02	184	99	99	172	170	164	172	164	167	366	364	387	400	418	422
58	3	91428E+00	181	98	97	168	167	163	168	163	165	365	363	385	398	412	416
59	1	30180E+02	553	429	404	400	381	360	400	360	373	733	710	735	792	773	802
59	2	31830E+02	184	99	99	172	170	165	172	165	167	366	364	387	401	418	422
59	3	45717E+00	181	98	97	168	167	163	168	163	165	365	363	385	398	412	416
60	1	30208E-06	607	451	405	459	428	394	459	394	414	764	726	749	860	815	864
60	2	13619E-05	184	100	99	172	171	165	172	165	167	366	364	387	401	418	423
60	3	13431E-05	181	98	97	168	167	163	168	163	165	365	363	385	398	412	416

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 * BM1 MODEL *

EARTHQUAKE NO. 1

*MOMENTS, AND FORCES (INERTIA COMPONENT)

ELEM. NO.	FORCE CODE	FORCE (T.H.)	URS	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
				1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	12	.25292E+04	68	28	27	12	11	11	12	11	12	92	91	112	105	119	121
2	18	.43788E+03	106	49	45	35	34	31	35	31	34	124	121	139	142	149	154
3	12	.69014E+03	72	33	31	16	15	13	16	13	15	98	96	113	111	123	127
4	18	.25722E+04	64	27	26	11	10	9	11	9	10	91	89	109	103	116	119
5	12	.21157E+04	79	25	22	45	42	39	45	39	43	144	137	164	167	174	184
6	12	.17761E+04	106	41	36	97	91	86	97	86	94	233	222	253	267	268	284
7	12	.28130E+04	77	29	26	73	68	65	73	65	71	196	188	212	224	226	238
8	12	.14892E+04	106	39	37	96	93	90	96	90	95	235	229	270	267	281	290
9	18	.15312E+04	142	77	71	122	116	112	122	112	119	276	265	297	315	318	335
10	12	.93541E+03	200	124	116	130	126	123	130	123	126	273	269	312	314	337	345
11	12	.28963E+04	123	56	50	62	59	57	62	57	59	158	155	190	186	204	209
12	12	.21738E+04	110	51	48	62	60	59	62	59	61	168	166	203	194	215	220
13	18	.21127E+04	108	49	47	62	60	59	62	59	61	169	167	205	194	215	221
14	12	.22384E+04	276	193	180	153	148	145	153	145	147	275	270	311	335	356	362
15	12	.12012E+04	274	190	177	156	151	148	156	148	150	285	279	329	343	371	376
16	12	.82099E+03	281	195	183	162	158	154	162	154	156	287	281	321	350	370	376
17	12	.30301E+03	273	172	163	202	196	193	202	193	198	405	397	463	454	482	494
18	12	.31997E+03	269	175	167	181	175	172	181	172	177	363	356	418	410	439	449
19	18	.32529E+03	264	173	165	172	167	164	172	164	168	345	338	399	391	421	430
20	12	.48778E-11	324	166	156	315	310	304	315	304	310	591	582	665	667	702	717
21	12	.15378E+04	244	135	133	259	254	252	259	252	257	531	523	579	583	602	614
22	12	.12625E+04	207	143	142	218	214	212	218	212	216	449	442	481	495	507	517
23	12	.80305E+03	284	203	201	249	245	242	249	242	246	518	512	554	556	575	584
24	12	.19846E+04	220	142	140	202	198	195	202	195	200	436	428	457	476	480	492
25	12	.26380E+04	191	115	113	187	183	179	187	179	185	406	398	427	449	450	463
26	12	.24900E+04	166	90	88	183	179	175	183	175	182	395	386	416	442	443	456
27	12	.17861E+04	144	67	64	193	188	185	193	185	192	402	392	422	458	456	470
28	12	.12934E+04	239	169	168	248	245	240	248	240	244	493	487	529	544	560	569
29	12	.32854E+04	193	125	123	190	186	183	190	183	188	407	400	436	449	458	468
30	18	.10011E+04	311	234	233	303	301	296	303	296	299	589	586	636	640	670	676
31	12	.19836E+04	162	100	99	176	175	174	176	174	176	375	374	410	422	437	442
32	12	.34212E+04	96	30	29	136	134	132	136	132	135	303	298	316	351	351	358
33	12	.28926E+04	89	10	8	143	140	137	143	137	142	314	307	317	367	361	370
34	12	.89074E+03	385	275	273	345	341	339	345	339	344	701	694	735	753	766	777
35	12	.27410E+04	215	154	154	184	184	183	184	183	184	403	402	431	435	452	454
36	12	.21863E+04	119	62	61	154	151	150	154	150	153	331	326	348	380	384	391
37	12	.18246E+04	154	82	82	189	185	182	189	182	188	396	388	419	450	452	464
38	12	.17324E+04	247	166	165	224	221	217	224	217	222	474	467	502	516	525	536
39	12	.18406E+04	227	152	151	181	179	177	181	177	179	402	399	422	429	440	446
40	18	.15562E+04	219	145	145	169	168	165	169	165	167	381	379	398	405	416	420
41	12	.95306E+03	331	245	244	254	252	250	254	250	252	548	545	565	575	584	589
42	12	.17859E+04	362	269	268	282	281	280	282	280	281	603	601	625	632	643	647

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 * BM1 MODEL *

EARTHQUAKE NO. 1

*MOMENTS, AND FORCES (INERTIA COMPONENT)

ELEM. NO.	FORCE CODE	FORCE (T.H.)	URS	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
				1	2	3	4	5	6	7	8	9	10	11	12	13	14
43	18	.20068E+04	366	272	272	283	282	281	283	281	283	605	603	626	634	645	645
44	12	.20129E+04	311	234	233	232	231	230	232	230	232	511	508	526	533	541	545
45	12	.15113E+04	276	195	196	220	218	216	220	216	219	477	474	496	505	513	519
46	12	.14059E+04	211	125	124	192	189	187	192	187	191	417	412	441	452	461	469
47	18	.11385E+04	224	138	137	203	200	198	203	198	202	437	431	463	474	483	493
48	12	.68288E+03	258	177	176	226	222	215	226	215	220	468	462	498	507	520	530
49	12	.20181E+04	174	85	85	168	167	164	168	164	166	366	364	390	401	415	420
50	18	.20215E+04	174	86	85	168	166	163	168	163	165	366	364	389	401	414	419
51	12	.58817E+03	337	255	254	263	260	256	263	256	260	553	548	572	584	594	604
52	12	.12882E+04	258	168	166	222	219	215	222	215	219	470	466	490	505	515	523
53	18	.20969E+04	102	43	41	57	56	55	57	55	57	163	161	199	187	208	212
54	12	.19270E+04	257	160	158	267	262	258	267	258	265	543	533	584	596	609	624
55	12	.21404E+04	98	41	37	100	94	90	100	90	97	241	231	259	275	275	291

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 * BM1 MODEL *
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EARTHQUAKE NO. 1

*MOMENTS, AND FORCES (INERTIA COMPONENT)

ELEM. NO.	FORCE CODE	FORCE (T.H.)	URS	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
				1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	.17473E+03	62	23	21	13	12	10	13	10	12	93	90	109	106	117	122
2	1	.38344E+02	108	61	59	83	79	76	83	76	80	216	209	231	242	247	257
3	1	.15615E+03	85	44	42	27	25	24	27	24	26	120	118	139	133	147	151
4	1	.21659E+04	62	20	18	11	10	8	11	8	10	89	86	110	103	116	121
5	1	.14498E+04	77	19	12	12	9	6	12	6	9	71	67	75	91	87	97
6	1	.20902E+04	52	12	10	9	8	6	9	6	8	84	81	104	99	111	116
7	1	.32529E+02	94	38	33	54	52	49	54	49	52	138	135	164	171	187	195
8	1	.29148E+03	88	53	53	65	65	63	65	63	64	188	187	206	209	220	221
9	1	.14823E+03	149	90	89	127	123	120	127	120	126	301	293	327	331	341	353
10	1	.29370E+03	126	86	85	107	106	104	107	104	105	262	260	281	289	298	301
11	1	.10884E+03	102	51	50	49	47	45	49	45	49	153	149	174	172	188	195
12	1	.76673E+02	87	28	22	32	30	27	32	27	30	94	90	116	127	137	145
13	1	.15086E+02	295	213	204	142	138	135	142	135	137	291	287	339	324	357	361
14	1	.20041E+02	122	62	51	84	80	77	84	77	80	170	165	211	223	246	251
15	1	.83477E+02	143	92	90	102	100	97	102	97	101	247	242	270	276	292	300
16	1	.56525E+02	111	57	44	71	67	64	71	64	66	129	125	153	191	204	207
17	1	.39662E+02	305	208	196	219	210	204	219	204	212	429	415	478	483	507	525
18	1	.13828E+03	155	95	93	123	121	120	123	120	122	297	293	319	321	331	338
19	1	.84045E+02	184	134	134	146	144	138	146	138	140	326	324	345	354	363	367
20	1	.46229E+01	209	144	138	86	83	81	86	81	83	200	197	232	225	247	251
21	1	.37553E+01	144	69	63	121	117	115	121	115	119	266	260	313	309	330	340
22	1	.97130E+02	302	230	230	216	216	216	216	216	216	484	483	504	501	514	516
23	1	.12719E+03	58	8	8	84	84	83	84	83	83	205	205	235	244	259	259
24	1	.58864E+02	124	40	35	151	144	139	151	139	148	331	318	351	377	374	393
25	1	.79734E+02	255	177	177	197	196	195	197	195	197	445	443	466	470	479	483
26	1	.91383E+02	255	183	183	200	199	195	200	195	197	435	434	451	459	472	475
27	1	.14732E+02	308	227	223	228	225	221	228	221	223	493	489	511	519	525	530
28	1	.10218E+03	161	72	72	159	158	155	159	155	157	350	347	372	384	397	402
29	1	.10300E+03	160	72	72	158	156	154	158	154	157	351	348	373	386	395	402
30	1	.12715E+04	161	72	71	159	158	155	159	155	157	350	347	372	384	397	402
31	1	.71158E+03	339	266	263	245	240	237	245	237	242	532	525	539	556	555	567
32	1	.18715E+03	261	202	201	193	191	188	193	188	190	426	423	448	450	463	469

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 * BM2 MODEL *

EARTHQUAKE NO. 1

*DISPLACEMENT (INERTIA COMPONENT)

NODE NO.	COMP. NO.	DISP. (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	.21009E-09	211	211	180	179	178	180	178	179	305	303	331	312	335	338
1	2	.20274E-10	229	225	206	199	195	206	195	201	321	313	365	341	368	381
1	3	.12479E-09	467	466	400	398	398	400	398	399	626	625	668	639	674	677
2	1	.52312E-03	-18	-19	-14	-15	-17	-14	-17	-15	13	12	13	19	16	20
2	2	.39966E-03	511	510	436	435	435	436	435	436	680	679	729	693	734	736
2	3	.48485E-03	-9	-11	-9	-10	-12	-9	-12	-10	21	20	25	27	28	32
3	1	.26255E-02	125	125	106	105	104	106	104	105	196	195	216	202	219	222
3	2	.14623E-02	488	488	416	416	415	416	415	416	653	652	698	665	703	705
3	3	.14622E-02	366	365	311	310	309	311	309	310	497	496	528	508	534	536
4	1	.35881E-02	165	165	140	140	138	140	138	140	247	246	269	254	273	276
4	2	.14622E-02	488	488	417	416	415	417	415	416	653	652	698	666	703	705
4	3	.20378E-02	427	427	365	364	363	365	363	364	577	577	613	589	619	622
5	1	.57759E-02	166	165	141	140	139	141	139	140	248	247	270	255	273	277
5	2	.25481E-02	484	484	413	413	413	413	413	413	652	651	693	664	698	700
5	3	.33684E-02	417	417	356	356	354	356	354	355	565	564	599	577	605	607
6	1	.28829E-02	470	470	402	401	401	402	401	401	635	633	675	646	680	681
6	2	.17729E-09	283	282	248	248	247	248	247	248	416	415	448	430	453	456
6	3	.27867E-02	470	470	402	401	401	402	401	401	635	633	675	646	680	681
7	1	.54678E-02	178	178	152	151	150	152	150	151	264	263	287	271	291	294
7	2	.30098E-02	478	478	411	410	410	411	410	410	654	654	686	667	691	693
7	3	.33195E-02	432	432	369	369	368	369	368	369	585	585	620	598	626	628
8A	1	.44098E-02	247	247	211	210	209	211	209	211	352	351	380	360	384	387
8A	2	.24363E-02	461	461	397	397	396	397	396	397	637	636	663	650	669	670
8A	3	.30983E-02	460	460	394	393	393	394	393	394	622	621	658	635	664	667
8	1	.31182E-02	407	407	349	348	347	349	347	348	555	554	594	566	599	601
8	2	.11788E-02	420	419	361	361	361	361	361	361	587	587	606	600	613	614
8	3	.27409E-02	505	505	433	432	432	433	432	433	680	679	721	693	727	729
9	1	.28610E-02	495	494	424	423	423	424	423	423	667	666	707	679	713	715
9	2	.86759E-03	380	380	328	327	327	328	327	327	539	538	554	551	560	562
9	3	.28893E-02	435	435	372	371	371	372	371	371	590	589	629	601	634	636
10	1	.53544E-02	448	448	386	386	386	386	386	386	624	624	640	636	648	649
10	2	.35147E-02	372	372	322	322	322	322	322	322	533	533	540	545	549	550
10	3	.47887E-02	428	428	369	368	368	369	368	369	598	598	616	610	624	625
11	1	.13394E-01	419	419	362	362	362	362	362	362	594	594	598	607	609	609
11	2	.35040E-02	371	371	321	321	321	321	321	321	532	532	539	543	547	548
11	3	.12761E-01	420	420	363	363	363	363	363	363	596	596	599	608	610	610
12	1	.11566E-01	421	421	364	363	363	364	363	363	596	596	600	608	610	610
12	2	.27572E-02	379	379	328	328	327	328	327	328	542	542	551	554	559	560
12	3	.10961E-01	422	422	365	365	365	365	365	365	598	598	601	610	612	612
13	1	.98831E-02	403	402	353	353	353	353	353	353	577	577	587	589	595	596
13	2	.68562E-02	56	54	54	50	49	54	49	52	120	115	127	128	137	143
13	3	.93196E-02	403	403	353	353	353	353	353	353	578	577	587	590	596	596

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 * BM2 MODEL *

EARTHQUAKE NO. 1

*DISPLACEMENT (INERTIA COMPONENT)

NODE NO.	COMP NO.	DISP. (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
14	1	.75412E-02	422	422	364	364	364	364	364	364	598	598	601	610	612	612
14	2	.15453E-02	379	378	328	328	327	328	327	328	543	543	558	556	564	565
14	3	.70030E-02	424	424	366	366	366	366	366	366	601	601	604	613	614	614
15	1	.27290E-03	402	402	363	360	360	363	360	361	586	583	601	599	608	613
15	2	.20121E-09	29	28	28	27	25	28	25	27	81	80	91	88	100	103
15	3	.13526E-03	402	402	363	360	360	363	360	361	586	583	600	599	608	613
19	1	.13497E-03	400	399	362	358	358	362	358	360	585	581	602	595	609	615
19	2	.97778E-04	156	148	209	192	191	209	191	201	340	319	340	358	378	394
19	3	.31287E-03	404	403	363	361	361	363	361	362	587	584	600	600	608	612
21	1	.18003E-03	397	396	362	359	359	362	359	361	577	574	597	590	604	608
21	2	.33233E-03	418	415	389	383	382	389	382	386	623	616	639	640	671	680
21	3	.44688E-03	403	402	364	361	361	364	361	362	586	584	600	599	608	612
23	1	.15445E-02	531	527	495	485	484	495	484	490	733	720	781	747	768	800
23	2	.40615E-02	132	123	224	205	204	224	204	215	356	333	352	379	395	411
23	3	.32306E-02	525	521	490	479	479	490	479	485	726	713	774	740	781	793
25	1	.38548E-10	558	557	497	496	494	497	494	496	727	725	810	744	812	818
25	2	.60464E-10	210	204	260	245	244	260	244	253	416	398	423	437	469	482
25	3	.57286E-10	437	434	408	399	398	408	398	403	629	618	666	643	673	684
27	1	.29343E-03	635	630	590	576	575	590	575	583	847	830	900	862	907	922
27	2	.11935E-02	53	42	162	144	143	162	143	154	263	241	250	284	280	295
27	3	.60849E-03	635	631	590	576	575	590	575	583	847	830	901	862	907	923
29	1	.21394E-05	648	644	597	584	582	597	582	591	849	831	896	864	901	917
29	2	.30269E-10	339	337	317	312	311	317	311	314	516	510	531	531	563	569
29	3	.13322E-05	650	646	600	586	584	600	584	593	853	835	900	867	906	922
33	1	.75205E-04	654	649	605	592	590	605	590	599	865	847	917	880	923	939
33	2	.46226E-03	253	250	259	252	252	259	252	256	428	419	443	443	478	485
33	3	.14928E-03	652	648	604	590	589	604	589	598	864	846	916	879	922	938
35	1	.8107E-04	654	649	606	592	590	606	590	599	865	847	917	880	923	939
35	2	.7777E-03	205	200	245	234	233	245	233	239	399	385	411	417	451	462
35	3	.19579E-03	654	649	605	591	590	605	590	599	865	847	917	880	923	939
37	1	.86749E-04	656	651	607	593	592	607	592	600	867	849	919	882	925	941
37	2	.98459E-11	377	377	329	328	328	329	328	328	542	541	550	554	564	566
37	3	.36734E-04	656	651	607	593	592	607	592	600	867	849	919	882	925	941
16	1	.10202E-03	366	364	342	334	333	342	333	338	548	539	581	565	588	599
16	2	.15806E-09	264	263	230	229	229	230	229	229	395	394	432	412	434	436
16	3	.94794E-04	366	362	343	335	333	343	333	339	548	538	584	566	591	603
20	1	.64872E-01	421	421	363	363	363	363	363	363	597	597	598	609	610	610
20	2	.66517E-02	167	166	165	163	158	165	158	162	301	297	360	343	368	377
20	3	.83629E-01	421	421	364	364	364	364	364	364	597	597	599	609	610	610
22	1	.17258E+00	420	420	363	363	363	363	363	363	596	596	597	608	608	609
22	2	.16235E-01	93	90	110	107	100	110	100	106	218	213	256	269	276	287
22	3	.16956E+00	420	420	363	363	363	363	363	363	596	596	597	608	609	609

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 * BM2 MODEL *

EARTHQUAKE NO. 1

*DISPLACEMENT (INERTIA COMPONENT)

NODE NO.	COMP. NO.	DISP. (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
24	1	.30246E+00	419	419	362	362	362	362	362	362	594	594	595	606	607	607
24	2	.23518E-01	69	67	96	93	85	96	85	91	198	192	220	252	249	261
24	3	.29729E+00	419	419	362	362	362	362	362	362	594	594	595	606	607	607
26	1	.43486E+00	417	417	360	360	360	360	360	360	592	592	592	604	604	604
26	2	.25037E-01	61	59	95	91	83	95	83	90	196	191	210	252	244	259
26	3	.42749E+00	417	417	360	360	360	360	360	360	592	592	592	604	604	604
28	1	.55205E+00	415	415	358	358	358	358	358	358	589	589	590	601	601	601
28	2	.19904E-01	61	58	102	98	88	102	88	96	208	201	218	265	254	271
28	3	.54274E+00	415	415	358	358	358	358	358	358	589	589	590	601	601	601
30	1	.63904E+00	413	413	356	356	356	356	356	356	586	586	586	598	598	598
30	2	.99757E-02	71	68	121	117	105	121	105	115	239	231	252	299	287	306
30	3	.62829E+00	413	413	356	356	356	356	356	356	586	586	586	598	598	598
32	1	.68250E+00	411	411	354	354	354	354	354	354	583	583	583	595	595	595
32	2	.58388E-10	32	31	33	31	29	33	29	30	96	94	118	137	140	144
32	3	.67102E+00	410	410	354	354	354	354	354	354	583	583	583	595	595	595
36	1	.68720E+00	410	410	353	353	353	353	353	353	582	582	582	594	594	594
36	2	.19046E-02	81	79	168	163	150	168	150	161	308	299	313	383	367	388
36	3	.67438E+00	410	410	354	354	354	354	354	354	582	582	582	594	594	594
38	1	.65423E+00	404	404	348	348	348	348	348	348	574	574	574	586	586	586
38	2	.16524E-01	47	46	115	113	106	115	106	112	224	220	233	287	281	292
38	3	.65955E+00	407	407	351	351	351	351	351	351	579	579	579	590	590	590
39	1	.51199E+00	397	397	342	342	342	342	342	342	565	564	565	576	576	576
39	2	.28242E-01	38	37	99	97	91	99	91	96	200	195	203	259	252	262
39	3	.59539E+00	405	405	349	349	349	349	349	349	575	575	575	587	587	587
40	1	.29333E+00	386	386	332	332	332	332	332	332	550	550	552	561	562	562
40	2	.26506E-01	43	41	103	101	94	103	94	100	206	201	206	267	258	269
40	3	.49670E+00	404	404	348	348	348	348	348	348	574	574	574	585	585	585
41	1	.51736E-01	326	326	282	282	281	282	281	282	476	476	490	487	497	498
41	2	.13199E-01	63	61	129	126	118	129	118	124	244	239	247	312	300	315
41	3	.38764E+00	405	405	349	349	349	349	349	349	575	575	575	587	587	587
43	1	.14489E+00	410	410	354	354	354	354	354	354	582	582	582	594	594	594
43	2	.50237E-10	15	15	24	23	23	24	23	23	87	87	120	119	134	135
43	3	.29977E+00	410	410	354	354	354	354	354	354	582	582	582	594	594	594
44	1	.22177E+00	396	396	341	341	341	341	341	341	563	563	564	575	575	575
44	2	.67074E-02	74	72	125	122	114	125	114	121	240	234	268	296	295	309
44	3	.26514E+00	416	416	359	359	359	359	359	359	590	590	590	602	602	602
45	1	.24909E+00	387	387	333	333	333	333	333	333	552	552	553	563	564	564
45	2	.10788E-01	80	78	113	110	103	113	103	109	222	217	260	270	277	289
45	3	.25285E+00	420	420	363	363	363	363	363	363	596	596	597	608	608	608
46	1	.23872E+00	379	379	326	326	326	326	326	326	541	541	544	552	554	554
46	2	.98348E-02	91	90	110	108	101	110	101	106	219	214	264	262	276	285
46	3	.25752E+00	423	423	365	366	366	366	366	366	600	600	601	612	613	613

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 * BM2 MODEL *

EARTHQUAKE NO. 1

*DISPLACEMENT (INERTIA COMPONENT)

NODE NO.	COMP. NO.	DISP. (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	
47	1	.20411E+00	367	367	316	316	316	316	316	316	316	526	526	531	537	540	540
47	2	.24680E-02	111	110	116	114	109	116	109	113	229	225	281	267	290	297	
47	3	.27313E+00	425	425	367	367	367	367	367	367	602	602	603	614	615	615	
48	1	.18277E+00	369	369	317	317	317	317	317	317	528	528	533	539	542	542	
48	2	.41253E-10	337	336	294	293	291	294	291	292	494	492	517	509	523	526	
48	3	.28138E+00	423	423	365	365	365	365	365	365	600	600	600	612	612	612	
49	1	.13533E+00	391	391	337	337	337	337	337	337	557	557	560	568	570	570	
49	2	.92495E-05	376	375	326	326	325	326	325	326	542	542	558	555	556	568	
49	3	.29667E+00	417	416	360	360	359	360	359	360	591	591	592	603	603	603	
50	1	.92357E-01	431	431	372	372	372	372	372	372	610	610	613	623	624	624	
50	2	.18500E-04	376	375	326	326	325	326	325	326	542	542	558	555	566	568	
50	3	.30932E+00	411	411	355	355	355	355	355	355	584	584	586	596	597	597	
51	1	.81273E-01	434	434	375	375	375	375	375	375	614	614	617	627	628	628	
51	2	.78290E-02	300	300	258	258	258	258	258	258	439	439	453	449	459	459	
51	3	.29961E+00	409	409	353	353	352	353	352	353	580	580	582	592	593	593	
52	1	.54833E-01	431	431	372	372	372	372	372	372	610	610	613	622	624	624	
52	2	.28541E-01	292	292	251	251	251	251	251	251	428	428	442	439	448	448	
52	3	.21560E+00	391	391	337	337	337	337	337	337	557	557	560	568	569	570	
53	1	.27139E-01	430	430	372	372	372	372	372	372	609	609	613	622	623	623	
53	2	.22601E-01	289	288	248	247	247	248	247	247	423	423	436	434	442	442	
53	3	.12735E+00	354	354	304	304	304	304	304	304	508	508	517	519	524	524	
54	1	.16429E-02	389	388	337	336	336	337	336	336	557	557	570	570	578	579	
54	2	.31923E-02	289	289	248	248	248	248	248	248	423	423	435	434	441	441	
54	3	.43553E-01	224	223	195	194	193	195	193	194	347	346	398	366	402	403	
55	1	.10819E-09	381	381	329	329	329	329	329	329	546	546	558	558	566	566	
55	2	.89628E-10	204	204	175	175	175	175	175	175	314	314	353	330	355	356	
55	3	.28740E-01	173	172	157	156	155	157	155	156	294	293	363	327	370	373	
56	1	.90631E-02	390	390	337	337	337	337	337	337	557	557	564	570	573	574	
56	2	.15088E-04	170	169	156	155	154	156	154	155	295	293	364	328	371	374	
56	3	.14046E-01	171	170	156	155	154	156	154	155	294	293	363	327	370	373	
57	1	.17030E-01	397	397	343	343	343	343	343	343	566	566	572	579	582	582	
57	2	.30174E-04	170	169	156	155	154	156	154	155	295	293	364	328	371	374	
57	3	.17211E-02	169	168	156	155	153	156	153	154	294	293	363	327	370	373	
58	1	.14273E-01	396	396	342	342	341	342	341	342	564	564	571	577	580	581	
58	2	.11214E-02	169	168	156	155	153	156	153	154	294	292	363	327	370	373	
58	3	.23877E-04	156	155	155	153	150	155	150	152	300	297	369	340	378	384	
59	1	.33530E-02	387	387	335	334	334	335	334	334	553	553	561	566	570	571	
59	2	.10746E-02	169	168	156	154	153	156	153	154	293	292	363	327	370	373	
59	3	.11939E-04	156	155	155	153	150	155	150	152	300	297	369	340	378	384	
60	1	.19047E-10	351	348	307	305	302	307	302	305	508	507	522	524	531	536	
60	2	.45942E-10	169	168	155	154	153	155	153	154	293	292	363	327	370	373	
60	3	.35075E-10	156	155	155	153	150	155	150	152	300	297	369	340	378	384	

 * BM2 MODEL *

EARTHQUAKE NO. 1

*ACCELERATION(INERTIA COMPONENT)

NODE NO.	COMP. NO.	ACC(DY) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	.42727E-06	5623	5586	5478	5444	5346	5478	5346	5434	7366	7310	7409	7585	7472	7655
1	2	.12368E-06	3088	3050	2832	2785	2720	2832	2720	2784	3786	3724	3834	3960	3908	4044
1	3	.38661E-06	5905	5883	5206	5176	5122	5206	5122	5177	6983	6936	7086	7120	7125	7240
2	1	.26267E+00	13937	13700	14048	13916	13512	14048	13512	13855	18628	18429	18457	19678	18941	19694
2	2	.96514E+00	8023	8010	7007	6983	6941	7007	6941	6982	9402	9365	9610	9543	9645	9731
2	3	.23002E+00	14903	14656	14618	14478	14090	14618	14090	14422	19343	19143	19187	20449	19740	20476
3	1	.35337E+01	6885	6822	6926	6884	6725	6926	6725	6860	9287	9214	9290	9631	9401	9686
3	2	.39578E+01	6574	6564	5701	5678	5660	5701	5660	5684	7664	7632	7851	7764	7879	7926
3	3	.26100E+01	8949	8893	7810	7774	7661	7810	7661	7755	10383	10330	10521	10707	10648	10864
4	1	.55569E+01	6503	6451	6436	6397	6264	6436	6264	6380	8638	8571	8662	8929	8751	8994
4	2	.39558E+01	6578	6569	5705	5682	5664	5705	5664	5688	7670	7637	7857	7769	7884	7932
4	3	.43591E+01	8099	8055	7113	7079	6977	7113	6977	7065	9480	9427	9601	9744	9693	9891
5	1	.88583E+01	6523	6471	6451	6411	6277	6451	6277	6394	8656	8588	8678	8950	8770	9015
5	2	.65584E+01	6466	6457	5588	5565	5547	5588	5547	5571	7509	7477	7698	7606	7725	7772
5	3	.67538E+01	8353	8306	7328	7295	7189	7328	7189	7278	9759	9708	9887	10040	9987	10190
6	1	.80735E+01	5757	5749	4955	4933	4926	4955	4926	4942	6668	6638	6850	6746	6873	6901
6	2	.93056E-06	1765	1740	1779	1763	1708	1779	1708	1751	2399	2375	2453	2534	2510	2604
6	3	.78040E+01	5757	5749	4955	4933	4926	4955	4926	4942	6668	6638	6850	6746	6873	6901
7	1	.89851E+01	6285	6238	6219	6184	6060	6219	6060	6167	8355	8293	8383	8627	8465	8691
7	2	.61878E+01	6563	6551	5628	5612	5572	5628	5572	5607	7539	7513	7743	7654	7771	7850
7	3	.67754E+01	8143	8102	7105	7075	6979	7105	6979	7059	9467	9421	9612	9718	9699	9882
8A	1	.87859E+01	5951	5917	5749	5718	5625	5749	5625	5709	7734	7681	7790	7947	7851	8023
8A	2	.51876E+01	5406	5394	4613	4599	4559	4613	4559	4592	6175	6153	6359	6281	6385	6463
8A	3	.70283E+01	7378	7348	6438	6410	6333	6438	6333	6401	8602	8557	8744	8792	8802	8952
8	1	.83816E+01	5681	5666	5147	5123	5086	5147	5086	5127	6933	6895	7058	7054	7091	7169
8	2	.24694E+01	4203	4187	3575	3551	3516	3575	3516	3551	4784	4751	4944	4882	4972	5050
8	3	.74796E+01	6331	6317	5497	5472	5433	5497	5433	5474	7374	7336	7530	7489	7560	7644
9	1	.78716E+01	6097	6086	5270	5246	5221	5270	5221	5251	7077	7042	7245	7174	7271	7331
9	2	.18321E+01	3018	2996	2566	2528	2507	2566	2507	2539	3436	3388	3582	3533	3621	3688
9	3	.80152E+01	5639	5628	5000	4977	4956	5000	4956	4984	6734	6701	6882	6833	6910	6963
10	1	.91758E+01	5130	5120	4314	4301	4276	4314	4276	4300	5770	5750	5970	5851	5994	6047
10	2	.60293E+01	1644	1617	1792	1751	1709	1792	1709	1759	2427	2371	2536	2536	2562	2661
10	3	.93677E+01	4571	4558	4027	4006	3977	4027	3977	4010	5419	5386	5556	5510	5580	5645
11	1	.20270E+02	1413	1409	1349	1341	1333	1349	1333	1343	1821	1809	1988	1864	1994	2016
11	2	.60535E+01	1658	1630	1806	1765	1722	1806	1722	1772	2446	2389	2553	2557	2581	2681
11	3	.19455E+02	1440	1437	1317	1314	1307	1317	1307	1314	1778	1772	1946	1816	1952	1968
12	1	.17436E+02	1285	1281	1194	1187	1180	1194	1180	1189	1614	1604	1772	1652	1778	1796
12	2	.56005E+01	1161	1144	1273	1245	1217	1273	1217	1249	1741	1703	1874	1825	1888	1955
12	3	.16685E+02	1315	1313	1161	1159	1153	1161	1153	1158	1570	1566	1729	1602	1734	1746
13	1	.16461E+02	2360	2332	3026	2983	2949	3026	2949	2998	4098	4035	4307	4225	4335	4431
13	2	.99416E+01	5116	5009	5026	4889	4796	5026	4796	4927	6693	6514	6606	7093	6939	7185
13	3	.15657E+02	2367	2342	2991	2954	2921	2991	2921	2966	4050	3995	4263	4173	4290	4380

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 * BM2 MODEL *

EARTHQUAKE NO. 1

*ACCELERATION(INERTIA COMPONENT)

NODE NO.	COMP. NO.	ACC(DY) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
14	1	.11410E+02	1129	1126	1022	1015	1010	1022	1010	1017	1387	1377	1532	1419	1537	1552
14	2	.48009E+01	677	665	750	733	712	750	712	733	1053	1031	1175	1124	1187	1229
14	3	.10771E+02	1179	1177	985	984	980	985	980	983	1338	1336	1486	1362	1489	1495
15	1	.55585E+00	2833	2762	3500	3348	3325	3500	3325	3426	4761	4558	4789	4895	4871	5059
15	2	.27674E-06	5023	4943	5162	5115	4976	5162	4976	5093	6882	6813	6870	7286	7131	7373
15	3	.27593E+00	2843	2772	3501	3347	3325	3501	3325	3426	4761	4557	4788	4894	4870	5058
19	1	.33636E+00	2439	2370	2972	2820	2798	2972	2798	2898	4055	3853	4069	4179	4147	4327
19	2	.46107E+00	1815	1714	2521	2344	2328	2521	2328	2436	3477	3250	3313	3697	3611	3770
19	3	.56055E+00	3160	3090	3912	3761	3739	3912	3739	3839	5311	5110	5354	5452	5440	5629
21	1	.53640E+00	3094	3066	3169	3096	3091	3169	3091	3135	4298	4200	4365	4368	4417	4500
21	2	.13687E+01	2627	2555	3087	2975	2911	3087	2911	3016	4196	4044	4133	4432	4345	4519
21	3	.78230E+00	3628	3557	4258	4095	4078	4258	4078	4181	5777	5560	5801	5915	5899	6095
23	1	.40962E+01	9986	9921	9196	9010	8985	9196	8985	9106	12403	12154	12635	12583	12722	12936
23	2	.24025E+02	1316	1223	2240	2094	2076	2240	2076	2170	3122	2933	2979	3319	3224	3360
23	3	.82268E+01	10202	10135	9400	9206	9181	9400	9181	9306	12677	12418	12912	12862	13002	13223
25	1	.26531E-06	4689	4680	4374	4364	4328	4374	4328	4358	5909	5891	6101	6021	6129	6197
25	2	.33803E-06	1475	1392	2254	2113	2098	2254	2098	2186	3131	2950	3003	3329	3259	3387
25	3	.16836E-06	5753	5690	5435	5250	5238	5435	5238	5349	7360	7114	7435	7484	7522	7715
27	1	.89075E+00	11789	11724	10794	10612	10572	10794	10572	10702	14548	14302	14832	14767	14919	15151
27	2	.62411E+01	1364	1277	2342	2212	2185	2342	2185	2277	3209	3088	3151	3460	3371	3503
27	3	.18479E+01	11793	11727	10797	10615	10575	10797	10575	10705	14552	14306	14836	14770	14924	15155
29	1	.66570E-02	12522	12459	11495	11328	11274	11495	11274	11406	15488	15261	15790	15732	15875	16113
29	2	.12314E-06	1921	1860	2341	2234	2208	2341	2208	2284	3211	3071	3154	3402	3383	3499
29	3	.41570E-02	12458	12394	11431	11264	11211	11431	11211	11342	15402	15173	15703	15644	15789	16026
33	1	.23535E+00	12077	12012	11063	10887	10842	11063	10842	10972	14908	14670	15201	15136	15287	15520
33	2	.20405E+01	1121	1041	2157	2044	2030	2157	2030	2103	3018	2870	2959	3194	3130	3236
33	3	.46624E+00	12057	11993	11044	10868	10823	11044	10823	10953	14883	14645	15175	15111	15262	15494
35	1	.26651E+00	12083	12018	11069	10893	10848	11069	10848	10978	14916	14678	15208	15144	15295	15528
35	2	.23874E+01	1205	1122	2240	2121	2101	2240	2101	2181	3126	2971	3050	3312	3236	3353
35	3	.61261E+00	12075	12010	11061	10886	10840	11061	10840	10970	14906	14668	15198	15134	15284	15518
37	1	.27223E+00	12104	12039	11089	10913	10868	11089	10868	10998	14943	14705	15235	15172	15322	15555
37	2	.21440E-07	2571	2527	2636	2577	2527	2636	2527	2592	3558	3478	3577	3745	3734	3852
37	3	.11528E+00	12104	12039	11088	10914	10868	11088	10868	10998	14942	14704	15235	15171	15321	15554
16	1	.59767E+00	1761	1717	1836	1734	1716	1836	1716	1784	2520	2387	2516	2609	2578	2696
16	2	.11194E-05	261	251	266	258	245	266	245	255	411	403	497	486	514	534
16	3	.59385E+00	1765	1722	1820	1721	1703	1820	1703	1769	2497	2367	2497	2584	2557	2672
20	1	.90198E+02	369	368	362	361	358	362	358	360	555	553	623	576	625	631
20	2	.79457E+02	158	152	172	167	158	172	158	165	302	296	345	383	381	397
20	3	.88915E+02	366	364	360	358	355	360	355	358	551	549	618	572	621	627
22	1	.22574E+03	350	350	334	333	332	334	332	333	533	532	582	550	585	588
22	2	.19868E+03	139	134	152	148	142	152	142	147	275	270	301	355	350	362
22	3	.22214E+03	349	349	333	332	331	333	331	332	531	530	580	548	583	586

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 * BM2 MODEL *

EARTHQUAKE NO. 1

*ACCELERATION (INERTIA COMPONENT)

NODE NO.	COMP. NO.	ACC(DY) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
24	1	.36533E+03	365	364	334	333	332	334	332	333	543	542	581	558	586	588
24	2	.29075E+03	129	125	145	141	135	145	135	140	265	260	286	343	337	349
24	3	.35934E+03	364	364	333	332	331	333	331	332	542	541	580	556	585	586
26	1	.47709E+03	391	391	346	345	345	346	345	345	569	568	596	582	602	603
26	2	.31138E+03	122	118	140	137	131	140	131	136	259	254	282	334	330	342
26	3	.46919E+03	391	391	346	345	345	346	345	345	568	568	596	582	601	603
28	1	.55579E+03	421	421	366	366	365	366	365	366	602	601	617	615	625	626
28	2	.24870E+03	114	111	138	134	128	138	128	133	256	251	284	328	325	337
28	3	.54632E+03	421	421	366	366	365	366	365	366	602	601	617	615	625	626
30	1	.62759E+03	429	428	372	371	371	372	371	371	609	608	615	621	625	625
30	2	.12600E+03	105	101	138	134	125	138	125	132	257	251	289	326	322	337
30	3	.61707E+03	428	428	371	371	371	371	371	371	609	608	615	621	625	625
32	1	.69679E+03	407	407	353	353	353	353	353	353	579	579	582	591	593	593
32	2	.60457E-06	185	179	188	180	169	188	169	178	320	312	368	406	404	424
32	3	.68506E+03	407	407	353	353	353	353	353	353	579	579	582	591	593	593
36	1	.70822E+03	402	402	349	349	348	349	348	349	572	572	575	584	586	586
36	2	.22039E+02	109	104	181	174	158	181	158	171	319	309	355	391	383	407
36	3	.69303E+03	403	403	350	350	350	350	350	350	575	575	577	586	588	588
38	1	.71146E+03	370	370	320	320	319	320	319	319	531	531	542	543	549	550
38	2	.15401E+03	114	110	177	171	158	177	158	168	311	303	347	387	382	402
38	3	.69450E+03	388	388	335	335	335	335	335	335	554	554	558	565	567	568
39	1	.57717E+03	356	356	313	313	312	313	312	313	521	521	546	534	552	553
39	2	.25986E+03	95	93	142	139	132	142	132	138	263	258	281	338	333	345
39	3	.63359E+03	379	379	327	327	327	327	327	327	542	542	548	553	557	557
40	1	.37862E+03	342	342	327	326	325	327	325	326	526	525	575	541	580	583
40	2	.27339E+03	88	85	128	125	118	128	118	124	241	236	252	312	305	317
40	3	.52424E+03	382	382	330	330	330	330	330	330	547	547	554	559	563	563
41	1	.11720E+03	458	456	523	519	514	523	514	519	768	763	863	795	873	885
41	2	.16259E+03	112	107	155	149	136	155	136	147	276	268	307	348	340	360
41	3	.40520E+03	387	387	334	334	334	334	334	334	553	553	556	564	567	567
43	1	.14840E+03	405	405	352	352	352	352	352	352	577	577	580	589	591	591
43	2	.33190E-06	232	227	240	232	219	240	219	230	395	387	471	485	504	523
43	3	.30704E+03	405	405	352	352	352	352	352	352	577	577	580	589	591	591
44	1	.27622E+03	311	310	271	270	269	271	269	270	459	458	480	471	486	488
44	2	.83944E+02	190	184	244	232	209	244	209	228	395	382	444	477	473	506
44	3	.28769E+03	388	387	339	339	339	339	339	339	557	557	570	569	578	579
45	1	.39117E+03	231	230	205	204	202	205	202	204	362	361	402	378	405	408
45	2	.12562E+03	200	194	245	234	213	245	213	230	397	385	455	480	483	514
45	3	.34917E+03	280	289	252	251	251	252	251	251	428	427	450	439	454	455
46	1	.50631E+03	151	150	138	138	137	138	137	138	263	262	313	280	314	315
46	2	.10763E+03	187	181	221	212	197	221	197	210	364	355	432	444	458	482
46	3	.41853E+03	231	231	199	199	199	199	199	199	351	351	378	362	381	381

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 * BM2 MODEL *

EARTHQUAKE NO. 1

*ACCELERATION (INERTIA COMPONENT)

NODE NO.	COMP. NO.	ACC (DY) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
47	1	.56862E+03	107	107	110	110	109	110	109	110	216	215	274	235	275	276
47	2	.25242E+02	165	161	183	178	172	183	172	177	315	310	389	392	416	428
47	3	.48205E+03	205	205	175	175	175	175	175	175	317	316	345	328	347	347
48	1	.52018E+03	106	106	109	109	108	109	108	109	214	213	272	233	273	274
48	2	.17900E-06	1106	1001	1095	1027	899	1095	899	992	1578	1467	1519	1784	1667	1807
48	3	.44509E+03	238	238	205	205	204	205	204	205	380	360	388	372	391	391
49	1	.34242E+03	120	120	112	111	110	112	110	111	220	219	266	236	267	268
49	2	.33326E-01	1677	1554	1692	1628	1508	1692	1508	1604	2412	2353	2386	2640	2481	2657
49	3	.37391E+03	328	327	286	285	284	286	284	285	482	481	527	502	531	533
50	1	.20493E+03	206	204	181	179	177	181	177	179	321	319	389	367	400	406
50	2	.66651E-01	1676	1554	1692	1627	1508	1692	1508	1604	2411	2353	2385	2639	2480	2656
50	3	.50283E+03	244	243	214	213	212	214	212	213	374	373	432	400	436	439
51	1	.19942E+03	208	205	185	182	179	185	179	182	323	321	394	373	410	417
51	2	.41936E+02	101	95	122	119	113	122	113	118	222	218	280	256	283	292
51	3	.54707E+03	209	208	183	182	181	183	181	182	329	327	387	355	390	393
52	1	.13854E+03	202	199	180	177	174	180	174	177	316	313	386	373	401	408
52	2	.15964E+03	228	210	246	237	219	246	219	233	390	381	434	438	441	467
52	3	.43259E+03	169	168	154	154	152	154	152	153	290	289	349	314	351	354
53	1	.68858E+02	209	205	188	184	180	188	180	183	327	323	398	383	410	419
53	2	.12750E+03	319	294	335	321	296	335	296	316	512	499	547	572	558	595
53	3	.35847E+03	115	115	121	120	117	121	117	119	244	243	311	282	319	322
54	1	.82089E+01	814	753	822	790	732	822	732	779	1193	1164	1197	1309	1239	1326
54	2	.16985E+02	388	357	399	383	351	399	351	376	602	586	635	672	649	694
54	3	.33520E+03	154	150	159	156	152	159	152	155	294	290	336	373	380	388
55	1	.50468E-06	131	123	133	130	123	133	123	129	245	242	301	278	303	312
55	2	.68637E-06	206	194	217	211	200	217	200	209	358	351	435	425	446	463
55	3	.29556E+03	171	166	174	170	166	174	166	169	316	311	357	401	407	415
56	1	.43440E+02	604	554	604	575	522	604	522	564	883	857	886	986	925	997
56	2	.15783E+00	167	162	173	169	164	173	164	168	315	311	360	398	405	414
56	3	.14624E+03	168	164	174	170	165	174	165	169	315	311	359	399	406	415
57	1	.75102E+02	609	559	607	578	525	607	525	567	887	860	893	993	931	1005
57	2	.31563E+00	167	162	173	169	164	173	164	168	315	311	360	398	405	414
57	3	.18089E+02	168	163	174	169	165	173	165	168	315	311	361	399	406	415
58	1	.64667E+02	659	605	657	626	568	657	568	613	956	927	958	1068	1000	1079
58	2	.11785E+02	168	163	174	170	165	174	165	168	315	311	361	399	406	415
58	3	.27653E+00	167	161	182	177	170	182	170	176	331	326	394	408	422	435
59	1	.17318E+02	820	754	819	781	711	819	711	766	1180	1145	1170	1313	1228	1322
59	2	.11311E+02	168	163	174	170	165	174	165	169	316	311	361	399	406	415
59	3	.13828E+00	167	161	182	177	170	182	170	176	331	326	394	408	422	435
60	1	.10484E-06	2049	1894	2045	1960	1803	2045	1803	1927	2886	2809	2821	3179	2963	3184
60	2	.48426E-06	168	163	174	170	165	174	165	169	316	312	362	400	406	416
60	3	.40623E-06	167	161	182	177	170	182	170	176	331	326	394	408	422	435

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 * BM2 MODEL *

EARTHQUAKE NO. 1

*MOMENTS, AND FORCES (INERTIA COMPONENT)

ELEM. NO.	FORCE CODE	FORCE (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	12	.27785E+04	303	303	256	256	255	256	255	256	419	418	448	428	452	154
2	18	.11002E+04	112	112	90	89	89	90	89	89	177	176	185	183	188	190
3	12	.77147E+03	189	188	157	156	155	157	155	157	264	263	292	271	296	299
4	18	.22409E+04	378	378	322	321	320	322	320	321	513	511	550	523	555	557
5	12	.31235E+04	246	245	210	209	208	210	208	209	355	355	373	364	377	379
6	12	.27216E+04	288	287	251	250	249	251	249	250	421	420	433	432	439	442
7	12	.29428E+04	284	284	250	249	248	250	248	249	420	418	442	431	447	450
8	12	.32294E+04	361	361	312	312	312	312	312	312	517	517	530	528	537	538
9	18	.26184E+04	432	431	377	377	376	377	376	377	612	611	625	625	634	637
10	12	.20478E+04	143	141	137	134	133	137	133	136	243	239	257	253	270	275
11	12	.51759E+04	131	130	135	132	131	135	131	134	235	231	250	244	255	260
12	12	.33499E+04	366	365	319	319	318	319	318	318	518	518	545	530	555	557
13	18	.32969E+04	367	367	320	320	319	320	319	319	520	520	547	532	558	558
14	12	.31181E+04	297	292	312	299	298	312	298	306	467	450	483	483	500	514
15	12	.15202E+04	414	409	417	403	402	417	402	410	628	612	658	647	684	698
16	12	.11946E+04	303	298	318	305	304	318	304	312	480	464	494	496	510	523
17	12	.96194E+03	402	402	351	350	350	351	350	350	571	570	582	584	593	595
18	12	.88340E+03	400	399	351	349	349	351	349	350	568	566	579	580	592	594
19	18	.84305E+03	399	398	350	349	348	350	348	349	567	564	578	579	591	594
20	12	.12894E-10	490	490	484	483	483	484	483	484	654	653	665	716	724	726
21	12	.67779E+04	426	426	368	368	368	368	368	368	604	604	607	616	618	618
22	12	.61738E+04	418	418	361	361	361	361	361	361	593	593	594	605	605	605
23	12	.31832E+04	406	406	350	350	350	350	350	350	577	577	579	589	590	590
24	12	.66678E+03	258	256	267	264	259	267	259	264	451	447	506	494	522	532
25	12	.23819E+04	434	433	378	378	377	378	377	378	620	620	633	635	643	644
26	12	.44670E+04	433	433	375	375	375	375	375	375	615	615	619	626	630	630
27	12	.61056E+04	427	427	369	369	369	369	369	369	606	605	607	618	619	619
28	12	.71377E+04	419	419	362	362	362	362	362	362	595	595	595	607	607	607
29	12	.92288E+04	423	423	366	366	366	366	366	366	600	600	602	613	613	614
30	18	.72082E+04	417	417	361	361	361	361	361	361	592	592	593	604	605	605
31	12	.64857E+04	402	402	347	346	346	347	346	346	571	571	573	583	584	584
32	12	.45402E+04	375	375	324	324	324	324	324	324	538	538	543	550	553	553
33	12	.15280E+04	291	291	261	260	259	261	259	260	445	444	468	462	479	482
34	12	.26616E+04	427	427	369	369	369	369	369	369	606	606	611	618	621	622
35	12	.68459E+04	406	406	351	351	351	351	351	351	578	577	579	589	590	590
36	12	.56377E+04	396	396	342	342	342	342	342	342	564	564	565	576	576	576
37	12	.43165E+04	386	386	333	333	333	333	333	333	551	551	554	563	564	564
38	12	.28197E+04	385	385	333	333	332	333	332	332	551	551	557	563	567	567
39	12	.12859E+04	388	388	337	337	337	337	337	337	559	559	581	576	589	590
40	18	.99419E+03	368	368	320	320	319	320	319	320	533	533	563	552	569	570
41	12	.14036E+04	378	377	326	326	326	326	326	326	542	542	558	555	565	565
42	12	.26159E+04	330	330	284	284	284	284	284	284	479	479	495	490	501	502

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 * BM2 MODEL *

EARTHQUAKE NO. 1

*MOMENTS, AND FORCES (INERTIA COMPONENT)

MEM. NO.	FORCE CODE	FORCE (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	
43	18	.28420E+04	322	322	278	278	278	278	278	278	278	469	469	485	481	491	491
44	12	.19869E+04	287	287	248	248	247	248	247	248	248	424	424	443	436	448	449
45	12	.10553E+04	339	339	296	296	295	296	295	296	296	497	497	523	513	529	530
46	12	.13690E+04	427	427	371	371	371	371	371	371	371	609	609	616	624	627	627
47	18	.14930E+04	430	430	373	373	372	373	372	373	373	611	611	617	625	627	628
48	12	.15536E+04	415	415	358	358	358	358	358	358	358	589	589	595	603	606	606
49	12	.18102E+04	371	371	321	321	321	321	321	321	321	535	535	550	551	560	561
50	18	.17615E+04	370	370	321	321	320	321	320	320	320	534	534	549	550	559	560
51	12	.13296E+04	403	403	348	348	348	348	348	348	348	573	573	579	586	589	589
52	12	.12700E+04	350	349	304	303	302	304	302	303	303	508	507	525	524	534	535
53	18	.32570E+04	371	371	323	323	322	323	322	323	323	526	526	552	538	560	562
54	12	.79009E+04	424	424	366	366	366	366	366	366	366	601	601	603	613	614	614
55	12	.27456E+04	293	292	258	257	256	258	256	257	257	434	432	449	445	455	459

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 * BM2 MODEL *

EARTHQUAKE NO. 1

*MOMENTS, AND FORCES (INERTIA COMPONENT)

ELEM. NO.	FORCE CODE	FORCE (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	.21009E+03	211	211	180	179	178	180	178	179	305	303	331	312	335	338
2	1	.20274E+02	229	225	206	199	195	206	195	201	321	313	365	341	368	361
3	1	.12479E+03	467	466	400	398	398	400	398	399	626	625	668	639	674	677
4	1	.16288E+04	455	454	389	388	387	389	387	388	608	607	651	621	656	660
5	1	.39658E+04	-15	-17	-13	-14	-16	-13	-16	-14	15	13	16	21	19	24
6	1	.22627E+04	259	259	220	219	218	220	218	219	362	362	394	371	397	400
7	1	.70195E+02	17	16	33	32	30	33	30	32	86	83	97	94	104	108
8	1	.17729E+03	283	282	248	248	247	248	247	248	416	415	448	430	453	456
9	1	.35232E+03	427	427	370	370	370	370	370	370	605	605	611	618	621	621
10	1	.15806E+03	264	263	230	229	229	230	229	229	395	394	432	412	434	436
11	1	.82942E+02	506	506	445	444	445	445	443	444	682	681	746	696	751	755
12	1	.20121E+03	29	28	28	27	25	28	25	27	81	80	91	88	100	103
13	1	.15139E+02	585	581	547	534	533	547	533	541	796	780	848	811	855	869
14	1	.30269E+02	339	337	317	312	311	317	311	314	516	510	531	531	563	569
15	1	.38548E+02	558	557	497	496	494	497	494	496	727	725	810	744	812	818
16	1	.60464E+02	210	204	260	245	244	260	244	253	416	398	423	437	469	482
17	1	.57286E+02	437	434	408	399	398	408	398	403	629	618	666	643	673	684
18	1	.10532E+03	333	332	303	300	299	303	299	301	500	496	526	514	531	537
19	1	.58388E+02	32	31	33	31	29	33	29	30	96	94	118	137	140	144
20	1	.31195E+01	648	643	597	583	582	597	582	590	848	830	894	863	900	916
21	1	.98459E+01	377	377	329	328	328	329	328	328	542	541	550	554	564	566
22	1	.21530E+03	389	389	336	336	336	336	336	336	555	555	559	566	569	569
23	1	.50237E+02	15	15	24	23	23	24	23	23	87	87	120	119	134	135
24	1	.41253E+02	337	336	294	293	291	294	292	292	494	492	517	509	523	526
25	1	.10819E+03	381	381	329	329	329	329	329	329	546	546	558	558	566	566
26	1	.89628E+02	204	204	175	175	175	175	175	175	314	314	353	330	355	356
27	1	.19047E+02	351	348	307	305	302	307	302	305	508	507	522	524	531	536
28	1	.45942E+02	169	168	155	154	153	155	153	154	293	292	363	327	370	373
29	1	.35075E+02	156	155	155	153	150	155	150	152	300	297	369	340	378	384
30	1	.57192E+03	169	168	155	154	153	155	153	154	293	292	363	327	370	373
31	1	.10373E+04	379	379	329	328	327	329	327	328	544	543	553	557	562	564
32	1	.45816E+03	415	415	358	358	358	358	358	358	589	589	593	602	604	604

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 * BM3 MODEL *

EARTHQUAKE NO. 1

*DISPLACEMENT (INERTIA COMPONENT)

NODE NO.	COMP. NO.	DISP. (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	.20539E-09	76	72	60	56	56	60	56	60	84	81	91	86	91	95
1	2	.84625E-09	90	90	88	87	87	88	87	88	91	91	102	91	103	103
1	3	.22982E-09	26	20	24	18	18	24	18	24	32	26	30	35	37	44
2	1	.17674E-05	76	72	60	56	56	60	56	60	84	81	91	86	91	95
2	2	.15477E-02	134	130	121	117	117	121	117	121	140	136	155	142	155	159
2	3	.20679E-02	22	22	69	69	69	69	69	69	107	107	108	108	108	109
3	1	.16511E-02	87	82	69	64	64	69	64	69	95	91	101	97	102	107
3	2	.26070E-02	135	131	119	114	114	119	114	119	143	138	155	145	156	161
3	3	.54119E-02	15	13	50	49	49	50	49	50	81	79	81	82	82	84
4	1	.11426E-05	16	9	27	21	21	27	21	27	41	35	41	43	42	48
4	2	.27039E-02	137	132	121	116	116	121	116	121	144	139	157	146	158	163
4	3	.22286E-05	32	24	31	24	24	31	24	31	39	31	36	43	43	51
5	1	.40835E-01	56	53	39	36	36	39	36	39	64	61	68	66	69	73
5	2	.27121E-02	137	132	121	116	116	121	116	121	144	139	157	146	158	163
5	3	.36357E-01	26	19	25	18	18	25	18	25	34	27	31	37	38	46
6	1	.62092E-01	50	46	52	47	47	52	47	52	80	76	82	82	82	87
6	2	.75540E-02	47	44	33	30	30	33	30	33	51	48	55	54	60	63
6	3	.43930E-01	26	19	25	18	18	25	18	24	34	27	31	37	38	46
7	1	.53801E+00	49	49	115	115	115	115	115	115	166	166	166	166	166	166
7	2	.14320E-05	60	56	40	35	35	40	35	40	65	60	66	67	68	73
7	3	.44268E-01	26	19	25	18	18	25	18	25	34	27	31	37	38	46
8	1	.53919E+00	51	51	118	118	118	118	118	118	169	169	169	170	170	170
8	2	.40849E-01	82	77	54	48	48	54	48	54	87	82	87	90	89	95
8	3	.50832E-01	50	40	48	38	38	48	38	48	56	45	49	61	58	69
9	1	.53910E+00	51	51	118	118	118	118	118	118	169	169	169	170	170	170
9	2	.60419E+00	76	71	50	45	45	50	45	50	81	76	81	83	84	89
9	3	.32526E+00	83	64	81	66	66	81	66	81	88	72	73	94	80	96
10	1	.53857E+00	51	51	118	118	118	118	118	118	169	169	169	170	170	170
10	2	.63807E+00	92	90	57	54	54	57	54	57	98	96	98	100	101	103
10	3	.33344E+00	71	57	81	69	69	81	69	81	96	84	86	101	93	106
11	1	.53813E+00	51	51	118	118	118	118	118	118	169	169	169	170	170	170
11	2	.19739E-05	52	41	44	32	32	44	32	44	56	44	50	58	52	64
11	3	.13578E-02	145	132	175	164	164	175	164	175	210	199	204	215	213	224
12	1	.53758E+00	51	51	118	118	118	118	118	118	169	169	169	170	170	170
12	2	.90320E+00	91	91	51	51	51	51	51	51	97	97	97	99	99	99
12	3	.22522E+00	51	49	109	108	108	109	108	109	156	154	156	156	156	158
13	1	.53698E+00	51	51	118	118	118	118	118	118	169	169	169	170	170	170
13	2	.17281E+01	88	88	49	49	49	49	49	49	94	93	94	96	96	96
13	3	.53621E-01	62	62	134	134	134	134	134	134	189	189	189	189	189	189
14	1	.49466E+00	52	52	119	119	119	119	119	119	170	170	170	171	171	171
14	2	.16909E+01	88	88	49	49	49	49	49	49	93	93	94	96	96	96
14	3	.16844E-01	107	107	192	192	192	192	192	192	260	259	261	262	263	263

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 * BM3 MODEL *

EARTHQUAKE NO. 1

*DISPLACEMENT (INERTIA COMPONENT)

NODE NO.	COMP. NO.	DISP. (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
15	1	.94076E-02	12	12	55	55	55	55	55	55	92	91	93	93	94	94
15	2	.87083E+00	89	88	50	50	50	50	50	50	94	94	94	97	97	97
15	3	.16884E-01	107	107	192	192	192	192	192	192	260	259	261	262	263	263
16	1	.25992E+00	98	97	183	183	183	183	183	183	249	249	250	250	251	251
16	2	.63268E-01	93	93	58	57	57	58	57	58	104	103	106	106	107	107
16	3	.16923E-01	107	107	192	192	192	192	192	192	260	259	261	262	263	263
17	1	.27863E+00	98	98	184	184	184	184	184	184	250	250	251	251	252	252
17	2	.96778E-06	85	84	83	82	82	83	82	83	127	126	136	133	137	138
17	3	.13580E-02	50	47	75	72	71	75	71	74	108	105	115	111	117	120
18	1	.27822E+00	98	98	184	184	184	184	184	184	251	251	251	252	252	252
18	2	.24836E+00	90	90	122	122	122	122	122	122	173	173	181	179	183	184
18	3	.25093E+00	63	63	116	115	115	116	115	115	164	164	169	169	173	173
19	1	.27749E+00	98	98	185	184	184	185	184	184	251	251	252	252	252	252
19	2	.34937E-01	111	105	132	126	123	132	123	125	172	166	179	193	212	217
19	3	.12905E+00	68	66	58	56	54	58	54	56	97	95	108	102	109	111
20	1	.25892E+00	98	97	183	183	183	183	183	183	249	249	250	250	251	251
20	2	.30250E-01	95	87	84	75	71	84	71	75	102	94	106	137	134	139
20	3	.10891E+00	69	67	57	55	53	57	53	55	97	94	108	102	109	111
21	1	.37588E-01	129	128	200	199	198	200	198	199	271	269	276	274	286	288
21	2	.30192E-01	95	88	84	75	71	84	71	75	102	94	106	137	134	140
21	3	.70319E-02	35	34	51	49	48	51	48	49	72	70	81	74	109	111
22	1	.16224E-01	132	130	205	204	203	205	203	204	276	274	281	279	294	295
22	2	.13138E-01	83	77	72	64	61	72	61	64	90	82	97	121	119	124
22	3	.70469E-02	35	34	51	49	48	51	48	49	72	70	81	73	109	110
23	1	.23760E-02	108	107	181	180	180	181	180	180	248	247	252	250	254	256
23	2	.16383E-05	65	59	54	47	44	54	44	48	75	68	88	100	101	106
23	3	.70515E-02	35	33	51	49	48	51	48	49	72	70	81	73	109	110
24	1	.30146E-02	163	159	187	182	180	187	180	181	228	224	231	243	295	297
24	2	.50382E-02	110	105	148	144	143	148	143	145	197	193	203	213	233	237
24	3	.11015E-01	61	60	91	90	89	91	89	90	126	125	134	130	166	167
25	1	.30191E-02	163	159	187	182	179	187	179	180	227	222	231	242	295	296
25	2	.11615E-01	202	196	253	247	243	253	243	244	313	308	313	327	382	384
25	3	.22668E-01	126	123	143	139	137	143	137	138	174	171	178	187	234	235
26	1	.30387E-02	161	157	185	180	178	185	178	179	226	222	229	240	292	294
26	2	.19612E-01	675	663	650	633	624	650	624	627	695	681	687	763	805	808
26	3	.65498E-01	236	230	223	214	210	223	210	211	240	233	234	271	278	280
27	1	.54928E-02	181	176	175	168	164	175	164	165	192	187	191	216	238	239
27	2	.17624E-01	700	688	673	654	645	673	645	648	716	702	708	787	821	824
27	3	.67919E-01	237	231	224	215	211	224	211	212	241	234	235	272	278	279
28	1	.12944E-01	188	183	176	169	165	176	165	166	191	185	193	216	219	220
28	2	.10270E-01	699	686	669	651	641	669	641	644	712	697	701	783	807	811
28	3	.67910E-01	237	231	224	215	211	224	211	212	241	234	235	272	278	279

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 * BM3 MODEL *

EARTHQUAKE NO. 1

*DISPLACEMENT (INERTIA COMPONENT)

NODE NO.	COMP. NO.	DISP. (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
29	1	.20008E-01	185	180	173	167	163	173	163	164	189	184	193	213	216	220
29	2	.31568E-02	560	548	532	516	507	532	507	510	564	551	553	624	629	632
29	3	.67900E-01	237	231	224	215	211	224	211	212	241	234	235	272	278	279
30	1	.20108E-01	182	177	171	164	160	171	160	161	187	181	191	210	216	218
30	2	.48201E-04	83	80	105	102	100	105	100	101	135	133	138	146	183	184
30	3	.64030E-01	226	220	213	204	200	213	200	202	230	223	224	259	266	268
31	1	.22706E-09	94	90	91	86	83	91	83	84	108	103	121	121	143	144
31	2	.49297E-09	83	80	105	102	100	105	100	101	135	133	138	146	183	184
31	3	.92931E-09	99	95	98	93	90	98	90	91	113	109	111	130	153	154
32	1	.37905E-01	130	128	199	197	196	199	196	197	270	268	275	273	285	287
32	2	.29571E-01	109	101	98	89	85	98	85	89	118	108	118	155	153	159
32	3	.70228E-02	35	34	51	49	48	51	48	49	72	71	81	74	110	111
33	1	.37352E-01	131	129	198	196	195	198	195	196	269	267	275	272	284	287
33	2	.28574E-01	121	113	111	101	98	111	98	102	132	122	131	172	171	177
33	3	.70125E-02	35	34	51	50	48	51	48	49	73	71	81	74	110	111
34	1	.32720E-01	133	131	197	195	193	197	193	195	269	266	275	272	284	287
34	2	.24183E-01	151	142	142	131	127	142	127	132	166	156	164	212	214	220
34	3	.69823E-02	35	34	51	50	49	51	49	50	73	71	82	74	110	111
35	1	.27302E-02	152	150	213	210	207	213	207	210	289	285	296	291	311	315
35	2	.53949E-02	137	134	204	201	200	204	200	202	267	264	269	279	301	305
35	3	.68465E-02	36	35	53	51	50	53	50	51	75	73	83	76	112	113
36	1	.91510E-04	108	105	143	139	137	143	137	139	207	202	212	210	219	223
36	2	.10979E-05	124	118	156	151	150	156	150	153	200	195	203	223	250	255
36	3	.55080E-02	4	4	5	5	4	5	4	4	8	7	15	9	27	27
37	1	.45818E-04	108	105	143	139	136	143	136	139	207	202	212	210	219	223
37	2	.11438E-01	51	47	97	94	94	97	94	97	135	133	137	137	164	170
37	3	.79168E-02	60	53	69	62	61	69	61	68	85	78	89	87	122	131
38	1	.10333E-08	108	105	143	139	136	143	136	139	207	202	212	210	219	223
38	2	.13723E-08	52	46	86	81	81	86	81	86	116	112	116	118	155	162
38	3	.10211E-08	80	77	86	77	76	86	76	85	98	89	99	99	133	143

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 * BM3 MODEL *

EARTHQUAKE NO. 1

*ACCELERATION (INERTIA COMPONENT)

NODE NO.	COMP. NO.	ACC(DY) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	.17117E-06	3668	3665	3672	3669	3669	3672	3669	3670	3679	3676	3706	3682	3708	3711
1	2	.19268E-06	47827	47826	47893	47893	47893	47893	47893	47893	47966	47966	47992	47984	48012	48016
1	3	.13557E-06	1474	1463	1460	1448	1447	1460	1447	1457	1486	1475	1519	1493	1592	1608
2	1	.39731E-02	3668	3665	3672	3670	3669	3672	3669	3670	3679	3676	3706	3682	3708	3711
2	2	.10319E+01	14758	14758	14779	14778	14777	14779	14777	14778	14801	14800	14830	14808	14839	14842
2	3	.10283E+01	300	297	329	326	326	329	326	328	377	375	390	380	407	409
3	1	.13337E+01	4944	4942	4950	4948	4948	4950	4948	4949	4959	4957	4987	4962	4991	4994
3	2	.20560E+01	10882	10882	10897	10896	10896	10897	10896	10897	10915	10914	10943	10919	10950	10953
3	3	.26193E+01	588	582	592	586	586	592	586	591	627	622	646	632	684	691
4	1	.56510E-03	2828	2814	2830	2817	2814	2830	2814	2818	2839	2825	2884	2849	2884	2891
4	2	.20785E+01	11563	11562	11579	11578	11578	11579	11578	11578	11597	11596	11626	11602	11633	11636
4	3	.13265E-02	1352	1342	1335	1325	1323	1335	1323	1333	1364	1353	1403	1371	1471	1486
5	1	.32115E+02	836	829	835	828	827	835	827	830	840	833	856	845	862	866
5	2	.20813E+01	11588	11587	11604	11603	11603	11604	11603	11603	11622	11622	11652	11627	11658	11662
5	3	.20774E+02	1274	1264	1258	1247	1245	1258	1245	1255	1286	1275	1317	1293	1388	1403
6	1	.42299E+02	785	777	786	778	777	786	777	781	794	786	821	799	823	828
6	2	.31162E+01	7973	7969	7980	7976	7975	7980	7975	7979	7998	7994	8094	8003	8135	8145
6	3	.25064E+02	1268	1258	1252	1241	1240	1252	1240	1250	1280	1269	1311	1288	1382	1397
7	1	.30275E+03	108	108	194	194	194	194	194	194	263	262	264	264	265	265
7	2	.11514E-02	155	146	147	137	136	147	136	146	159	149	166	163	171	182
7	3	.25263E+02	1265	1255	1249	1238	1236	1249	1236	1246	1277	1266	1308	1284	1379	1394
8	1	.31023E+03	106	105	191	191	191	191	191	191	259	259	260	260	261	261
8	2	.28086E+02	112	97	100	85	85	100	85	100	116	101	112	120	115	132
8	3	.33637E+02	894	883	876	865	864	876	864	874	904	893	928	912	987	1003
9	1	.31017E+03	106	105	191	191	191	191	191	191	259	259	260	260	261	261
9	2	.44210E+03	82	68	71	57	57	71	57	71	86	72	80	89	82	96
9	3	.23861E+03	241	216	233	208	208	233	208	233	254	229	241	266	263	291
10	1	.30987E+03	106	105	191	191	191	191	191	191	259	259	260	260	261	261
10	2	.37468E+03	77	67	61	50	50	61	50	60	82	72	80	85	82	93
10	3	.22699E+03	245	222	241	219	219	241	219	241	270	248	261	281	281	306
11	1	.30963E+03	106	105	191	191	191	191	191	191	259	259	260	260	261	261
11	2	.15791E-02	489	455	478	441	440	478	440	477	495	460	474	500	479	517
11	3	.11999E+01	1148	1118	1143	1111	1109	1143	1109	1140	1178	1148	1176	1184	1229	1231
12	1	.30933E+03	106	105	191	191	191	191	191	191	259	259	260	260	261	261
12	2	.28241E+03	148	144	113	108	108	113	108	113	155	150	157	158	164	169
12	3	.13630E+03	464	441	482	470	469	482	469	481	518	507	521	522	547	562
13	1	.30901E+03	106	105	191	191	191	191	191	191	259	259	260	260	261	261
13	2	.62793E+03	92	89	59	55	55	59	55	59	97	94	98	100	100	104
13	3	.32405E+02	157	155	232	230	230	232	230	232	296	295	302	298	304	307
14	1	.29574E+03	106	105	191	191	191	191	191	191	259	259	260	260	261	261
14	2	.61884E+03	92	89	60	56	56	60	56	60	97	94	98	100	100	105
14	3	.13248E+02	223	219	266	261	258	266	258	261	343	338	359	353	369	374

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 * BM3 MODEL *

EARTHQUAKE NO. 1

*ACCELERATION (INERTIA COMPONENT)

NODE NO.	COMP. NO.	ACC(DY) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
15	1	.45854E+01	342	337	338	332	330	338	330	334	446	441	462	456	475	482
15	2	.31961E+03	97	93	66	61	61	66	61	66	102	99	104	105	107	111
15	3	.13282E+02	220	216	264	259	256	264	256	259	341	336	356	351	366	371
16	1	.19827E+03	149	148	214	213	213	214	213	213	293	291	298	296	303	305
16	2	.24889E+02	132	130	111	108	107	111	107	110	154	151	175	165	175	179
16	3	.13314E+02	217	213	261	257	254	261	254	257	338	334	354	349	364	369
17	1	.21324E+03	151	149	215	214	213	215	213	214	294	292	299	297	304	307
17	2	.66460E-03	537	534	531	527	524	531	524	527	563	560	661	584	670	676
17	3	.88748E+00	1198	1172	1183	1152	1147	1183	1147	1175	1260	1228	1325	1268	1392	1430
18	1	.21312E+03	151	149	215	214	213	215	213	214	294	292	299	298	305	307
18	2	.19934E+03	188	185	194	191	189	194	189	190	249	246	280	276	293	295
18	3	.15003E+03	290	284	304	296	291	304	291	294	391	383	417	419	436	442
19	1	.21278E+03	151	150	215	214	213	215	213	214	294	292	300	298	305	307
19	2	.32714E+02	610	584	571	541	529	571	529	548	658	624	647	776	770	796
19	3	.62761E+02	652	629	652	615	582	652	582	610	832	782	828	866	851	891
20	1	.19762E+03	155	153	216	215	214	216	214	215	295	294	301	299	306	308
20	2	.28992E+02	688	661	639	609	597	639	597	617	728	692	710	870	851	879
20	3	.54199E+02	669	645	675	638	604	675	604	633	862	811	855	897	879	919
21	1	.36864E+02	523	512	528	511	497	528	497	509	710	688	717	720	743	761
21	2	.28969E+02	688	661	639	609	596	639	596	617	728	692	710	870	851	879
21	3	.13048E+02	1296	1295	1297	1295	1295	1297	1295	1296	1305	1303	1341	1308	1392	1396
22	1	.16040E+02	501	490	505	489	476	505	476	488	669	649	681	679	715	731
22	2	.11900E+02	673	647	626	596	582	626	582	603	718	681	703	850	831	859
22	3	.13087E+02	1296	1295	1297	1296	1295	1297	1295	1296	1305	1303	1341	1308	1392	1396
23	1	.24589E+01	542	535	544	534	526	544	526	534	663	649	713	669	774	785
23	2	.13769E-02	700	672	649	615	597	649	597	622	764	720	748	879	858	893
23	3	.13099E+02	1296	1295	1297	1296	1295	1297	1295	1296	1305	1303	1341	1308	1391	1396
24	1	.26151E+01	586	572	576	557	544	576	544	552	672	652	693	710	778	789
24	2	.53214E+01	552	529	514	490	478	514	478	497	608	576	600	701	705	730
24	3	.14964E+02	1130	1128	1132	1129	1127	1132	1127	1129	1152	1148	1201	1156	1288	1295
25	1	.26184E+01	587	573	576	557	545	576	545	553	672	653	694	710	779	790
25	2	.11972E+02	533	519	527	509	500	527	500	505	595	579	605	650	715	721
25	3	.21430E+02	840	834	837	829	824	837	824	827	876	867	920	896	1017	1025
26	1	.26321E+01	590	577	580	561	549	580	549	557	675	655	699	712	782	794
26	2	.43550E+02	711	701	678	662	654	678	654	658	721	708	719	800	813	819
26	3	.50348E+02	767	750	730	706	693	730	693	698	777	757	765	857	867	873
27	1	.44988E+01	765	753	757	721	709	737	709	712	772	759	817	820	849	852
27	2	.38654E+02	741	730	705	689	680	705	680	684	750	736	747	831	843	849
27	3	.52658E+02	763	746	727	702	690	727	690	695	774	755	761	855	866	871
28	1	.11824E+02	1036	1025	1011	997	983	1011	983	986	1070	1056	1159	1100	1182	1188
28	2	.20707E+02	790	778	752	733	723	752	723	727	799	783	794	884	895	901
28	3	.52651E+02	763	746	727	702	690	727	690	695	774	755	761	855	866	871

 * BM3 MODEL *

EARTHQUAKE NO. 1

*ACCELERATION (INERTIA COMPONENT)

NODE NO.	COMP. NO.	ACC(DY) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
29	1	.18772E+02	1142	1131	1117	1104	1088	1117	1088	1092	1183	1170	1287	1208	1310	1317
29	2	.45198E+01	870	854	825	802	789	825	789	794	877	857	867	966	975	981
29	3	.52642E+02	764	746	727	703	690	727	690	695	775	755	761	855	866	872
30	1	.19091E+02	1174	1163	1149	1135	1120	1149	1120	1124	1216	1203	1324	1240	1346	1353
30	2	.69962E-01	579	576	558	554	552	558	552	554	595	590	604	669	698	701
30	3	.50354E+02	726	710	692	668	657	692	657	661	738	719	725	815	826	832
31	1	.19749E-06	1363	1350	1335	1321	1303	1335	1303	1308	1403	1389	1531	1419	1550	1558
31	2	.71553E-06	579	576	558	554	552	558	552	554	595	590	604	669	698	701
31	3	.81695E-06	472	464	457	446	441	457	441	444	492	483	492	553	572	576
32	1	.37279E+02	545	533	554	535	519	554	519	533	749	724	750	759	774	794
32	2	.30031E+02	695	668	647	617	606	647	606	626	733	698	714	881	863	890
32	3	.13038E+02	1296	1295	1297	1296	1295	1297	1295	1296	1305	1303	1341	1308	1392	1397
33	1	.36800E+02	567	554	579	559	541	579	541	557	787	760	783	797	804	827
33	2	.30467E+02	703	675	654	625	614	654	614	634	738	704	713	891	874	901
33	3	.12024E+02	1296	1295	1297	1296	1295	1297	1295	1296	1305	1303	1341	1308	1392	1397
34	1	.34986E+02	558	543	577	555	536	577	536	552	794	766	780	803	796	820
34	2	.28928E+02	707	680	659	631	621	659	621	640	741	708	721	898	884	909
34	3	.12979E+02	1296	1295	1297	1296	1295	1297	1295	1296	1305	1303	1341	1308	1392	1397
35	1	.46602E+01	712	693	727	704	694	727	694	714	837	811	872	843	964	990
35	2	.58892E+01	661	625	657	621	610	657	616	647	720	682	700	796	861	898
35	3	.12736E+02	1294	1293	1296	1294	1293	1296	1293	1294	1304	1302	1340	1307	1393	1398
36	1	.97244E-01	760	737	811	780	759	811	759	784	1076	1040	1078	1086	1115	1150
36	2	.14068E-02	846	780	834	769	766	834	766	827	873	809	828	955	997	1064
36	3	.90201E+01	1478	1477	1477	1476	1476	1477	1476	1477	1479	1478	1497	1483	1506	1509
37	1	.48733E-01	760	737	811	781	760	811	760	784	1075	1039	1078	1086	1116	1150
37	2	.10947E+02	1657	1524	1670	1540	1539	1670	1539	1664	1686	1559	1568	1727	1711	1837
37	3	.22167E+02	920	863	919	863	862	919	862	918	928	873	893	935	945	1003
38	1	.10991E-05	760	737	811	780	760	811	760	784	1075	1039	1078	1086	1115	1150
38	2	.16198E-05	1727	1586	1738	1600	1598	1738	1598	1732	1751	1615	1622	1793	1733	1867
38	3	.35676E-05	887	833	886	833	833	886	833	885	893	841	856	899	894	948

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 * BM3 MODEL *

EARTHQUAKE NO. 1

*MOMENTS, AND FORCES (INERTIA COMPONENT)

ELEM. NO.	FORCE CODE	FORCE (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	12	.16064E+04	64	61	95	93	93	95	93	95	134	132	135	136	137	139
2	18	.16099E+04	48	46	84	82	82	84	82	84	121	119	122	122	123	125
3	12	.41029E+04	51	46	49	44	44	49	44	49	71	66	72	73	75	80
4	12	.25733E+04	95	89	89	83	83	89	83	89	125	120	125	128	128	134
5	18	.25545E+04	115	106	107	98	98	107	98	107	140	132	138	144	143	153
6	12	.61161E+04	78	71	90	83	83	90	83	90	121	115	118	125	123	129
7	18	.54598E+04	77	70	91	85	85	91	85	91	123	117	120	126	124	130
8	12	.73257E+04	101	89	88	76	76	88	76	88	110	99	107	115	112	124
9	12	.72786E+04	137	133	108	104	104	108	104	108	158	154	158	161	161	166
10	12	.90816E+04	103	93	93	82	82	93	82	93	118	108	114	122	119	130
11	12	.61852E+04	101	97	148	145	145	148	145	148	200	197	201	202	202	205
12	12	.12610E+05	64	64	119	119	119	119	119	119	170	170	171	171	171	172
13	18	.10432E+05	75	74	129	128	128	129	128	129	182	182	184	184	184	184
14	12	.16859E+05	20	20	58	57	57	58	57	57	95	94	96	96	97	97
15	12	.56663E+04	133	132	145	144	144	145	144	144	207	206	210	210	212	213
16	18	.58030E+04	116	115	111	111	110	111	110	111	167	166	171	170	173	174
17	12	.59878E+04	166	166	166	166	166	166	166	166	166	166	166	166	166	166
18	12	.58382E+04	89	89	112	111	111	112	111	111	164	163	167	166	169	170
19	18	.50961E+04	96	95	101	100	100	101	100	101	152	151	156	155	158	159
20	12	.14881E+05	79	79	144	144	143	144	143	144	202	201	204	203	205	205
21	12	.38428E+04	107	105	153	151	150	153	150	151	201	199	206	209	234	235
22	12	.33869E+04	150	147	215	212	211	215	211	212	280	278	284	286	314	316
23	18	.31769E+04	155	152	221	218	217	221	217	218	287	285	292	294	320	321
24	12	.26453E+04	153	150	219	216	214	219	214	215	285	283	289	292	310	311
25	12	.87799E+03	354	342	336	319	310	336	310	314	364	350	368	408	423	428
26	18	.96118E+03	281	270	271	257	250	271	250	253	299	288	304	335	356	360
27	12	.17559E+04	74	70	79	74	72	79	72	73	99	95	101	114	136	137
28	12	.26310E+04	18	17	37	36	36	37	36	36	60	59	64	67	86	86
29	18	.25401E+04	21	20	42	41	40	42	40	41	65	64	70	72	92	92
30	12	.62208E+04	170	165	162	155	151	162	151	152	177	172	174	201	215	217
31	12	.12249E+05	153	150	221	218	216	221	216	218	291	288	296	301	307	310
32	12	.12100E+05	158	155	223	219	217	223	217	219	293	289	298	304	311	314
33	12	.11283E+05	168	164	229	225	223	229	223	225	301	297	305	314	320	323
34	12	.10529E+05	91	90	169	168	168	169	168	168	230	230	232	232	237	237
35	18	.11071E+05	96	95	171	171	170	171	170	171	234	233	236	236	241	242
36	12	.72610E+04	85	76	102	94	93	102	93	101	122	114	121	126	164	173
37	12	.10353E+05	73	66	102	97	96	102	96	102	132	127	133	135	170	178

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 * BM3 MODEL *

EARTHQUAKE NO. 1

*MOMENTS, AND FORCES (INERTIA COMPONENT)

ELEM. NO.	FORCE CODE	FORCE (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	.20539E+02	76	72	60	56	56	60	56	60	84	81	91	86	91	95
2	1	.84625E+02	90	90	88	87	87	88	87	88	91	91	102	91	103	103
3	1	.22982E+02	26	20	24	18	18	24	18	24	32	26	30	35	37	44
4	1	.78380E+03	41	33	37	29	29	37	29	37	45	37	42	49	51	59
5	1	.16918E+04	20	19	64	63	63	64	63	64	100	99	101	101	101	102
6	1	.14608E+04	133	130	122	119	119	122	119	122	138	135	154	139	154	154
7	1	.11426E+03	16	9	27	21	21	27	21	27	41	35	41	43	42	48
8	1	.22286E+03	32	24	31	24	24	31	24	31	39	31	36	43	43	51
9	1	.14320E+03	60	56	40	35	35	40	35	40	65	60	66	67	68	73
10	1	.19739E+03	52	41	44	32	32	44	32	44	56	44	50	58	52	64
11	1	.13578E+03	145	132	175	164	164	175	164	175	210	199	204	215	213	224
12	1	.94076E+03	12	12	55	55	55	55	55	55	92	91	93	93	94	94
13	1	.96778E+02	85	84	83	82	82	83	82	83	127	126	136	133	137	138
14	1	.13580E+03	50	47	75	72	71	75	71	74	108	105	115	111	117	120
15	1	.10979E+03	124	118	152	151	150	156	150	153	200	195	203	223	250	255
16	1	.55080E+03	4	4	5	5	4	5	4	4	8	7	15	9	27	27
17	1	.10333E+03	108	105	143	139	136	143	136	139	207	202	212	210	219	223
18	1	.13723E+03	52	46	86	81	81	86	81	86	116	112	116	118	155	162
19	1	.10211E+03	80	71	86	77	76	86	76	85	98	89	99	99	133	143
20	1	.24722E+04	61	56	67	62	60	67	60	62	88	84	90	113	126	129
21	1	.64450E+04	71	62	78	70	69	78	69	77	91	83	94	93	128	137
22	1	.89491E+04	51	46	90	87	86	90	86	90	124	121	125	126	159	165
23	1	.23760E+03	108	107	181	180	180	181	180	180	248	247	252	250	254	256
24	1	.16383E+03	65	59	54	47	44	54	44	43	75	68	88	100	101	106
25	1	.22706E+02	94	90	91	86	83	91	83	84	108	103	121	121	143	144
26	1	.49297E+02	83	80	105	102	100	105	100	100	135	133	138	146	183	184
27	1	.92931E+02	99	95	98	93	90	98	90	90	113	109	111	130	153	154
28	1	.58969E+04	170	165	162	155	151	162	151	152	177	172	173	202	216	217
29	1	.55051E+03	172	168	162	156	153	162	153	154	178	174	187	199	209	211
30	1	.16641E+04	153	148	144	137	133	144	133	135	159	154	166	179	191	192

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APPENDIX II

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DESCRIPTORS USED IN STATIC RESPONSE TABLES (EXCEPTIVE ACCELERATION)

DESCRIPTION OF DIFFERENT METHODS CONSIDERED IN PREDICTING SEISMIC ANCHOR
MOVEMENT RESPONSES

METHODS	DESCRIPTIONS
1 .	RANDOM SAMPLING OF INPUT STRUCTURE DISPLACEMENT TIME HISTORY RESPONSES AND THEN ENVELOPING ALL PIPE RESPONSES F=1.0 : MULTIPLYING FACTOR OF 1.0 MAX. F : MAXIMUM MULTIPLYING FACTOR
2 :	EACH SUPPORT MOTION CONSIDERED INDEPENDENTLY SRSS : RESPONSES COMBINED BY SRSS ABS : RESPONSES COMBINED BY ABSOLUTE SUM
3 :	ALL SUPPORTS IN EACH GLOBAL DIRECTION ARE IN PHASE SRSS : DIRECTIONAL RESPONSES COMBINED BY SRSS ABS : DIRECTIONAL RESPONSES COMBINED BY ABSOLUTE SUM
4 :	SUPPORT GROUPS ACCORDING TO STRUCTURE ATTACHMENTS WITHIN EACH GROUP ALL SUPPORTS IN EACH GLOBAL DIRECTION ARE IN PHASE AND THEN THE THREE DIRECTIONAL RESPONSES COMBINED BY SRSS SRSS : GROUP RESPONSES COMBINED BY SRSS ABS : GROUP RESPONSES COMBINED BY ABSOLUTE SUM
5 :	SUPPORT GROUPS ACCORDING TO STRUCTURE ELEVATIONS AND LOCATIONS WITHIN EACH GROUP ALL SUPPORTS IN EACH GLOBAL DIRECTION ARE IN PHASE AND THEN THE THREE DIRECTIONAL RESPONSES COMBINED BY SRSS SRSS : GROUP RESPONSES COMBINED BY SRSS ABS : GROUP RESPONSES COMBINED BY ABSOLUTE SUM

DESCRIPTORS USED IN STATIC ACCELERATION RESPONSE TABLES

DESCRIPTION OF THE DIFFERENT COMBINATIONS
CONSIDERED IN THE DYNAMIC ANALYSIS:

CASE NUMBER COMBINATION SEQUENCE

1 :GROUP(ALG)-DIRECTION-MODES
2 :GROUP(ALG)-MODES-DIRECTION
3 :GROUP(SRSS)-DIRECTION-MODES
4 :GROUP(SRSS)-MODES-DIRECTION
5 :MODES-GROUP(SRSS)-DIRECTION
6 :DIRECTION-GROUP(SRSS)-MODES
7 :MODES-DIRECTION-GROUP(SRSS)
8 :DIRECTION-MODES-GROUP(SRSS)
9 :GROUP(ABS)-DIRECTION-MODES
10 :GROUP(ABS)-MODES-DIRECTION
11 :MODES-GROUP(ABS)-DIRECTION
12 :DIRECTION-GROUP(ABS)-MODES
13 :MODES-DIRECTION-GROUP(ABS)
14 :DIRECTION-MODES-GROUP(ABS)

ABBREVIATIONS,
AND SYMBOLS

DESCRIPTION

T.H. TIME HISTORY DATA FROM
 LAWRENCE LIVERMORE LABORATORY

DISP. DISPLACEMENT (INERTIA COMPONENT)

ACC(ST) ACCELERATION (PSEUDO-STATIC COMPONENT)

ACC(DY) ACCELERATION (INERTIA COMPONENT)

ACC(TL) TOTAL ACCELERATION

URS UNIFORM RESPONSE SPECTRUM

FORCE CODES

1 SUPPORT FORCE (INERTIA COMPONENT)

6 I-END MOMENT (INERTIA COMPONENT)

12 J-END MOMENT (INERTIA COMPONENT)

NOTES:

FOR ALL OF THE ABOVE CASES:

- 1) COMBINATION OF MODAL RESPONSES
IS BY SRSS WITH A CLUSTERING
FACTOR OF 0.1.
- 2) COMBINATION OF DIRECTIONAL
COMPONENTS IS BY SRSS.

 * RHRS11 MODEL *

 ** MEAN VALUES **

TOTAL NO. OF EARTHQUAKES: 33

*ACCELERATION (STATIC COMPONENT)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
6	1	35	0	0	-1	-1	-1	-1	-1	-1	0	0	0	0	0	0
6	2	48	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	3	36	0	0	0	0	0	0	0	0	1	1	1	9	9	9
9	1	34	0	0	4	4	4	4	4	4	54	54	54	63	63	63
9	2	44	0	0	0	0	0	0	0	0	18	18	18	29	29	29
9	3	36	0	0	2	2	2	2	2	2	4	4	4	16	16	16
12	1	34	0	0	14	14	14	14	14	14	63	63	63	75	75	75
12	2	44	0	0	2	2	2	2	2	2	5	5	5	7	7	7
12	3	36	0	0	2	2	2	2	2	2	20	20	20	43	43	43
16	1	34	0	0	8	8	8	8	8	8	48	48	48	55	55	55
16	2	44	0	0	-1	-1	-1	-1	-1	-1	0	0	0	0	0	0
16	3	36	0	0	0	0	0	0	0	0	43	43	43	73	73	73
19	1	34	0	0	-20	-20	-20	-20	-20	-20	39	39	39	61	61	61
19	2	44	0	0	-9	-9	-9	-9	-9	-9	2	2	2	3	3	3
19	3	36	0	0	56	56	56	56	56	56	134	134	134	162	162	162
22	1	34	0	0	27	27	27	27	27	27	106	106	106	159	159	159
22	2	45	0	0	158	158	158	158	158	158	343	343	343	350	350	350
22	3	36	0	0	4	4	4	4	4	4	23	23	23	56	56	56
23	1	34	0	0	26	26	26	26	26	26	105	105	105	158	158	158
23	2	45	0	0	146	146	146	146	146	146	336	336	336	343	343	343
23	3	36	0	0	4	4	4	4	4	4	26	26	26	57	57	57
35	1	29	3	3	58	58	58	58	58	58	207	207	207	280	280	280
35	2	33	0	0	91	91	91	91	91	91	287	287	287	339	339	339
35	3	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	1	29	3	3	58	58	58	58	58	58	201	201	201	271	271	271
36	2	32	-1	-1	96	96	96	96	96	96	298	298	298	353	353	353
36	3	36	0	0	0	0	0	0	0	0	1	1	1	13	13	13
39	1	29	3	3	48	48	48	48	48	48	174	174	174	232	232	232
39	2	34	0	0	15	15	15	15	15	15	121	121	121	147	147	147
39	3	36	0	0	28	28	28	28	28	28	54	54	54	88	88	88
42	1	31	2	2	29	29	29	29	29	29	102	102	102	124	124	124
42	2	34	1	1	-1	-1	-1	-1	-1	-1	20	20	20	40	40	40
42	3	36	0	0	34	34	34	34	34	34	62	62	62	80	80	80
45	1	31	2	2	23	23	23	23	23	23	78	78	78	90	90	90
45	2	34	0	0	0	0	0	0	0	0	5	5	5	21	21	21
45	3	36	0	0	29	29	29	29	29	29	54	54	54	67	67	67
50	1	33	-13	-13	40	40	40	40	40	40	106	106	106	120	120	120
50	2	34	0	0	0	0	0	0	0	0	3	3	3	17	17	17
50	3	36	0	0	-7	-7	-7	-7	-7	-7	0	0	0	2	2	2
57	1	2	0	0	-1	-1	-1	-1	-1	-1	7	7	7	18	18	18
57	2	34	1	1	-1	-1	-1	-1	-1	-1	1	1	1	2	2	2
57	3	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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 * RHR511 MODEL *

 ** MEAN VALUES **

TOTAL NO. OF EARTHQUAKES: 33

*ACCELERATION (STATIC COMPONENT)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
59	1	0	0	0	1	1	1	1	1	1	2	2	2	10	10	10
59	2	35	11	11	-16	-16	-16	-16	-16	-16	12	12	12	14	14	14
59	3	32	4	4	-17	-17	-17	-17	-17	-17	5	5	5	9	9	9
67	1	34	0	0	-2	-2	-2	-2	-2	-2	14	14	14	39	39	39
67	2	47	0	0	85	85	85	85	85	85	246	246	246	252	252	252
67	3	36	0	0	0	0	0	0	0	0	0	0	0	1	1	1
68	1	34	0	0	0	0	0	0	0	0	8	8	8	30	30	30
68	2	47	0	0	77	77	77	77	77	77	231	231	231	238	238	238
68	3	36	0	0	0	0	0	0	0	0	1	1	1	8	8	8

 * RHRS11 MODEL *

TOTAL NO. OF EARTHQUAKES: 33

** STANDARD DEVIATION **

*ACCELERATION (STATIC COMPONENT)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
6	1	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	2	25	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	3	16	1	1	1	1	1	1	1	1	1	1	1	1	1	1
9	1	19	0	0	1	1	1	1	1	1	1	2	2	2	3	3
9	2	25	1	1	1	1	1	1	1	1	1	1	1	2	2	2
9	3	16	1	1	1	1	1	1	1	1	1	1	1	1	1	1
12	1	19	0	0	1	1	1	1	1	1	1	1	1	1	1	1
12	2	25	1	1	1	1	1	1	1	1	1	1	1	1	1	1
12	3	16	0	0	2	2	2	2	2	2	2	5	5	5	6	6
16	1	19	0	0	4	4	4	4	4	4	4	8	8	8	8	8
16	2	25	1	1	1	1	1	1	1	1	1	1	1	1	1	1
16	3	16	0	0	4	4	4	4	4	4	4	9	9	9	10	10
19	1	19	0	0	2	2	2	2	2	2	2	5	5	5	8	8
19	2	25	1	1	1	1	1	1	1	1	1	1	1	1	1	1
19	3	16	1	1	10	10	10	10	10	10	10	20	20	20	20	20
22	1	20	0	0	13	13	13	13	13	13	13	20	20	20	24	24
22	2	25	1	1	3	3	3	3	3	3	3	5	5	5	6	6
22	3	16	1	1	2	2	2	2	2	2	2	6	6	6	8	8
23	1	20	0	0	12	12	12	12	12	12	12	20	20	20	23	23
23	2	25	1	1	3	3	3	3	3	3	3	5	5	5	6	6
23	3	16	1	1	2	2	2	2	2	2	2	7	7	7	9	9
35	1	14	3	3	11	11	11	11	11	11	11	21	21	21	28	28
35	2	25	4	4	11	11	11	11	11	11	11	22	22	22	28	28
35	3	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	1	14	3	3	10	10	10	10	10	10	10	19	19	19	26	26
36	2	25	5	5	12	12	12	12	12	12	12	24	24	24	31	31
36	3	16	1	1	1	1	1	1	1	1	1	1	1	1	2	2
39	1	14	3	3	7	7	7	7	7	7	7	14	14	14	20	20
39	2	25	2	2	4	4	4	4	4	4	4	10	10	10	13	13
39	3	17	1	1	1	1	1	1	1	1	1	2	2	2	5	5
42	1	16	2	2	3	3	3	3	3	3	3	4	4	4	6	6
42	2	24	1	1	1	1	1	1	1	1	1	2	2	2	5	5
42	3	17	1	1	1	1	1	1	1	1	1	1	1	1	3	3
45	1	16	2	2	2	2	2	2	2	2	2	3	3	3	4	4
45	2	24	1	1	1	1	1	1	1	1	1	1	1	1	3	3
45	3	17	1	1	1	1	1	1	1	1	1	1	1	1	2	2
50	1	25	8	8	13	13	13	13	13	13	13	21	21	21	22	22
50	2	24	1	1	1	1	1	1	1	1	1	1	1	1	2	2
50	3	16	1	1	0	0	0	0	0	0	0	1	1	1	1	1
57	1	4	4	4	3	3	3	3	3	3	3	4	4	4	5	5
57	2	24	1	1	1	1	1	1	1	1	1	1	1	1	1	1
57	3	16	1	1	0	0	0	0	0	0	0	1	1	1	1	1

 * RHRS11 MODEL *

TOTAL NO. OF EARTHQUAKES: 33 ** STANDARD DEVIATION ** *ACCELERATION (STATIC COMPONENT)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
59	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
59	2	18	7	7	6	6	6	6	6	6	6	6	6	6	6	6
59	3	12	3	3	3	3	3	3	3	3	3	3	3	3	3	3
67	1	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
67	2	25	1	1	2	2	2	2	2	2	2	2	2	2	2	2
67	3	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0
68	1	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
68	2	25	1	1	2	2	2	2	2	2	2	2	2	2	2	2
68	3	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0

 * RHR511 MODEL *

MEAN VALUES OVER 33 EARTHQUAKES OF PIPE MOMENTS

ELEMENT NUMBER	(PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)									
	METHOD 1		METHOD 2		METHOD 3		METHOD 4		METHOD 5	
	F=1.0	MAX. F	SRSS	ABS	SRSS	ABS	SRSS	A3S	SRSS	ABS
1	-17	1.25	12184	30437	-2	36	9413	16108	1970	2888
2	-19	1.31	6066	14034	-7	10	4844	8301	1375	2033
3	-20	1.33	5377	12684	-7	3	4239	7306	1248	1853
6	-18	1.26	5200	15252	50	127	4040	8201	2194	3219
9	-18	1.26	5729	15809	61	126	4998	9697	3395	4938
16	-16	1.23	8055	22684	27	80	7290	13937	3924	5832
19	-12	1.18	4111	10973	-13	16	3594	6872	2374	3659
20	-13	1.20	2964	9483	-28	6	2210	4942	2269	3492
21	-14	1.21	3008	9376	-38	-22	2233	4654	2086	3202
22	-16	1.22	8715	21904	-28	9	7483	12902	3408	4986
32	-15	1.22	682	2022	-40	-20	486	1171	450	718
33	-15	1.21	912	2549	-37	-15	689	1510	591	920
36	-16	1.24	165	679	-40	-23	163	450	108	222
39	-16	1.23	167	631	-37	-21	138	395	7	73
42	-16	1.23	197	735	-37	-20	162	470	21	91
47	-13	1.18	211	603	-34	-11	175	372	26	101
54	-22	1.34	10	107	-31	-7	7	75	-6	16
59	-25	1.39	0	50	-42	-35	-1	37	-2	25
60	-16	1.24	9457	23397	-2	41	7233	12511	2232	3434
61	-17	1.24	5593	12679	-19	14	1688	3801	830	1353
62	-14	1.20	3711	9844	-24	9	1667	3787	706	1155
70	-14	1.21	4754	8723	-40	-34	1120	2385	148	289

 * RHR511 MODEL *

STANDARD DEVIATIONS FOR PIPE MOMENTS

ELEMENT NUMBER	METHOD 1		(PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)							
	F=1.0	MAX. F	METHOD 2		METHOD 3		METHOD 4		METHOD 5	
			SRSS	ABS	SRSS	ABS	SRSS	ABS	SRSS	ABS
1	13	.26	2536	6659	26	37	2914	4959	504	731
2	15	.38	2537	5334	17	19	2964	4947	910	1313
3	15	.38	2241	4732	17	18	2646	4420	847	1224
6	12	.21	1372	3920	42	64	1511	3103	791	1148
9	11	.18	1687	4135	34	48	1898	3612	1514	2185
16	12	.24	2542	6197	32	53	2218	3484	600	888
19	12	.26	1729	3911	28	43	1347	2027	548	780
20	12	.27	1306	3802	21	37	637	1224	637	926
21	15	.29	1462	4044	16	25	785	1371	704	1022
22	12	.22	3987	9062	15	25	3334	5190	640	934
32	12	.24	313	770	13	16	149	321	212	312
33	12	.24	403	961	13	18	213	414	261	381
36	12	.23	68	230	13	15	66	130	35	57
39	12	.24	86	241	14	17	61	121	33	54
42	13	.24	92	266	14	18	63	135	37	59
47	11	.18	80	176	15	19	66	103	17	33
54	14	.29	34	62	26	37	34	57	29	34
59	14	.29	9	23	11	13	9	19	9	14
60	14	.30	1502	10204	27	40	3548	5704	638	955
61	12	.23	2323	4171	20	28	308	685	231	351
62	12	.24	1538	3123	16	24	252	543	129	197
70	12	.25	2906	5103	25	25	643	1266	117	172

 * RHR511 MODEL *

MEAN VALUES OVER 33 EARTHQUAKES OF SUPPORT FORCES

SUPPORT NUMBER	METHOD 1		METHOD 2		METHOD 3		METHOD 4		METHOD 5	
	F=1.0	MAX. F	SRSS	ABS	SRSS	ABS	SRSS	ABS	SRSS	ABS
10	-20	1.32	12235	24406	-53	-41	12106	19193	1849	2850
11	-22	1.34	13442	35269	-8	32	10572	19356	3008	4339
12	-15	1.22	3732	11724	-17	25	2562	5735	2996	4487
13	-19	1.31	10521	20950	-44	-28	10410	16597	1497	2359
14	-18	1.27	2335	6966	-13	17	2241	4771	1308	2218
15	-14	1.21	628	1984	-37	-20	545	1185	363	661
16	-17	1.26	3233	6926	-35	-10	474	1266	241	466
17	-12	1.17	432	1286	-26	-2	410	944	131	280
18	-16	1.24	329	992	-37	-17	229	572	68	159
19	-29	1.56	341	1188	-72	-66	163	513	78	225
20	-27	1.43	0	84	-40	-25	-1	60	-20	4
21	-20	1.31	54	293	-30	-5	51	208	-24	20
22	-29	1.52	65	245	-72	-68	34	140	27	81
23	-19	1.29	13539	26151	-16	21	1664	3899	427	713
24	-21	1.34	4749	10275	-21	0	4563	7858	824	1300

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 * RHR511 MODEL *

STANDARD DEVIATIONS FOR SUPPORT FORCES

SUPPORT NUMBER	METHOD 1		(PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)									
	F=1.0	MAX. F	METHOD 2		METHOD 3		METHOD 4		METHOD 5			
			SRSS	ABS	SRSS	ABS	SRSS	ABS	SRSS	ABS		
10	15	.31	5911	10734	27	32	5866	8847	524	785		
11	13	.27	4379	11420	36	51	3622	6717	1306	1860		
12	12	.26	1601	4459	24	43	591	1229	792	1154		
13	15	.33	4985	9009	29	34	4957	7563	513	777		
14	13	.25	635	1822	26	33	578	1067	274	458		
15	12	.25	155	562	14	17	120	232	83	139		
16	13	.25	1828	3295	17	24	127	250	123	207		
17	10	.17	156	409	22	30	156	310	65	106		
18	13	.24	223	462	15	20	157	248	86	128		
19	18	.64	116	321	19	20	57	140	52	95		
20	14	.30	16	31	15	20	16	28	12	15		
21	14	.29	48	112	23	33	48	96	21	33		
22	18	.46	38	77	20	21	32	53	31	44		
23	14	.28	5499	9334	29	46	314	822	168	256		
24	14	.36	3439	6992	39	50	3384	5718	656	982		

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 * AFWSG1 MODEL *

 ** MEAN VALUES **

TOTAL NO. OF EARTHQUAKES: 33

*ACCELERATION (STATIC COMPONENT)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
20	1	89	0	0	3	3	3	3	3	3	29	29	29	41	41	41
20	2	79	1	1	4	4	4	4	4	4	8	8	8	10	10	10
20	3	137	0	0	-3	-3	-3	-3	-3	-3	42	42	42	56	56	56
30	1	89	0	0	3	3	3	3	3	3	29	29	29	42	42	42
30	2	79	1	1	2	2	2	2	2	2	8	8	8	21	21	21
30	3	127	0	0	-9	-9	-9	-9	-9	-9	66	66	66	76	76	76
40	1	87	0	0	-17	-17	-17	-17	-17	-17	25	25	25	33	33	33
40	2	78	0	0	2	2	2	2	2	2	5	5	5	9	9	9
40	3	127	0	0	-7	-7	-7	-7	-7	-7	70	70	70	80	80	80
45	1	83	0	0	-7	-7	-7	-7	-7	-7	9	9	9	13	13	13
45	2	78	0	0	2	2	2	2	2	2	6	6	6	13	13	13
45	3	125	0	0	-11	-11	-11	-11	-11	-11	62	62	62	74	74	74
60	1	78	0	0	43	43	43	43	43	43	248	248	248	297	297	297
60	2	76	1	1	-13	-13	-13	-13	-13	-13	25	25	25	38	38	38
60	3	125	0	0	-11	-11	-11	-11	-11	-11	62	62	62	74	74	74
70	1	81	1	1	-7	-7	-7	-7	-7	-7	100	100	100	136	136	136
70	2	58	0	0	-11	-11	-11	-11	-11	-11	50	50	50	55	55	55
70	3	120	0	0	1	1	1	1	1	1	107	107	107	143	143	143
80	1	76	1	1	-25	-25	-25	-25	-25	-25	31	31	31	48	48	48
80	2	73	1	1	-7	-7	-7	-7	-7	-7	48	48	48	59	59	59
80	3	106	-2	-2	61	61	61	61	61	61	209	209	209	249	249	249
90	1	80	1	1	-27	-27	-27	-27	-27	-27	49	49	49	76	76	76
90	2	57	0	0	11	11	11	11	11	11	21	21	21	30	30	30
90	3	119	0	0	20	20	20	20	20	20	86	86	86	103	103	103
102	1	80	1	1	-27	-27	-27	-27	-27	-27	49	49	49	76	76	76
102	2	79	1	1	62	62	62	62	62	62	213	213	213	312	312	312
102	3	143	1	1	33	33	33	33	33	33	132	132	132	151	151	151
110	1	82	1	1	-22	-22	-22	-22	-22	-22	66	66	66	79	79	79
110	2	83	1	1	8	8	8	8	8	8	47	47	47	108	108	108
110	3	143	1	1	35	35	35	35	35	35	133	133	133	153	153	153
111	1	83	1	1	-19	-19	-19	-19	-19	-19	74	74	74	86	86	86
111	2	82	0	0	0	0	0	0	0	0	2	2	2	18	18	18
111	3	143	1	1	35	35	35	35	35	35	133	133	133	153	153	153
120	1	83	0	0	-7	-7	-7	-7	-7	-7	65	65	65	84	84	84
120	2	82	0	0	0	0	0	0	0	0	1	1	1	13	13	13
120	3	136	0	0	10	10	10	10	10	10	106	106	106	121	121	121
125	1	83	0	0	-6	-6	-6	-6	-6	-6	67	67	67	87	87	87
125	2	83	0	0	4	4	4	4	4	4	14	14	14	52	52	52
125	3	137	-1	-1	24	24	24	24	24	24	136	136	136	153	153	153
132	1	78	-1	-1	19	19	19	19	19	19	100	100	100	133	133	133
132	2	83	0	0	0	0	0	0	0	0	3	3	3	19	19	19
132	3	129	-5	-5	126	126	126	126	126	126	219	219	219	243	243	243

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 * AFWSG1 MODEL *

TOTAL NO. OF EARTHQUAKES: 33

** MEAN VALUES **

*ACCELERATION (STATIC COMPONENT)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
137	1	81	0	0	13	13	13	13	13	13	58	58	58	72	72	72
137	2	82	0	0	0	0	0	0	0	0	0	0	0	0	0	0
137	3	136	0	0	-8	-8	-8	-8	-8	-8	35	35	35	46	46	46
142	1	82	0	0	2	2	2	2	2	2	10	10	10	13	13	13
142	2	68	-7	-7	73	73	73	73	73	73	148	148	148	226	226	226
142	3	133	0	0	8	8	8	8	8	8	54	54	54	70	70	70
152	1	74	-5	-5	12	12	12	12	12	12	75	75	75	95	95	95
152	2	105	0	0	-1	-1	-1	-1	-1	-1	3	3	3	20	20	20
152	3	128	0	0	31	31	31	31	31	31	91	91	91	124	124	124
163	1	72	0	0	0	0	0	0	0	0	15	15	15	20	20	20
163	2	107	0	0	0	0	0	0	0	0	1	1	1	1	1	1
163	3	119	0	0	35	35	35	35	35	35	82	82	82	116	116	116
172	1	4	3	3	1	1	1	1	1	1	10	10	10	24	24	24
172	2	107	0	0	0	0	0	0	0	0	1	1	1	1	1	1
172	3	52	6	6	14	14	14	14	14	14	77	77	77	100	100	100
183	1	1	1	1	1	1	1	1	1	1	3	3	3	8	8	8
183	2	19	6	6	1	1	1	1	1	1	6	6	6	7	7	7
183	3	4	1	1	-2	-2	-2	-2	-2	-2	3	3	3	4	4	4
184	1	1	0	0	0	0	0	0	0	0	1	1	1	3	3	3
184	2	16	5	5	4	4	4	4	4	4	5	5	5	6	6	6
184	3	1	1	1	0	0	0	0	0	0	1	1	1	2	2	2

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 * AFWSG1 MODEL *

TOTAL NO. OF EARTHQUAKES: 33

** STANDARD DEVIATION **

*ACCELERATION (STATIC COMPONENT)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
20	1	83	1	1	4	4	4	4	4	4	8	8	8	8	8	8
20	2	111	2	2	2	2	2	2	2	2	2	2	2	2	2	2
20	3	130	1	1	2	2	2	2	2	2	4	4	4	6	6	6
30	1	83	1	1	4	4	4	4	4	4	8	8	8	9	9	9
30	2	111	2	2	2	2	2	2	2	2	2	2	2	5	5	5
30	3	164	1	1	2	2	2	2	2	2	3	3	3	4	4	4
40	1	79	1	1	3	3	3	3	3	3	5	5	5	6	6	6
40	2	110	2	2	2	2	2	2	2	2	2	2	2	2	2	2
40	3	163	1	1	2	2	2	2	2	2	4	4	4	4	4	4
45	1	73	0	0	0	0	0	0	0	0	0	0	0	1	1	1
45	2	110	2	2	2	2	2	2	2	2	2	2	2	3	3	3
45	3	162	1	1	1	1	1	1	1	1	4	4	4	5	5	5
60	1	65	6	6	12	12	12	12	12	12	31	31	31	36	36	36
60	2	105	2	2	2	2	2	2	2	2	5	5	5	7	7	7
60	3	162	1	1	1	1	1	1	1	1	4	4	4	5	5	5
70	1	74	2	2	10	10	10	10	10	10	22	22	22	25	25	25
70	2	76	2	2	2	2	2	2	2	2	4	4	4	5	5	5
70	3	152	2	2	7	7	7	7	7	7	16	16	16	19	19	19
80	1	66	1	1	2	2	2	2	2	2	6	6	6	8	8	8
80	2	98	2	2	3	3	3	3	3	3	4	4	4	5	5	5
80	3	123	5	5	22	22	22	22	22	22	41	41	41	44	44	44
90	1	72	2	2	3	3	3	3	3	3	8	8	8	11	11	11
90	2	66	1	1	2	2	2	2	2	2	3	3	3	4	4	4
90	3	142	1	1	5	5	5	5	5	5	12	12	12	14	14	14
102	1	72	2	2	3	3	3	3	3	3	7	7	7	11	11	11
102	2	93	3	3	24	24	24	24	24	24	56	56	56	65	65	65
102	3	189	2	2	5	5	5	5	5	5	12	12	12	14	14	14
110	1	74	2	2	4	4	4	4	4	4	9	9	9	11	11	11
110	2	109	2	2	4	4	4	4	4	4	14	14	14	22	22	22
110	3	189	2	2	5	5	5	5	5	5	12	12	12	14	14	14
111	1	74	2	2	5	5	5	5	5	5	10	10	10	12	12	12
111	2	106	1	1	1	1	1	1	1	1	1	1	1	3	3	3
111	3	189	2	2	5	5	5	5	5	5	12	12	12	14	14	14
120	1	75	2	2	3	3	3	3	3	3	7	7	7	9	9	9
120	2	105	1	1	1	1	1	1	1	1	1	1	1	3	3	3
120	3	164	2	2	7	7	7	7	7	7	17	17	17	18	18	18
125	1	75	2	2	3	3	3	3	3	3	7	7	7	9	9	9
125	2	108	1	1	1	1	1	1	1	1	4	4	4	10	10	10
125	3	159	2	2	8	8	8	8	8	8	18	18	18	20	20	20
132	1	63	2	2	5	5	5	5	5	5	9	9	9	12	12	12
132	2	107	1	1	1	1	1	1	1	1	1	1	1	4	4	4
132	3	137	6	6	20	20	20	20	20	20	29	29	29	32	32	32

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 * AFWSG1 MODEL *

TOTAL NO. OF EARTHQUAKES: 33

** STANDARD DEVIATION **

*ACCELERATION (STATIC COMPONENT)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
137	1	68	1	1	1	1	1	1	1	1	3	3	3	4	4	4
137	2	106	1	1	1	1	1	1	1	1	1	1	1	1	1	1
137	3	184	2	2	5	5	5	5	5	5	8	8	8	9	9	9
142	1	70	0	0	0	0	0	0	0	0	0	0	0	1	1	1
142	2	87	7	7	35	35	35	35	35	35	54	54	54	62	62	62
142	3	183	3	3	8	8	8	8	8	8	12	12	12	13	13	13
152	1	57	6	6	5	5	5	5	5	5	8	8	8	9	9	9
152	2	114	1	1	1	1	1	1	1	1	1	1	1	5	5	5
152	3	168	5	5	13	13	13	13	13	13	20	20	20	22	22	22
163	1	58	1	1	1	1	1	1	1	1	1	1	1	1	1	1
163	2	116	1	1	1	1	1	1	1	1	1	1	1	1	1	1
163	3	158	6	6	13	13	13	13	13	13	21	21	21	23	23	23
172	1	4	4	4	4	4	4	4	4	4	4	4	4	5	5	5
172	2	116	1	1	1	1	1	1	1	1	1	1	1	1	1	1
172	3	51	7	7	7	7	7	7	7	7	12	12	12	16	16	16
183	1	2	1	1	1	1	1	1	1	1	1	1	1	2	2	2
183	2	17	5	5	6	6	6	6	6	6	5	5	5	5	5	5
183	3	2	1	1	1	1	1	1	1	1	1	1	1	2	2	2
184	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
184	2	18	5	5	5	5	5	5	5	5	5	5	5	5	5	5
184	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

 * AFWSG1 MODEL *

MEAN VALUES OVER 33 EARTHQUAKES OF PIPE MOMENTS

ELEMENT NUMBER	(PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)									
	METHOD 1		METHOD 2		METHOD 3		METHOD 4		METHOD 5	
	F=1.0	MAX. F	SRSS	ABS	SRSS	ABS	SRSS	ABS	SRSS	ABS
10	-33	1.70	7154	13746	-12	25	885	1656	953	1401
14	-30	1.53	1371	4270	6	35	658	1426	601	937
18	-29	1.52	2784	6370	-4	22	569	1320	514	862
23	-33	1.68	1902	5000	-9	15	411	1082	269	514
34	-32	1.63	771	3020	-13	6	420	1181	191	424
44	-31	1.65	638	2303	-35	-20	476	1228	58	176
52	-30	1.53	1009	3590	-10	11	878	2090	160	460
62	-32	1.61	740	2596	-17	13	618	1510	197	464
71	-31	1.56	556	1956	-56	-39	244	812	265	541
76	-30	1.53	552	1932	-55	-35	280	905	328	644
82	-28	1.50	1745	4953	-9	32	603	1801	703	1330
86	-31	1.53	808	3007	-5	38	540	1405	555	1110
93	-34	1.62	656	2319	-9	29	524	1122	547	1004
98	-35	1.70	448	1341	-20	20	446	882	458	795
101	-35	1.70	463	1328	-18	22	459	885	486	848
108	-33	1.69	465	1716	-4	35	395	1038	364	714
110	-35	1.72	469	1423	-23	16	465	908	469	794
121	-29	1.58	479	1425	102	196	479	1091	334	570
132	-31	1.54	339	852	-17	2	339	670	102	211
133	-31	1.53	352	994	-19	9	352	744	92	197
134	-30	1.53	683	1789	76	182	683	1483	752	1278
157	-31	1.55	759	1307	-6	-4	582	865	640	940
158	-31	1.57	545	920	7	24	545	845	561	873

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* AFWSG1 MODEL *

STANDARD DEVIATIONS FOR PIPE MOMENTS

ELEMENT NUMBER	METHOD 1		(PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)				METHOD 4		METHOD 5	
	F=1.0	MAX. F	METHOD 2 SRSS	METHOD 2 ABS	METHOD 3 SRSS	METHOD 3 ABS	SRSS	ABS	SRSS	ABS
10	20	.76	2239	4244	21	35	305	543	326	462
14	16	.41	430	1206	18	25	190	385	181	262
18	17	.47	751	1530	11	16	128	268	131	192
23	19	.71	618	1411	15	30	121	272	105	161
34	19	.67	230	774	13	18	117	282	59	99
44	20	.71	171	545	36	33	120	278	35	61
52	16	.37	273	878	12	18	234	529	71	137
62	19	.51	245	705	19	24	210	429	67	121
71	15	.46	182	486	17	23	79	196	61	101
76	16	.41	183	497	24	37	97	240	88	148
82	16	.43	737	1842	20	29	225	626	241	422
86	13	.35	473	1636	27	39	317	775	320	604
93	15	.43	464	1528	28	40	374	758	382	667
98	16	.73	318	887	23	35	316	597	321	534
101	16	.71	336	902	23	35	334	616	349	587
108	18	.79	289	938	23	39	242	577	201	375
110	17	.75	344	973	23	34	341	633	337	547
121	18	.69	209	588	61	100	209	457	147	244
132	15	.39	180	396	13	16	180	322	72	120
133	14	.37	193	482	13	20	193	371	73	121
134	16	.43	273	640	50	92	273	543	263	449
157	16	.42	191	316	9	10	146	210	184	258
158	17	.49	218	345	10	12	218	325	223	335

 * AFWSG1 MODEL *

MEAN VALUES OVER 33 EARTHQUAKES OF SUPPORT FORCES

SUPPORT NUMBER	(PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)									
	METHOD 1		METHOD 2		METHOD 3		METHOD 4		METHOD 5	
	F=1.0	MAX. F	SRSS	ABS	SRSS	ABS	SRSS	ABS	SRSS	ABS
4	-31	1.56	2206	3925	-10	-4	523	806	575	855
5	-33	1.68	1051	3418	-3	6	736	1448	493	777
6	-32	1.58	3371	6154	-10	3	522	850	574	857
7	-32	1.63	11101	22837	-11	33	1034	2111	885	1303
8	-32	1.62	1648	5876	-26	-4	964	2188	1070	1687
9	-32	1.65	1231	3606	-53	-29	531	1127	66	151
10	-34	1.71	1054	3563	-3	21	696	1496	330	570
11	-31	1.59	1685	4228	-45	-32	1466	2921	-15	30
12	-36	1.73	1366	3289	0	6	344	2876	-70	-37
13	-32	1.60	742	3311	-6	31	527	1532	240	573
14	-37	1.81	928	2223	-3	2	826	1732	-64	-29
15	-31	1.58	1696	3716	5	14	892	1846	200	364
16	-35	1.78	594	2826	-14	12	425	1162	228	469
17	-30	1.51	741	1881	-68	-56	168	541	219	420
18	-31	1.56	566	2064	-59	-38	561	1298	499	893
19	-34	1.64	1289	6237	63	153	1041	3211	348	1771
20	-34	1.69	760	3978	15	67	628	1945	421	912
21	-31	1.57	2362	6203	20	86	637	1745	686	1332
22	-36	1.68	2548	6781	33	103	875	1970	908	1684
23	-33	1.69	707	2220	-27	3	228	785	217	513
24	-35	1.71	494	1413	-19	18	490	908	496	834
25	-35	1.68	521	1601	-17	17	501	949	500	847
26	-34	1.70	294	916	-34	2	293	756	192	370
27	-33	1.65	1002	1997	-38	-17	1002	1862	1038	1723
28	-35	1.77	483	1428	-16	18	484	1047	717	1238
29	-34	1.68	602	1772	-24	8	602	1357	401	736
33	-32	1.68	970	1677	-17	7	970	1622	1002	1616
34	-37	1.82	354	975	-9	25	354	695	468	858

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 * AFWSG1 MODEL *

STANDARD DEVIATIONS FOR SUPPORT FORCES

SUPPORT NUMBER	(PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)									
	METHOD 1		METHOD 2		METHOD 3		METHOD 4		METHOD 5	
	F=1.0	MAX. F	SRSS	ABS	SRSS	ABS	SRSS	ABS	SRSS	ABS
4	16	.42	501	862	10	10	120	178	150	214
5	19	.70	403	1246	9	15	274	498	184	266
6	16	.43	797	1430	11	10	128	203	157	225
7	19	.53	3753	7594	22	33	363	699	341	488
8	20	.52	637	2252	33	41	398	874	432	658
9	19	.76	315	788	18	28	128	236	37	53
10	19	.82	273	854	12	16	187	353	93	136
11	18	.53	574	1350	37	39	525	993	21	32
12	19	.55	497	1091	36	36	494	988	7	16
13	17	.47	246	975	13	21	158	429	86	167
14	21	.53	294	640	26	27	266	507	9	19
15	18	.49	831	1705	20	24	469	870	108	161
16	20	.78	181	757	15	24	135	337	111	188
17	15	.38	333	714	17	22	87	198	95	168
18	16	.42	194	559	15	25	191	371	143	220
19	15	.47	808	3695	73	131	661	1907	528	1031
20	18	.59	387	1854	22	43	314	900	210	412
21	16	.45	1434	3527	37	61	371	968	393	722
22	14	.44	2668	6869	64	103	924	2005	953	1701
23	19	.69	286	781	15	24	95	276	83	170
24	16	.73	376	1011	25	39	373	662	373	600
25	16	.53	396	1126	25	37	381	686	378	608
26	19	.69	128	335	24	37	128	288	79	137
27	18	.56	381	681	26	32	381	650	359	570
28	20	.72	299	789	21	30	300	593	423	678
29	17	.66	371	972	34	51	371	776	255	435
33	18	.76	539	871	16	19	539	852	533	816
34	20	.75	206	489	22	31	205	367	279	456

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 * ZBEND MODEL *

DISPLACEMENT COMPONENT RESPONSES FOR EARTHQUAKE 1

NODE NO.	T.H.	(PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)									
		METHOD 1		METHOD 2		METHOD 3		METHOD 4		METHOD 5	
		F=1.0	F=1.5	SRSS	ABS	SRSS	ABS	SRSS	ABS	SRSS	ABS
1X	1.2495E-01	-60	-41	0	0	0	0	0	0	0	0
1Y	5.6694E-02	-43	-14	0	0	0	0	0	0	205	205
1Z	1.0600E+00	-31	2	0	0	0	0	0	0	8	8
2X	1.2494E-01	-60	-41	0	0	0	0	0	0	0	0
2Y	5.6674E-02	-43	-14	0	0	0	0	0	0	205	205
2Z	1.0618E+00	-31	2	-4	0	0	0	-4	0	8	9
3X	1.2483E-01	-60	-41	0	0	0	0	0	0	0	0
3Y	5.5979E-02	-42	-13	0	2	2	2	0	2	209	209
3Z	1.0671E+00	-31	2	-11	2	0	0	-11	2	8	9
4X	1.2473E-01	-60	-41	0	0	0	0	0	0	0	0
4Y	5.5285E-02	-41	-12	0	7	6	6	0	7	213	214
4Z	1.0769E+00	-31	2	-16	2	0	0	-16	2	8	9
5X	1.2302E-01	-61	-42	0	0	0	0	0	0	1	1
5Y	9.4142E-02	-27	8	-2	31	21	22	-2	28	93	96
5Z	1.1350E+00	-33	0	-24	5	-1	-1	-24	5	4	8
6X	1.2132E-01	-62	-43	-1	0	0	0	-1	0	2	2
6Y	1.7141E-01	-17	25	0	1	0	0	0	0	1	2
6Z	1.1509E+00	-33	0	-1	0	0	0	-1	0	0	0
7X	1.2128E-01	-62	-43	-1	0	0	0	-1	0	2	2
7Y	1.7271E-01	-17	23	0	0	0	0	0	0	0	0
7Z	1.1500E+00	-33	0	0	0	0	0	0	0	0	0
8X	1.2127E-01	-62	-43	-1	0	0	0	-1	0	2	2
8Y	1.7375E-01	-17	24	0	1	0	0	0	1	-1	-1
8Z	1.1489E+00	-32	0	1	3	0	0	1	3	0	0
9X	1.2125E-01	-62	-43	-1	0	0	0	-1	0	2	3
9Y	1.7460E-01	-16	25	0	3	0	0	0	2	-4	-2
9Z	1.1466E+00	-32	0	3	9	0	0	3	9	0	0
10X	1.2123E-01	-62	-43	-1	0	0	0	-1	0	2	3
10Y	1.7389E-01	-15	26	0	6	0	1	0	5	-6	-4
10Z	1.1432E+00	-32	1	6	15	1	1	6	15	-1	0
11X	1.2114E-01	-62	-43	-1	0	0	0	-1	0	2	3
11Y	1.5430E-01	-12	30	0	23	4	8	0	18	-15	-4
11Z	1.1170E+00	-29	5	15	40	4	4	15	40	-5	3
12X	1.2106E-01	-62	-43	-1	1	0	0	-1	0	2	3
12Y	1.2597E-01	-8	36	1	43	13	19	1	33	-18	1
12Z	1.0653E+00	-27	9	21	58	8	8	21	58	-7	6
13X	1.2106E-01	-62	-43	-1	1	0	0	-1	0	2	3
13Y	1.1683E-01	-7	39	1	50	17	24	1	39	-18	4
13Z	1.0746E+00	-26	10	23	64	9	9	23	64	-8	7
14X	1.2106E-01	-62	-43	-1	1	0	0	-1	0	2	3
14Y	1.1226E-01	-9	35	0	52	16	24	0	40	-21	3
14Z	1.0640E+00	-25	12	25	69	11	11	25	69	-9	8

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 * ZBEND MODEL *

DISPLACEMENT COMPONENT RESPONSES FOR EARTHQUAKE 1

NODE NO.	T.H.	(PERCENTAGE OVER TIME HISTORY (T.P.) VALUES)									
		METHOD 1		METHOD 2		METHOD 3		METHOD 4		METHOD 5	
		F=1.0	F=1.5	SRSS	ABS	SRSS	ABS	SRSS	ABS	SRSS	ABS
15X	1.2101E-01	-62	-43	-1	1	0	0	-1	0	2	3
15Y	1.0345E-01	-14	28	-6	54	15	23	-6	41	-26	1
15Z	1.0600E+00	-24	13	26	77	11	11	26	77	-12	9
16X	1.0868E-01	-69	-53	0	15	6	10	0	12	3	9
16Y	9.7177E-02	-21	17	-10	44	14	19	-10	35	-30	-1
16Z	1.0646E+00	-24	13	21	77	11	11	21	77	-16	8
17X	7.7087E-02	-68	-52	10	42	32	36	10	38	14	35
17Y	9.7139E-02	-21	17	-10	45	14	19	-10	35	-30	-1
17Z	1.0605E+00	-23	14	16	71	11	11	16	71	-17	9
18X	6.5372E-02	-65	-48	18	58	48	52	18	53	22	52
18Y	9.7137E-02	-21	17	-10	45	14	19	-10	35	-30	-1
18Z	1.0596E+00	-23	14	14	69	11	11	14	69	-18	9
19X	5.3652E-02	-62	-43	30	81	72	75	30	75	35	75
19Y	9.7136E-02	-21	17	-10	45	14	19	-10	35	-30	-1
19Z	1.0588E+00	-23	14	12	67	11	11	12	67	-18	9
20X	4.4761E-02	-58	-37	45	105	98	100	45	100	50	101
20Y	9.7126E-02	-21	17	-10	45	14	19	-10	35	-30	-1
20Z	1.0581E+00	-23	14	11	65	11	11	11	65	-18	9
21X	3.6347E-02	-55	-33	62	133	128	129	62	129	66	132
21Y	9.7111E-02	-21	17	-10	45	14	19	-10	35	-30	-1
21Z	1.0572E+00	-23	14	9	63	11	11	9	63	-18	9
22X	3.9164E-02	-58	-37	41	107	101	103	41	103	44	104
22Y	9.7099E-02	-21	17	-10	45	14	19	-10	35	-30	-1
22Z	1.0564E+00	-23	14	8	61	11	11	8	61	-18	9
23X	4.2405E-02	-58	-37	24	82	74	78	24	79	26	76
23Y	9.7098E-02	-21	17	-10	45	14	19	-10	35	-30	-1
23Z	1.0556E+00	-23	14	6	59	11	11	6	59	-19	9
24X	4.5768E-02	-56	-34	14	62	51	56	14	58	14	53
24Y	9.7097E-02	-21	17	-10	45	14	19	-10	35	-30	-1
24Z	1.0548E+00	-23	14	5	57	11	11	5	57	-19	10
25X	4.8975E-02	-49	-24	8	45	33	39	8	42	8	34
25Y	9.7085E-02	-21	17	-10	45	14	19	-10	35	-30	-1
25Z	1.0541E+00	-23	14	3	55	11	11	3	55	-19	10
26X	5.8033E-02	-39	-9	0	0	0	0	0	0	0	0
26Y	9.0230E-02	-27	8	-11	31	15	15	-11	31	-28	0
26Z	1.0603E+00	-23	14	-4	47	11	11	-4	47	-22	9
27X	5.8023E-02	-39	-9	0	0	0	0	0	0	0	0
27Y	7.9390E-02	-36	-5	-13	30	14	16	-13	26	-22	3
27Z	1.0774E+00	-23	14	-11	38	9	9	-11	38	-22	8
28X	5.8016E-02	-39	-9	0	0	0	0	0	0	0	0
28Y	7.3056E-02	-26	10	-11	26	13	14	-11	22	-16	5
28Z	1.0894E+00	-24	13	-12	31	8	8	-12	31	-20	7

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* ZBEND MODEL *

DISPLACEMENT COMPONENT RESPONSES FOR EARTHQUAKE 1

NODE NO.	T.H.	(PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)									
		METHOD 1		METHOD 2		METHOD 3		METHOD 4		METHOD 5	
		F=1.0	F=1.5	SRSS	ABS	SRSS	ABS	SRSS	ABS	SRSS	ABS
29X	5.8016E-02	-39	-9	0	0	0	0	0	0	0	0
29Y	7.0232E-02	-20	18	-9	23	12	13	-9	20	-12	5
29Z	1.0958E+00	-24	13	-12	28	7	7	-12	28	-18	6
30X	5.8015E-02	-39	-9	0	0	0	0	0	0	0	0
30Y	8.7457E-02	-15	27	-5	19	11	12	-5	17	-7	6
30Z	1.1049E+00	-24	12	-12	24	6	6	-12	24	-16	6
31X	5.8004E-02	-39	-9	0	0	0	0	0	0	0	0
31Y	6.4853E-02	-6	39	0	4	3	3	0	4	0	2
31Z	1.1424E+00	-19	21	-8	12	3	3	-8	12	-9	2
32X	5.8002E-02	-39	-9	0	0	0	0	0	0	0	0
32Y	6.5362E-02	-6	39	0	0	0	0	0	0	0	0
32Z	1.1655E+00	-14	28	-3	4	1	1	-3	4	-3	1
33X	5.8001E-02	-39	-9	0	0	0	0	0	0	0	0
33Y	6.5394E-02	-6	39	0	0	0	0	0	0	0	0
33Z	1.1713E+00	-13	29	-2	2	0	0	-2	2	-2	0
34X	5.3001E-02	-39	-9	0	0	0	0	0	0	0	0
34Y	6.5398E-02	-6	39	0	0	0	0	0	0	0	0
34Z	1.1800E+00	-11	32	0	0	0	0	0	0	0	0

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 * ZBEND MODEL *

EARTHQUAKE NO. 1

ACCELERATION (STATIC COMPONENT)

NODE NO.	COMP. NO.	ACC (ST) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	.24516E+03	2	2	2	2	2	2	2	2	2	2	2	2	2	2
1	2	.13363E+03	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	3	.81292E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	1	.24512E+03	2	2	2	2	2	2	2	2	2	2	2	2	2	2
2	2	.13360E+03	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	3	.81335E+03	0	0	-4	-4	-4	-4	-4	-4	0	0	0	0	0	0
3	1	.24477E+03	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3	2	.13269E+03	2	2	1	1	1	1	1	1	3	3	3	3	3	3
3	3	.81411E+03	0	0	-10	-10	-10	-10	-10	-10	1	1	1	1	1	1
4	1	.24445E+03	2	2	2	2	2	2	2	2	2	2	2	2	2	2
4	2	.13068E+03	6	6	1	1	1	1	1	1	7	7	7	7	7	7
4	3	.81480E+03	0	0	-15	-15	-15	-15	-15	-15	3	3	3	3	3	3
5	1	.23910E+03	4	4	2	2	2	2	2	2	4	4	4	4	4	4
5	2	.15308E+03	56	56	23	23	23	23	23	23	67	67	67	68	68	68
5	3	.81891E+03	2	2	-21	-21	-21	-21	-21	-21	9	9	9	9	9	9
6	1	.23375E+03	5	5	3	3	3	3	3	3	5	5	5	5	5	5
6	2	.28756E+03	20	20	19	19	19	19	19	19	21	21	21	21	21	21
6	3	.82029E+03	3	3	2	2	2	2	2	2	4	4	4	4	4	4
7	1	.23361E+03	5	5	3	3	3	3	3	3	5	5	5	5	5	5
7	2	.29088E+03	19	19	19	19	19	19	19	19	19	19	19	19	19	19
7	3	.82025E+03	3	3	3	3	3	3	3	3	3	3	3	3	3	3
8	1	.23360E+03	5	5	3	3	3	3	3	3	5	5	5	5	5	5
8	2	.29367E+03	18	18	18	18	18	18	18	18	20	20	20	20	20	20
8	3	.82020E+03	3	3	4	4	4	4	4	4	7	7	7	7	7	7
9	1	.23356E+03	5	5	3	3	3	3	3	3	5	5	5	5	5	5
9	2	.29662E+03	18	18	18	18	18	18	18	18	22	22	22	22	22	22
9	3	.82008E+03	3	3	7	7	7	7	7	7	12	12	12	12	12	12
10	1	.23352E+03	5	5	3	3	3	3	3	3	5	5	5	5	5	5
10	2	.29670E+03	18	18	18	18	18	18	18	18	24	24	24	25	25	25
10	3	.81990E+03	3	3	9	9	9	9	9	9	18	18	18	18	18	18
11	1	.23333E+03	5	5	3	3	3	3	3	3	5	5	5	6	6	6
11	2	.26520E+03	25	25	17	17	17	17	17	17	39	39	39	43	43	43
11	3	.81837E+03	3	3	16	16	16	16	16	16	41	41	41	41	41	41
12	1	.23318E+03	5	5	3	3	3	3	3	3	5	5	5	6	6	6
12	2	.21899E+03	38	38	19	19	19	19	19	19	58	58	58	64	64	64
12	3	.81646E+03	3	3	19	19	19	19	19	19	55	55	55	55	55	55
13	1	.23318E+03	5	5	3	3	3	3	3	3	5	5	5	6	6	6
13	2	.20451E+03	43	43	20	20	20	20	20	20	64	64	64	72	72	72
13	3	.81581E+03	3	3	20	20	20	20	20	20	58	58	58	58	58	58
14	1	.23317E+03	5	5	3	3	3	3	3	3	5	5	5	6	6	6
14	2	.19003E+03	49	49	22	22	22	22	22	22	72	72	72	80	80	80
14	3	.81515E+03	3	3	20	20	20	20	20	20	62	62	62	62	62	62

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 * ZBEND MODEL *

EARTHQUAKE NO. 1

*ACCELERATION (STATIC COMPONENT)

NODE NO.	COMP. NO.	ACC (ST) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
15	1	.23309E+03	6	6	3	3	3	3	3	3	6	6	6	6	6	6
15	2	.16232E+03	63	63	29	29	29	29	29	29	90	90	90	100	100	100
15	3	.81376E+03	3	3	21	21	21	21	21	21	68	68	68	68	68	68
16	1	.20744E+03	16	16	5	5	5	5	5	5	17	17	17	22	22	22
16	2	.15109E+03	65	65	28	28	28	28	28	28	92	92	92	97	97	97
16	3	.81099E+03	3	3	17	17	17	17	17	17	69	69	69	69	69	69
17	1	.14363E+03	60	60	23	23	23	23	23	23	60	60	60	65	65	65
17	2	.15092E+03	66	66	28	28	28	28	28	28	92	92	92	97	97	97
17	3	.81003E+03	3	3	11	11	11	11	11	11	63	63	63	63	63	63
18	1	.12002E+03	88	88	38	38	38	38	38	38	89	89	89	93	93	93
18	2	.15092E+03	66	66	28	28	28	28	28	28	92	92	92	97	97	97
18	3	.80966E+03	3	3	9	9	9	9	9	9	60	60	60	60	60	60
19	1	.96389E+02	130	130	63	63	63	63	63	63	130	130	130	133	133	133
19	2	.15091E+03	66	66	28	28	28	28	28	28	92	92	92	97	97	97
19	3	.80930E+03	3	3	8	8	8	8	8	8	58	58	58	58	58	58
20	1	.94947E+02	130	130	61	61	61	61	61	61	131	131	131	132	132	132
20	2	.15087E+03	66	66	28	28	28	28	28	28	93	93	93	97	97	97
20	3	.80902E+03	3	3	6	6	6	6	6	6	56	56	56	56	56	56
21	1	.99351E+02	115	115	51	51	51	51	51	51	116	116	116	116	116	116
21	2	.15081E+03	66	66	28	28	28	28	28	28	93	93	93	97	97	97
21	3	.80862E+03	3	3	4	4	4	4	4	4	54	54	54	54	54	54
22	1	.10274E+03	105	105	47	47	47	47	47	47	105	105	105	106	106	106
22	2	.15076E+03	66	66	28	28	28	28	28	28	93	93	93	97	97	97
22	3	.80831E+03	3	3	3	3	3	3	3	3	52	52	52	52	52	52
23	1	.11125E+03	86	86	40	40	40	40	40	40	86	86	86	89	89	89
23	2	.15075E+03	66	66	28	28	28	28	28	28	93	93	93	97	97	97
23	3	.80796E+03	2	2	1	1	1	1	1	1	50	50	50	50	50	50
24	1	.12712E+03	59	59	29	29	29	29	29	29	59	59	59	64	64	64
24	2	.15075E+03	66	66	28	28	28	28	28	28	93	93	93	97	97	97
24	3	.80761E+03	2	2	0	0	0	0	0	0	48	48	48	48	48	48
25	1	.14097E+03	41	41	22	22	22	22	22	22	41	41	41	47	47	47
25	2	.15070E+03	66	66	28	28	28	28	28	28	93	93	93	97	97	97
25	3	.80731E+03	2	2	-1	-1	-1	-1	-1	-1	46	46	46	46	46	46
26	1	.17421E+03	10	10	10	10	10	10	10	10	10	10	10	11	11	11
26	2	.14623E+03	64	64	24	24	24	24	24	24	86	86	86	86	86	86
26	3	.80333E+03	2	2	-9	-9	-9	-9	-9	-9	38	38	38	38	38	38
27	1	.17422E+03	10	10	10	10	10	10	10	10	10	10	10	11	11	11
27	2	.11796E+03	84	84	42	42	42	42	42	42	102	102	102	103	103	103
27	3	.79847E+03	1	1	-16	-16	-16	-16	-16	-16	31	31	31	31	31	31
28	1	.17423E+03	10	10	10	10	10	10	10	10	10	10	10	10	10	10
28	2	.11817E+03	72	72	39	39	39	39	39	39	84	84	84	85	85	85
28	3	.79511E+03	1	1	-18	-18	-18	-18	-18	-18	25	25	25	25	25	25

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 * ZBEND MODEL *

EARTHQUAKE NO. 1		*ACCELERATION (STATIC COMPONENT)														
NODE NO.	COMP. NO.	ACC.(ST) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
29	1	.17423E+03	10	10	10	10	10	10	10	10	10	10	10	10	10	10
29	2	.11850E+03	66	66	39	39	39	39	39	39	75	75	75	76	76	76
29	3	.79342E+03	0	0	-18	-18	-18	-18	-18	-18	22	22	22	22	22	22
30	1	.17423E+03	10	10	10	10	10	10	10	10	10	10	10	10	10	10
30	2	.12239E+03	55	55	36	36	36	36	36	36	62	62	62	63	63	63
30	3	.79172E+03	0	0	-17	-17	-17	-17	-17	-17	19	19	19	19	19	19
31	1	.17424E+03	10	10	10	10	10	10	10	10	10	10	10	10	10	10
31	2	.13125E+03	34	34	31	31	31	31	31	31	35	35	35	35	35	35
31	3	.78613E+03	0	0	-12	-12	-12	-12	-12	-12	9	9	9	9	9	9
32	1	.17424E+03	10	10	10	10	10	10	10	10	10	10	10	10	10	10
32	2	.13271E+03	31	31	30	30	30	30	30	30	31	31	31	31	31	31
32	3	.78266E+03	0	0	-5	-5	-5	-5	-5	-5	3	3	3	3	3	3
33	1	.17424E+03	10	10	10	10	10	10	10	10	10	10	10	10	10	10
33	2	.13280E+03	30	30	30	30	30	30	30	30	30	30	30	30	30	30
33	3	.78179E+03	0	0	-4	-4	-4	-4	-4	-4	1	1	1	1	1	1
34	1	.17424E+03	10	10	10	10	10	10	10	10	10	10	10	10	10	10
34	2	.13282E+03	30	30	30	30	30	30	30	30	30	30	30	30	30	30
34	3	.78049E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* ZBEND MODEL *

RESULTANT PIPE MOMENT RESPONSES FOR EARTHQUAKE NO. 1

J-END ELEM. NO.	T.H.	(PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)									
		METHOD 1		METHOD 2		METHOD 3		METHOD 4		METHOD 5	
		F=1.0	F=1.5	SRSS	ABS	SRSS	ABS	SRSS	ABS	SRSS	ABS
1	3.9853E+04	-13	29	10	47	-29	-27	10	42	-82	-77
2	1.1156E+04	-13	29	11	49	-29	-27	11	44	-82	-76
3	2.4016E+04	-13	29	11	48	-29	-27	11	43	-82	-76
4	9.8339E+03	-13	29	14	54	-30	-28	14	50	-79	-71
5	2.1185E+04	-13	29	13	53	-30	-28	13	48	-79	-72
6	1.3498E+04	-33	0	161	322	-90	-89	161	321	17	66
7	3.7666E+04	-22	16	83	187	-44	-40	83	184	-23	7
8	1.2830E+04	-22	16	80	192	-43	-40	80	178	-25	4
9	2.6622E+04	-22	16	81	183	-43	-40	81	179	-24	5
10	1.1394E+04	-28	7	88	200	-49	-44	88	196	-6	29
11	2.4059E+04	-28	7	87	199	-49	-43	87	195	-6	29
12	3.1463E+04	-28	7	95	211	-52	-48	95	208	-4	32
13	2.2860E+04	-28	7	120	254	-64	-62	120	252	3	45
14	1.7568E+04	-30	3	144	296	-79	-72	144	295	16	64
15	1.7009E+04	-34	-1	142	291	-82	-78	142	290	17	65
16	1.7963E+04	-43	-14	105	237	-67	-54	105	234	11	54
17	1.6343E+04	-42	-13	98	227	-59	-44	98	222	11	53
18	1.2882E+04	-36	-4	135	282	-73	-64	135	280	17	64
19	1.2197E+04	-34	-1	145	298	-81	-75	145	297	19	67
20	1.1896E+04	-32	0	153	309	-92	-92	153	309	19	68
21	1.2925E+04	-35	-3	141	292	-81	-74	141	291	14	61
22	1.3928E+04	-37	-6	131	275	-74	-65	131	273	12	57
23	1.6417E+04	-41	-12	109	244	-65	-52	109	240	7	49
24	1.6069E+04	-44	-16	104	234	-69	-57	104	231	6	48
25	1.1564E+04	-30	3	139	289	-74	-64	139	287	18	66
26	1.2975E+04	-27	8	100	225	-60	-51	100	220	0	38
27	1.4274E+04	-26	9	80	188	-53	-47	80	184	-7	27
28	2.2107E+04	-27	9	32	101	-39	-35	32	94	-20	5
29	8.7119E+03	-27	8	24	90	-36	-29	24	80	-21	3
30	1.7747E+04	-27	8	25	91	-36	-30	25	81	-21	3
31	8.9685E+03	-27	8	23	90	-36	-29	23	79	-21	3
32	1.8625E+04	-27	8	23	90	-36	-29	23	79	-21	3
33	2.9314E+04	-27	8	22	88	-36	-28	22	77	-21	3
34	1.7083E+04	-38	-7	131	275	-79	-75	131	273	15	62
35	1.1905E+04	-33	0	151	307	-89	-87	151	307	19	68
36	1.5173E+04	-39	-9	119	258	-69	-57	119	255	9	52
37	1.5826E+04	-26	10	63	156	-48	-45	63	153	-13	18
38	3.3512E+04	-28	7	91	205	-50	-46	91	201	-5	30
39	1.2292E+04	-33	0	149	303	-67	-83	149	303	17	65

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 * ZBEND MODEL *
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SUPPORT FORCE RESPONSES FOR EARTHQUAKE NO. 1

SUPP NO.	T. H.	(PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)									
		METHOD 1		METHOD 2		METHOD 3		METHOD 4		METHOD 5	
		F=1.0	F=1.5	SRSS	ABS	SRSS	ABS	SRSS	ABS	SRSS	ABS
1	4.7544E+03	-8	36	40	93	-17	-13	40	84	-90	-87
2	9.0494E+02	-15	27	10	50	-29	-26	10	43	-75	-67
3	2.8599E+02	-33	0	165	327	-91	-91	165	327	17	65
4	3.7677E+02	-32	0	153	310	-92	-92	153	310	18	67
5	4.2557E+04	-14	28	10	47	-29	-27	10	41	-82	-77
6	4.6785E+03	-8	37	36	76	-19	-19	36	76	-99	-99
7	1.4598E+03	-19	20	14	73	-28	-19	14	55	-49	-34
8	4.7170E+02	-33	0	160	320	-91	-91	160	320	17	66
9	3.4433E+03	-32	0	153	310	-92	-92	153	310	18	67
10	4.7521E+02	-23	14	406	703	-64	-64	406	703	49	111
11	9.4697E+03	-39	-9	-25	48	-59	-50	-25	26	-19	4
12	5.0574E+02	-57	-36	3	92	-42	-20	3	72	-5	23
13	5.9522E+02	-32	1	16	97	-29	-13	16	75	-13	12
14	1.8571E+02	-32	0	153	310	-92	-92	153	310	18	67
15	7.3227E+03	-32	0	153	310	-92	-92	153	310	18	67
16	2.8385E+04	-27	8	7	63	-33	-25	7	49	-24	-2

 * B.M.1 MODEL *

DISPLACEMENT COMPONENT RESPONSES FOR EARTHQUAKE 1

NODE	NO.	T.H.	(PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)									
			METHOD 1		METHOD 2		METHOD 3		METHOD 4		METHOD 5	
			F=1.0	MAX. F	SRSS	ABS	SRSS	ABS	SRCS	ABS	SRSS	ABS
1	X	4.5660E-02	-71	3.5	0	0	0	0	0	0	0	0
1	Y	1.4180E-02	-46	1.9	0	0	0	0	0	0	0	0
1	Z	3.2110E-02	-50	2.0	0	0	0	0	0	0	0	0
2	X	4.5463E-02	-71	3.5	0	3	0	0	0	1	0	0
2	Y	1.4121E-02	-47	1.9	0	28	-3	-1	0	12	0	13
2	Z	3.3299E-02	-50	2.0	-1	4	0	1	-1	1	-1	0
3	X	4.4335E-02	-70	3.4	-3	29	0	3	-4	9	-3	13
3	Y	1.4285E-02	-48	1.9	-2	64	-3	2	-2	23	-1	28
3	Z	3.4015E-02	-51	2.1	-8	32	0	6	-10	7	-8	12
4	X	4.3859E-02	-70	3.3	-4	45	0	4	-5	14	-3	21
4	Y	1.4285E-02	-48	1.9	-2	64	-3	2	-2	23	-1	28
4	Z	3.4266E-02	-51	2.1	-10	49	1	9	-13	11	-9	22
5	X	4.2600E-02	-69	3.2	-4	100	0	10	-9	31	-1	48
5	Y	1.4767E-02	-49	2.0	-4	118	-4	4	-3	48	0	56
5	Z	3.5666E-02	-52	2.1	-13	96	2	17	-18	24	-9	44
6	X	3.8445E-02	-58	2.4	-2	127	-3	14	-4	42	-2	51
6	Y	2.8340E-02	-53	2.1	0	0	0	0	0	0	0	0
6	Z	4.5035E-02	-53	2.1	-16	96	-5	11	-14	26	-15	30
7	X	4.0508E-02	-65	2.9	-3	139	-1	16	-7	46	-1	60
7	Y	1.6902E-02	-54	2.2	39	237	-15	-1	39	133	43	136
7	Z	3.8879E-02	-52	2.1	-15	118	0	22	-16	32	-12	44
8A	X	3.9446E-02	-63	2.7	-2	146	-2	16	-4	50	0	60
8A	Y	1.7957E-02	-53	2.1	53	223	-7	5	52	137	55	138
8A	Z	4.0435E-02	-53	2.1	-14	118	-1	21	-14	33	-13	41
8	X	3.8408E-02	-60	2.5	-1	137	-2	13	-2	48	0	56
6	Y	2.2516E-02	-53	2.2	27	101	0	6	26	65	27	65
8	Z	4.2240E-02	-53	2.2	-15	105	-4	15	-13	28	-14	34
9	X	3.8620E-02	-57	2.3	-4	129	-4	17	-5	41	-3	50
9	Y	3.3009E-02	-52	2.1	-13	29	0	3	-12	10	-12	8
9	Z	4.3385E-02	-53	2.1	-16	97	-6	7	-15	27	-16	31
10	X	3.7053E-02	-60	2.5	-23	120	-3	12	-21	29	-12	52
10	Y	4.0135E-02	-52	2.1	-21	73	0	7	-19	25	-18	24
10	Z	4.1051E-02	-47	1.9	-26	132	-5	19	-26	26	-16	43
11	X	3.2746E-02	-70	3.4	-23	152	1	12	-22	17	39	66
11	Y	4.0369E-02	-52	2.1	-21	73	0	7	-20	25	-19	24
11	Z	3.8668E-02	-46	1.9	-31	136	-5	9	-39	2	25	51
12	X	3.2646E-02	-59	3.3	-23	147	0	11	-20	22	39	62
12	Y	5.1918E-02	-52	2.1	-24	55	0	4	-24	16	-24	12
12	Z	3.7905E-02	-46	1.9	-30	133	-4	11	-38	3	29	52
13	X	3.1816E-02	-68	3.2	-16	162	5	18	-17	46	51	68
13	Y	2.1434E-02	-54	2.2	44	330	12	36	77	156	137	238
13	Z	4.1595E-02	-48	1.9	-21	97	0	5	-22	14	13	29

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 * B.M.1 MODEL *

DISPLACEMENT COMPONENT RESPONSES FOR EARTHQUAKE 1

NODE NO.	T.H.	(PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)											
		METHOD 1		METHOD 2		METHOD 3		METHOD 4		METHOD 5			
		F=1.0	MAX. F	SRSS	ABS	SRSS	ABS	SRSS	ABS	SRSS	ABS	SRSS	ABS
14 X	3.2466E-02	-66	3.0	-20	134	0	7	-16	27	42	57		
14 Y	7.0611E-02	-52	2.1	-13	31	0	2	-13	9	-13	4		
14 Z	3.6552E-02	-46	1.9	-27	124	-2	11	-34	5	36	53		
15 X	2.9624E-02	-67	3.1	5	133	6	25	4	68	67	70		
15 Y	2.8340E-02	-53	2.1	0	0	0	0	0	0	230	230		
15 Z	4.2999E-02	-48	1.9	-8	58	0	2	-8	20	23	24		
19 X	2.9540E-02	-67	3.1	6	129	5	24	5	66	68	70		
19 Y	2.8868E-02	-52	2.1	0	13	1	1	-3	2	231	235		
19 Z	4.2917E-02	-48	1.9	-9	60	0	3	-8	21	23	25		
21 X	2.9274E-02	-67	3.1	7	128	5	23	6	65	70	72		
21 Y	2.9268E-02	-52	2.1	0	27	0	1	-4	3	233	242		
21 Z	4.2803E-02	-48	1.9	-9	62	0	3	-9	21	24	25		
23 X	2.9021E-02	-68	3.1	5	85	0	5	3	45	73	75		
23 Y	7.6178E-02	-52	2.1	-8	42	0	2	-8	15	36	46		
23 Z	3.5360E-02	-49	2.0	-12	116	0	6	-15	55	53	57		
25 X	2.8710E-02	-65	2.9	0	0	0	0	0	0	74	74		
25 Y	9.3670E-02	-52	2.1	0	0	0	0	0	0	0	0		
25 Z	3.3530E-02	-50	2.0	0	0	0	0	0	0	58	58		
27 X	2.6358E-02	-68	3.2	4	71	2	13	2	37	89	89		
27 Y	6.5922E-02	-52	2.1	-11	15	0	0	-12	5	38	40		
27 Z	3.8732E-02	-47	1.9	-16	61	2	11	-19	20	36	37		
29 X	2.3903E-02	-66	3.0	34	139	9	33	34	88	109	109		
29 Y	2.4660E-02	-50	2.0	0	0	0	0	0	0	279	279		
29 Z	4.8022E-02	-45	1.9	-10	38	0	13	-10	15	10	10		
33 X	2.3633E-02	-66	3.0	41	160	10	37	44	104	111	111		
33 Y	1.5420E-02	-49	2.0	94	188	0	0	97	169	516	523		
33 Z	4.9783E-02	-45	1.8	-9	40	0	12	-6	19	6	6		
35 X	2.3617E-02	-66	3.0	42	163	11	38	45	106	111	111		
35 Y	1.3693E-02	-49	2.0	125	245	0	0	133	224	593	601		
35 Z	5.0370E-02	-45	1.8	-11	39	0	12	-4	20	5	5		
37 X	2.3573E-02	-66	3.0	42	163	11	38	45	106	112	112		
37 Y	2.4660E-02	-50	2.0	0	0	0	0	0	0	279	279		
37 Z	5.6862E-02	-51	2.1	-5	46	-3	4	8	26	-6	-6		
16 X	3.2264E-02	-69	3.3	-11	142	0	14	-6	40	52	59		
16 Y	9.3670E-02	-52	2.1	0	0	0	0	0	0	0	0		
16 Z	3.3451E-02	-49	2.0	-15	132	5	24	-19	24	56	64		
20 X	3.3171E-02	-58	2.4	10	240	-2	10	12	77	72	100		
20 Y	1.4130E-01	-52	2.1	19	75	0	3	19	47	22	43		
20 Z	3.1567E-02	-53	2.2	19	267	11	49	14	72	96	135		
22 X	3.4834E-02	-50	2.0	30	338	-4	19	26	110	90	142		
22 Y	1.5671E-01	-52	2.1	25	102	0	4	26	64	34	62		
22 Z	3.1164E-02	-60	2.5	49	393	14	62	41	123	125	189		

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 * B.M.1 MODEL *

DISPLACEMENT COMPONENT RESPONSES FOR EARTHQUAKE 1

NODE NO.	T.H.	(PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)											
		METHOD 1		METHOD 2		METHOD 3		METHOD 4		METHOD 5			
		F=1.0	MAX. F	SRSS	ABS	SRSS	ABS	SRSS	ABS	SRSS	ABS		
24 X	3.6584E-02	-43	1.8	43	402	-3	24	35	133	101	169		
24 Y	1.4735E-01	-53	2.1	27	117	-1	4	28	71	45	77		
24 Z	3.1934E-02	-66	3.0	65	477	13	64	55	159	137	220		
26 X	3.8361E-02	-38	1.6	49	443	-1	27	37	147	106	183		
26 Y	1.2071E-01	-53	2.1	26	125	-2	3	27	74	62	96		
26 Z	3.2591E-02	-65	2.9	74	533	12	63	63	185	143	236		
28 X	4.0107E-02	-34	1.5	49	459	0	27	37	154	104	186		
28 Y	8.4243E-02	-53	2.2	19	126	-4	1	21	71	92	126		
28 Z	9.3170E-02	-63	2.8	77	564	11	58	65	202	142	242		
30 X	4.1763E-02	-30	1.4	47	457	2	30	34	155	99	181		
30 Y	4.5429E-02	-54	2.2	0	109	-7	-2	2	57	170	201		
30 Z	3.3703E-02	-61	2.6	76	572	10	51	65	212	136	237		
32 X	4.3145E-02	-28	1.4	44	449	4	33	31	53	92	171		
32 Y	1.4180E-02	-46	1.9	0	0	0	0	0	0	560	560		
32 Z	3.4191E-02	-59	2.5	73	564	8	44	63	215	128	226		
36 X	4.3287E-02	-27	1.4	42	443	5	34	30	153	90	168		
36 Y	1.4166E-02	-56	2.3	28	156	-43	-39	27	107	509	532		
36 Z	3.4239E-02	-59	2.4	72	560	9	42	63	214	126	223		
38 X	4.4273E-02	-24	1.3	33	389	9	35	25	140	77	144		
38 Y	2.0400E-02	-64	2.8	110	369	-94	-31	94	237	239	281		
38 Z	3.4677E-02	-57	2.3	66	532	8	34	59	208	116	207		
39 X	4.5977E-02	-24	1.3	21	301	9	30	17	113	57	106		
39 Y	3.2214E-02	-68	3.2	82	294	-68	-64	54	169	106	136		
39 Z	3.5757E-02	-56	2.3	57	480	6	29	52	193	101	180		
40 X	4.5987E-02	-25	1.3	14	210	12	27	14	84	41	72		
40 Y	4.6334E-02	-67	3.1	46	177	-35	-33	17	88	58	75		
40 Z	3.6108E-02	-55	2.2	51	434	6	26	48	180	90	156		
41 X	4.3905E-02	-26	1.4	13	132	18	40	13	58	28	39		
41 Y	5.9642E-02	-63	2.7	21	80	-13	-12	2	32	41	48		
41 Z	3.5202E-02	-54	2.2	49	359	8	27	48	172	84	140		
43 X	4.0916E-02	-50	1.4	9	169	22	45	9	66	10	29		
43 Y	6.9000E-02	-60	2.5	0	0	0	0	0	0	35	35		
43 Z	3.3063E-02	-53	2.1	51	377	15	32	50	168	86	133		
44 X	3.9961E-02	-37	1.6	0	205	19	35	0	72	-7	28		
44 Y	7.1896E-02	-59	2.4	-16	15	3	3	0	8	34	37		
44 Z	3.1546E-02	-53	2.2	50	363	19	37	50	163	89	131		
45 X	3.8876E-02	-47	1.9	-4	235	14	31	-5	78	-20	33		
45 Y	7.2246E-02	-58	2.4	-28	20	4	4	0	10	33	38		
45 Z	3.0127E-02	-55	2.2	50	366	23	51	50	158	94	136		
46 X	3.9296E-02	-54	2.2	-3	242	4	25	-6	84	-20	44		
46 Y	7.1044E-02	-59	2.4	-25	16	2	3	0	6	34	38		
46 Z	2.8731E-02	-57	2.3	53	392	28	66	53	162	104	156		

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 * B.M.1 MODEL *

DISPLACEMENT COMPONENT RESPONSES FOR EARTHQUAKE 1

NODE NO.	T.H.	(PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)											
		METHOD 1		METHOD 2		METHOD 3		METHOD 4		METHOD 5			
		F=1.0	MAX. F	SRSS	ABS	SRSS	ABS	SRSS	ABS	SRSS	ABS	SRSS	ABS
47 X	4.1221E-02	-60	2.5	3	228	-7	12	-1	90	-10	60		
47 Y	6.9280E-02	-59	2.5	-4	3	0	0	0	1	35	36		
47 Z	2.7562E-02	-59	2.5	60	428	33	80	58	175	119	183		
48 X	4.0359E-02	-61	2.6	-1	199	-9	11	-4	83	-9	60		
48 Y	6.9000E-02	-60	2.5	0	0	0	0	0	0	35	35		
48 Z	2.7945E-02	-60	2.5	58	441	30	77	54	168	113	181		
49 X	3.6317E-02	-62	2.6	-11	148	-5	15	-9	64	-9	57		
49 Y	6.8998E-02	-60	2.5	0	0	0	0	0	0	35	35		
49 Z	2.9581E-02	-61	2.6	53	442	20	61	41	140	90	162		
50 X	3.2660E-02	-62	2.7	0	156	-2	15	-4	42	0	62		
50 Y	6.8996E-02	-60	2.5	0	0	0	0	0	0	35	35		
50 Z	3.1136E-02	-62	2.7	55	441	11	46	30	117	68	145		
51 X	3.2043E-02	-61	2.6	5	175	-2	12	-1	35	5	64		
51 Y	6.6857E-02	-59	2.5	-2	7	1	2	-1	3	34	38		
51 Z	3.1433E-02	-62	2.7	51	430	10	41	25	107	58	136		
52 X	3.0825E-02	-63	2.7	6	133	-2	9	3	30	6	53		
52 Y	5.1282E-02	-57	2.4	-13	44	8	14	-12	24	18	55		
52 Z	2.9490E-02	-63	2.7	29	385	19	55	20	105	38	136		
53 X	2.9696E-02	-63	2.7	9	79	-2	5	7	26	9	41		
53 Y	3.5436E-02	-53	2.1	-13	72	19	27	-13	46	4	66		
53 Z	2.7180E-02	-64	2.8	36	336	35	77	40	139	43	163		
54 X	2.8896E-02	-63	2.8	12	36	-1	2	11	29	12	32		
54 Y	2.8822E-02	-53	2.2	-2	19	3	5	-2	11	-2	14		
54 Z	2.5553E-02	-64	2.8	75	299	50	107	79	186	76	191		
55 X	2.9700E-02	-63	2.8	0	0	0	0	0	0	0	0		
55 Y	2.8340E-02	-53	2.1	0	0	0	0	0	0	0	0		
55 Z	2.5787E-02	-61	2.6	70	264	46	97	73	170	70	171		
56 X	3.5008E-02	-66	3.0	-28	26	0	3	-27	9	-28	11		
56 Y	2.8326E-02	-53	2.1	0	0	0	0	0	0	0	0		
56 Z	2.8725E-02	-55	2.3	28	136	21	51	31	88	29	88		
57 X	4.0649E-02	-68	3.2	-20	39	0	4	-18	14	-19	16		
57 Y	2.8312E-02	-53	2.1	0	0	0	0	0	0	0	0		
57 Z	3.2253E-02	-51	2.1	2	23	2	9	3	15	2	15		
58 X	4.2279E-02	-69	3.2	-14	32	0	3	-12	12	-14	14		
58 Y	2.6114E-02	-52	2.1	-6	4	0	0	-6	1	-6	2		
58 Z	3.3112E-02	-50	2.0	0	0	0	0	0	0	0	0		
59 X	4.4526E-02	-70	3.4	-4	8	0	1	-4	3	-4	4		
59 Y	1.7716E-02	-51	2.1	-27	6	1	1	-27	3	-27	3		
59 Z	3.3111E-02	-50	2.0	0	0	0	0	0	0	0	0		
60 X	4.5660E-02	-71	3.5	0	0	0	0	0	0	0	0		
60 Y	1.4180E-02	-46	1.9	0	0	0	0	0	0	0	0		
60 Z	3.3110E-02	-50	2.0	0	0	0	0	0	0	0	0		

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 * BM1 MODEL *

EARTHQUAKE NO. 1

*ACCELERATION(STATIC COMPONENT)

NODE NO.	COMP. NO.	ACC(ST) (T.H.)	URS	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
				1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	.35980E+03	-24	7	7	7	7	7	7	7	7	7	7	7	7	7	7
1	2	.57680E+02	536	7	7	7	7	7	7	7	7	7	7	7	7	7	7
1	3	.15210E+03	24	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	1	.35814E+03	-24	7	7	6	6	6	6	6	6	6	6	6	6	6	6
2	2	.59612E+02	515	0	0	2	2	2	2	2	2	2	12	12	12	14	14
2	3	.15217E+03	24	2	2	0	0	0	0	0	0	0	2	2	2	3	3
3	1	.34775E+03	-22	7	7	2	2	2	2	2	2	2	8	8	8	12	12
3	2	.61475E+02	497	-3	-3	1	1	1	1	1	1	1	22	22	22	27	27
3	3	.15677E+03	20	2	2	-8	-8	-8	-8	-8	-8	-8	5	5	5	13	13
4	1	.34303E+03	-21	7	7	0	0	0	0	0	0	0	10	10	10	14	14
4	2	.61489E+02	497	-3	-3	1	1	1	1	1	1	1	22	22	22	27	27
4	3	.15994E+03	18	1	1	-11	-11	-11	-11	-11	-11	-11	7	7	7	19	19
5	1	.32615E+03	-17	7	7	-3	-3	-3	-3	-3	-3	-3	18	18	18	25	25
5	2	.65560E+02	459	-11	-11	2	2	2	2	2	2	2	44	44	44	49	49
5	3	.16547E+03	14	4	4	-10	-10	-10	-10	-10	-10	-10	29	29	29	43	43
6	1	.28229E+03	-4	6	6	-13	-13	-13	-13	-13	-13	-13	25	25	25	27	27
6	2	.78250E+02	369	3	3	3	3	3	3	3	3	3	3	3	3	3	3
6	3	.19662E+03	-3	3	3	20	20	20	20	20	20	20	74	74	74	79	79
7	1	.30828E+03	-12	5	5	-11	-11	-11	-11	-11	-11	-11	20	20	20	29	29
7	2	.80606E+02	355	-38	-38	18	18	18	18	18	18	18	86	86	86	105	105
7	3	.17128E+03	10	10	10	11	11	11	11	11	11	11	69	69	69	76	76
8A	1	.29895E+03	-9	5	5	-12	-12	-12	-12	-12	-12	-12	21	21	21	29	29
8A	2	.82150E+02	346	-37	-37	20	20	20	20	20	20	20	81	81	81	106	106
8A	3	.18343E+03	3	6	6	16	16	16	16	16	16	16	75	75	75	80	80
8	1	.28853E+03	-6	5	5	-13	-13	-13	-13	-13	-13	-13	24	24	24	28	28
8	2	.76105E+02	382	-15	-15	14	14	14	14	14	14	14	49	49	49	72	72
8	3	.19316E+03	-1	4	4	19	19	19	19	19	19	19	76	76	76	80	80
9	1	.27850E+03	-2	7	7	-14	-14	-14	-14	-14	-14	-14	26	26	26	28	28
9	2	.90400E+02	306	6	6	-4	-4	-4	-4	-4	-4	-4	20	20	20	38	38
9	3	.19756E+03	-4	2	2	20	20	20	20	20	20	20	72	72	72	78	78
10	1	.27057E+03	0	9	9	-24	-24	-24	-24	-24	-24	-24	20	20	20	25	25
10	2	.11406E+03	221	5	5	5	5	5	5	5	5	5	52	52	52	83	83
10	3	.17350E+03	9	9	9	0	0	0	0	0	0	0	49	49	49	62	62
11	1	.25322E+03	6	12	12	-14	-14	-14	-14	-14	-14	-14	16	16	16	22	22
11	2	.11489E+03	219	5	5	5	5	5	5	5	5	5	52	52	52	83	83
11	3	.17074E+03	10	3	3	-33	-33	-33	-33	-33	-33	-33	10	10	10	13	13
12	1	.25203E+03	7	12	12	-12	-12	-12	-12	-12	-12	-12	19	19	19	26	26
12	2	.15152E+03	142	6	6	-5	-5	-5	-5	-5	-5	-5	35	35	35	57	57
12	3	.16930E+03	11	3	3	-31	-31	-31	-31	-31	-31	-31	10	10	10	15	15
12	1	.25333E+03	6	11	11	-22	-22	-22	-22	-22	-22	-22	20	20	20	30	30
13	2	.66594E+02	451	8	8	142	142	142	142	142	142	142	269	269	269	291	291
13	3	.18739E+03	1	7	7	-8	-8	-8	-8	-8	-8	-8	32	32	32	39	39

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 * BM1 MODEL *

EARTHQUAKE NO. 1

*ACCELERATION(STATIC COMPONENT)

NODE NO.	COMP. NO.	ACC(ST) (T.H.)	URS	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
				1	2	3	4	5	6	7	8	9	10	11	12	13	14
14	1	.24774E+03	9	13	13	-8	-8	-8	-8	-8	-8	25	25	25	31	31	31
14	2	.21158E+03	73	7	7	-2	-2	-2	-2	-2	-2	18	18	18	32	32	32
14	3	.17059E+03	10	1	1	-27	-27	-27	-27	-27	-27	11	11	11	18	18	18
15	1	.23496E+03	15	12	12	-9	-9	-9	-9	-9	-9	32	32	32	41	41	41
15	2	.78250E+02	369	3	3	3	3	3	3	3	3	3	3	3	3	3	3
15	3	.20349E+03	-6	3	3	6	6	6	6	6	6	40	40	40	50	50	50
19	1	.23415E+03	15	12	12	-9	-9	-9	-9	-9	-9	32	32	32	41	41	41
19	2	.79570E+02	361	4	4	1	1	1	1	1	1	4	4	4	6	6	6
19	3	.20382E+03	-7	3	3	5	5	5	5	5	5	40	40	40	50	50	50
21	1	.23155E+03	16	12	12	-7	-7	-7	-7	-7	-7	32	32	32	41	41	41
21	2	.80568E+02	355	3	3	0	0	0	0	0	0	4	4	4	11	11	11
21	3	.20404E+03	-7	3	3	4	4	4	4	4	4	40	40	40	50	50	50
23	1	.22103E+03	22	15	15	11	11	11	11	11	11	28	28	28	41	41	41
23	2	.22387E+03	63	10	10	2	2	2	2	2	2	23	23	23	34	34	34
23	3	.16941E+03	11	4	4	-6	-6	-6	-6	-6	-6	58	58	58	72	72	72
25	1	.21600E+03	25	16	16	16	16	16	16	16	16	16	16	16	16	16	16
25	2	.28410E+03	29	8	8	8	8	8	8	8	8	8	8	8	8	8	8
25	3	.15260E+03	24	8	8	8	8	8	8	8	8	8	8	8	8	8	8
27	1	.20347E+03	32	13	13	10	10	10	10	10	10	21	21	21	33	33	33
27	2	.19716E+03	86	7	7	-4	-4	-4	-4	-4	-4	12	12	12	14	14	14
27	3	.19987E+03	-5	-4	-4	-20	-20	-20	-20	-20	-20	16	16	16	19	19	19
29	1	.19260E+03	40	11	11	15	15	15	15	15	15	35	35	35	52	52	52
29	2	.66060E+02	455	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	3	.25477E+03	-25	-9	-9	-13	-13	-13	-13	-13	-13	4	4	4	19	19	19
33	1	.19236E+03	40	11	11	18	18	18	18	18	18	41	41	41	59	59	59
33	2	.38909E+02	843	-16	-16	118	118	118	118	118	118	202	202	202	213	213	213
33	3	.26309E+03	-28	-9	-9	-10	-10	-10	-10	-10	-10	4	4	4	24	24	24
35	1	.19254E+03	40	11	11	19	19	19	19	19	19	42	42	42	60	60	60
35	2	.38075E+02	864	-30	-30	137	137	137	137	137	137	233	233	233	242	242	242
35	3	.26463E+03	-28	-9	-9	-9	-9	-9	-9	-9	-9	3	3	3	25	25	25
37	1	.19213E+03	40	11	11	19	19	19	19	19	19	42	42	42	60	60	60
37	2	.66060E+02	455	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	3	.23792E+03	-20	5	5	21	21	21	21	21	21	35	35	35	52	52	52
16	1	.24940E+03	8	12	12	-5	-5	-5	-5	-5	-5	30	30	30	35	35	35
16	2	.28410E+03	29	8	8	8	8	8	8	8	8	8	8	8	8	8	8
16	3	.18575E+03	1	-6	-6	-18	-18	-18	-18	-18	-18	17	17	17	28	28	28
20	1	.24010E+03	12	16	16	11	11	11	11	11	11	60	60	60	64	64	64
20	2	.44354E+03	-17	8	8	29	29	29	29	29	29	54	54	54	71	71	71
20	3	.19859E+03	-4	-12	-12	6	6	6	6	6	6	43	43	43	61	61	61
22	1	.23636E+03	14	18	18	25	25	25	25	25	25	88	88	88	94	94	94
22	2	.51554E+03	-28	3	3	33	33	33	33	33	33	67	67	67	87	87	87
22	3	.20898E+03	-9	-15	-15	26	26	26	26	26	26	78	78	78	99	99	99

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 * BM1 MODEL *

EARTHQUAKE NO. 1

*ACCELERATION(STATIC COMPONENT)

NODE NO.	COMP. NO.	ACC(ST) (T.H.)	URS	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
				1	2	3	4	5	6	7	8	9	10	11	12	13	14
24	1	.23439E+03	15	21	21	33	33	33	33	33	33	113	113	113	119	119	119
24	2	.49313E+03	-25	2	2	35	35	35	35	35	35	76	76	76	96	96	96
24	3	.21728E+03	-12	-18	-18	38	38	38	38	38	38	110	110	110	131	131	131
26	1	.23385E+03	15	24	24	37	37	37	37	37	37	132	132	132	138	138	138
26	2	.40243E+03	-8	2	2	36	36	36	36	36	36	85	85	85	103	103	103
26	3	.22388E+03	-15	-20	-20	46	46	46	46	46	46	135	135	135	154	154	154
28	1	.23444E+03	15	27	27	38	38	38	38	38	38	145	145	145	151	151	151
28	2	.26956E+03	36	6	6	39	39	39	39	39	39	98	98	98	113	113	113
28	3	.22913E+03	-17	-22	-22	50	50	50	50	50	50	154	154	154	171	171	171
30	1	.23583E+03	14	30	30	37	37	37	37	37	37	152	152	152	158	158	158
30	2	.13019E+03	181	21	21	39	39	39	39	39	39	119	119	119	126	126	126
30	3	.23812E+03	-20	-25	-25	49	49	49	49	49	49	163	163	163	177	177	177
32	1	.24154E+03	11	30	30	33	33	33	33	33	33	150	150	150	157	157	157
32	2	.57680E+02	536	7	7	7	7	7	7	7	7	7	7	7	7	7	7
32	3	.25637E+03	-26	-31	-31	42	42	42	42	42	42	156	156	156	167	167	167
36	1	.24358E+03	11	29	29	31	31	31	31	31	31	147	147	147	154	154	154
36	2	.68659E+02	434	-28	-28	0	0	0	0	0	0	47	47	47	48	48	48
36	3	.25960E+03	-27	-32	-32	39	39	39	39	39	39	153	153	153	164	164	164
38	1	.25524E+03	5	24	24	20	20	20	20	20	20	128	128	128	135	135	135
38	2	.13670E+03	168	-68	-68	4	4	4	4	4	4	88	88	88	90	90	90
38	3	.27291E+03	-30	-35	-35	31	31	31	31	31	31	140	140	140	149	149	149
39	1	.26173E+03	3	21	21	12	12	12	12	12	12	104	104	104	111	111	111
39	2	.20958E+03	75	-52	-52	-2	-2	-2	-2	-2	-2	65	65	65	69	69	69
39	3	.28290E+03	-33	-37	-37	24	24	24	24	24	24	127	127	127	135	135	135
40	1	.25997E+03	4	21	21	9	9	9	9	9	9	79	79	79	83	83	83
40	2	.27664E+03	32	-29	-29	-5	-5	-5	-5	-5	-5	37	37	37	40	40	40
40	3	.28609E+03	-33	-37	-37	21	21	21	21	21	21	118	118	118	124	124	124
41	1	.24769E+03	9	25	25	8	8	8	8	8	8	59	59	59	60	60	60
41	2	.33097E+03	10	-11	-11	-3	-3	-3	-3	-3	-3	14	14	14	16	16	16
41	3	.27983E+03	-32	-36	-36	21	21	21	21	21	21	112	112	112	117	117	117
43	1	.23823E+03	13	28	28	4	4	4	4	4	4	65	65	65	67	67	67
43	2	.36540E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43	3	.26164E+03	-27	-31	-31	24	24	24	24	24	24	110	110	110	114	114	114
44	1	.24048E+03	12	26	26	-3	-3	-3	-3	-3	-3	70	70	70	75	75	75
44	2	.37531E+03	-2	3	3	1	1	1	1	1	1	7	7	7	8	8	8
44	3	.24053E+03	-21	-25	-25	30	30	30	30	30	30	113	113	113	117	117	117
45	1	.26030E+03	3	15	15	-12	-12	-12	-12	-12	-12	60	60	60	69	69	69
45	2	.37599E+03	-2	4	4	1	1	1	1	1	1	7	7	7	10	10	10
45	3	.21528E+03	-12	-15	-15	41	41	41	41	41	41	121	121	121	127	127	127
46	1	.27950E+03	-3	6	6	-14	-14	-14	-14	-14	-14	51	51	51	67	67	67
46	2	.37152E+03	-1	3	3	1	1	1	1	1	1	5	5	5	7	7	7
46	3	.19868E+03	-4	-7	-7	50	50	50	50	50	50	134	134	134	140	140	140

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 * BM1 MODEL *

EARTHQUAKE NO. 1

*ACCELERATION(STATIC COMPONENT)

NODE NO.	COMP. NO.	ACC(ST) (T.H.)	URS	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
				1	2	3	4	5	6	7	8	9	10	11	12	13	14
47	1	.29526E+03	-8	0	0	-10	-10	-10	-10	-10	-10	43	43	43	71	71	71
47	2	.36601E+03	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2
47	3	.19156E+03	-1	-2	-2	56	56	56	56	56	56	146	146	146	154	154	154
48	1	.28671E+03	-5	0	0	-9	-9	-9	-9	-9	-9	41	41	41	70	70	70
48	2	.36540E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48	3	.19377E+03	-2	-4	-4	55	55	55	55	55	55	143	143	143	151	151	151
49	1	.25866E+03	4	3	3	-8	-8	-8	-8	-8	-8	33	33	33	57	57	57
49	2	.36539E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
49	3	.20264E+03	-6	-10	-10	43	42	43	43	43	43	125	125	125	130	130	130
50	1	.23455E+03	15	7	7	-1	-1	-1	-1	-1	-1	28	28	28	40	40	40
50	2	.36538E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	3	.21058E+03	-10	-15	-15	35	35	35	35	35	35	110	110	110	113	113	113
51	1	.22703E+03	19	8	8	2	2	2	2	2	2	28	28	28	35	35	35
51	2	.35203E+03	4	0	0	0	0	0	0	0	0	1	1	1	4	4	4
51	3	.21166E+03	-10	-16	-16	29	29	29	29	29	29	100	100	100	103	103	103
52	1	.22268E+03	21	6	6	7	7	7	7	7	7	22	22	22	28	28	28
52	2	.25805E+03	42	2	2	-3	-8	-8	-8	-8	-8	11	11	11	30	30	30
52	3	.19825E+03	-4	-16	-16	6	6	6	6	6	6	62	62	62	69	69	69
53	1	.21677E+03	24	5	5	12	12	12	12	12	12	20	20	20	25	25	25
53	2	.16354E+03	124	4	4	-10	-10	-10	-10	-10	-10	28	28	28	55	55	55
53	3	.18301E+03	3	-12	-12	-2	-2	-2	-2	-2	-2	40	40	40	60	60	60
54	1	.21233E+03	27	5	5	16	16	16	16	16	16	26	26	26	30	30	30
54	2	.79718E+02	360	12	12	4	4	4	4	4	4	20	20	20	38	38	38
54	3	.17318E+03	9	-7	-7	6	6	6	6	6	6	43	43	43	68	68	68
55	1	.21740E+03	24	6	6	6	6	6	6	6	6	6	6	6	6	6	6
55	2	.78250E+02	369	3	3	3	3	3	3	3	3	3	3	3	3	3	3
55	3	.17224E+03	9	-7	-7	6	6	6	6	6	6	36	36	36	62	62	62
56	1	.26679E+03	1	6	6	-23	-23	-23	-23	-23	-23	8	8	8	13	13	13
56	2	.78212E+02	369	3	3	3	3	3	3	3	3	3	3	3	3	3	3
56	3	.16469E+03	14	-5	-5	0	0	0	0	0	0	12	12	12	35	35	35
57	1	.31753E+03	-14	6	6	-11	-11	-11	-11	-11	-11	9	9	9	16	16	16
57	2	.78174E+02	369	3	3	3	3	3	3	3	3	3	3	3	3	3	3
57	3	.15462E+03	22	0	0	0	0	0	0	0	0	0	0	0	8	8	8
58	1	.33188E+03	-18	7	7	-5	-5	-5	-5	-5	-5	9	9	9	14	14	14
58	2	.72356E+02	407	7	7	-3	-3	-3	-3	-3	-3	8	8	8	10	10	10
58	3	.15212E+03	24	1	1	1	1	1	1	1	1	1	1	1	1	1	1
59	1	.35051E+03	-22	7	7	2	2	2	2	2	2	7	7	7	9	9	9
59	2	.60168E+02	510	11	11	-16	-16	-16	-16	-16	-16	12	12	12	13	13	13
59	3	.15211E+03	24	1	1	1	1	1	1	1	1	1	1	1	1	1	1
60	1	.35980E+03	-24	7	7	7	7	7	7	7	7	7	7	7	7	7	7
60	2	.57680E+02	536	7	7	7	7	7	7	7	7	7	7	7	7	7	7
60	3	.15210E+03	24	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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 * B.M.1 MODEL *

RESULTANT PIPE MOMENT RESPONSES FOR EARTHQUAKE NO. 1

J-END ELEM. NO.	T.H.	(PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)											
		METHOD 1		METHOD 2		METHOD 3		METHOD 4		METHOD 5			
		F=1.0	MAX. F	SRSS	ABS	SRSS	ABS	SRSS	ABS	SRSS	ABS		
1	1.9471E+03	-61	2.6	359	1227	32	117	342	639	458	763		
2	1.3203E+03	-58	2.4	387	1238	19	89	340	623	526	830		
3	1.1532E+03	-58	2.4	453	1576	9	71	380	691	598	959		
4	1.0935E+03	-65	2.9	519	1872	12	69	382	706	688	1115		
5	6.6770E+03	-49	2.0	103	437	9	42	104	229	124	231		
6	9.8638E+03	-50	2.0	106	432	10	43	105	231	118	220		
7	1.5384E+04	-50	2.0	111	433	10	43	107	235	119	217		
8	5.1278E+03	-46	1.9	184	745	18	70	183	378	212	392		
9	1.0305E+04	-53	2.2	80	421	10	28	86	192	72	159		
10	1.7607E+04	-55	2.2	129	554	21	56	130	274	133	243		
11	6.6134E+03	-49	2.0	85	456	-7	20	88	212	107	201		
12	6.0610E+03	-51	2.1	196	750	18	58	179	388	89	189		
13	5.9205E+03	-51	2.1	133	587	6	34	114	261	82	180		
14	5.1800E+03	-52	2.1	72	298	0	11	66	160	-28	8		
15	1.5296E+04	-51	2.1	56	187	0	6	54	123	-77	-65		
16	5.4739E+03	-52	2.1	64	228	0	5	56	124	-52	-32		
17	5.3872E+03	-47	1.9	139	432	1	20	73	162	-41	-10		
18	4.8402E+03	-47	1.9	143	439	2	20	74	165	-41	-10		
19	4.5683E+03	-47	1.9	143	440	2	20	74	165	-41	-10		
20	7.6679E-10	-52	2.1	129	554	18	70	86	192	212	392		
21	1.4127E+04	-53	2.2	75	283	5	15	71	140	85	153		
22	3.3152E+03	-52	2.1	53	188	2	11	54	116	35	81		
23	2.5525E+03	-52	2.1	54	191	1	11	55	117	37	85		
24	1.7925E+03	-53	2.1	57	210	0	10	58	126	42	93		
25	1.0411E+03	-53	2.2	66	263	-4	7	65	149	55	115		
26	3.6628E+02	-57	2.4	107	510	-13	4	93	235	92	202		
27	5.8708E+02	-50	2.0	48	275	24	28	37	121	-1	54		
28	1.2606E+03	-53	2.1	37	185	11	15	34	103	3	41		
29	4.0791E+03	-52	2.1	52	186	3	12	53	115	33	79		
30	1.2092E+03	-53	2.2	35	181	9	13	32	100	2	40		
31	8.9720E+02	-53	2.1	34	173	6	10	34	100	4	43		
32	5.7560E+02	-51	2.1	44	221	0	6	40	103	12	57		
33	2.9486E+02	-45	1.8	131	462	-2	18	75	189	52	131		
34	2.5535E+02	-43	1.8	246	683	53	84	113	254	88	200		
35	5.2222E+02	-51	2.1	145	497	41	57	64	181	38	109		
36	4.2550E+02	-52	2.1	114	429	30	42	50	159	23	88		
37	3.3513E+02	-52	2.1	75	414	15	25	41	151	20	104		
38	2.5783E+02	-50	2.0	62	454	4	17	67	210	62	188		
39	2.4521E+02	-51	2.1	131	665	12	31	121	307	127	290		
40	2.3537E+02	-51	2.1	159	719	28	51	140	340	150	324		

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 * B.M.1 MODEL *

RESULTANT PIPE MOMENT RESPONSES FOR EARTHQUAKE NO. 1

J-END ELEM. NO.	T.H.	(PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)									
		METHOD 1		METHOD 2		METHOD 3		METHOD 4		METHOD 5	
		F=1.0	MAX. F	SRSS	ABS	SRSS	ABS	SRSS	ABS	SRSS	ABS
41	2.0435E+02	-46	1.9	198	855	69	107	178	402	201	417
42	2.2059E+02	-42	1.7	196	893	82	131	184	411	212	430
43	2.0654E+02	-42	1.7	208	899	87	14	192	407	216	420
44	1.6029E+02	-57	2.4	260	988	37	105	222	481	197	403
45	2.9055E+02	-70	3.4	182	583	-15	13	178	386	177	385
46	4.8078E+02	-63	2.7	148	506	-10	28	157	341	170	367
47	5.0318E+02	-63	2.8	149	517	-8	30	153	347	172	372
48	2.3541E+02	-58	2.4	217	779	15	52	226	446	247	481
49	2.5663E+02	-67	3.1	254	858	22	55	297	542	289	553
50	2.8174E+02	-65	2.9	249	675	4	15	255	429	250	441
51	7.6095E+02	-54	2.2	167	361	5	9	162	275	167	290
52	1.4298E+03	-56	2.3	168	337	9	15	167	284	169	294
53	5.9585E+03	-48	2.0	147	611	7	37	132	290	71	162
54	5.6676E+03	-65	2.9	134	589	-7	32	126	271	69	134
55	1.3336E+04	-50	2.0	109	432	10	43	106	234	118	217

 * B.M.1 MODEL *

SUPPORT FORCE RESPONSES FOR EARTHQUAKE NO. 1

SUPP NO.	T.H.	(PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)									
		METHOD 1		METHOD 2		METHOD 3		METHOD 4		METHOD 5	
		F=1.0	MAX. F	SRSS	ABS	SRSS	ABS	SRSS	ABS	SRSS	ABS
1	1.0996E+02	-60	2.5	252	1113	1	30	144	311	312	536
2	2.0019E+02	-50	2.0	114	388	7	32	95	212	120	197
3	1.6210E+02	-55	2.3	209	857	35	65	171	368	224	396
4	1.8803E+03	-39	1.6	241	1028	-24	28	225	454	316	582
5	1.9795E+03	-56	2.3	221	800	28	119	262	515	198	375
6	2.8078E+03	-50	2.0	217	884	33	99	226	462	257	471
7	5.6698E+02	-56	2.3	166	645	31	76	166	338	184	320
8	1.8330E+03	-51	2.1	88	332	7	28	81	180	89	154
9	1.9277E+02	-55	2.2	172	690	10	32	118	255	205	361
10	1.6575E+03	-51	2.1	80	310	9	31	81	182	73	133
11	8.5021E+02	-65	2.9	299	934	-1	55	292	552	-11	25
12	1.3084E+02	-54	2.2	213	898	20	65	122	293	257	434
13	8.8064E+01	-42	1.7	250	749	-1	42	159	353	-90	-86
14	2.6317E+02	-52	2.1	36	135	-2	3	37	83	-74	-62
15	2.0548E+03	-64	2.8	308	934	1	56	301	557	-20	10
16	3.5590E+02	-52	2.1	40	158	0	4	38	87	-64	-43
17	1.0162E+03	-63	2.7	309	946	5	54	302	560	-22	6
18	2.5254E+03	-57	2.4	298	908	14	85	300	556	-7	25
19	4.9351E+01	-52	2.1	44	183	8	15	43	110	19	56
20	2.8986E+01	-47	1.9	322	810	1	40	145	284	-96	-94
21	5.1009E+01	-51	2.0	38	228	-4	6	35	130	-37	-4
22	6.4371E+00	-51	2.1	103	687	9	62	94	234	111	250
23	1.6824E+01	-56	2.3	97	355	33	37	43	144	8	58
24	5.8624E+00	-71	3.5	296	922	-61	-54	107	288	158	368
25	1.8660E+01	-73	3.8	200	514	1	36	211	407	204	401
26	3.9075E+01	-57	2.3	183	427	-7	1	186	325	186	341
27	1.9451E+01	-67	3.1	182	454	-5	32	194	376	193	388
28	4.1444E+01	-58	2.4	156	335	8	13	157	270	156	274
29	4.4143E+00	-46	1.9	137	718	7	40	160	360	155	342
30	1.4274E+03	-56	2.3	133	246	2	3	133	222	133	224
31	5.4498E+02	-69	3.2	210	537	-10	22	198	393	218	437
32	2.6788E+02	-67	3.0	233	495	0	3	243	390	233	395

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 * B.M.2 MODEL *

DISPLACEMENT COMPONENT RESPONSES FOR EARTHQUAKE 1

(PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)

NODE	NO.	T.H.	METHOD 1		METHOD 2		METHOD 3		METHOD 4		METHOD 5	
			F=1.0	MAX. F	SRSS	ABS	SRSS	ABS	SRSS	ABS	SRSS	ABS
1	X	4.3700E-01	-56	2.3	0	0	0	0	0	0	0	0
1	Y	2.9100E-01	-56	2.3	0	0	0	0	0	0	0	0
1	Z	4.3700E-01	-56	2.3	0	0	0	0	0	0	0	0
2	X	4.3689E-01	-56	2.3	0	3	0	0	0	0	0	0
2	Y	2.9181E-01	-56	2.3	-1	10	0	0	0	0	0	0
2	Z	4.3696E-01	-56	2.3	0	3	0	0	0	0	0	0
3	X	4.4999E-01	-55	2.3	-8	23	-1	0	0	3	-8	7
3	Y	2.9158E-01	-56	2.3	-4	27	0	0	0	0	-4	9
3	Z	4.5083E-01	-55	2.3	-9	19	-1	0	0	2	-9	6
4	X	4.6011E-01	-55	2.3	-12	33	-2	0	0	5	-11	11
4	Y	2.9159E-01	-56	2.3	-4	27	0	0	0	0	-4	9
4	Z	4.6157E-01	-55	2.3	-13	27	-2	0	0	3	-12	10
5	X	4.9017E-01	-55	2.2	-18	68	-5	0	1	10	-17	25
5	Y	2.9245E-01	-55	2.3	-11	50	0	0	0	1	-10	18
5	Z	4.9088E-01	-55	2.2	-20	56	-5	0	0	9	-18	22
6	X	4.3554E-01	-56	2.3	-4	123	0	0	0	1	-4	45
6	Y	2.9100E-01	-56	2.3	0	0	0	0	0	0	0	0
6	Z	4.3841E-01	-56	2.3	-8	114	0	0	-1	0	-7	39
7	X	4.8556E-01	-55	2.2	-17	101	-4	1	2	10	-16	34
7	Y	3.0021E-01	-55	2.3	-17	88	-2	0	-2	7	-17	33
7	Z	4.8656E-01	-55	2.3	-20	85	-5	0	0	8	-18	29
8A	X	4.7433E-01	-55	2.3	-13	113	-3	1	1	8	-12	37
8A	Y	3.0080E-01	-55	2.3	-10	80	-2	0	-2	8	-10	32
8A	Z	4.7578E-01	-55	2.3	-16	98	-4	0	0	6	-15	33
8	X	4.5319E-01	-55	2.3	-7	119	-1	0	0	3	-7	41
8	Y	2.9681E-01	-55	2.3	-3	42	-1	0	-1	5	-3	17
8	Z	4.5538E-01	-55	2.3	-11	108	-2	0	-1	2	-11	36
9	X	4.2230E-01	-56	2.3	-2	129	1	2	-1	1	-2	49
9	Y	2.8584E-01	-56	2.3	0	37	1	3	1	7	0	16
9	Z	4.2562E-01	-56	2.3	-6	122	0	2	-1	1	-6	43
10	X	3.4867E-01	-57	2.3	-9	148	11	22	-1	18	-1	69
10	Y	2.7784E-01	-56	2.3	4	114	4	8	3	19	4	49
10	Z	3.4652E-01	-57	2.3	-10	164	13	25	1	21	-3	66
11	X	2.3041E-01	-54	2.2	11	216	47	82	33	93	71	111
11	Y	2.7748E-01	-56	2.3	4	114	4	8	4	20	4	49
11	Z	2.3189E-01	-54	2.2	8	228	46	79	29	87	69	113
12	X	2.3182E-01	-54	2.2	16	215	48	84	36	96	71	104
12	Y	2.9241E-01	-55	2.3	-14	95	0	0	0	19	-14	30
12	Z	2.2925E-01	-54	2.2	15	230	49	84	34	95	74	113
13	X	2.1323E-01	-54	2.2	-8	195	29	54	-2	64	97	126
13	Y	1.2680E-01	-54	2.2	126	509	94	171	97	181	167	302
13	Z	2.4990E-01	-55	2.2	-12	148	17	30	-10	27	54	83

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 * B.M.2 MODEL *

DISPLACEMENT COMPONENT RESPONSES FOR EARTHQUAKE 1

NODE	NO.	T.H.	(PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)									
			METHOD 1		METHOD 2		METHOD 3		METHOD 4		METHOD 5	
			F=1.0	MAX. F	SRSS	ABS	SRSS	ABS	SRSS	ABS	SRSS	ABS
14	X	2.3117E-01	-54	2.2	26	212	50	87	40	100	75	97
14	Y	2.9338E-01	-55	2.3	-22	67	0	0	0	17	-23	14
14	Z	2.2924E-01	-54	2.2	24	223	50	87	38	99	78	105
15	X	2.3168E-01	-54	2.2	-6	104	4	5	-6	10	87	90
15	Y	1.5600E-01	-54	2.2	3	3	3	3	3	3	86	86
15	Z	2.3284E-01	-54	2.2	-1	87	3	4	-1	7	87	88
19	X	2.3205E-01	-54	2.2	-5	100	3	4	-5	9	87	90
19	Y	1.5704E-01	-54	2.2	4	22	1	4	5	11	89	96
19	Z	2.3239E-01	-54	2.2	-2	90	3	3	-1	10	88	90
21	X	2.3295E-01	-54	2.2	-4	100	3	3	-3	10	87	90
21	Y	1.5935E-01	-54	2.2	5	48	-1	4	6	18	91	107
21	Z	2.3202E-01	-54	2.2	-3	92	2	3	-1	11	88	91
23	X	2.3655E-01	-54	2.2	5	73	1	4	6	15	85	89
23	Y	1.6791E-01	-55	2.2	-2	161	-10	3	10	39	97	141
23	Z	2.2667E-01	-54	2.2	-10	128	0	2	0	33	97	104
25	X	2.3400E-01	-54	2.2	3	3	3	3	3	3	86	86
25	Y	1.5600E-01	-54	2.2	3	3	3	3	3	3	86	86
25	Z	2.3400E-01	-54	2.2	3	3	3	3	3	3	86	86
27	X	2.3348E-01	-54	2.2	-5	48	4	4	2	5	86	87
27	Y	1.5306E-01	-54	2.2	-17	53	7	11	3	11	85	95
27	Z	2.3508E-01	-54	2.2	-8	87	4	4	4	9	85	86
29	X	2.3400E-01	-54	2.2	0	82	3	3	3	3	86	86
29	Y	1.5600E-01	-54	2.2	3	3	3	3	3	3	86	86
29	Z	2.3400E-01	-54	2.2	7	99	3	3	3	3	86	86
33	X	2.3412E-01	-54	2.2	3	94	3	3	4	4	86	86
33	Y	1.5749E-01	-54	2.2	13	52	1	3	4	8	87	95
33	Z	2.3376E-01	-54	2.2	11	107	3	3	3	4	87	87
35	X	2.3414E-01	-54	2.2	3	96	3	3	4	4	86	86
35	Y	1.5748E-01	-54	2.2	13	55	1	3	4	8	87	94
35	Z	2.3368E-01	-54	2.2	10	107	3	3	3	5	87	87
37	X	2.3414E-01	-54	2.2	3	96	3	3	4	4	86	86
37	Y	1.5600E-01	-54	2.2	3	3	3	3	3	3	86	86
37	Z	2.3394E-01	-54	2.2	21	130	3	3	3	4	86	86
16	X	2.2859E-01	-54	2.2	44	225	54	92	46	107	88	97
16	Y	2.9100E-01	-56	2.3	0	0	0	0	0	0	0	0
16	Z	2.3121E-01	-54	2.2	42	219	51	87	40	100	88	97
20	X	2.2348E-01	-54	2.2	92	362	62	105	60	125	122	163
20	Y	2.7618E-01	-56	2.3	116	356	2	3	6	52	118	216
20	Z	2.3170E-01	-55	2.2	86	354	54	96	50	110	115	167
22	X	2.2168E-01	-54	2.2	129	489	65	112	66	137	154	230
22	Y	2.5545E-01	-57	2.3	192	574	3	6	13	80	201	352
22	Z	2.2893E-01	-55	2.2	121	477	58	103	56	117	142	225

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 * B.M.2 MODEL *

DISPLACEMENT COMPONENT RESPONSES FOR EARTHQUAKE 1

NODE	NO.	T.H.	(PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)									
			METHOD 1		METHOD 2		METHOD 3		METHOD 4		METHOD 5	
			F=1.0	MAX. F	SRSS	ABS	SRSS	ABS	SRSS	ABS	SRSS	ABS
24	X	2.2229E-01	-54	2.2	149	573	65	113	67	142	178	277
24	Y	2.3107E-01	-57	2.4	218	673	4	7	12	87	243	418
24	Z	2.2379E-01	-55	2.3	146	575	60	109	58	122	166	271
26	X	2.2443E-01	-54	2.2	156	622	62	109	63	141	194	306
26	Y	2.0528E-01	-57	2.4	198	655	4	7	2	76	245	418
26	Z	2.1715E-01	-55	2.3	161	645	62	113	58	126	186	306
28	X	2.2720E-01	-54	2.2	150	636	58	101	56	137	201	319
28	Y	1.8334E-01	-56	2.3	133	519	3	6	-10	53	211	353
28	Z	2.0988E-01	-55	2.3	166	688	63	116	54	127	202	330
30	X	2.2972E-01	-54	2.2	138	623	52	93	49	131	203	321
30	Y	1.5649E-01	-56	2.3	40	272	2	3	-14	24	151	232
30	Z	2.0287E-01	-55	2.3	163	704	62	116	49	126	212	344
32	X	2.3110E-01	-54	2.2	123	607	47	85	44	126	202	316
32	Y	1.4300E-01	-55	2.2	0	0	0	0	0	0	103	103
32	Z	1.9732E-01	-55	2.2	154	698	61	115	44	123	216	346
36	X	2.3181E-01	-54	2.2	116	592	45	82	41	122	200	311
36	Y	1.4022E-01	-55	2.2	8	84	0	0	6	18	92	115
36	Z	1.9683E-01	-55	2.2	149	689	60	113	41	120	216	344
38	X	2.3447E-01	-55	2.2	76	490	35	64	28	97	187	279
38	Y	1.3016E-01	-54	2.2	49	264	0	1	26	65	76	135
38	Z	1.9562E-01	-55	2.2	130	647	55	106	32	109	210	330
39	X	2.3344E-01	-55	2.2	37	361	24	46	19	69	169	235
39	Y	1.2907E-01	-54	2.2	58	319	-1	2	29	74	74	139
39	Z	1.9607E-01	-55	2.2	107	585	49	96	23	96	199	304
40	X	2.2883E-01	-55	2.2	9	221	14	28	15	39	147	183
40	Y	1.3366E-01	-54	2.2	37	249	-1	2	20	53	77	128
40	Z	1.9814E-01	-55	2.2	83	511	41	82	16	81	183	272
41	X	2.2100E-01	-55	2.2	0	109	3	6	12	23	121	126
41	Y	1.3973E-01	-55	2.2	14	124	0	1	8	23	88	114
41	Z	2.0166E-01	-55	2.2	63	437	32	66	9	66	164	236
43	X	2.1033E-01	-55	2.2	3	192	-8	0	5	32	87	115
43	Y	1.4300E-01	-55	2.2	0	0	0	0	0	0	103	103
43	Z	2.0642E-01	-55	2.2	46	371	24	48	3	51	143	201
44	X	2.0109E-01	-55	2.2	5	237	-17	1	-3	33	58	104
44	Y	1.4200E-01	-55	2.2	-10	45	2	5	0	5	111	120
44	Z	2.1057E-01	-55	2.2	37	332	18	35	-1	43	129	179
45	X	1.8963E-01	-54	2.2	4	265	-26	1	-14	28	30	91
45	Y	1.3987E-01	-55	2.2	-20	62	3	8	0	7	115	127
45	Z	2.1573E-01	-55	2.2	29	306	12	23	-4	39	116	162
46	X	1.7495E-01	-54	2.2	4	280	-33	1	-25	21	10	82
46	Y	1.3895E-01	-55	2.2	-19	50	3	8	1	7	113	123
46	Z	2.2233E-01	-55	2.2	24	291	7	14	-6	39	106	152

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 * B.M.2 MODEL *

DISPLACEMENT COMPONENT RESPONSES FOR EARTHQUAKE 1

NODE	NO.	T.H.	(PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)									
			METHOD 1		METHOD 2		METHOD 3		METHOD 4		METHOD 5	
			F=1.0	MAX. F	SRSS	ABS	SRSS	ABS	SRSS	ABS	SRSS	ABS
47	X	1.5606E-01	-54	2.2	6	290	-39	0	-31	17	5	89
47	Y	1.4159E-01	-55	2.2	-2	11	1	3	1	2	105	107
47	Z	2.3084E-01	-55	2.2	20	281	4	9	-7	40	100	146
48	X	1.4739E-01	-54	2.2	0	262	-39	0	-33	15	4	87
48	Y	1.4300E-01	-55	2.2	0	0	0	0	0	0	103	103
48	Z	2.3283E-01	-55	2.2	20	284	2	3	-8	39	96	144
49	X	1.2959E-01	-53	2.2	-12	206	-37	0	-36	12	3	81
49	Y	1.4299E-01	-55	2.2	0	0	0	0	0	0	103	103
49	Z	2.3110E-01	-55	2.2	19	291	-1	5	-12	35	88	140
50	X	1.1023E-01	-53	2.1	-17	182	-32	0	-34	15	8	83
50	Y	1.4299E-01	-55	2.2	0	0	0	0	0	0	103	103
50	Z	2.2857E-01	-55	2.2	18	295	-5	1	-15	32	79	134
51	X	1.0219E-01	-52	2.1	-14	195	-29	0	-32	19	11	87
51	Y	1.3743E-01	-55	2.2	0	15	1	1	0	1	102	108
51	Z	2.2070E-01	-55	2.2	17	296	-5	1	-17	30	76	132
52	X	8.6593E-02	-52	2.1	-16	161	-27	0	-30	14	2	74
52	Y	9.9068E-02	-54	2.2	-7	80	3	6	-10	6	86	125
52	Z	1.6960E-01	-54	2.2	11	298	-1	0	-22	26	70	136
53	X	7.0777E-02	-50	2.0	-13	102	-20	0	-23	8	-5	50
53	Y	6.3453E-02	-52	2.1	-16	110	5	10	-24	10	47	116
53	Z	1.1781E-01	-53	2.2	4	290	5	9	-27	24	58	148
54	X	5.8705E-02	-49	2.0	1	27	-6	0	-6	1	2	23
54	Y	3.7153E-02	-49	2.0	-5	35	2	4	-7	3	-3	27
54	Z	7.1751E-02	-51	2.0	17	284	16	31	-21	24	50	173
55	X	5.3000E-02	-49	2.0	0	0	0	0	0	0	0	0
55	Y	3.5000E-02	-48	1.9	0	0	0	0	0	0	0	0
55	Z	6.4773E-02	-50	2.0	18	255	15	29	-17	21	40	156
56	X	5.1481E-02	-48	2.0	-20	62	5	17	2	19	-17	37
56	Y	3.4993E-02	-48	1.9	0	0	0	0	0	0	0	0
56	Z	5.9015E-02	-49	2.0	3	151	7	14	-12	11	11	89
57	X	5.3276E-02	-49	2.0	-19	104	3	24	0	26	-13	55
57	Y	3.4987E-02	-48	1.9	0	0	0	0	0	0	0	0
57	Z	5.3757E-02	-49	2.0	-1	27	0	1	-2	1	-1	15
58	X	5.2780E-02	-49	2.0	-14	90	3	21	0	23	-10	49
58	Y	3.5492E-02	-48	1.9	-14	11	-1	1	-1	2	-14	6
58	Z	5.3014E-02	-49	2.0	0	0	0	0	0	0	0	0
59	X	5.2264E-02	-48	2.0	-5	24	2	7	1	7	-5	15
59	Y	3.5471E-02	-48	1.9	-23	10	-1	1	-1	2	-23	6
59	Z	5.3007E-02	-49	2.0	0	0	0	0	0	0	0	0
60	X	5.3000E-02	-49	2.0	0	0	0	0	0	0	0	0
60	Y	3.5000E-02	-48	1.9	0	0	0	0	0	0	0	0
60	Z	5.3000E-02	-49	2.0	0	0	0	0	0	0	0	0

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* BM2 MODEL *
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EARTHQUAKE NO. 1

*ACCELERATION (STATIC COMPONENT)

11-44

NODE NO.	COMP. NO.	ACC (ST) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	.66662E+03	15	15	15	15	15	15	15	15	15	15	15	15	15	15
1	2	.44464E+03	4	4	4	4	4	4	4	4	4	4	4	4	4	4
1	3	.66662E+03	15	15	15	15	15	15	15	15	15	15	15	15	15	15
2	1	.66624E+03	16	16	16	16	16	16	16	16	16	16	16	16	16	16
2	2	.44573E+03	4	4	4	4	4	4	4	4	4	4	4	4	4	4
2	3	.66634E+03	15	15	15	15	15	15	15	15	15	15	15	15	15	15
3	1	.69526E+03	13	13	15	15	15	15	15	15	17	17	17	17	17	17
3	2	.44560E+03	3	3	3	3	3	3	3	3	4	4	4	5	5	5
3	3	.69561E+03	12	12	14	14	14	14	14	14	15	16	16	16	16	16
4	1	.71789E+03	10	10	14	14	14	14	14	14	14	17	17	18	18	18
4	2	.44561E+03	3	3	3	3	3	3	3	3	4	4	4	5	5	5
4	3	.71850E+03	10	10	13	13	13	13	13	13	13	15	15	15	17	17
5	1	.78366E+03	5	5	12	12	12	12	12	12	19	19	19	21	21	21
5	2	.44690E+03	3	3	3	3	3	3	3	3	3	3	3	5	5	5
5	3	.78206E+03	5	5	11	11	11	11	11	11	11	17	17	20	20	20
6	1	.66519E+03	15	15	14	14	14	14	14	14	15	15	15	17	17	17
6	2	.44464E+03	4	4	4	4	4	4	4	4	4	4	4	4	4	4
6	3	.66800E+03	15	15	14	14	14	14	14	14	16	16	16	16	16	16
7	1	.77305E+03	6	6	13	13	13	13	13	13	20	20	20	22	22	22
7	2	.45685E+03	1	1	2	2	2	2	2	2	3	3	3	13	13	13
7	3	.77197E+03	5	5	11	11	11	11	11	11	16	16	16	19	19	19
8A	1	.74864E+03	8	8	13	13	13	13	13	13	13	19	19	21	21	21
8A	2	.45745E+03	1	1	2	2	2	2	2	2	4	4	4	14	14	14
8A	3	.74848E+03	7	7	11	11	11	11	11	11	15	15	15	18	18	18
8	1	.70309E+03	11	11	14	14	14	14	14	14	14	16	16	18	18	18
8	2	.45233E+03	2	2	3	3	3	3	3	3	3	3	3	10	10	10
8	3	.70444E+03	11	11	13	13	13	13	13	13	14	14	14	16	16	16
9	1	.63682E+02	18	18	15	15	15	15	15	15	18	18	18	18	18	18
9	2	.43800E+03	5	5	5	5	5	5	5	5	6	6	6	12	12	12
9	3	.64056E+03	18	18	15	15	15	15	15	15	18	18	18	19	19	19
10	1	.47297E+03	44	44	28	28	28	28	28	28	50	50	50	52	52	52
10	2	.42743E+03	8	8	7	7	7	7	7	7	7	10	10	24	24	24
10	3	.47148E+03	45	45	31	31	31	31	31	31	53	53	53	55	55	55
11	1	.34068E+03	73	73	59	59	59	59	59	59	59	126	126	126	127	127
11	2	.42698E+03	8	8	7	7	7	7	7	7	10	10	10	25	25	25
11	3	.33480E+03	76	76	57	57	57	57	57	57	123	123	123	124	124	124
12	1	.33792E+02	77	77	65	65	65	65	65	65	132	132	132	132	132	132
12	2	.46219E+03	0	0	1	1	1	1	1	1	3	3	3	21	21	21
12	3	.33208E+03	79	79	63	63	63	63	63	63	131	131	131	131	131	131
13	1	.32992E+03	44	44	11	11	11	11	11	11	64	64	64	80	80	80
13	2	.23289E+03	77	77	84	84	84	84	84	84	84	152	152	159	159	159
13	3	.36325E+03	41	41	5	5	5	5	5	5	50	50	50	53	53	53

 * BM2 MODEL *

EARTHQUAKE NO. 1

*ACCELERATION(STATIC COMPONENT)

NODE NO.	COMP. NO.	ACC(ST) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
14	1	.33539E+03	81	81	71	71	71	71	71	71	139	139	139	139	139	139
14	2	.46425E+03	0	0	1	1	1	1	1	1	2	2	2	19	19	19
14	3	.33177E+03	81	81	68	68	68	68	68	68	137	137	137	137	137	137
15	1	.34850E+03	19	15	8	8	8	8	8	8	21	21	21	24	24	24
15	2	.25138E+03	11	11	11	11	11	11	11	11	11	11	11	11	11	11
15	3	.36274E+03	15	15	10	10	10	10	10	10	16	16	16	18	18	18
19	1	.34980E+03	18	18	9	9	9	9	9	9	21	21	21	24	24	24
19	2	.25160E+03	10	10	12	12	12	12	12	12	14	14	14	15	15	15
19	3	.36146E+03	15	15	10	10	10	10	10	10	17	17	17	20	20	20
21	1	.35422E+03	17	17	10	10	10	10	10	10	19	19	19	23	23	23
21	2	.25208E+03	9	9	14	14	14	14	14	14	19	19	19	24	24	24
21	3	.35992E+03	15	15	11	11	11	11	11	11	18	18	18	21	21	21
23	1	.37729E+03	11	11	15	15	15	15	15	15	19	19	19	22	22	22
23	2	.25402E+03	4	4	25	25	25	25	25	25	44	44	44	56	56	56
23	3	.34417E+03	13	13	17	17	17	17	17	17	44	44	44	47	47	47
25	1	.37688E+03	12	12	12	12	12	12	12	12	12	12	12	12	12	12
25	2	.25138E+03	11	11	11	11	11	11	11	11	11	11	11	11	11	11
25	3	.37688E+03	12	12	12	12	12	12	12	12	12	12	12	12	12	12
27	1	.37488E+03	13	13	12	12	12	12	12	12	13	13	13	14	14	14
27	2	.25076E+03	13	13	9	9	9	9	9	9	13	13	13	17	17	17
27	3	.38103E+03	12	12	12	12	12	12	12	12	15	15	15	16	16	16
29	1	.37689E+03	12	12	12	12	12	12	12	12	12	12	12	12	12	12
29	2	.25138E+03	11	11	11	11	11	11	11	11	11	11	11	11	11	11
29	3	.37689E+03	12	12	12	12	12	12	12	12	12	12	12	12	12	12
33	1	.37735E+03	12	12	12	12	12	12	12	12	13	13	13	13	13	13
33	2	.25168E+03	10	10	12	12	12	12	12	12	15	15	15	17	17	17
33	3	.37594E+03	12	12	12	12	12	12	12	12	13	13	13	13	13	13
35	1	.37741E+03	12	12	12	12	12	12	12	12	13	13	13	13	13	13
35	2	.25168E+03	10	10	12	12	12	12	12	12	15	15	15	17	17	17
35	3	.37566E+03	12	12	12	12	12	12	12	12	13	13	13	14	14	14
37	1	.37742E+03	12	12	12	12	12	12	12	12	13	13	13	13	13	13
37	2	.25138E+03	11	11	11	11	11	11	11	11	11	11	11	11	11	11
37	3	.37665E+03	12	12	12	12	12	12	12	12	12	12	12	13	13	13
16	1	.32614E+03	87	87	79	79	79	79	79	79	149	149	149	149	149	149
16	2	.44464E+03	4	4	4	4	4	4	4	4	4	4	4	4	4	4
16	3	.32605E+03	87	86	75	75	75	75	75	75	144	144	144	144	144	144
20	1	.31419E+03	98	98	98	98	98	98	98	98	172	172	172	173	173	173
20	2	.37903E+03	18	18	24	24	24	24	24	24	39	39	39	79	79	79
20	3	.31815E+03	95	95	92	92	92	92	92	92	162	162	162	163	163	163
22	1	.30618E+03	104	104	109	109	109	109	109	109	185	185	185	190	190	190
22	2	.32136E+03	30	30	45	45	45	45	45	45	83	83	83	132	132	132
22	3	.30640E+03	103	103	104	104	104	104	104	104	176	176	176	180	180	180

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 * BM2 MODEL *

EARTHQUAKE NO. 1

*ACCELERATION(STATIC COMPONENT)

NODE NO.	COMP. NO.	ACC.(ST) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
24	1	.30087E+03	105	105	113	113	113	113	113	113	190	190	190	201	201	201
24	2	.28042E+03	35	35	50	50	50	50	50	50	105	105	105	151	151	151
24	3	.29198E+03	110	110	112	112	112	112	112	112	184	184	184	193	193	193
26	1	.29705E+03	103	103	111	111	111	111	111	111	199	199	199	207	207	207
26	2	.26019E+03	27	27	32	32	32	32	32	32	91	91	91	127	127	127
26	3	.27610E+03	116	116	115	115	115	115	115	115	188	188	188	204	204	204
28	1	.29349E+03	98	98	105	105	105	105	105	105	201	201	201	208	208	208
28	2	.23031E+03	23	23	11	11	11	11	11	11	66	66	66	93	93	93
28	3	.25995E+03	120	120	115	115	115	115	115	115	186	186	186	212	212	212
30	1	.28899E+03	92	92	97	97	97	97	97	97	199	199	199	206	206	206
30	2	.19783E+03	20	20	1	1	1	1	1	1	35	35	35	55	55	55
30	3	.24475E+03	122	122	110	110	110	110	110	110	189	189	189	216	216	216
32	1	.28312E+03	86	86	91	91	91	91	91	91	195	195	195	204	204	204
32	2	.17158E+03	18	18	18	18	18	18	18	18	18	18	18	18	18	18
32	3	.23237E+03	120	120	103	103	103	103	103	103	188	188	188	215	215	215
36	1	.28371E+03	83	83	87	87	87	87	87	87	189	189	189	199	199	199
36	2	.16701E+03	18	18	25	25	25	25	25	25	32	32	32	38	38	38
36	3	.23196E+03	119	119	100	100	100	100	100	100	185	185	185	212	212	212
38	1	.28526E+03	65	65	62	62	62	62	62	62	149	149	149	161	161	161
38	2	.15195E+03	18	18	53	53	53	53	53	53	83	83	83	105	105	105
38	3	.23125E+03	109	109	84	84	84	84	84	84	170	170	170	195	195	195
39	1	.28261E+03	47	47	45	45	45	45	45	45	107	107	107	119	119	119
39	2	.15008E+03	17	17	59	59	59	59	59	59	94	94	94	120	120	120
39	3	.23243E+03	96	96	68	68	68	68	68	68	149	149	149	174	174	174
40	1	.27592E+03	32	32	36	36	36	36	36	36	67	67	67	75	75	75
40	2	.15674E+03	16	16	45	45	45	45	45	45	71	71	71	92	92	92
40	3	.23544E+03	83	83	53	53	53	53	53	53	126	126	126	149	149	149
41	1	.26556E+03	19	19	33	33	33	33	33	33	49	49	49	52	52	52
41	2	.16592E+03	17	17	29	29	29	29	29	29	40	40	40	50	50	50
41	3	.24010E+03	70	70	41	41	41	41	41	41	102	102	102	124	124	124
43	1	.25190E+03	7	7	27	27	27	27	27	27	59	59	59	67	67	67
43	2	.17158E+03	18	18	18	18	18	18	18	18	18	18	18	18	18	18
43	3	.24619E+03	59	59	31	31	31	31	31	31	80	80	80	101	101	101
44	1	.24024E+03	1	1	19	19	19	19	19	19	67	67	67	76	76	76
44	2	.17102E+03	20	20	17	17	17	17	17	17	21	21	21	25	25	25
44	3	.25144E+03	52	52	24	24	24	24	24	24	73	73	73	87	87	87
45	1	.22599E+03	-3	-3	9	9	9	9	9	9	68	68	68	79	79	79
45	2	.16862E+03	22	22	18	18	18	18	18	18	23	23	23	29	29	29
45	3	.25785E+03	45	45	20	20	20	20	20	20	72	72	72	84	84	84
46	1	.20802E+03	-6	-6	2	2	2	2	2	2	69	69	69	80	80	80
46	2	.16730E+03	22	22	19	19	19	19	19	19	23	23	23	28	28	28
46	3	.26593E+03	40	40	18	18	18	18	18	18	76	76	76	86	86	86

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 * BM2 MODEL *

EARTHQUAKE NO. 1

*ACCELERATION(STATIC COMPONENT)

NODE NO.	COMP. NO.	ACC(ST) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
47	1	.18785E+03	-7	-7	4	4	4	4	4	4	70	70	70	84	84	84
47	2	.17000E+03	20	20	19	19	19	19	19	19	20	20	20	21	21	21
47	3	.27621E+03	35	35	17	17	17	17	17	17	81	81	81	90	90	90
48	1	.18046E+03	-6	-6	4	4	4	4	4	4	69	69	69	83	83	83
48	2	.17158E+03	18	18	18	18	18	18	18	18	18	18	18	18	18	18
48	3	.27849E+03	33	33	16	16	16	16	16	16	81	81	81	89	89	89
49	1	.16489E+03	0	0	4	4	4	4	4	4	67	67	67	77	77	77
49	2	.17157E+03	18	18	18	18	18	18	18	18	18	18	18	18	18	18
49	3	.27617E+03	30	30	12	12	12	12	12	12	80	80	80	86	86	86
50	1	.14829E+03	8	8	9	9	9	9	9	9	71	71	71	79	79	79
50	2	.17157E+03	18	18	18	18	18	18	18	18	18	18	18	18	18	18
50	3	.27302E+03	27	27	9	9	9	9	9	9	79	79	79	83	83	83
51	1	.14411E+03	10	10	11	11	11	11	11	11	69	69	69	78	78	78
51	2	.16518E+03	20	20	17	17	17	17	17	17	20	20	20	21	21	21
51	3	.26368E+03	28	28	7	7	7	7	7	7	78	78	78	82	82	82
52	1	.14711E+03	5	5	5	5	5	5	5	5	42	42	42	52	52	52
52	2	.12042E+03	37	37	8	8	8	8	8	8	38	38	38	43	43	43
52	3	.20339E+03	42	42	3	3	3	3	3	3	76	76	76	82	82	82
53	1	.15012E+03	2	2	2	2	2	2	2	2	19	19	19	26	26	26
53	2	.96935E+02	36	36	-3	-3	-3	-3	-3	-3	37	37	37	42	42	42
53	3	.15495E+03	53	53	0	0	0	0	0	0	69	69	69	77	77	77
54	1	.15277E+03	0	0	1	1	1	1	1	1	2	2	2	5	5	5
54	2	.10194E+03	2	2	-2	-2	-2	-2	-2	-2	2	2	2	3	3	3
54	3	.15045E+03	24	24	-7	-7	-7	-7	-7	-7	28	28	28	31	31	31
55	1	.15347E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
55	2	.10236E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
55	3	.15170E+03	17	17	-6	-6	-6	-6	-6	-6	20	20	20	22	22	22
56	1	.15376E+03	0	0	0	0	0	0	0	0	4	4	4	8	8	8
56	2	.10236E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
56	3	.15255E+03	8	8	-3	-3	-3	-3	-3	-3	9	9	9	10	10	10
57	1	.15342E+03	0	0	0	0	0	0	0	0	8	8	8	14	14	14
57	2	.10237E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	3	.15335E+03	1	1	0	0	0	0	0	0	1	1	1	1	1	1
58	1	.15351E+03	0	0	0	0	0	0	0	0	6	6	6	12	12	12
58	2	.10229E+03	0	0	0	0	0	0	0	0	0	0	0	1	1	1
58	3	.15347E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	1	.15361E+03	0	0	0	0	0	0	0	0	1	1	1	3	3	3
59	2	.10229E+03	0	0	0	0	0	0	0	0	0	0	0	1	1	1
59	3	.15347E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	1	.15347E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	2	.10236E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	3	.15347E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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 * B.M.2 MODEL *

RESULTANT PIPE MOMENT RESPONSES FOR EARTHQUAKE NO. 1

J-END ELEM. NO.	T.H.	(PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)									
		METHOD 1		METHOD 2		METHOD 3		METHOD 4		METHOD 5	
		F=1.0	MAX. F	SRSS	ABS	SRSS	ABS	SRSS	ABS	SRSS	ABS
1	3.8100E+04	-52	2.1	144	524	-31	0	60	128	180	336
2	3.5237E+04	-52	2.1	87	352	-32	-2	57	124	129	244
3	3.3420E+04	-52	2.1	86	420	-32	-4	57	123	127	260
4	3.1488E+04	-52	2.1	102	492	-32	-4	59	129	142	285
5	4.1115E+04	-52	2.1	133	583	-29	3	68	145	167	323
6	4.7568E+04	-52	2.1	179	726	-28	6	76	161	204	390
7	6.0110E+04	-52	2.1	238	888	-27	9	87	182	254	471
8	3.1925E+04	-52	2.1	274	1044	-25	1	81	170	293	555
9	4.5605E+04	-52	2.1	168	785	-21	14	93	182	186	368
10	1.5386E+05	-52	2.1	100	458	-24	15	73	148	141	262
11	4.6560E+04	-52	2.1	112	506	-26	11	77	158	147	272
12	1.0468E+04	-52	2.1	987	3380	114	250	772	1334	655	1178
13	1.0517E+04	-52	2.1	733	2721	108	237	490	830	614	1106
14	4.1617E+03	-55	2.3	941	3095	83	187	549	958	519	934
15	3.5797E+03	-53	2.2	2415	6692	95	198	616	1077	609	1102
16	2.5518E+03	-53	2.2	1225	3820	79	196	432	735	565	958
17	1.9769E+03	-54	2.2	3590	9590	71	182	338	559	1184	1997
18	1.7726E+03	-54	2.2	3655	9738	71	182	340	562	1183	1996
19	1.8724E+03	-54	2.2	3667	9766	71	182	340	562	1183	1995
20	5.5008E-09	-54	2.2	383	712	248	296	248	250	527	528
21	3.0643E+04	-52	2.1	329	1133	-40	-9	88	195	344	598
22	9.5802E+02	-59	2.4	2288	5919	30	82	583	1028	2055	3282
23	6.7918E+02	-59	2.5	2560	6645	53	109	660	1144	2305	3690
24	4.0169E+02	-59	2.5	3214	8484	91	178	847	1428	2902	4674
25	1.7292E+02	-49	2.0	4934	13677	225	395	1353	2195	4458	7269
26	3.4298E+02	-51	2.0	1271	4155	48	115	330	594	1099	1940
27	5.8702E+02	-53	2.1	587	1985	10	30	145	301	434	813
28	8.0844E+02	-55	2.3	773	2152	1	9	190	407	626	1020
29	1.2373E+03	-58	2.4	2140	5518	33	68	541	966	1919	3055
30	7.7925E+02	-56	2.3	755	2161	0	10	186	397	616	1016
31	5.8339E+02	-56	2.3	747	2120	7	24	194	400	640	1054
32	3.9181E+02	-57	2.4	756	2246	25	62	247	485	701	1137
33	2.5518E+02	-59	2.5	881	2827	64	133	426	758	826	1331
34	2.6857E+02	-58	2.4	1048	3346	63	139	525	940	800	1368
35	4.1712E+02	-56	2.3	997	3298	29	89	429	799	682	1187
36	3.2086E+02	-56	2.3	1010	3289	31	93	400	749	682	1207
37	4.1703E+02	-57	2.3	550	2004	38	68	173	349	439	820
38	6.2197E+02	-57	2.3	258	1150	39	95	62	176	322	590
39	8.6134E+02	-57	2.3	172	871	58	109	54	145	300	490
40	8.6081E+02	-57	2.4	180	868	42	116	59	145	309	495
41	7.3483E+02	-57	2.4	234	1105	56	144	80	177	352	594
42	6.9627E+02	-57	2.4	286	1291	68	167	112	224	388	659
43	6.0417E+02	-57	2.4	333	1427	80	189	138	262	429	721
44	2.1095E+02	-58	2.4	709	2786	139	276	291	470	701	1230
45	7.9688E+02	-57	2.4	90	527	-26	0	9	63	127	314
46	1.4618E+03	-57	2.4	53	378	-17	11	4	48	132	264
47	1.5605E+03	-57	2.4	52	389	-17	9	2	50	131	266

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 * B.M.2 MODEL *

RESULTANT PIPE MOMENT RESPONSES FOR EARTHQUAKE NO. 1

J-END ELEM. NO.	T.H.	(PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)									
		METHOD 1		METHOD 2		METHOD 3		METHOD 4		METHOD 5	
		F=1.0	MAX. F	SRSS	ABS	SRSS	ABS	SRSS	ABS	SRSS	ABS
48	1.1417E+03	-57	2.3	61	476	-7	21	11	71	147	283
49	1.0653E+03	-57	2.3	107	624	4	36	22	94	195	382
50	9.4965E+02	-57	2.3	122	624	8	35	27	102	210	370
51	2.9501E+02	-58	2.4	993	2456	107	211	170	334	1067	1867
52	5.3560E+02	-56	2.3	1013	2192	70	125	123	218	1075	1897
53	1.1704E+04	-55	2.2	715	2526	87	191	576	1007	511	928
54	1.0243E+04	-48	2.0	719	2510	-55	-27	607	1042	417	717
55	5.5307E+04	-52	2.1	219	838	-27	8	83	175	238	445

 * B.M.2 MODEL *

SUPPORT FORCE RESPONSES FOR EARTHQUAKE NO. 1

SUPP NO.	T.H.	(PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)									
		METHOD 1		METHOD 2		METHOD 3		METHOD 4		METHOD 5	
		F=1.0	MAX. F	SRSS	ABS	SRSS	ABS	SRSS	ABS	SRSS	ABS
1	7.0587E+01	-56	2.3	4316	14911	98	180	1323	2286	4334	7396
2	3.4870E+02	-54	2.2	553	1642	-36	2	168	348	528	887
3	6.3655E+02	-53	2.2	439	1751	-26	0	103	248	461	865
4	2.2325E+04	-52	2.1	194	845	-30	2	77	142	226	456
5	8.1549E+02	-53	2.2	7880	20433	385	638	1149	1884	7750	11589
6	3.0454E+04	-52	2.1	144	683	-31	-1	52	117	180	367
7	6.1094E+03	-52	2.1	101	436	-26	12	70	142	143	266
8	2.9125E+03	-54	2.2	496	1631	-34	2	171	353	463	781
9	6.5016E+02	-53	2.1	497	1725	-37	-2	47	139	495	901
10	3.4642E+03	-53	2.2	329	1178	-29	0	115	269	308	537
11	2.0390E+03	-56	2.3	978	2740	-59	-47	963	1515	124	260
12	9.9972E+02	-52	2.1	190	851	-3	61	128	226	246	450
13	3.6507E+01	-51	2.1	5107	13905	80	133	764	1369	116	227
14	9.2875E+00	-60	2.5	11363	31788	204	352	666	1011	6709	9830
15	5.5376E+03	-57	2.3	880	2419	-58	-37	868	1344	72	167
16	9.8233E+01	-53	2.1	1352	4672	84	210	346	543	913	1639
17	2.8041E+03	-50	2.3	855	2392	-57	-35	858	1324	63	150
18	0.6103E+03	-58	2.4	557	1602	-29	0	548	850	20	89
19	1.9096E+01	-55	2.3	1447	3693	10	20	347	669	1260	1967
20	4.9333E+00	-51	2.1	14792	36508	97	133	763	1368	116	227
21	1.9623E+01	-54	2.2	1577	5285	69	183	301	483	1206	2033
22	6.2781E+00	-59	2.5	982	3880	134	302	673	1204	889	1480
23	1.9475E+01	-58	2.4	424	1433	-17	24	37	143	304	538
24	7.5048E+00	-57	2.4	650	2457	59	110	211	401	424	887
25	4.2214E+01	-56	2.3	115	562	-33	3	0	69	135	341
26	6.9224E-01	-30	1.4	25997	71054	4508	7130	4974	8055	28358	54616
27	3.9341E+01	-56	2.3	108	437	-22	11	-3	40	167	361
28	2.0083E+01	-57	2.3	764	1972	78	133	104	201	847	1628
29	1.9842E+01	-57	2.3	83	551	19	79	41	100	220	340
30	2.5032E+02	-57	2.3	1990	3743	78	133	104	201	2026	3398
31	4.2957E+02	-55	2.3	493	1512	78	138	144	241	616	1215
32	1.9919E+02	-58	2.4	547	1505	5	33	29	115	575	1119

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 * B.M.3 MODEL *

DISPLACEMENT COMPONENT RESPONSES FOR EARTHQUAKE 1

NODE NO.	T.H.	(PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)											
		METHOD 1		METHOD 2		METHOD 3		METHOD 4		METHOD 5			
		F=1.0	MAX. F	SRSS	ABS	SRSS	ABS	SRSS	ABS	SRSS	ABS	SRSS	ABS
1X	6.2200E-01	-30	1.4	1	1	1	1	1	1	1	1	1	1
1Y	4.1500E-01	-30	1.4	1	1	1	1	1	1	1	1	1	1
1Z	6.2200E-01	-30	1.4	1	1	1	1	1	1	1	1	1	1
2X	6.2200E-01	-30	1.4	1	1	1	1	1	1	1	1	1	1
2Y	4.1497E-01	-30	1.4	0	3	1	1	1	1	1	1	1	1
2Z	6.2173E-01	-30	1.4	1	2	1	1	1	1	1	1	1	1
3X	6.2196E-01	-30	1.4	0	1	1	1	1	1	1	1	1	1
3Y	4.1494E-01	-30	1.4	1	6	1	1	1	1	1	1	1	1
3Z	6.2153E-01	-30	1.4	0	3	1	1	1	1	1	1	1	1
4X	6.2200E-01	-30	1.4	1	1	1	1	1	1	1	1	1	1
4Y	4.1494E-01	-30	1.4	0	6	1	1	1	1	1	1	1	1
4Z	6.2200E-01	-30	1.4	1	1	1	1	1	1	1	1	1	1
5X	6.2294E-01	-30	1.4	12	28	1	1	1	1	1	0	2	1
5Y	4.1494E-01	-30	1.4	0	6	1	1	1	1	1	1	1	1
5Z	6.2256E-01	-30	1.4	9	28	1	1	1	1	1	0	1	1
6X	6.2573E-01	-30	1.4	11	36	1	1	2	3	-3	3	1	1
6Y	4.1504E-01	-30	1.4	-1	8	1	1	0	1	1	1	1	1
6Z	6.2268E-01	-30	1.4	11	34	1	1	1	1	0	1	1	1
7X	7.0045E-01	-30	1.4	23	98	1	3	28	49	21	50	1	1
7Y	4.1500E-01	-30	1.4	1	1	1	1	1	1	1	1	1	1
7Z	6.2268E-01	-30	1.4	11	34	1	1	1	1	0	1	1	1
8X	7.0192E-01	-30	1.4	26	102	1	3	28	51	24	52	1	1
8Y	4.1495E-01	-30	1.4	4	14	1	1	1	1	0	1	1	1
8Z	6.2141E-01	-30	1.4	10	37	1	1	1	1	0	2	1	1
9X	7.0192E-01	-30	1.4	26	102	1	3	28	51	24	52	1	1
9Y	4.1446E-01	-30	1.4	-10	55	2	2	2	3	-19	5	1	1
9Z	6.1534E-01	-29	1.4	1	106	2	3	2	4	-12	15	1	1
10X	7.0194E-01	-30	1.4	26	102	1	3	28	51	24	52	1	1
10Y	4.1315E-01	-30	1.4	-4	55	2	3	3	5	-14	8	1	1
10Z	6.3030E-01	-30	1.4	10	78	0	1	0	2	-16	4	1	1
11X	7.0194E-01	-30	1.4	26	102	1	3	28	51	24	52	1	1
11Y	4.1500E-01	-30	1.4	1	1	1	1	1	1	1	1	1	1
11Z	6.2184E-01	-30	1.4	1	1	1	1	1	1	1	1	1	1
12X	7.0195E-01	-30	1.4	26	102	1	3	28	51	24	52	1	1
12Y	4.1937E-01	-30	1.4	-5	68	-1	0	-4	0	8	30	1	1
12Z	5.9737E-01	-29	1.4	-19	48	5	10	8	17	12	26	1	1
13X	7.0195E-01	-30	1.4	26	102	1	3	28	51	24	52	1	1
13Y	4.2321E-01	-30	1.4	-9	123	-5	0	-12	0	6	46	1	1
13Z	6.1121E-01	-30	1.4	1	21	3	5	4	9	5	10	1	1
14X	6.9702E-01	-30	1.4	24	94	1	3	27	48	23	49	1	1
14Y	4.2305E-01	-30	1.4	-12	120	-5	0	-13	0	6	44	1	1
14Z	6.1539E-01	-30	1.4	3	15	2	4	3	7	3	7	1	1

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 * B.M.3 MODEL *

DISPLACEMENT COMPONENT RESPONSES FOR EARTHQUAKE 1

NODE NO.	T.H.	(PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)									
		METHOD 1		METHOD 2		METHOD 3		METHOD 4		METHOD 5	
		F=1.0	MAX. F	SRSS	ABS	SRSS	ABS	SRSS	ABS	SRSS	ABS
15X	2.2099E-01	-30	1.4	0	1	1	1	0	1	0	1
15Y	2.1985E-01	-30	1.4	-21	61	-2	0	-6	0	3	24
15Z	6.1538E-01	-30	1.4	3	15	2	4	3	7	3	7
16X	5.2040E-01	-28	1.4	-30	50	0	2	-29	0	-31	5
16Y	4.1579E-01	-30	1.4	0	8	1	1	2	3	3	5
16Z	6.1538E-01	-30	1.4	3	15	2	4	3	7	3	7
17X	5.1259E-01	-28	1.4	-31	54	-1	2	-29	0	-32	5
17Y	4.1500E-01	-30	1.4	1	1	1	1	1	1	1	1
17Z	6.2197E-01	-30	1.4	1	1	1	1	1	1	1	1
18X	5.1246E-01	-28	1.4	-31	54	-1	2	-29	0	-32	5
18Y	4.0223E-01	-29	1.4	-20	71	-8	1	-23	2	-24	6
18Z	6.2304E-01	-30	1.4	-14	76	-8	2	-17	7	-18	18
19X	5.1224E-01	-28	1.4	-31	54	-1	2	-29	0	-32	5
19Y	2.7730E-01	-26	1.4	-17	24	1	3	0	5	-19	5
19Z	4.2193E-01	-26	1.4	3	73	1	3	-3	5	-1	24
20X	5.0407E-01	-28	1.4	-32	52	0	2	-29	0	-33	5
20Y	2.6958E-01	-26	1.4	-15	15	3	4	3	4	-17	4
20Z	4.1570E-01	-26	1.4	5	66	1	3	0	5	0	22
21X	4.1701E-01	-26	1.4	-23	23	3	3	-4	3	-22	4
21Y	2.6958E-01	-26	1.4	-15	15	3	4	3	4	-17	4
21Z	4.0459E-01	-26	1.4	7	18	3	3	3	3	3	6
22X	4.1009E-01	-26	1.4	-6	12	3	3	0	3	-6	4
22Y	2.6982E-01	-26	1.4	-2	9	3	3	3	3	-3	3
22Z	4.0459E-01	-26	1.4	7	18	3	3	3	3	3	6
23X	4.0568E-01	-26	1.4	2	4	3	3	2	3	2	3
23Y	2.7000E-01	-26	1.4	3	3	3	3	3	3	3	3
23Z	4.0459E-01	-26	1.4	7	18	3	3	3	3	3	6
24X	4.0437E-01	-26	1.4	4	10	3	3	3	4	5	7
24Y	2.6867E-01	-26	1.4	1	15	3	4	4	5	5	8
24Z	4.0356E-01	-26	1.4	5	17	3	4	3	4	0	5
25X	4.0437E-01	-26	1.4	4	10	3	3	3	4	5	7
25Y	2.6564E-01	-26	1.4	-10	38	5	6	5	9	5	13
25Z	4.0187E-01	-26	1.4	-3	30	4	4	4	6	-9	7
26X	4.0437E-01	-26	1.4	4	10	3	3	3	4	5	7
26Y	2.6495E-01	-26	1.4	-8	55	5	7	5	10	0	21
26Z	4.0351E-01	-26	1.4	-14	40	3	4	3	5	-15	7
27X	4.0459E-01	-26	1.4	0	16	3	3	3	3	5	9
27Y	2.6586E-01	-26	1.4	-4	50	4	6	5	8	0	18
27Z	4.0376E-01	-26	1.4	-11	46	3	4	3	5	-13	6
28X	4.0503E-01	-26	1.4	-11	30	3	3	3	3	5	15
28Y	2.6787E-01	-26	1.4	-1	31	4	4	4	6	1	12
28Z	4.0376E-01	-26	1.4	-11	46	3	4	3	5	-13	6

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 * B.M.3 MODEL *

DISPLACEMENT COMPONENT RESPONSES FOR EARTHQUAKE 1

NODE NO.	T.H.	(PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)									
		METHOD 1		METHOD 2		METHOD 3		METHOD 4		METHOD 5	
		F=1.0	MAX. F	SRSS	ABS	SRSS	ABS	SRSS	ABS	SRSS	ABS
29X	4.0539E-01	-26	1.4	-19	43	3	3	3	3	6	20
29Y	2.6963E-01	-26	1.4	2	10	3	3	3	3	2	5
29Z	4.0376E-01	-26	1.4	-11	46	3	4	3	5	-13	6
30X	4.0551E-01	-26	1.4	-22	42	3	3	3	3	6	20
30Y	2.6999E-01	-26	1.4	3	3	3	3	3	3	3	3
30Z	4.0353E-01	-26	1.4	-10	43	3	4	3	5	-12	6
31X	4.0500E-01	-26	1.4	3	3	3	3	3	3	3	3
31Y	2.7000E-01	-26	1.4	3	3	3	3	3	3	3	3
31Z	4.0500E-01	-26	1.4	3	3	3	3	3	3	3	3
32X	4.1726E-01	-26	1.4	-27	25	3	3	-4	3	-27	4
32Y	2.6952E-01	-26	1.4	-19	16	3	4	3	4	-21	4
32Z	4.0459E-01	-26	1.4	7	18	3	3	3	3	3	6
33X	4.1713E-01	-26	1.4	-29	27	3	3	-4	3	-29	4
33Y	2.6954E-01	-26	1.4	-21	17	3	4	3	4	-24	4
33Z	4.0459E-01	-26	1.4	7	18	3	3	3	3	3	6
34X	4.1559E-01	-26	1.4	-30	29	3	3	-3	3	-30	4
34Y	2.6986E-01	-26	1.4	-22	19	3	3	3	3	-26	3
34Z	4.0459E-01	-26	1.4	7	18	3	3	3	3	3	6
35X	4.0584E-01	-26	1.4	0	11	3	3	2	3	0	3
35Y	2.7165E-01	-26	1.4	7	24	2	3	2	4	-1	4
35Z	4.0457E-01	-26	1.4	7	18	3	3	3	3	3	6
36X	4.0502E-01	-26	1.4	3	3	3	3	3	3	3	3
36Y	2.7000E-01	-26	1.4	3	3	3	3	3	3	3	3
36Z	4.0516E-01	-26	1.4	2	4	3	3	3	3	3	3
37X	4.0501E-01	-26	1.4	3	3	3	3	3	3	3	3
37Y	2.6743E-01	-26	1.4	-21	11	4	5	4	6	4	8
37Z	4.0574E-01	-26	1.4	-23	9	3	3	3	3	3	6
38X	4.0500E-01	-26	1.4	3	3	3	3	3	3	3	3
38Y	2.7000E-01	-26	1.4	3	3	3	3	3	3	3	3
38Z	4.0500E-01	-26	1.4	3	3	3	3	3	3	3	3

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 * BM3 MODEL *

EARTHQUAKE NO. 1

*ACCELERATION(STATIC COMPONENT)

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NODE NO.	COMP. NO.	ACC(ST) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
15	1	.20683E+03	86	86	86	86	86	86	86	86	86	86	86	86	86	86
15	2	.13996E+03	81	81	72	72	72	72	72	72	82	82	82	84	84	84
15	3	.20481E+03	89	89	90	90	90	90	90	90	91	91	91	94	94	94
16	1	.17049E+03	65	65	21	21	21	21	21	21	66	66	66	66	66	66
16	2	.13849E+03	86	86	88	88	88	88	88	88	89	89	89	89	89	89
16	3	.20481E+03	89	89	90	90	90	90	90	90	91	91	91	94	94	94
17	1	.16787E+03	63	63	18	18	18	18	18	18	64	64	64	64	64	64
17	2	.13820E+03	86	86	86	86	86	86	86	86	86	86	86	86	86	86
17	3	.20719E+03	86	86	86	86	86	86	86	86	86	86	86	86	86	86
18	1	.16762E+03	63	63	18	18	18	18	18	18	64	64	64	64	64	64
18	2	.13362E+03	75	75	42	42	42	42	42	42	90	90	90	90	90	90
18	3	.20758E+03	59	59	48	48	48	48	48	48	83	83	83	85	85	85
19	1	.16754E+03	63	63	18	18	18	18	18	18	64	64	64	64	64	64
19	2	.88546E+02	119	119	115	115	115	115	115	115	119	119	119	126	126	126
19	3	.13492E+03	48	48	39	39	39	39	39	39	49	49	49	56	56	56
20	1	.16459E+03	62	62	16	16	16	16	16	16	63	63	63	63	63	63
20	2	.85757E+02	125	125	124	124	124	124	124	124	125	125	125	126	126	126
20	3	.13267E+03	48	48	43	43	43	43	43	43	49	49	49	55	55	55
21	1	.13314E+03	52	52	38	38	38	38	38	38	52	52	52	52	52	52
21	2	.85759E+02	125	125	124	124	124	124	124	124	125	125	125	126	126	126
21	3	.12865E+03	50	50	50	50	50	50	50	50	50	50	50	50	50	50
22	1	.13064E+03	51	51	44	44	44	44	44	44	51	51	51	51	51	51
22	2	.85845E+02	125	125	124	124	124	124	124	124	125	125	125	125	125	125
22	3	.12865E+03	50	50	50	50	50	50	50	50	50	50	50	50	50	50
23	1	.12904E+03	50	50	49	49	49	49	49	49	50	50	50	50	50	50
23	2	.85910E+02	124	124	124	124	124	124	124	124	124	124	124	124	124	124
23	3	.12865E+03	50	50	50	50	50	50	50	50	50	50	50	50	50	50
24	1	.12857E+03	49	49	50	50	50	50	50	50	51	51	51	51	51	51
24	2	.85430E+02	126	126	126	126	126	126	126	126	126	126	126	128	128	128
24	3	.12828E+03	50	50	50	50	50	50	50	50	50	50	50	52	52	52
25	1	.12857E+03	49	49	50	50	50	50	50	50	51	51	51	51	51	51
25	2	.84335E+02	129	129	129	129	129	129	129	129	130	130	130	137	137	137
25	3	.12767E+03	51	51	51	51	51	51	51	51	52	52	52	55	55	55
26	1	.12857E+03	49	49	50	50	50	50	50	50	51	51	51	51	51	51
26	2	.84085E+02	129	129	130	130	130	130	130	130	131	131	131	139	139	139
26	3	.12826E+03	50	50	50	50	50	50	50	50	50	50	50	53	53	53
27	1	.12865E+03	49	49	50	50	50	50	50	50	50	50	50	50	50	50
27	2	.84415E+02	128	128	129	129	129	129	129	129	129	129	129	136	136	136
27	3	.12835E+03	50	50	50	50	50	50	50	50	50	50	50	52	52	52
28	1	.12881E+03	50	50	49	49	49	49	49	49	50	50	50	50	50	50
28	2	.85139E+02	126	126	127	127	127	127	127	127	127	127	127	130	130	130
28	3	.12835E+03	50	50	50	50	50	50	50	50	50	50	50	52	52	52

 * BM3 MODEL *

EARTHQUAKE NO. 1

*ACCELERATION(STATIC COMPONENT)

NODE NO.	COMP. NO.	ACC(ST) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
29	1	.12894E+03	50	50	49	49	49	49	49	49	50	50	50	50	50	50
29	2	.85777E+02	125	125	125	125	125	125	125	125	125	125	125	125	125	125
29	3	.12835E+03	50	50	50	50	50	50	50	50	50	50	50	52	52	52
30	1	.12898E+03	50	50	49	49	49	49	49	49	50	50	50	50	50	50
30	2	.85907E+02	124	124	124	124	124	124	124	124	124	124	124	124	124	124
30	3	.12827E+03	50	50	50	50	50	50	50	50	50	50	50	53	53	53
31	1	.12880E+03	49	49	49	49	49	49	49	49	49	49	49	49	49	49
31	2	.85910E+02	124	124	124	124	124	124	124	124	124	124	124	124	124	124
31	3	.12880E+03	49	49	49	49	49	49	49	49	49	49	49	49	49	49
32	1	.13323E+03	52	52	38	38	38	38	38	38	52	52	52	52	52	52
32	2	.85736E+02	125	125	124	124	124	124	124	124	125	125	125	126	126	126
32	3	.12865E+03	50	50	50	50	50	50	50	50	50	50	50	50	50	50
33	1	.13318E+03	52	52	38	38	38	38	38	38	52	52	52	52	52	52
33	2	.85744E+02	125	125	124	124	124	124	124	124	125	125	125	126	126	126
33	3	.12865E+03	50	50	50	50	50	50	50	50	50	50	50	50	50	50
34	1	.13263E+03	52	52	39	39	39	39	39	39	52	52	52	52	52	52
34	2	.85857E+02	125	125	124	124	124	124	124	124	125	125	125	125	125	125
34	3	.12865E+03	50	50	50	50	50	50	50	50	50	50	50	50	50	50
35	1	.12910E+03	50	50	49	49	49	49	49	49	50	50	50	50	50	50
35	2	.86505E+02	123	123	123	123	123	123	123	123	123	123	123	126	126	126
35	3	.12865E+03	50	50	50	50	50	50	50	50	50	50	50	50	50	50
36	1	.12881E+03	50	50	49	49	49	49	49	49	50	50	50	50	50	50
36	2	.85910E+02	124	124	124	124	124	124	124	124	124	124	124	124	124	124
36	3	.12886E+03	49	49	49	49	49	49	49	49	49	49	49	50	50	50
37	1	.12880E+03	50	50	49	49	49	49	49	49	50	50	50	50	50	50
37	2	.84982E+02	127	127	127	127	127	127	127	127	127	127	127	132	132	132
37	3	.12907E+03	49	49	49	49	49	49	49	49	49	49	49	50	50	50
38	1	.12880E+03	49	49	49	49	49	49	49	49	49	49	49	49	49	49
38	2	.85910E+02	124	124	124	124	124	124	124	124	124	124	124	124	124	124
38	3	.12880E+03	49	49	49	49	49	49	49	49	49	49	49	49	49	49

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 * B.M.3 MODEL *

RESULTANT PIPE MOMENT RESPONSES FOR EARTHQUAKE NO. 1

J-END ELEM. NO.	T.H.	(PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)											
		METHOD 1		METHOD 2		METHOD 3		METHOD 4		METHOD 5			
		F=1.0	MAX. F	SRSS	ABS	SRSS	ABS	SRSS	ABS	SRSS	ABS		
1	1.6940E+02	-34	1.5	4574	7642	7	19	286	436	1173	1869		
2	1.6829E+02	-34	1.5	4429	7358	7	18	286	436	1176	1873		
3	1.8581E+02	-34	1.5	3028	6696	7	19	287	437	1188	1894		
4	1.6855E+02	-34	1.5	3161	6614	7	19	286	436	1209	1921		
5	1.5411E+02	-34	1.5	3294	7140	7	19	286	436	1220	1940		
6	4.1357E+02	-34	1.5	1211	2983	8	21	289	439	1057	1708		
7	4.1960E+02	-34	1.5	1222	2987	9	21	292	444	1075	1735		
8	2.1782E+02	-34	1.5	1473	3271	9	23	294	446	1313	2079		
9	2.2609E+02	-33	1.5	1614	3558	17	38	321	484	578	1063		
10	4.4751E+02	-33	1.5	1329	3241	13	29	307	464	610	1172		
11	6.2312E+02	-34	1.5	310	1038	10	25	298	453	886	585		
12	1.6097E+03	-34	1.5	319	929	9	22	293	446	212	449		
13	1.6901E+03	-34	1.5	323	940	9	22	293	445	258	448		
14	1.8712E+03	-34	1.5	376	1051	9	21	292	444	312	538		
15	2.3919E+03	-34	1.5	175	566	-21	3	182	291	160	316		
16	2.7709E+03	-34	1.5	176	553	-20	3	185	296	165	319		
17	1.4714E+03	-34	1.5	208	595	-14	3	209	329	194	355		
18	1.5022E+03	-34	1.5	282	827	1	39	266	408	269	470		
19	1.2908E+03	-34	1.5	278	863	-2	38	252	388	257	452		
20	4.9732E+03	-34	1.5	198	595	-17	-3	195	309	191	350		
21	1.0345E+03	-33	1.5	804	2157	-13	-1	210	329	656	1105		
22	1.2074E+03	-34	1.5	905	2410	-14	-2	206	324	720	1225		
23	1.1455E+03	-34	1.5	886	2413	-14	-2	206	324	734	1243		
24	9.2925E+02	-34	1.5	864	2380	-14	-2	205	324	663	1131		
25	8.6850E+01	-31	1.5	16934	37437	-16	0	198	314	7235	10533		
26	1.2837E+02	-31	1.5	11046	25083	-10	1	220	344	5106	7531		
27	1.8956E+02	-33	1.5	5553	12847	-11	1	219	342	2647	3998		
28	3.2406E+02	-34	1.5	3518	8277	-14	-4	209	328	1193	1914		
29	3.3194E+02	-34	1.5	3289	7360	-15	-1	204	322	868	1437		
30	2.8502E+02	-31	1.4	11493	21550	-1	14	253	390	4255	6350		
31	5.2052E+03	-34	1.5	246	790	-17	0	198	313	202	368		
32	4.9201E+03	-34	1.5	280	881	-17	0	197	313	212	388		
33	4.3350E+03	-34	1.5	413	1166	-17	-1	197	312	261	484		
34	3.9208E+03	-34	1.5	940	2105	-16	-3	199	315	512	839		
35	3.8610E+03	-34	1.5	1037	2223	-16	-3	200	316	564	921		
36	1.0673E+03	-33	1.5	3752	8277	-15	-1	204	321	889	1427		
37	1.9604E+03	-34	1.5	568	1610	-16	-3	199	315	640	1041		

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 * B.M.3 MODEL *

SUPPORT FORCE RESPONSES FOR EARTHQUAKE NO. 1

SUPP NO.	T.H.	(PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)									
		METHOD 1		METHOD 2		METHOD 3		METHOD 4		METHOD 5	
		F=1.0	MAX. F	SRSS	ABS	SRSS	ABS	SRSS	ABS	SRSS	ABS
1	5.2798E-01	-34	1.5	7123	13417	5	18	280	428	1333	2115
2	1.7947E-01	-33	1.5	20491	47320	74	132	527	769	1041	1955
3	1.6669E-01	-34	1.5	34953	67066	32	62	378	563	828	1438
4	4.1505E+00	-35	1.6	141588	235534	-19	21	188	300	2828	4230
5	1.7039E+02	-34	1.5	1349	3374	7	19	288	438	1157	1847
6	2.4841E+01	-34	1.5	19438	34719	-5	29	239	371	1235	1977
7	4.6841E+00	-34	1.5	1607	3807	7	19	288	438	1083	1742
8	2.9612E+00	-33	1.5	2428	6515	11	25	299	454	823	1375
9	5.9673E-02	-39	1.6	63188	153718	954	1614	3695	5162	7951	14264
10	9.1984E-01	-34	1.5	2467	5873	-20	0	187	298	733	1337
11	1.6485E+01	-34	1.5	576	1603	9	21	293	445	371	673
12	1.0209E+02	-34	1.5	248	661	-9	4	224	350	245	443
13	3.7944E+00	-34	1.5	836	2536	94	178	600	871	560	960
14	2.7469E+00	-35	1.6	2775	6385	177	291	897	1283	910	1896
15	1.8448E+01	-33	1.5	1660	3397	-16	-3	198	314	278	565
16	1.6073E+01	-34	1.5	4442	8872	-26	0	165	267	1401	2221
17	2.7801E+01	-33	1.5	659	1767	-16	4	200	316	375	715
18	2.5641E+01	-34	1.5	1073	2205	-16	-3	199	314	192	346
19	6.9764E+00	-33	1.5	8969	16002	-12	5	216	338	2049	3204
20	4.5819E+02	-34	1.5	1774	3160	-14	0	208	327	1745	2763
21	5.1392E+02	-33	1.5	18901	30064	-12	4	213	334	1944	3051
22	1.8355E+03	-34	1.5	2998	4962	-17	-4	197	312	191	344
23	6.8376E+01	-34	1.5	750	1894	-7	3	232	360	304	562
24	1.1291E+01	-35	1.5	1113	3286	-34	-5	133	224	437	816
25	1.7567E+00	-27	1.4	22857	44757	-7	5	234	364	5804	8552
26	8.5737E+00	-34	1.5	1125	3394	-17	-4	196	310	360	711
27	6.6132E+00	-33	1.5	2270	5665	-9	3	226	353	1811	2876
28	2.7326E+02	-31	1.5	4113	9497	-1	15	253	389	3463	5249
29	1.8035E+01	-47	1.9	43927	82761	-25	-10	169	273	9199	13299
30	7.9012E+01	-24	1.3	37789	68017	0	10	259	398	9408	13675

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LIST OF DESCRIPTORS USED IN COMBINED RESPONSE TABLES

DESCRIPTION OF THE DIFFERENT COMBINATIONS
CONSIDERED IN THE DYNAMIC ANALYSIS:

CASE NUMBER COMBINATION SEQUENCE

1 :GROUP(ALG)-DIRECTION-MODES
2 :GROUP(ALG)-MODES-DIRECTION
3 :GROUP(SRSS)-DIRECTION-MODES
4 :GROUP(SRSS)-MODES-DIRECTION
5 :MODES-GROUP(SRSS)-DIRECTION
6 :DIRECTION-GROUP(SRSS)-MODES
7 :MODES-DIRECTION-GROUP(SRSS)
8 :DIRECTION-MODES-GROUP(SRSS)
9 :GROUP(ABS)-DIRECTION-MODES
10 :GROUP(ABS)-MODES-DIRECTION
11 :MODES-GROUP(ABS)-DIRECTION
12 :DIRECTION-GROUP(ABS)-MODES
13 :MODES-DIRECTION-GROUP(ABS)
14 :DIRECTION-MODES-GROUP(ABS)

ABBREVIATIONS,
AND SYMBOLS

DESCRIPTION

T.H. TIME HISTORY DATA FROM
 LAWRENCE LIVERMORE LABORATORY

DISP. DISPLACEMENT (INERTIA COMPONENT)

ACC(ST) ACCELERATION (PSEUDO-STATIC COMPONENT)

ACC(DY) ACCELERATION (INERTIA COMPONENT)

ACC(TL) TOTAL ACCELERATION

URS UNIFORM RESPONSE SPECTRUM

FORCE CODES

1 SUPPORT FORCE (INERTIA COMPONENT)

6 I-END MOMENT (INERTIA COMPONENT)

12 J-END MOMENT (INERTIA COMPONENT)

NOTES:

FOR ALL OF THE ABOVE CASES:

- 1) COMBINATION OF MODAL RESPONSES IS BY SRSS WITH A CLUSTERING FACTOR OF 0.1.
- 2) COMBINATION OF DIRECTIONAL COMPONENTS IS BY SRSS.

 * RHRS11 MODEL *

TOTAL NO. OF EARTHQUAKES: 33

** MEAN VALUES **

* TOTAL ACCELERATION (SRSS)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
6	1	37	2	2	0	0	0	0	0	0	4	4	4	7	7	7
6	2	48	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	3	54	15	15	12	11	11	12	11	11	39	38	50	58	67	68
9	1	156	99	98	93	91	88	93	88	89	233	229	279	296	344	346
9	2	182	118	116	107	103	97	107	97	100	241	232	249	322	334	339
9	3	74	33	32	27	26	25	27	25	25	76	73	92	107	120	121
12	1	115	64	64	62	61	61	62	61	61	175	174	216	212	258	259
12	2	50	5	5	6	6	6	6	6	6	19	18	20	29	31	31
12	3	97	49	49	39	39	39	39	39	39	118	118	144	147	175	175
16	1	113	63	63	54	53	52	54	52	53	148	146	179	179	210	211
16	2	44	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	3	111	59	59	53	53	53	53	53	53	161	161	199	199	239	239
19	1	92	39	37	94	91	91	94	91	92	275	272	305	346	381	383
19	2	45	0	0	-8	-8	-8	-8	-8	-8	5	5	6	7	7	7
19	3	98	43	40	115	112	112	115	112	113	299	295	333	370	404	407
22	1	94	40	38	104	101	101	104	101	102	288	285	318	365	402	404
22	2	95	41	40	154	153	153	154	153	153	380	380	404	442	469	469
22	3	48	8	7	30	29	28	30	28	29	102	101	125	137	156	157
23	1	95	41	39	105	102	102	105	102	103	289	286	320	367	404	406
23	2	99	44	42	154	154	154	154	154	154	385	385	410	450	478	479
23	3	51	9	8	31	30	29	31	29	30	105	103	128	140	159	161
35	1	57	23	22	180	179	179	180	179	180	457	457	473	552	565	565
35	2	69	30	30	202	202	202	202	202	202	505	505	515	609	621	621
35	3	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	1	58	23	23	175	175	175	175	175	175	448	448	460	542	554	554
36	2	70	31	31	204	204	204	204	204	204	508	508	519	613	625	625
36	3	41	5	4	14	14	13	14	13	14	56	55	67	79	88	88
39	1	71	29	29	164	164	164	164	164	164	424	424	441	514	534	534
39	2	83	42	38	188	186	186	188	186	186	468	466	499	563	584	591
39	3	122	77	71	134	127	127	134	127	130	245	234	263	315	356	363
42	1	90	38	38	114	114	114	114	114	114	312	312	337	384	414	415
42	2	99	51	46	73	68	67	73	67	72	184	176	234	233	280	293
42	3	101	59	54	108	103	102	108	102	104	197	188	216	253	291	297
45	1	73	28	27	78	77	77	78	77	77	225	224	249	279	309	310
45	2	82	36	34	28	26	25	28	25	27	76	73	107	106	134	140
45	3	79	38	34	73	70	69	73	69	71	141	134	162	181	216	222
50	1	116	50	41	98	93	92	98	92	95	231	224	264	284	331	338
50	2	78	34	31	25	23	22	25	22	23	68	65	93	96	124	129
50	3	48	9	9	1	0	0	1	0	0	24	23	35	35	49	51
57	1	8	4	4	1	1	1	1	1	1	14	13	14	17	23	26
57	2	48	11	11	4	3	3	4	3	4	16	14	17	23	24	26
57	3	37	1	1	0	0	0	0	0	0	2	1	1	2	2	2

S-III

 * RHR511 MODEL *

 ** MEAN VALUES **

TOTAL NO. OF EARTHQUAKES: 33

*TOTAL ACCELERATION(SRSS)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
59	1	0	0	0	1	1	1	1	1	1	3	3	3	11	11	11
59	2	109	64	59	28	22	21	28	21	27	86	77	97	111	122	133
59	3	68	35	34	9	8	7	3	7	7	55	52	53	77	77	79
67	1	62	19	17	20	22	21	23	21	22	95	93	115	139	158	161
67	2	101	42	40	130	129	129	130	129	129	343	342	381	402	438	439
67	3	36	0	0	0	0	0	0	0	0	1	1	1	2	2	2
68	1	45	8	7	11	10	10	11	10	10	48	47	61	79	91	93
68	2	101	41	39	126	124	124	126	124	125	333	331	374	390	427	429
68	3	37	1	1	2	2	2	2	2	2	6	6	7	14	16	16

 * RHRSI1 MODEL *

TOTAL NO. OF EARTHQUAKES: 33

** STANDARD DEVIATION **

*TOTAL ACCELERATION(SRSS)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
6	1	19	0	0	0	0	0	0	0	0	0	0	0	1	1	1
6	2	25	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	3	17	7	7	7	7	7	7	7	7	7	10	10	61	67	73
9	1	38	30	30	31	30	30	31	30	30	30	55	55	61	67	73
9	2	48	29	29	22	22	21	22	21	21	21	38	36	39	49	51
9	3	19	11	11	10	10	10	10	10	10	10	15	15	17	18	19
12	1	33	26	26	27	27	27	27	27	27	27	49	48	55	55	63
12	2	24	2	2	2	2	2	1	2	1	1	3	3	3	5	5
12	3	35	26	26	21	21	21	21	21	21	21	36	36	41	40	45
16	1	31	23	23	24	23	23	24	23	23	23	40	40	45	44	50
16	2	25	1	1	1	1	1	1	1	1	1	1	1	1	1	1
16	3	39	28	28	25	25	25	25	25	25	25	47	47	54	53	61
19	1	37	18	18	31	31	31	31	31	31	31	63	62	68	70	75
19	2	25	1	1	1	1	1	1	1	1	1	2	2	2	2	2
19	3	35	15	14	30	29	29	30	29	30	61	61	67	65	71	71
22	1	37	18	18	33	33	33	33	33	33	33	65	65	70	72	79
22	2	37	22	22	47	47	47	47	47	47	88	88	92	94	99	99
22	3	16	5	5	11	10	10	11	10	10	26	26	30	26	30	30
23	1	38	19	18	34	33	33	34	33	33	66	65	71	74	79	80
23	2	39	24	24	49	49	49	49	49	49	93	93	97	95	105	105
23	3	17	6	6	10	10	10	10	10	10	25	25	30	26	30	30
35	1	42	25	25	64	64	64	64	64	64	127	127	128	141	141	141
35	2	47	24	24	58	58	58	58	58	58	115	115	116	133	133	133
35	3	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	1	40	24	24	62	62	62	62	62	62	123	123	123	137	136	136
36	2	43	25	25	59	59	59	59	59	59	118	118	119	137	137	137
36	3	15	5	5	8	8	8	8	8	3	21	21	23	23	25	25
39	1	35	23	23	58	58	58	58	58	58	114	114	114	126	126	126
39	2	44	20	19	40	40	40	40	40	40	80	80	82	94	95	96
39	3	26	14	14	20	20	20	20	20	20	30	30	33	35	39	39
42	1	30	18	18	38	38	38	38	38	38	75	75	77	80	83	83
42	2	31	15	15	15	15	15	15	15	15	25	25	31	30	36	37
42	3	24	12	12	17	16	16	17	16	16	24	23	25	29	31	32
45	1	24	15	15	25	25	25	25	25	25	50	50	52	53	56	57
45	2	34	8	8	6	6	6	6	6	6	11	11	14	15	17	18
45	3	21	9	8	12	11	11	12	11	12	18	17	20	22	24	25
50	1	30	15	14	19	18	18	19	18	18	35	34	41	40	48	48
50	2	32	8	7	6	6	5	6	5	6	11	10	14	15	18	19
50	3	15	3	3	3	3	3	3	3	3	6	6	9	7	10	10
57	1	4	4	4	4	4	4	4	4	4	5	5	5	7	7	7
57	2	28	4	4	3	3	3	3	3	3	5	5	5	6	6	7
57	3	16	1	1	1	1	1	1	1	1	1	1	1	1	1	1

L-III

 * RHRSD MODEL *

TOTAL NO. OF EARTHQUAKES: 33

** STANDARD DEVIATION **

*TOTAL ACCELERATION(SRSS)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
59	1	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3
59	2	29	11	11	10	9	9	10	9	9	14	13	14	18	18	20
59	3	16	5	5	4	4	4	4	4	4	7	7	7	9	9	9
67	1	22	9	9	10	10	9	10	9	10	20	19	23	24	26	26
67	2	35	20	19	38	38	38	38	38	38	73	73	79	77	83	83
67	3	17	0	0	0	0	0	0	0	0	0	0	0	1	1	1
68	1	19	5	5	6	6	6	6	6	6	13	13	16	15	17	17
68	2	34	18	18	35	34	34	35	34	34	66	66	72	69	75	75
68	3	16	1	1	2	2	2	2	2	2	3	3	3	4	4	4

 * RHRS11 MODEL *

 ** MEAN VALUES **

TOTAL NO. OF EARTHQUAKES: 33

*TOTAL ACCELERATION(ABS. SUM)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
6	1	58	18	18	15	14	14	15	14	14	29	28	29	37	37	38
6	2	48	0	0	0	0	0	0	0	0	1	0	1	1	1	1
6	3	113	60	60	54	53	52	54	52	53	97	95	111	123	135	136
9	1	228	154	152	149	147	143	149	143	145	319	314	367	389	438	441
9	2	262	191	189	178	174	167	178	167	170	334	325	342	426	439	444
9	3	146	87	86	79	78	76	79	76	77	143	140	162	183	198	200
12	1	181	114	114	116	116	115	116	115	115	257	255	301	302	351	351
12	2	86	34	33	34	33	32	34	32	33	62	60	64	79	82	83
12	3	167	102	101	91	91	91	91	91	91	187	186	215	227	258	258
16	1	185	118	117	110	109	107	110	107	107	229	227	263	266	299	301
16	2	45	0	0	0	0	0	0	0	0	2	2	2	2	3	3
16	3	177	108	108	101	101	101	101	101	101	234	234	274	286	329	329
19	1	156	86	83	136	133	133	136	133	134	351	347	382	434	470	472
19	2	55	8	8	2	2	2	2	2	2	26	26	27	30	32	32
19	3	161	89	86	186	183	182	186	182	184	412	408	448	497	534	537
22	1	157	87	85	166	163	163	166	163	164	393	390	425	496	534	537
22	2	150	79	78	242	242	242	242	242	242	538	537	564	608	637	637
22	3	102	46	45	82	81	80	82	80	81	180	179	208	232	256	258
23	1	158	88	85	166	163	163	166	163	164	393	390	425	497	535	538
23	2	151	80	79	236	236	236	236	236	236	534	534	561	607	636	637
23	3	107	49	47	85	82	81	85	81	82	185	182	213	236	260	263
35	1	97	55	55	233	233	233	233	233	233	561	561	577	680	692	693
35	2	99	53	53	247	247	247	247	247	247	596	596	606	713	724	725
35	3	38	2	2	2	2	2	2	2	2	3	3	3	4	4	4
36	1	99	55	55	228	228	228	228	228	228	549	549	561	665	677	677
36	2	99	53	53	248	248	248	248	248	248	598	598	609	716	728	728
36	3	83	36	33	57	56	56	57	56	56	119	118	132	150	161	162
39	1	113	63	63	216	216	216	216	216	216	521	520	538	630	650	650
39	2	134	81	77	237	235	234	237	234	237	562	560	593	669	690	697
39	3	192	130	123	203	195	195	203	195	198	331	320	350	420	463	470
42	1	151	85	85	177	177	177	177	177	177	416	415	442	500	532	532
42	2	177	111	105	137	131	129	137	129	136	269	261	322	333	383	397
42	3	176	116	110	184	177	177	184	177	179	295	284	315	364	405	412
45	1	140	79	78	144	143	143	144	143	144	330	330	357	394	426	428
45	2	156	93	89	81	77	76	81	76	79	145	141	182	187	220	226
45	3	152	94	89	144	139	138	144	138	140	234	226	260	287	327	334
50	1	199	105	94	179	172	170	179	170	174	358	350	396	426	478	487
50	2	151	89	85	75	73	71	75	71	74	134	130	165	172	206	211
50	3	96	46	43	34	33	32	34	32	33	73	71	90	90	110	113
57	1	38	29	29	23	23	22	23	22	22	47	46	48	66	70	71
57	2	99	50	49	37	34	34	37	34	36	59	55	62	71	73	77
57	3	51	12	12	10	10	9	10	9	10	17	16	16	20	20	20

 * RHRS11 MODEL *

 ** MEAN VALUES **

TOTAL NO. OF EARTHQUAKES: 33

*TOTAL ACCELERATION(ABS. SUM)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
59	1	12	10	10	10	9	9	10	9	9	16	16	16	26	26	28
59	2	191	130	124	79	72	70	79	70	77	158	147	170	188	200	212
59	3	136	90	80	54	53	51	54	51	52	119	116	117	148	149	151
67	1	126	68	64	74	72	71	74	71	72	170	167	194	231	253	256
67	2	161	83	81	204	203	203	204	203	203	483	481	524	548	587	588
67	3	43	5	5	5	5	5	5	5	5	8	8	9	11	12	13
68	1	95	44	41	51	49	48	51	48	49	109	107	127	153	169	171
68	2	164	84	82	200	198	198	200	198	199	473	471	517	537	577	579
68	3	54	14	13	18	17	17	18	17	17	33	32	37	45	49	50

01-III

 * RHR511 MODEL *

TOTAL NO. OF EARTHQUAKES: 33

** STANDARD DEVIATION **

*TOTAL ACCELERATION(ABS. SUM)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
6	1	21	2	2	1	1	1	1	1	1	1	2	2	2	2	2
6	2	25	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	3	24	11	11	10	10	10	10	10	10	14	14	16	15	17	17
9	1	49	39	39	41	40	39	41	39	40	70	69	75	83	90	90
9	2	61	33	33	26	26	25	26	25	25	42	41	43	54	56	56
9	3	27	15	15	14	14	14	14	14	14	21	20	23	24	26	26
12	1	41	33	33	36	36	36	36	36	36	63	62	70	71	79	79
12	2	28	5	5	4	4	4	4	4	4	7	6	7	9	9	9
12	3	45	33	33	29	29	29	29	29	29	46	46	51	51	57	57
16	1	40	29	29	32	32	32	32	32	32	54	53	59	59	65	65
16	2	25	1	1	1	1	1	1	1	1	1	1	1	1	1	1
16	3	48	35	35	33	33	33	33	33	33	59	59	67	68	77	77
19	1	49	25	24	37	37	37	37	37	37	73	72	78	83	88	88
19	2	26	2	2	3	3	3	3	3	3	6	6	6	6	6	6
19	3	45	20	19	36	36	36	36	36	36	70	70	76	76	81	81
22	1	50	25	25	44	44	44	44	44	44	83	82	88	95	101	101
22	2	47	30	29	64	64	64	64	64	64	119	118	123	126	131	131
22	3	22	8	8	16	16	16	16	16	16	32	32	36	34	38	38
23	1	50	26	25	44	44	44	44	44	44	83	83	89	96	102	102
23	2	49	31	31	65	65	65	65	65	65	123	123	128	131	137	137
23	3	23	8	8	16	15	15	15	15	15	32	32	37	34	38	39
35	1	50	30	30	73	73	73	73	73	73	144	144	145	164	164	164
35	2	51	28	28	65	65	65	65	65	65	130	130	131	151	151	151
35	3	17	1	1	1	1	1	1	1	1	1	1	1	1	1	1
36	1	47	30	30	71	71	71	71	71	71	140	140	140	159	159	159
36	2	52	29	28	67	67	67	67	67	67	134	134	134	155	155	155
36	3	19	9	8	14	14	14	14	14	14	27	27	29	29	31	31
39	1	43	29	23	67	67	67	67	67	67	131	131	131	148	147	147
39	2	51	25	25	46	46	46	46	46	46	92	91	94	109	110	110
39	3	34	18	19	25	25	25	25	25	25	38	38	42	45	50	50
42	1	37	25	25	47	47	47	47	47	47	90	90	92	98	100	100
42	2	43	21	20	21	20	20	21	20	21	32	31	37	38	43	45
42	3	32	15	15	20	20	20	20	20	20	29	28	31	34	37	37
45	1	32	21	21	34	34	34	34	34	34	62	62	64	67	70	70
45	2	48	11	11	9	9	9	9	9	9	14	14	17	19	21	22
45	3	30	12	12	17	16	16	17	16	17	23	23	26	28	30	30
50	1	41	20	19	26	25	25	25	25	25	46	46	52	52	59	60
50	2	45	11	11	9	8	8	9	8	9	14	13	16	19	22	23
50	3	20	7	7	6	6	6	6	6	6	10	10	13	11	14	14
57	1	7	6	6	6	6	6	6	6	6	8	8	8	11	11	11
57	2	38	8	8	6	5	5	6	5	6	9	8	9	10	10	11
57	3	18	1	1	1	1	1	1	1	1	1	1	1	1	1	1

 * RHRS11 MODEL *

TOTAL NO. OF EARTHQUAKES: 33

** STANDARD DEVIATION **

*TOTAL ACCELERATION (ABS. SUM)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
59	1	2	2	2	2	2	2	2	2	2	3	3	3	4	4	4
59	2	40	16	15	13	12	12	13	12	13	19	17	19	23	23	25
59	3	22	7	7	6	6	6	6	6	6	10	10	10	13	12	13
67	1	31	12	12	14	14	14	14	14	14	25	25	29	31	33	33
67	2	47	27	26	50	50	50	50	50	50	96	96	102	100	107	107
67	3	17	1	1	1	1	1	1	1	1	1	1	1	1	2	2
68	1	24	8	7	10	10	10	10	10	10	18	18	21	22	24	24
68	2	47	25	25	46	46	46	46	46	46	88	87	94	91	97	98
68	3	18	2	2	4	4	4	4	4	4	7	7	8	8	9	9

 * RHRSI1 MODEL *

 ** MEAN VALUES **

TOTAL NO. OF EARTHQUAKES: 33

*TOTAL MOMENTS AND FORCES(SRSS)

ELEM. NO.	FORCE CODE	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	6	105	57	56	46	46	46	46	46	46	150	149	181	178	212	213
2	6	65	31	31	74	74	74	74	74	74	220	220	255	272	306	307
3	12	76	41	41	95	94	94	95	94	94	258	258	297	319	358	358
6	12	84	42	42	87	87	87	87	87	87	250	250	291	308	350	350
9	12	76	38	37	107	106	106	107	106	106	293	292	329	356	390	391
16	12	95	48	48	104	103	103	104	103	103	292	292	331	366	401	401
19	12	75	34	33	159	158	158	159	158	158	409	408	436	496	527	527
20	12	69	31	31	175	174	174	175	174	174	442	441	462	533	554	554
21	12	64	26	26	150	150	150	150	150	150	397	396	427	487	521	521
22	6	108	55	54	191	190	190	191	190	191	475	474	496	574	598	599
32	12	53	29	29	190	189	189	190	189	189	465	465	467	560	561	562
33	12	44	19	18	181	181	180	181	180	181	454	454	457	548	551	551
36	12	56	28	28	121	121	121	121	121	121	315	315	324	385	397	398
39	12	35	18	18	121	121	121	121	121	121	315	315	317	383	386	386
42	12	34	18	18	129	129	129	129	129	129	332	332	332	402	403	403
47	12	0	0	0	3	3	3	3	3	3	18	18	19	24	26	26
54	12	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
59	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	6	103	48	47	140	140	139	140	139	140	375	374	408	465	505	505
61	12	68	30	29	168	168	168	168	168	168	433	433	455	528	556	556
62	12	60	23	23	153	153	153	153	153	153	403	403	425	491	520	520
70	12	76	35	31	104	102	102	104	102	103	279	277	312	340	371	372

III-13

 * RHRIS1 MODEL *

TOTAL NO. OF EARTHQUAKES: 33

** STANDARD DEVIATION **

*TOTAL MOMENTS AND FORCES(SRSS)

ELEM. NO.	FORCE CODE	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	6	33	26	26	26	26	26	26	26	26	48	48	55	53	60	60
2	6	30	20	20	43	43	43	43	43	43	92	92	99	105	114	114
3	12	32	18	18	37	37	37	37	37	37	84	84	92	98	106	106
6	12	31	19	19	40	40	40	40	40	40	82	82	86	92	97	97
9	12	28	19	19	42	42	43	42	43	42	86	86	88	94	97	97
16	12	37	22	22	31	31	31	31	31	31	66	66	71	74	79	79
19	12	26	17	17	44	44	44	44	44	44	88	88	89	96	99	99
20	12	33	19	19	47	47	47	47	47	47	93	93	94	104	106	106
21	12	32	21	20	45	45	45	45	45	45	91	91	93	101	105	105
22	6	30	17	17	48	48	48	48	48	48	94	94	96	102	104	104
32	12	47	24	24	60	60	60	60	60	60	121	121	121	138	138	138
33	12	47	23	23	58	58	58	58	58	58	116	116	116	133	133	133
36	12	37	20	20	46	46	46	46	46	46	102	102	104	123	126	127
39	12	33	16	16	49	49	49	49	49	49	110	110	110	131	132	132
42	12	34	16	16	51	51	51	51	51	51	114	114	114	135	135	135
47	12	3	2	2	4	4	4	4	4	4	12	12	13	16	17	17
54	12	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
59	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	6	38	18	18	38	38	38	38	38	38	76	76	80	83	88	88
61	12	36	20	20	49	49	49	49	49	49	98	98	99	113	115	115
62	12	29	17	17	44	44	44	44	44	44	87	87	88	98	99	99
70	12	33	21	20	39	39	39	39	39	39	81	81	87	91	98	98

 * HRRS. 1 MODEL *

 ** MEAN V_r UES **

TOTAL NO. OF EARTHQUAKES: 33

*TOTAL MOMENTS AND FORCES(ABS. SUM)

ELEM. NO.	FORCE CODE	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	6	118	70	69	59	59	58	59	58	59	163	162	195	192	226	226
2	6	109	72	72	120	120	120	120	120	120	271	271	306	324	359	359
3	12	128	89	89	149	149	149	149	149	149	320	320	360	382	422	422
6	12	122	78	78	125	125	125	125	125	125	291	291	333	349	392	392
9	12	110	70	70	142	141	141	142	141	141	330	330	366	393	428	429
16	12	134	85	84	142	142	142	142	142	142	334	333	373	408	443	443
19	12	105	63	62	190	189	189	190	189	190	441	441	469	529	560	560
20	12	100	61	61	207	207	207	207	207	207	476	476	496	567	589	589
21	12	94	55	54	181	181	181	181	181	181	430	429	459	520	554	554
22	6	127	74	73	210	210	210	210	210	210	494	494	515	594	618	619
32	12	101	74	74	245	245	245	245	245	245	526	525	527	621	622	622
33	12	80	53	53	221	221	221	221	221	221	497	497	500	591	594	594
36	12	109	76	76	182	181	181	182	181	181	383	383	392	455	466	467
39	12	85	64	63	186	186	186	186	186	186	389	389	391	458	461	461
42	12	84	64	64	193	193	193	193	193	193	405	405	406	477	477	477
47	12	18	13	13	29	29	29	29	29	29	61	61	63	72	74	74
54	12	3	2	2	5	5	5	5	5	5	10	10	11	12	13	13
59	12	4	3	3	3	3	3	3	3	3	4	4	5	5	6	6
60	6	117	62	61	154	154	154	154	154	154	390	389	422	479	519	520
61	12	97	58	57	199	199	199	199	199	199	465	464	487	560	588	588
62	12	88	50	50	183	183	183	183	183	183	434	434	456	522	551	551
70	12	123	78	74	153	151	151	153	151	151	333	331	366	394	426	427

 * RHR511 MODEL *

TOTAL NO. OF EARTHQUAKES: 33

** STANDARD DEVIATION **

*TOTAL MOMENTS AND FORCES(ABS. SUM)

ELEM. NO.	FORCE CODE	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	6	33	28	28	29	29	29	29	29	29	51	51	58	56	63	63
2	6	29	21	21	43	43	43	43	43	43	90	90	96	102	110	110
3	12	34	22	22	38	38	38	38	38	38	80	80	86	92	100	100
6	12	33	25	25	44	44	44	44	44	44	85	85	89	94	99	99
9	12	28	22	22	46	46	46	46	46	46	89	89	89	96	98	98
16	12	38	26	26	34	34	34	34	34	34	67	67	72	75	79	79
19	12	27	21	21	46	47	47	46	47	47	89	89	91	98	100	100
20	12	37	25	25	50	50	50	50	50	50	96	96	96	107	108	108
21	12	34	26	26	50	50	50	50	50	50	94	94	96	105	109	109
22	6	31	19	19	50	50	50	50	50	50	97	97	98	104	106	106
32	12	56	35	35	68	68	68	68	66	68	126	126	126	143	143	143
33	12	53	31	31	64	64	64	64	64	64	121	121	121	137	137	138
36	12	42	26	26	48	48	48	48	48	48	100	99	102	120	124	124
39	12	41	23	23	52	52	52	52	52	52	109	109	110	130	131	131
42	12	42	23	23	55	55	55	55	55	55	113	113	113	133	134	134
47	12	8	5	5	11	11	11	11	11	11	22	22	23	27	27	27
54	12	2	1	1	2	2	2	2	2	2	5	5	5	6	6	6
59	12	2	1	1	1	1	1	1	1	1	2	2	2	2	3	3
60	6	39	19	19	39	39	39	39	39	39	77	77	82	84	89	89
61	12	37	24	24	50	50	50	50	50	50	98	98	99	113	115	115
62	12	30	21	21	45	45	45	45	45	45	87	87	88	98	99	99
70	12	35	25	24	39	39	39	39	39	39	78	78	84	87	94	94

 * RHR511 MODEL *

 ** MEAN VALUES **

TOTAL NO. OF EARTHQUAKES: 33

*TOTAL MOMENTS AND FORCES(SRSS)

ELEM. NO.	FORCE CODE	URS	CASE NUMBERS (PERCENTAGE)														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	
10	1	57	22	22	178	178	178	178	178	178	178	451	451	465	541	555	555
11	1	95	49	49	55	55	55	55	55	55	55	173	172	203	204	232	233
12	1	64	24	23	75	74	74	75	74	74	74	229	227	273	278	315	316
13	1	56	21	21	173	173	173	173	173	173	173	441	441	455	530	545	545
14	1	45	12	12	163	163	163	163	163	163	163	425	425	437	514	526	526
15	1	12	-9	-9	88	88	88	88	88	88	88	269	269	283	332	349	349
16	1	22	4	3	80	79	79	80	79	80	80	232	231	243	286	299	300
17	1	32	5	4	85	85	85	85	85	85	85	256	256	271	317	335	336
18	1	4	-2	-2	25	24	24	25	24	25	25	89	88	94	116	124	126
19	1	34	7	6	101	101	100	101	100	101	101	290	289	314	358	376	378
20	1	-2	-2	-2	-3	-3	-3	-3	-3	-3	-3	-2	-2	-2	-2	-2	-1
21	1	2	-1	-1	21	21	21	21	21	21	21	78	78	81	100	103	103
22	1	-1	-2	-3	-3	-3	-3	-3	-3	-3	-3	0	0	4	3	5	6
23	1	52	18	15	141	140	140	141	140	140	140	373	373	393	455	477	477
24	1	54	15	13	108	108	108	108	108	108	108	308	307	335	373	402	402

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 * RHR511 MODEL *

TOTAL NO. OF EARTHQUAKES: 33

** STANDARD DEVIATION **

*TOTAL MOMENTS AND FORCES(SRSS)

ELEM. NO.	FORCE CODE	URS	CASE NUMBERS (PERCENTAGE)														
			1	2	3	4	5	6	7	8	9	10	* 11	12	13	14	
10	1	46	22	22	53	53	53	53	53	53	53	106	106	106	122	124	124
11	1	39	29	29	32	32	32	32	32	32	32	62	62	68	68	73	73
12	1	33	23	22	32	32	32	32	32	32	32	66	66	70	72	77	77
13	1	44	21	21	50	50	50	50	50	50	50	100	100	100	115	117	117
14	1	44	20	20	45	45	45	45	45	45	45	90	90	91	106	107	107
15	1	23	13	13	39	39	39	39	39	39	39	78	78	79	86	87	87
16	1	27	13	13	35	34	34	35	34	34	34	79	78	81	94	97	98
17	1	26	16	16	39	39	39	39	39	39	39	83	83	85	95	98	98
18	1	13	7	7	17	16	16	17	16	16	16	42	42	44	53	57	57
19	1	31	16	15	35	35	35	35	35	35	35	74	74	77	83	90	90
20	1	1	1	2	2	2	2	2	2	2	2	1	1	1	1	1	1
21	1	9	7	7	17	17	17	17	17	17	17	48	48	49	59	60	60
22	1	4	3	3	3	3	3	3	3	3	3	4	4	6	5	7	8
23	1	32	18	17	50	50	50	50	50	50	50	100	100	102	112	112	112
24	1	25	16	15	34	34	34	34	34	34	34	67	67	70	73	78	78

 * RHR511 MODEL *

 ** MEAN VALUES **

TOTAL NO. OF EARTHQUAKES: 33

*TOTAL MOMENTS AND FORCES(ABS. SUM)

ELEM. NO.	FORCE CODE	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
10	1	79	43	43	200	200	200	200	200	200	474	474	488	564	578	578
11	1	111	65	65	71	71	71	71	71	71	189	188	220	221	249	249
12	1	92	52	50	104	103	103	104	103	103	259	258	304	308	346	347
13	1	78	43	43	197	197	197	197	197	197	466	466	479	554	569	569
14	1	55	21	21	173	173	173	173	173	173	435	435	446	524	535	536
15	1	41	17	17	120	120	120	120	120	120	304	304	318	367	384	384
16	1	66	44	42	133	132	132	133	132	132	292	291	303	347	360	361
17	1	71	40	40	128	128	128	128	128	128	303	303	319	365	384	384
18	1	43	31	30	74	73	73	74	73	73	150	148	156	179	189	190
19	1	74	45	43	146	145	145	146	145	145	338	338	363	406	425	427
20	1	5	3	3	3	2	2	3	2	2	6	6	8	9	10	10
21	1	32	23	23	66	66	66	66	66	66	141	141	143	166	169	169
22	1	20	14	13	13	12	12	13	12	13	27	25	35	32	38	40
22	1	78	43	40	168	167	167	168	167	167	402	401	421	483	505	505
24	1	73	33	32	128	128	127	128	127	128	328	327	355	393	422	423

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 * RHR511 MODEL *

TOTAL NO. OF EARTHQUAKES: 33

** STANDARD DEVIATION **

*TOTAL MOMENTS AND FORCES(ABS. SUM)

ELEM. NO.	FORCE CODE	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
10	1	50	28	28	59	59	59	59	59	59	112	112	112	128	129	129
11	1	40	31	31	36	36	36	36	36	36	66	66	72	72	77	77
12	1	35	27	27	37	37	37	37	37	37	69	69	74	76	80	80
13	1	48	27	27	55	55	55	55	55	55	105	105	106	121	122	122
14	1	44	21	21	46	46	46	46	46	46	91	91	92	107	108	108
15	1	24	17	17	41	41	41	41	41	41	79	79	79	86	87	87
16	1	32	18	17	36	36	36	36	36	36	76	76	79	91	94	95
17	1	28	20	20	41	41	41	41	41	41	82	82	83	93	95	95
18	1	20	12	12	23	22	22	23	22	23	46	45	48	55	59	59
19	1	34	20	20	39	39	39	39	39	39	75	75	78	89	90	91
20	1	2	2	1	1	1	1	1	1	1	3	3	4	4	5	5
21	1	18	11	11	27	27	27	27	27	27	56	56	57	66	67	67
22	1	10	6	6	6	5	5	6	5	6	10	10	14	13	15	16
23	1	34	22	21	51	51	51	51	51	51	101	101	102	112	113	113
24	1	27	19	18	37	37	37	37	37	37	69	69	73	75	80	80

 * AFWSG1 MODEL *

 ** MEAN VALUES **

TOTAL NO. OF EARTHQUAKES: 33

*TOTAL ACCELERATION(SRSS)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
20	1	138	10	8	14	13	10	14	10	11	68	66	79	90	101	104
20	2	127	15	13	14	13	12	14	12	12	34	32	43	45	58	59
20	3	309	47	40	55	51	38	55	38	41	189	182	222	236	270	276
30	1	144	11	9	16	15	11	16	11	12	73	71	85	96	109	111
30	2	353	104	98	86	82	74	86	74	76	174	167	223	222	287	294
30	3	434	86	74	91	85	69	51	69	72	278	268	322	340	387	395
40	1	276	75	70	125	117	90	125	90	92	319	308	354	381	433	440
40	2	230	51	48	43	40	35	43	35	36	96	91	131	129	173	177
40	3	440	88	76	94	88	72	94	72	75	285	275	329	347	395	404
45	1	106	8	7	2	2	0	2	0	0	41	40	56	54	73	74
45	2	278	61	55	49	46	38	49	38	40	122	115	161	162	209	215
45	3	265	31	23	80	79	67	80	67	68	282	278	318	336	379	382
60	1	252	71	69	85	84	81	85	81	81	321	320	369	388	434	434
60	2	447	94	87	116	111	98	116	98	103	298	286	351	304	456	472
60	3	273	34	26	83	82	70	83	70	71	287	283	325	343	387	391
70	1	318	57	53	62	59	52	62	52	54	244	239	303	305	366	372
70	2	484	119	101	121	113	92	121	92	96	312	298	363	418	489	501
70	3	312	60	57	58	56	50	58	50	51	234	230	293	294	354	350
80	1	168	34	33	21	20	19	21	19	19	163	163	182	207	229	230
80	2	443	118	102	109	101	84	109	84	88	294	280	365	395	490	502
80	3	250	69	68	77	77	75	77	75	75	291	290	327	356	393	395
90	1	213	59	59	50	50	49	50	49	49	244	243	262	302	318	319
90	2	382	84	79	89	86	76	89	76	79	235	228	317	321	438	447
90	3	233	58	56	74	73	68	74	68	69	263	262	318	322	377	380
102	1	212	58	58	50	50	49	50	49	49	243	243	259	302	317	317
102	2	385	120	115	140	140	128	143	128	131	387	381	510	479	619	625
102	3	242	68	66	68	68	65	68	65	66	269	268	309	330	377	378
110	1	309	86	79	94	91	79	94	79	80	303	299	392	380	485	490
110	2	310	97	93	117	115	106	117	106	108	325	321	426	408	516	521
110	3	254	71	68	73	72	68	73	68	69	274	273	325	338	398	400
111	1	363	105	96	123	119	102	123	102	103	350	343	456	439	565	571
111	2	139	29	27	43	42	37	43	37	38	120	118	150	159	192	195
111	3	254	71	68	73	72	68	73	68	69	274	273	325	332	398	400
120	1	284	82	72	99	95	78	99	78	80	300	294	361	372	441	446
120	2	131	19	17	27	26	22	27	22	22	91	89	125	126	185	167
120	3	293	82	77	105	103	93	105	93	94	317	314	410	391	495	499
125	1	297	90	80	107	104	86	107	86	87	315	309	383	391	467	471
125	2	267	68	64	88	86	77	88	77	78	230	236	313	310	402	406
125	3	355	94	87	113	111	97	113	97	98	331	327	408	409	506	516
132	1	309	59	53	92	85	74	92	74	76	286	280	359	356	433	440
132	2	105	3	2	5	5	3	5	3	4	26	25	32	48	56	57
132	3	319	117	109	210	206	190	210	190	192	421	415	492	502	584	589

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 * AFWSG1 MODEL *

 ** MEAN VALUES **

TOTAL NO. OF EARTHQUAKES: 33

*TOTAL ACCELERATION(SRSS)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
137	1	288	74	65	92	90	76	92	76	77	254	249	326	323	413	418
137	2	82	0	0	0	0	0	0	0	0	0	0	0	1	1	1
137	3	175	33	30	42	41	33	42	33	34	144	142	177	180	218	220
142	1	121	16	14	21	20	17	21	17	17	66	65	83	89	111	113
142	2	273	65	61	132	130	121	132	121	121	306	302	370	400	469	472
142	3	193	43	39	65	63	55	65	55	55	185	182	226	231	279	281
152	1	138	58	55	77	77	69	77	69	69	186	184	223	231	274	276
152	2	111	3	2	4	4	3	4	3	3	23	23	30	44	52	52
152	3	183	45	41	73	71	63	73	63	64	185	182	216	236	271	274
163	1	99	20	19	32	32	30	32	30	30	87	86	99	110	126	127
163	2	108	1	1	0	0	0	0	0	0	2	2	2	3	4	4
163	3	156	36	35	56	56	54	56	54	54	127	127	145	171	192	193
172	1	49	25	25	22	22	21	22	21	21	51	51	63	75	90	90
172	2	110	3	3	2	2	2	2	2	2	6	6	7	9	10	10
172	3	182	105	105	99	98	96	99	96	97	203	202	221	257	279	279
183	1	53	26	26	21	21	20	21	20	20	34	34	40	46	56	56
183	2	66	33	33	24	24	24	24	24	24	38	38	42	47	53	54
183	3	30	15	14	17	17	14	17	14	14	47	46	52	59	67	67
184	1	14	6	6	4	4	4	4	4	4	9	9	12	14	18	18
184	2	23	9	9	8	8	8	8	8	8	11	11	13	14	16	16
184	3	4	2	2	2	2	1	2	1	1	6	6	7	9	10	10

 * AFWSG1 MODEL *

TOTAL NO. OF EARTHQUAKES: 33

** STANDARD DEVIATION **

*TOTAL ACCELERATION(SRSS)

NCIDE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
20	1	93	8	7	8	7	7	8	7	7	17	16	19	20	23	23
20	2	120	8	7	6	5	5	6	5	5	11	11	14	15	18	19
20	3	196	22	21	17	16	15	17	15	15	36	35	42	42	49	49
30	1	96	8	8	8	8	7	8	7	7	18	17	21	21	24	25
30	2	218	31	29	24	23	20	24	20	21	48	45	56	60	69	71
30	3	247	32	31	27	26	24	27	24	24	56	55	61	63	71	72
40	1	176	23	22	29	27	25	29	25	26	49	47	58	58	72	73
40	2	169	17	16	14	13	12	14	12	13	26	25	33	34	42	43
40	3	249	32	31	28	27	25	28	25	25	58	57	63	65	73	74
45	1	77	5	5	4	4	4	4	4	4	9	9	12	11	15	15
45	2	200	22	19	17	16	14	17	14	15	35	32	41	45	52	54
45	3	244	19	17	39	38	35	39	35	35	85	84	90	96	103	104
60	1	223	50	50	49	49	48	49	48	48	112	111	120	128	137	137
60	2	239	29	28	30	29	27	30	27	28	53	50	55	72	71	75
60	3	243	19	17	38	38	35	38	35	35	84	83	89	95	102	103
70	1	271	27	27	33	33	32	33	32	31	73	73	86	83	97	97
70	2	300	37	33	35	33	31	35	31	31	60	57	66	81	91	94
70	3	191	30	30	31	31	30	31	30	30	68	69	80	78	90	90
80	1	206	26	26	24	24	24	24	24	24	58	58	59	59	66	68
80	2	217	34	32	34	32	30	34	30	31	62	59	72	82	96	100
80	3	259	59	59	55	55	55	55	55	55	127	127	131	147	152	153
90	1	229	44	44	40	40	40	40	40	40	93	93	93	107	106	106
90	2	225	36	34	40	39	37	40	37	38	69	67	87	89	114	116
90	3	193	49	49	43	43	42	43	42	42	99	99	106	114	122	123
102	1	229	44	44	40	40	40	40	40	40	93	93	93	107	106	106
102	2	213	49	48	53	53	51	53	51	51	109	108	132	127	151	152
102	3	233	54	54	49	49	49	49	49	49	115	115	118	133	138	138
110	1	198	34	33	36	35	33	36	33	33	72	71	87	84	103	103
110	2	206	57	57	55	55	54	55	54	54	118	118	143	137	163	163
110	3	224	50	50	45	45	45	45	45	45	105	105	111	121	131	131
111	1	198	34	33	39	38	35	39	35	35	72	71	89	85	104	105
111	2	116	17	16	21	20	19	21	19	20	39	38	47	47	54	55
111	3	224	50	50	45	45	45	45	45	45	105	105	111	121	131	131
120	1	157	31	29	29	29	26	29	26	27	59	58	70	68	81	81
120	2	109	13	12	15	15	14	15	14	14	32	32	41	39	48	49
120	3	203	39	39	37	37	37	37	37	37	79	79	95	91	111	112
125	1	153	33	31	31	30	28	31	28	28	62	61	74	72	86	86
125	2	165	31	30	33	32	31	33	31	32	65	65	83	76	96	97
125	3	167	50	49	46	45	43	46	43	43	98	97	114	114	137	138
132	1	173	28	28	31	30	28	31	28	28	62	61	73	70	82	83
132	2	110	4	4	5	5	4	5	4	4	14	13	15	17	18	19
132	3	148	40	38	43	42	40	43	40	40	74	72	87	88	105	106

III-23

 * AFWSG1 MODEL *

TOTAL NO. OF EARTHQUAKES: 33

** STANDARD DEVIATION **

*TOTAL ACCELERATION(SRSS)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
137	1	158	25	24	27	27	25	27	25	25	46	46	58	53	65	65
137	2	106	1	1	1	1	1	1	1	1	1	1	1	1	1	1
137	3	168	18	17	21	20	19	21	19	19	32	32	41	39	48	49
142	1	83	8	8	9	9	8	9	8	8	17	17	22	22	28	29
142	2	134	25	24	44	44	43	44	43	43	79	79	93	88	103	103
142	3	165	22	21	23	23	22	23	22	22	39	38	48	47	57	58
152	1	68	36	36	36	36	36	36	36	36	49	49	55	57	64	65
152	2	115	2	2	3	3	3	3	3	3	9	9	11	13	15	15
152	3	138	23	23	21	21	20	21	20	20	32	32	38	38	44	45
163	1	65	14	14	17	17	17	17	17	17	24	24	27	29	33	33
163	2	117	1	1	1	1	1	1	1	1	1	1	1	1	1	1
163	3	159	25	25	22	22	21	22	21	22	32	32	36	37	42	42
172	1	26	11	11	10	10	10	10	10	10	17	17	20	22	26	26
172	2	118	3	3	2	2	2	2	2	2	3	3	3	4	4	4
172	3	86	53	53	49	49	49	49	49	49	69	69	74	83	89	89
183	1	40	14	14	11	11	11	11	11	11	15	15	17	17	19	19
183	2	38	16	15	14	14	14	14	14	14	18	18	19	21	24	24
183	3	14	7	7	8	8	7	8	7	7	16	16	18	20	22	22
184	1	11	4	4	3	3	3	3	3	3	4	4	5	6	7	7
184	2	19	6	6	5	5	5	5	5	5	6	6	7	7	8	8
184	3	3	2	2	2	2	2	2	2	2	4	4	4	4	5	5

 * AFWSG1 MODEL *

 ** MEAN VALUES **

TOTAL NO. OF EARTHQUAKES: 33

*TOTAL ACCELERATION (ABS. SUM)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
20	1	229	48	45	56	54	47	56	47	48	137	134	152	168	184	186
20	2	212	56	54	52	51	47	52	47	48	86	84	101	104	122	124
20	3	438	103	94	111	106	91	111	91	94	278	270	313	335	371	378
30	1	238	51	47	59	57	50	59	50	51	144	140	160	177	193	196
30	2	476	171	165	152	147	138	152	138	140	251	214	302	310	378	385
30	3	537	132	120	133	128	111	133	111	114	358	347	403	425	473	482
40	1	398	140	135	187	179	149	187	149	152	418	407	454	487	541	548
40	2	343	111	106	101	97	91	101	91	92	166	160	205	205	253	257
40	3	540	133	121	136	130	113	136	113	117	364	353	409	432	481	490
45	1	176	40	38	36	35	32	36	32	32	98	97	120	118	144	145
45	2	392	122	115	108	104	94	108	94	96	193	185	236	240	290	297
45	3	379	78	70	129	127	115	129	115	116	373	369	410	436	479	482
60	1	301	99	97	124	123	120	124	120	120	414	413	463	495	542	543
60	2	533	142	136	160	154	141	160	141	146	363	351	417	477	529	545
60	3	389	82	73	132	130	117	132	117	119	379	374	418	443	488	492
70	1	380	91	87	93	91	83	93	83	85	312	307	372	385	448	453
70	2	561	167	149	164	156	135	164	135	139	387	373	442	497	569	581
70	3	382	92	89	91	88	82	91	82	84	301	297	361	373	434	439
80	1	253	82	82	60	60	59	60	59	59	238	237	258	292	315	317
80	2	526	167	151	155	146	128	155	128	132	369	354	440	476	572	585
80	3	321	104	102	129	129	126	129	126	126	394	393	432	473	512	514
90	1	275	95	95	78	78	77	78	77	77	301	300	317	370	386	386
90	2	447	125	119	133	130	120	133	120	122	287	280	369	377	495	504
90	3	335	108	105	132	131	125	132	125	126	361	360	420	430	489	492
102	1	274	95	95	78	77	76	78	76	76	300	300	316	369	385	385
102	2	427	145	139	180	177	165	180	165	167	458	452	582	572	712	720
102	3	323	104	103	114	114	111	114	111	111	353	352	394	423	471	472
110	1	376	123	117	124	120	108	124	108	109	366	361	456	449	555	560
110	2	406	151	146	175	173	164	175	164	166	410	406	513	525	637	642
110	3	336	107	105	120	119	114	120	114	115	359	357	412	431	493	495
111	1	427	141	131	153	148	130	153	130	132	412	405	520	507	633	639
111	2	234	80	77	101	100	93	101	93	94	195	193	229	247	284	286
111	3	336	107	105	120	119	114	120	114	115	359	357	412	431	493	495
120	1	367	129	118	142	139	121	142	121	123	379	374	442	462	532	537
120	2	222	66	63	78	77	71	78	71	71	160	157	197	204	247	250
120	3	391	126	121	154	152	141	154	141	142	410	406	505	492	598	602
125	1	379	136	124	150	147	128	150	128	130	394	388	463	480	556	561
125	2	381	129	125	153	151	141	153	141	142	321	317	397	418	513	517
125	3	442	133	125	161	158	144	161	144	146	423	419	502	509	608	612
132	1	379	96	89	136	133	118	136	118	129	363	357	438	446	524	532
132	2	173	28	27	35	34	30	35	30	31	76	74	85	107	119	121
132	3	460	181	172	333	329	308	333	308	310	615	608	696	717	810	815

III-25

 * AFWSG1 MODEL *

TOTAL NO. OF EARTHQUAKES: 33

** MEAN VALUES **

*TOTAL ACCELERATION(ABS. SUM)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
137	1	386	126	117	151	149	133	151	133	134	342	337	416	420	514	518
137	2	90	4	3	4	4	4	4	4	4	8	8	9	10	11	11
137	3	280	86	83	98	96	87	98	87	88	235	232	273	280	323	326
142	1	206	60	56	68	67	60	68	60	60	133	132	154	162	189	191
142	2	377	120	116	224	221	209	224	209	210	451	447	523	586	664	668
142	3	307	99	94	129	127	117	129	117	117	287	284	333	346	399	401
152	1	225	109	106	138	137	127	138	127	128	282	280	322	339	386	388
152	2	155	26	25	32	32	29	32	29	29	70	69	81	99	112	113
152	3	292	102	96	142	140	129	142	129	130	295	292	332	367	408	411
163	1	174	66	65	85	85	82	85	82	82	161	150	176	190	210	210
163	2	126	13	13	11	11	11	11	11	11	17	17	19	23	24	24
163	3	254	90	89	118	118	114	118	114	115	220	219	244	281	310	311
172	1	108	76	76	72	72	70	72	70	70	112	112	127	146	165	165
172	2	143	26	26	22	22	22	22	22	22	32	32	35	41	44	44
172	3	246	152	152	148	148	145	148	145	146	279	278	298	344	367	367
183	1	111	77	77	69	69	68	69	68	68	89	88	97	106	118	118
183	2	130	85	85	73	73	72	73	72	72	93	93	98	105	114	114
183	3	81	57	56	64	63	58	64	58	59	106	105	113	123	132	133
184	1	54	38	38	34	34	34	34	34	34	45	45	50	54	62	62
184	2	56	35	34	32	32	31	32	31	31	41	41	45	46	53	53
184	3	27	19	19	22	22	20	22	20	20	35	35	37	41	44	44

 * AFWSG1 MODEL *

TOTAL NO. OF EARTHQUAKES: 33

** STANDARD DEVIATION **

*TOTAL ACCELERATION (ABS. SUM)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
20	1	129	14	13	13	12	11	13	11	12	24	24	27	28	31	31
20	2	159	13	12	10	10	9	10	9	9	18	17	20	22	25	25
20	3	249	26	25	20	19	18	20	18	18	38	37	44	44	51	52
30	1	132	14	14	13	13	12	13	12	12	25	25	28	29	32	33
30	2	269	36	33	29	28	25	29	25	26	53	50	61	66	75	78
30	3	279	33	32	28	28	26	28	26	26	59	58	63	65	73	74
40	1	230	27	27	32	30	29	32	29	29	54	52	63	64	77	78
40	2	223	21	20	18	17	16	18	16	17	30	28	36	38	45	47
40	3	280	33	33	29	29	27	29	27	27	61	60	66	68	76	77
45	1	107	10	9	7	7	7	7	7	7	14	14	17	16	21	21
45	2	247	25	23	22	20	19	22	19	19	38	36	44	49	56	58
45	3	321	23	22	41	40	38	41	38	38	89	88	93	100	107	108
60	1	240	54	54	59	59	58	59	58	58	136	136	146	156	166	166
60	2	259	33	32	33	32	31	33	31	31	58	55	59	78	77	81
60	3	320	23	22	40	40	38	40	38	38	88	87	93	99	106	107
70	1	293	33	33	39	39	37	39	37	37	86	86	99	99	113	113
70	2	315	42	38	39	38	36	39	36	36	69	66	75	91	101	104
70	3	223	35	34	38	38	37	38	37	36	82	83	94	95	107	107
80	1	241	33	33	28	28	28	28	28	28	64	64	66	73	75	75
80	2	232	42	39	42	40	37	40	37	38	75	73	86	97	111	114
80	3	298	66	66	69	69	69	69	69	69	153	153	158	176	182	183
90	1	245	49	49	44	44	43	44	43	43	100	100	101	115	117	117
90	2	239	44	43	50	49	47	50	48	48	81	79	99	102	128	130
90	3	242	58	58	55	55	55	55	55	55	118	118	126	136	144	144
102	1	245	49	49	43	44	43	43	43	43	100	100	101	115	116	116
102	2	225	54	53	63	63	60	63	60	60	128	127	151	151	176	177
102	3	278	60	60	59	59	59	59	59	59	130	130	135	149	156	156
110	1	219	40	40	42	41	39	42	39	39	84	84	100	98	116	117
110	2	238	69	69	69	69	67	69	67	67	137	137	163	164	191	191
110	3	269	55	55	54	54	54	54	54	54	120	120	126	137	147	147
111	1	218	40	39	44	43	40	44	40	41	85	84	101	99	116	117
111	2	155	25	25	28	28	27	28	27	27	45	45	53	54	62	62
111	3	269	55	55	54	54	54	54	54	54	119	120	126	137	147	147
120	1	181	39	36	36	35	33	36	33	33	71	70	83	81	94	95
120	2	145	20	19	22	22	21	22	21	21	38	38	46	46	55	55
120	3	258	46	46	46	46	45	46	45	45	95	95	111	108	128	128
125	1	176	40	38	38	37	35	38	35	35	74	74	87	86	100	101
125	2	211	39	39	41	41	40	41	40	40	74	74	92	90	109	109
125	3	202	57	56	57	56	54	57	54	54	119	119	136	137	160	161
132	1	194	33	32	36	35	33	36	33	33	70	69	81	79	92	92
132	2	132	7	7	10	10	9	10	9	9	20	20	21	25	26	26
132	3	206	45	43	59	58	55	59	55	55	100	98	113	116	134	135

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 * AFWSG1 MODEL *

TOTAL NO. OF EARTHQUAKES: 33

** STANDARD DEVIATION **

*TOTAL ACCELERATION (ABS. SUM)

NODE NO.	COMP. NO.	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
137	1	188	29	28	32	32	30	32	30	30	53	53	64	61	71	71
137	2	108	1	1	1	1	1	1	1	1	2	2	2	2	3	3
137	3	214	24	23	26	25	25	26	25	25	40	39	48	47	56	57
142	1	114	14	14	14	14	13	14	13	14	22	22	27	27	33	33
142	2	169	30	29	62	62	60	62	60	60	109	109	124	122	138	138
142	3	219	28	27	29	29	27	29	27	28	48	47	57	57	67	68
152	1	90	39	39	42	42	42	42	42	42	60	60	66	70	77	78
152	2	129	7	7	9	9	8	9	8	8	16	16	19	21	24	24
152	3	182	28	28	28	28	27	28	27	27	42	41	48	49	55	56
163	1	89	21	21	23	23	23	23	23	23	30	29	33	35	39	39
163	2	124	4	4	3	3	3	3	3	3	4	4	4	5	5	5
163	3	208	30	30	30	30	30	30	30	30	43	43	48	51	55	56
172	1	32	15	15	14	14	14	14	14	14	22	22	25	29	34	34
172	2	129	7	7	7	7	7	7	7	7	8	8	8	9	9	9
172	3	104	63	63	60	60	59	60	59	59	89	88	93	105	111	112
183	1	48	21	21	17	17	17	17	17	17	22	22	23	23	26	26
183	2	49	24	24	22	22	22	22	22	22	26	26	27	29	32	32
183	3	22	12	12	13	13	12	13	12	12	24	23	25	28	30	31
184	1	21	9	9	8	8	8	8	8	8	10	10	11	11	13	13
184	2	27	12	12	11	11	11	11	11	11	13	13	15	15	17	17
184	3	8	5	5	6	6	5	6	5	5	9	9	10	10	11	12

 * AFWSG1 MODEL *

 ** MEAN VALUES **

TOTAL NO. OF EARTHQUAKES: 33

*TOTAL MOMENTS AND FORCES(SRSS)

ELEM. NO.	FORCE CODE	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
10	12	281	81	78	94	93	88	94	88	88	321	318	357	367	424	427
14	12	265	83	80	96	96	92	96	92	92	332	331	376	401	436	437
18	12	234	84	83	89	89	87	89	87	87	319	318	344	386	405	405
23	12	228	84	84	83	83	82	83	82	83	306	305	318	373	383	384
34	12	245	82	80	93	92	90	93	90	90	327	326	367	395	426	427
44	12	350	89	85	113	111	104	113	104	105	349	346	419	425	491	494
52	12	245	75	74	76	76	75	76	75	75	289	288	321	353	382	383
62	12	252	85	84	87	87	85	87	85	85	314	313	345	383	414	416
71	12	230	82	82	83	83	81	83	81	82	306	306	328	373	393	394
76	12	301	90	88	91	89	85	91	85	86	311	308	343	383	419	424
82	12	244	91	91	91	91	90	91	90	90	324	323	342	394	411	412
86	12	287	95	93	99	98	95	99	95	95	335	333	375	407	445	447
93	12	223	60	60	64	63	61	64	61	61	255	255	284	313	343	344
98	12	253	75	74	80	79	76	80	76	76	257	256	304	315	368	369
101	12	196	50	48	57	56	51	57	51	52	209	208	251	257	296	297
108	12	264	74	70	86	85	76	86	76	77	262	259	340	327	410	413
110	12	196	63	62	64	64	61	64	61	62	199	198	252	245	305	306
121	12	108	68	68	56	56	55	56	55	55	130	130	143	172	187	187
132	12	150	106	106	91	91	91	91	91	91	177	177	191	225	242	242
133	12	186	131	131	115	115	114	115	114	114	205	204	224	256	280	280
134	12	105	69	69	58	58	58	58	58	58	133	133	148	180	198	198
157	6	57	8	7	10	9	8	10	8	9	38	38	43	49	55	55
158	12	12	2	2	1	1	1	1	1	1	6	6	7	10	11	11

 * AFWSG1 MODEL *

TOTAL NO. OF EARTHQUAKES: 33

** STANDARD DEVIATION **

*TOTAL MOMENTS AND FORCES(SRSS)

ELEM. NO.	FORCE C. DE	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
10	12	231	42	42	51	50	50	51	50	50	100	100	108	116	124	124
14	12	254	48	48	57	57	56	57	56	56	116	115	127	133	144	144
18	12	227	57	56	67	67	66	67	66	67	135	135	146	155	165	165
23	12	224	57	57	64	64	64	64	64	64	127	127	133	147	152	152
34	12	221	54	54	64	63	63	64	63	63	127	127	138	146	157	157
44	12	312	67	67	84	83	82	84	82	82	154	153	173	179	200	202
52	12	228	48	48	54	54	54	54	54	54	108	108	116	125	132	133
62	12	246	55	55	60	60	59	60	59	60	123	123	131	143	151	152
71	12	232	54	54	59	58	58	59	58	58	120	120	123	138	142	142
76	12	218	52	52	56	56	55	56	55	55	112	111	120	131	140	142
82	12	232	60	60	65	65	65	65	65	65	132	132	136	152	157	157
86	12	246	55	55	58	58	57	58	57	57	120	120	126	139	146	146
93	12	216	42	42	44	44	43	44	43	43	93	93	97	108	112	113
98	12	192	49	49	48	48	47	48	47	47	122	122	136	144	160	161
101	12	244	32	32	35	35	33	35	33	33	89	88	102	105	118	118
108	12	174	41	40	42	41	39	42	39	39	96	95	117	114	136	136
110	12	199	56	55	51	51	50	51	50	50	127	126	150	150	177	177
121	12	67	45	45	38	38	38	38	38	38	55	55	58	66	70	70
132	12	85	66	66	57	57	57	57	57	57	83	83	89	99	105	105
133	12	93	87	87	77	77	77	77	77	77	110	110	119	130	140	140
134	12	70	54	54	48	48	48	48	48	48	75	75	81	92	98	98
157	6	107	11	10	14	13	12	14	12	12	44	44	48	54	59	59
158	12	33	3	3	2	2	2	2	2	2	8	8	10	13	14	14

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 * AFWSG1 MODEL *

 ** MEAN VALUES **

TOTAL NO. OF EARTHQUAKES: 33

*TOTAL MOMENTS AND FORCES(ABS. SUM)

ELEM. NO.	FORCE CODE	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
10	12	302	101	98	114	113	108	114	108	109	342	340	379	409	446	449
14	12	282	99	97	113	113	109	113	109	109	350	348	394	418	454	455
18	12	245	95	95	100	100	99	100	99	99	330	330	356	398	417	417
23	12	240	97	96	96	95	95	96	95	95	318	318	331	385	396	397
34	12	253	90	88	101	100	98	101	98	98	335	334	375	403	434	435
44	12	359	98	94	122	120	113	122	113	114	358	355	429	434	500	504
52	12	250	80	79	81	81	80	81	80	80	293	293	326	358	387	388
62	12	258	90	89	93	92	90	93	90	88	319	318	351	388	419	421
71	12	237	89	88	90	90	88	90	88	88	313	312	335	380	400	401
76	12	314	103	101	104	102	98	104	98	99	324	321	356	396	432	437
82	12	248	95	95	95	95	94	95	94	94	328	328	346	398	415	416
86	12	300	108	106	112	111	108	112	108	108	348	347	388	421	459	461
93	12	243	79	79	83	83	80	83	80	80	276	275	305	334	364	365
98	12	304	119	118	125	124	121	125	121	121	310	309	359	370	423	425
101	12	240	88	86	96	95	90	96	90	91	256	255	299	305	345	346
108	12	303	109	105	122	121	111	122	111	112	301	298	380	367	451	453
110	12	256	114	113	115	115	112	115	112	112	262	261	318	310	373	374
121	12	134	93	93	80	80	80	80	80	80	157	157	169	200	214	215
132	12	198	153	152	137	137	137	137	137	137	227	227	241	277	294	294
133	12	242	185	185	168	168	167	168	167	167	263	262	283	316	340	340
134	12	144	107	107	96	96	95	96	95	95	174	174	189	221	240	240
157	6	105	36	35	40	40	38	40	38	38	89	88	95	103	111	112
158	12	40	24	24	21	21	21	21	21	21	35	35	37	42	44	44

 * AFWSG1 MODEL *

TOTAL NO. OF EARTHQUAKES: 33

** STANDARD DEVIATION **

*TOTAL MOMENTS AND FORCES(ABS. SUM)

ELEM. NO.	FORCE CODE	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
10	12	229	45	45	58	57	56	58	56	56	105	104	113	120	128	129
14	12	253	51	51	63	62	61	63	61	61	120	120	132	138	149	149
18	12	226	61	60	73	73	72	73	72	72	140	140	152	161	171	171
23	12	222	61	61	70	70	70	70	70	70	133	132	139	152	158	158
34	12	221	56	56	67	67	66	67	66	66	130	130	142	149	160	160
44	12	313	71	71	89	88	86	89	86	87	158	157	178	183	205	206
52	12	228	50	49	56	56	56	56	56	56	110	110	118	127	134	135
62	12	246	56	56	62	62	61	62	61	62	125	124	133	144	153	154
71	12	231	56	56	61	61	61	61	61	61	122	122	126	141	145	145
76	12	217	57	57	63	62	61	63	61	62	118	117	127	136	147	148
82	12	231	60	60	66	66	66	66	66	66	133	133	137	153	158	158
86	12	243	54	55	59	59	58	59	58	58	119	119	126	138	145	146
93	12	212	41	42	45	45	45	45	45	45	90	90	95	105	110	110
98	12	188	59	59	58	58	57	58	57	57	124	123	137	144	160	160
101	12	241	41	41	43	43	42	43	42	42	88	87	100	103	115	115
108	12	171	42	41	43	43	41	43	41	41	93	92	113	110	131	132
110	12	205	78	78	72	72	71	72	71	71	143	143	165	164	189	190
121	12	64	50	50	44	44	44	44	44	44	58	58	61	67	70	70
132	12	88	81	81	73	73	73	73	73	73	98	97	103	112	118	118
133	12	104	112	112	102	102	102	102	102	102	135	135	143	154	163	163
134	12	72	65	65	59	59	59	59	59	59	85	85	90	101	107	107
157	6	124	23	22	26	25	24	26	24	24	58	57	61	67	71	72
158	12	45	13	13	12	12	12	12	12	12	20	20	22	25	27	27

 * AFWSG1 MODEL *

TOTAL NO. OF EARTHQUAKES: 33

** MEAN VALUES **

*TOTAL MOMENTS AND FORCES(SRSS)

ELEM. NO.	FORCE CODE	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
4	1	129	35	34	31	31	30	31	30	30	102	101	111	127	141	142
5	1	238	15	6	70	68	56	70	56	57	261	257	295	312	347	350
6	1	216	39	35	38	37	32	38	32	33	124	120	154	157	193	197
7	1	251	48	44	62	60	55	62	55	55	230	227	293	287	362	364
8	1	234	71	70	83	82	79	83	79	79	304	303	347	368	403	404
9	1	387	84	77	74	70	60	74	60	63	237	230	290	312	383	392
10	1	309	50	47	68	65	58	68	58	60	248	244	325	307	390	395
11	1	220	20	14	28	26	18	28	18	18	126	122	162	182	227	230
12	1	396	121	97	91	79	60	91	60	63	269	252	301	358	411	421
13	1	267	36	33	69	68	63	69	63	64	253	251	312	309	363	365
14	1	208	43	34	64	59	48	64	48	49	215	207	274	288	377	381
15	1	368	77	74	63	61	54	63	54	56	202	195	249	276	335	343
16	1	242	60	58	69	69	65	69	65	66	269	268	315	329	369	371
17	1	317	80	78	90	88	80	90	80	82	279	276	372	350	466	470
18	1	206	66	66	65	65	64	65	64	64	268	267	279	328	336	337
19	1	227	51	49	54	53	50	54	50	50	233	231	275	291	338	340
20	1	218	52	51	54	53	51	54	51	52	237	236	273	293	333	334
21	1	229	79	79	80	80	78	80	78	79	294	293	331	361	402	404
22	1	231	82	82	82	82	80	82	80	80	301	301	322	368	395	399
23	1	233	55	53	61	59	54	61	54	55	237	234	291	300	372	373
24	1	239	76	75	76	76	74	76	74	75	260	259	302	318	366	367
25	1	155	23	21	34	33	29	34	29	29	150	149	204	190	245	246
26	1	58	3	2	6	6	4	6	4	5	38	37	58	52	75	75
27	1	68	26	26	18	17	17	18	17	17	62	61	78	92	112	112
28	1	144	71	71	54	54	53	54	53	53	130	130	153	170	195	195
29	1	126	52	52	27	27	26	27	26	26	93	92	111	131	153	153
33	1	17	1	1	-1	-1	-1	-1	-1	-1	15	15	19	28	34	34
34	1	10	-2	-2	-1	-1	-2	-1	-2	-2	9	9	13	15	21	21

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 . AFWSG1 MODEL .
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TOTAL NO. OF EARTHQUAKES: 33

** STANDARD DEVIATION **

*TOTAL MOMENTS AND FORCES(SRSS)

ELEM. NO.	FORCE CODE	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
4	1	145	39	39	36	35	35	36	35	35	85	85	89	102	107	108
5	1	327	20	19	34	34	32	34	32	32	72	71	76	82	86	87
6	1	202	30	29	28	27	25	28	25	26	71	69	84	85	101	103
7	1	223	29	29	38	38	36	38	36	37	73	72	87	84	99	100
8	1	219	46	47	56	56	55	56	55	55	111	111	123	128	139	139
9	1	256	49	47	41	40	38	41	38	39	79	78	92	95	110	112
10	1	222	36	36	43	42	41	43	41	41	82	81	98	97	115	116
11	1	203	37	35	40	39	37	40	37	37	65	64	72	75	85	86
12	1	247	99	88	76	70	65	76	65	66	133	125	139	161	175	178
13	1	316	35	35	44	43	43	44	43	43	79	78	89	91	101	102
14	1	115	29	28	35	34	31	35	31	31	72	71	86	88	109	110
15	1	245	66	65	62	60	58	62	58	59	105	102	118	127	142	146
16	1	292	43	43	48	48	47	48	47	47	97	97	107	113	123	123
17	1	235	56	56	58	58	56	58	56	56	114	113	141	134	165	166
18	1	241	45	45	45	45	45	45	45	45	95	95	95	110	110	110
19	1	272	39	39	44	44	43	44	43	43	85	85	94	99	109	109
20	1	239	42	42	43	43	43	43	43	43	91	91	97	106	113	113
21	1	219	54	54	62	62	61	62	61	62	122	121	136	141	156	157
22	1	224	58	58	64	64	63	64	63	63	129	128	137	149	160	160
23	1	181	39	38	43	43	41	43	41	41	86	85	100	101	119	120
24	1	199	69	69	62	62	62	62	62	62	152	152	165	179	194	194
25	1	242	29	28	35	35	33	35	33	33	88	87	111	104	128	128
26	1	93	9	9	13	13	12	13	12	12	42	41	58	54	71	71
27	1	52	30	30	26	26	26	26	26	26	38	37	42	44	50	50
28	1	83	57	57	50	50	49	50	49	49	76	76	83	88	97	97
29	1	98	47	47	38	38	37	38	37	37	60	60	65	73	79	79
33	1	31	9	9	9	9	9	9	9	9	18	18	21	27	31	31
34	1	37	7	7	7	7	7	7	7	7	16	15	20	21	27	27

 * AFWSG1 MODEL *

 ** MEAN VALUES **

TOTAL NO. OF EARTHQUAKES: 33

*TOTAL MOMENTS AND FORCES(ABS. SUM)

ELEM. NO.	FORCE CODE	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
4	1	193	83	82	79	78	77	79	77	77	170	169	181	199	214	216
5	1	260	36	26	91	89	77	91	77	78	284	280	318	335	370	373
6	1	285	92	87	91	88	82	91	62	84	192	188	226	228	267	271
7	1	262	58	55	72	71	65	72	65	66	241	238	304	298	373	375
8	1	239	77	75	88	88	84	88	84	85	310	309	352	374	409	409
9	1	415	111	103	100	97	86	100	86	89	265	258	318	339	411	419
10	1	316	58	55	75	73	66	75	66	68	256	252	333	315	398	403
11	1	231	30	24	39	37	28	39	28	29	137	133	173	193	238	240
12	1	414	139	115	109	97	77	109	77	80	287	270	320	376	429	439
13	1	271	40	37	73	72	68	73	68	68	257	255	316	313	367	369
14	1	238	70	61	91	87	75	91	75	76	244	237	304	318	408	411
15	1	384	93	90	79	76	69	79	69	72	218	212	266	292	351	359
16	1	244	61	60	71	70	67	71	67	68	271	270	317	331	371	373
17	1	335	98	95	108	106	98	108	98	99	298	294	391	368	484	488
18	1	215	76	76	75	75	74	75	74	74	278	277	289	338	346	347
19	1	230	54	52	57	57	53	57	53	54	236	235	278	294	341	343
20	1	221	55	54	57	56	54	57	54	54	240	239	276	296	336	337
21	1	237	88	87	89	88	87	89	87	87	303	302	339	370	411	413
22	1	240	92	91	91	91	90	91	90	90	311	310	332	377	405	406
23	1	248	70	67	76	74	69	76	69	69	252	250	306	316	388	389
24	1	285	116	116	117	117	115	117	115	116	308	307	351	367	416	417
25	1	195	57	55	69	68	63	69	63	64	193	191	246	234	290	291
26	1	104	33	32	38	38	36	33	36	36	85	84	111	104	131	132
27	1	104	60	60	51	51	50	51	50	50	98	98	114	130	150	150
28	1	182	107	107	89	89	89	89	89	89	169	169	192	209	235	235
29	1	140	65	65	39	39	39	39	39	39	106	105	124	145	167	167
33	1	55	35	35	30	30	30	30	30	30	56	56	62	74	80	80
34	1	41	23	22	23	23	22	23	22	22	43	43	51	53	61	62

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 * AFWSG1 MODEL *

TOTAL NO. OF EARTHQUAKES: 33

** STANDARD DEVIATION **

*TOTAL MOMENTS AND FORCES(ABS. SUM)

ELEM. NO.	FORCE CODE	URS	CASE NUMBERS (PERCENTAGE)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
4	1	160	59	59	54	54	54	54	54	54	105	105	109	121	126	126
5	1	326	24	23	37	37	36	37	36	36	74	73	77	83	88	88
6	1	206	41	40	38	38	36	38	36	36	77	76	90	91	106	107
7	1	223	32	32	43	42	41	43	41	41	76	75	91	88	103	104
8	1	218	47	47	58	57	57	58	57	57	112	112	124	129	140	141
9	1	252	56	54	49	48	46	49	46	47	86	85	99	102	117	119
10	1	223	38	38	45	44	42	45	42	43	83	82	99	99	116	118
11	1	202	39	37	42	41	39	42	39	39	67	66	74	77	87	87
12	1	246	106	95	83	76	71	83	71	73	140	132	146	168	181	185
13	1	316	36	36	45	45	44	45	44	44	80	79	90	92	102	103
14	1	114	30	30	36	36	33	36	33	33	72	71	85	87	108	109
15	1	246	70	70	66	65	63	66	63	64	109	106	123	131	146	150
16	1	291	44	44	49	49	48	49	48	48	98	98	108	114	124	124
17	1	234	64	63	66	65	63	66	63	64	121	120	148	141	172	174
18	1	240	46	46	47	47	47	47	47	47	97	97	97	111	112	112
19	1	271	38	38	44	44	43	44	43	43	85	85	94	98	109	109
20	1	239	42	42	43	43	43	43	43	43	91	91	97	106	113	113
21	1	216	54	54	63	63	62	63	62	62	121	121	136	141	157	157
22	1	221	56	56	63	63	62	63	62	62	126	126	135	147	158	158
23	1	178	42	42	49	48	46	49	46	46	89	89	105	105	124	124
24	1	199	83	83	76	75	75	76	75	75	160	160	172	185	200	200
25	1	240	31	31	36	36	35	36	35	35	83	82	105	98	121	121
26	1	106	19	19	24	23	22	24	22	22	52	51	66	63	78	78
27	1	50	39	39	35	35	35	35	35	35	45	45	49	51	56	56
28	1	88	68	68	62	62	62	62	62	62	86	86	93	97	105	105
29	1	95	47	47	38	38	38	38	38	38	59	59	64	71	77	77
33	1	35	16	16	14	14	14	14	14	14	23	23	26	31	35	35
34	1	44	14	14	14	14	14	14	14	14	25	25	30	31	37	37

 * ZBEND MODEL *

EARTHQUAKE NO. 1

*TOTAL ACC. (SRSS)

NODE NO.	COMP. NO.	ACC(TL) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	.24520E+03	2	2	2	2	2	2	2	2	2	2	2	2	2	2
1	2	.13362E+03	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	3	.81294E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	1	.24517E+03	2	2	2	2	2	2	2	2	2	2	2	2	2	2
2	2	.13360E+03	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	3	.83602E+03	-1	-1	-6	-6	-6	-6	-6	-6	-6	0	0	0	0	0
3	1	.24491E+03	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3	2	.13262E+03	3	3	1	1	1	1	1	1	3	3	3	3	3	3
3	3	.87641E+03	0	0	-12	-12	-12	-12	-12	-12	4	4	4	4	4	4
4	1	.24468E+03	2	2	2	2	2	2	2	2	2	2	2	2	2	2
4	2	.13045E+03	10	10	4	4	4	4	4	4	12	12	12	13	13	13
4	3	.91231E+03	6	6	-14	-14	-14	-14	-14	-14	13	13	14	13	14	14
5	1	.24078E+03	3	3	2	2	2	2	2	2	3	3	3	3	3	3
5	2	.13853E+03	268	258	188	186	166	188	166	168	297	293	294	331	328	332
5	3	.10508E+04	28	28	-4	-4	-4	-4	-4	-4	44	44	48	44	48	48
6	1	.23688E+03	4	4	1	1	1	1	1	1	4	4	4	5	5	5
6	2	.28658E+03	20	20	20	20	20	20	20	20	21	21	21	22	22	22
6	3	.84337E+03	0	0	0	0	0	0	0	0	1	1	2	1	2	2
7	1	.23678E+03	4	4	1	1	1	1	1	1	4	4	4	5	5	5
7	2	.29029E+03	19	19	19	19	19	19	19	19	19	19	19	19	19	19
7	3	.82008E+03	3	3	3	3	3	3	3	3	3	3	3	3	3	3
8	1	.23681E+03	4	4	1	1	1	1	1	1	4	4	4	5	5	5
8	2	.29311E+03	19	19	19	19	19	19	19	19	20	20	20	21	21	21
8	3	.79626E+03	7	7	8	8	8	8	8	8	10	10	10	10	10	10
9	1	.23693E+03	4	4	1	1	1	1	1	1	4	4	4	5	5	5
9	2	.29484E+03	20	20	20	20	19	20	19	20	24	24	24	25	25	25
9	3	.75226E+03	14	14	18	18	18	18	18	18	26	26	27	26	27	27
10	1	.23706E+03	4	4	1	1	1	1	1	1	4	4	4	5	5	5
10	2	.29159E+03	23	23	22	22	22	22	22	22	31	31	31	33	34	34
10	3	.70196E+03	26	26	33	33	33	33	33	33	49	49	50	49	50	50
11	1	.23763E+03	4	4	1	1	1	1	1	1	4	4	4	5	5	5
11	2	.28130E+03	42	42	31	31	31	31	31	31	65	65	66	77	81	81
11	3	.58726E+03	78	78	116	116	116	116	116	116	185	185	189	185	169	189
12	1	.23808E+03	4	4	1	1	1	1	1	1	4	4	4	5	5	5
12	2	.22326E+03	83	82	59	59	58	59	58	58	113	113	115	131	139	139
12	3	.65971E+03	82	82	142	142	142	142	142	142	236	236	239	236	239	239
13	1	.23809E+03	4	4	1	1	1	1	1	1	4	4	4	5	5	5
13	2	.19518E+03	106	106	76	76	76	76	76	76	139	139	141	159	168	168
13	3	.71668E+03	75	75	136	136	136	136	136	136	231	231	235	231	235	235
14	1	.23810E+03	4	4	1	1	1	1	1	1	4	4	4	5	5	5
14	2	.16770E+03	138	138	102	102	102	102	102	102	176	176	178	198	207	207
14	3	.78028E+03	69	69	131	131	131	131	131	131	226	226	229	226	229	229

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 * ZBEND MODEL *

EARTHQUAKE NO. 1

*TOTAL ACC. (SRSS)

NODE NO.	COMP. NO.	ACC(TL) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
15	1	.23835E+03	4	4	1	1	1	1	1	1	4	4	4	5	5	5
15	2	.17634E+03	128	128	92	92	92	92	92	92	163	163	165	182	187	187
15	3	.90408E+03	62	62	123	123	123	123	123	123	218	218	221	218	221	221
16	1	.25391E+03	8	8	-5	-5	-5	-5	-5	-5	10	10	10	19	20	20
16	2	.16698E+03	160	160	121	121	120	121	120	120	200	200	202	219	222	222
16	3	.10276E+04	54	54	94	94	94	94	94	94	184	184	186	184	186	186
17	1	.22139E+03	44	44	9	9	9	9	9	9	48	48	49	64	66	66
17	2	.16121E+03	160	159	121	121	120	121	120	120	200	200	201	219	222	222
17	3	.11143E+04	41	41	56	56	56	56	56	56	134	134	136	134	136	136
18	1	.20216E+03	61	61	19	19	18	19	18	18	65	65	66	84	86	86
18	2	.16121E+03	160	159	121	121	120	121	120	120	200	200	201	219	222	222
18	3	.11442E+04	38	38	47	47	47	47	47	47	123	123	125	123	125	125
19	1	.19118E+03	73	73	26	26	26	26	26	26	78	78	80	99	102	102
19	2	.16122E+03	160	159	121	121	120	121	120	120	200	200	201	219	222	222
19	3	.11740E+04	37	37	42	42	42	42	42	42	117	117	118	117	118	118
20	1	.19472E+03	70	70	24	24	23	24	23	23	76	76	77	96	99	99
20	2	.16124E+03	160	159	121	120	120	121	120	120	200	200	201	219	222	222
20	3	.11952E+04	37	37	40	40	40	40	40	40	115	115	115	115	115	115
21	1	.19092E+03	67	66	21	21	21	21	21	21	72	72	73	91	94	94
21	2	.16127E+03	159	159	120	120	120	120	120	120	200	200	201	219	221	222
21	3	.12230E+04	38	38	40	40	40	40	40	40	115	115	116	115	116	116
22	1	.18079E+03	65	65	21	21	21	21	21	21	70	70	70	88	91	91
22	2	.16129E+03	159	159	120	120	120	120	120	120	200	200	201	219	221	222
22	3	.12414E+04	39	39	43	43	43	43	43	43	119	119	119	119	119	119
23	1	.16607E+03	64	64	24	24	24	24	24	24	68	68	69	85	88	88
23	2	.16129E+03	159	159	120	120	120	120	120	120	200	200	201	219	221	222
23	3	.12608E+04	42	42	47	47	47	47	47	47	125	125	126	125	126	126
24	1	.15119E+03	65	65	31	31	31	31	31	31	69	69	70	85	87	87
24	2	.16129E+03	159	159	120	120	120	120	120	120	200	200	201	219	221	222
24	3	.12801E+04	46	46	54	54	54	54	54	54	134	134	135	134	135	135
25	1	.13522E+03	69	69	43	43	43	43	43	43	74	74	75	88	90	90
25	2	.16127E+03	159	159	120	120	120	120	120	120	200	200	201	219	221	221
25	3	.13362E+04	44	44	55	55	55	55	55	55	136	136	137	136	137	137
26	1	.17286E+03	11	11	11	11	11	11	11	11	11	11	11	12	12	12
26	2	.17269E+03	116	116	82	82	82	82	82	82	149	149	151	164	169	169
26	3	.13447E+04	39	39	55	55	55	55	55	55	135	135	136	135	136	136
27	1	.17328E+03	11	11	11	11	11	11	11	11	11	11	11	11	11	11
27	2	.13797E+03	139	137	104	104	100	104	100	100	178	177	190	199	218	219
27	3	.10635E+04	49	49	62	62	62	62	62	62	145	145	148	145	148	148
28	1	.17356E+03	11	11	11	11	11	11	11	11	11	11	11	11	11	11
28	2	.10210E+03	190	186	152	151	144	152	144	145	234	233	247	262	281	282
28	3	.90602E+03	54	54	62	62	62	62	62	62	145	145	149	145	149	149

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 * ZBEND MODEL *

EARTHQUAKE NO. 1			*TOTAL ACC. (SRSS)													
NODE NO.	COMP. NO.	ACC (TL) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
29	1	.17357E+03	11	11	11	11	11	11	11	11	11	11	11	11	11	11
29	2	.10047E+03	171	167	138	137	130	138	130	131	209	207	219	233	248	249
29	3	.82967E+03	56	56	62	62	62	62	62	62	144	144	148	144	148	148
30	1	.17359E+03	11	11	11	11	11	11	11	11	11	11	11	11	11	11
30	2	.10793E+03	131	128	106	105	100	106	100	100	159	158	166	178	187	188
30	3	.75310E+03	60	60	63	63	63	63	63	63	143	143	148	143	148	148
31	1	.17405E+03	11	11	10	10	10	10	10	10	11	11	11	11	11	11
31	2	.12405E+03	45	45	42	42	41	42	41	41	48	48	48	50	50	50
31	3	.59007E+03	56	56	49	49	49	49	49	49	101	101	105	101	105	105
32	1	.17417E+03	10	10	10	10	10	10	10	10	10	10	10	10	10	10
32	2	.13200E+03	31	31	31	31	31	31	31	31	31	31	31	31	31	31
32	3	.68400E+03	16	16	11	11	11	11	11	11	26	26	27	26	27	27
33	1	.17420E+03	10	10	10	10	10	10	10	10	10	10	10	10	10	10
33	2	.13265E+03	31	31	31	31	31	31	31	31	31	31	31	31	31	31
33	3	.72259E+03	8	8	5	5	5	5	5	5	12	12	13	12	13	13
34	1	.17421E+03	10	10	10	10	10	10	10	10	10	10	10	10	10	10
34	2	.13277E+03	30	30	30	30	30	30	30	30	30	30	30	30	30	30
34	3	.78050E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0

 * ZBEND MODEL *

EARTHQUAKE NO. 1

*TOTAL ACC. (ABS. SUM)

NODE NO.	COMP. NO.	ACC(TL) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	.24520E+03	2	2	2	2	2	2	2	2	2	2	2	2	2	2
1	2	.13362E+03	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	3	.81294E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	1	.24517E+03	2	2	2	2	2	2	2	2	2	2	2	2	2	2
2	2	.13360E+03	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	3	.83602E+03	11	11	3	3	3	3	3	3	14	14	15	14	15	15
3	1	.24491E+03	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3	2	.13262E+03	13	12	9	9	8	9	8	8	13	13	13	15	15	15
3	3	.87641E+03	31	31	10	10	10	10	10	10	38	38	40	38	40	40
4	1	.24468E+03	3	3	2	2	2	2	2	2	3	3	3	3	3	3
4	2	.13045E+03	36	35	24	24	22	24	22	22	39	38	38	42	42	42
4	3	.91231E+03	47	47	16	16	16	16	16	16	58	58	60	58	60	60
5	1	.24073E+03	7	7	5	5	5	5	5	5	8	8	9	9	9	9
5	2	.13853E+03	396	387	290	288	265	290	265	267	437	432	433	475	472	475
5	3	.10508E+04	80	80	34	34	34	34	34	34	101	101	106	101	106	106
6	1	.23688E+03	12	12	8	8	8	8	8	8	14	13	14	15	15	15
6	2	.28658E+03	28	28	27	26	26	27	26	26	31	31	31	32	32	32
6	3	.84337E+03	7	7	5	5	5	5	5	5	11	11	11	11	11	11
7	1	.23678E+03	12	12	8	8	8	8	8	8	14	14	14	15	15	15
7	2	.29029E+03	21	21	20	20	20	20	20	20	21	21	21	21	21	21
7	3	.82008E+03	3	3	3	3	3	3	3	3	4	4	4	4	4	4
8	1	.23681E+03	12	12	8	8	8	8	8	8	14	14	14	15	15	15
8	2	.29311E+03	24	24	24	24	24	24	24	24	27	27	28	29	29	29
8	3	.79626E+03	13	13	15	15	15	15	15	15	20	20	21	20	21	21
9	1	.23693E+03	13	12	9	9	8	9	8	8	14	14	14	16	16	16
9	2	.29484E+03	35	35	33	33	33	33	33	33	43	43	44	47	47	47
9	3	.75226E+03	32	32	37	37	37	37	37	37	53	53	55	53	55	55
10	1	.23706E+03	13	13	9	9	8	9	8	8	15	14	15	16	16	16
10	2	.29159E+03	47	47	44	44	44	44	44	44	61	61	62	68	69	69
10	3	.70196E+03	55	55	65	65	65	65	65	65	94	94	97	94	97	97
11	1	.23763E+03	15	14	10	10	9	10	9	9	17	16	17	18	18	19
11	2	.28130E+03	97	97	82	82	81	82	81	81	131	131	133	150	156	156
11	3	.58726E+03	148	148	205	205	205	205	205	205	303	303	309	303	309	309
12	1	.23808E+03	16	16	11	11	10	11	10	10	18	18	18	20	20	20
12	2	.22326E+03	158	158	124	124	124	124	124	124	201	201	204	227	237	238
12	3	.65971E+03	158	158	239	239	239	239	239	239	368	368	372	368	372	372
13	1	.23809E+03	16	16	11	11	10	11	10	10	18	18	18	20	20	20
13	2	.19518E+03	191	191	150	150	149	150	149	149	238	238	241	266	278	278
13	3	.71668E+03	148	148	230	230	230	230	230	230	359	359	362	359	362	362
14	1	.23810E+03	16	16	11	11	10	11	10	10	18	18	18	20	20	20
14	2	.16770E+03	237	237	186	186	186	186	186	186	290	290	293	321	334	334
14	3	.78028E+03	138	138	219	219	219	219	219	219	348	348	351	348	351	351

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 * ZBEND MODEL *

EARTHQUAKE NO. 1

*TOTAL ACC. (ABS. SUM)

NODE NO.	COMP. NO.	ACC(TL) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
15	1	.23835E+03	17	16	12	12	11	12	11	11	19	18	19	21	21	21
15	2	.17634E+03	221	221	170	170	170	170	170	170	272	272	274	299	305	305
15	3	.90408E+03	125	125	204	204	204	204	204	204	332	332	335	332	335	335
16	1	.25391E+03	47	47	24	24	24	24	24	24	50	50	51	64	66	66
16	2	.16098E+03	264	264	205	205	205	205	205	205	321	320	322	345	348	348
16	3	.10276E+04	113	113	163	163	163	163	163	163	284	284	287	284	287	287
17	1	.22139E+03	104	104	54	54	54	54	54	54	109	109	111	132	134	134
17	2	.16121E+03	264	263	205	205	205	205	205	205	320	320	322	345	348	348
17	3	.11143E+04	95	95	114	114	114	114	114	114	220	220	222	220	222	222
18	1	.20216E+03	128	128	68	68	67	68	67	68	134	133	135	158	161	161
18	2	.16121E+03	264	263	205	205	205	205	205	205	320	320	322	345	348	348
18	3	.11442E+04	91	91	103	103	103	103	103	103	206	206	207	206	207	207
19	1	.19118E+03	145	145	78	78	78	78	78	78	152	152	154	178	182	182
19	2	.16122E+03	263	263	205	205	205	205	205	205	320	320	322	345	348	348
19	3	.11740E+04	88	88	96	96	96	96	96	96	197	197	198	197	198	198
20	1	.19472E+03	141	140	74	74	74	74	74	74	148	147	149	173	177	177
20	2	.16124E+03	263	263	205	205	205	205	205	205	320	320	322	345	348	348
20	3	.11952E+04	87	87	92	92	92	92	92	92	193	193	193	193	193	193
21	1	.19092E+03	136	135	71	71	71	71	71	71	143	143	144	167	171	171
21	2	.16127E+03	263	263	205	205	205	205	205	205	320	320	322	345	348	348
21	3	.12230E+04	88	88	91	91	91	91	91	91	191	191	192	191	192	192
22	1	.18079E+03	130	133	71	71	71	71	71	71	140	140	141	164	168	168
22	2	.16129E+03	263	263	205	205	204	205	204	205	320	320	322	345	348	348
22	3	.12414E+04	89	89	93	93	93	93	93	93	194	194	195	194	195	195
23	1	.16607E+03	131	131	75	75	74	75	74	74	138	138	139	161	166	166
23	2	.16129E+03	263	263	205	205	204	205	204	205	320	320	322	345	348	348
23	3	.12608E+04	92	92	97	97	97	97	97	97	200	200	201	200	201	201
24	1	.15119E+03	130	130	82	82	82	82	82	82	138	138	139	161	165	165
24	2	.16129E+03	263	263	205	205	204	205	204	205	320	320	322	345	348	348
24	3	.12801E+04	95	95	103	103	103	103	103	103	208	208	209	208	209	209
25	1	.13522E+03	131	131	93	93	93	93	93	93	139	139	141	162	167	167
25	2	.16127E+03	263	263	205	205	204	205	204	204	320	320	322	345	348	348
25	3	.13362E+04	92	92	103	103	103	103	103	103	207	207	209	207	209	209
26	1	.17286E+03	16	16	15	15	15	15	15	15	16	16	17	18	18	18
26	2	.17269E+03	205	204	154	154	154	154	154	154	251	251	254	269	276	276
26	3	.13447E+04	86	86	100	100	100	100	100	100	202	202	204	202	204	204
27	1	.17328E+03	14	14	13	13	13	13	13	13	15	15	15	15	15	15
27	2	.13707E+03	238	235	186	186	181	186	181	181	291	290	306	318	341	342
27	3	.10635E+04	104	104	112	112	112	112	112	112	223	223	226	223	226	226
28	1	.17356E+03	13	13	13	13	12	13	12	12	13	13	13	14	14	14
28	2	.10210E+03	310	305	255	254	245	255	245	246	371	369	388	406	430	431
28	3	.90602E+03	114	114	117	117	117	117	117	117	229	229	234	229	234	234

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 * ZBEND MODEL *

NODE NO.	COMP. NO.	EARTHQUAKE NO.	ACC.(TL) (T.H.)	*TOTAL ACC. (ABS. SUM)														
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	
29	1	1	.17357E+03	13	13	13	13	12	13	12	12	12	12	13	13	13	14	14
29	2	2	.10047E+03	283	278	236	235	226	236	226	226	226	226	336	334	368	387	388
29	3	3	.82967E+03	120	120	120	120	120	120	120	120	120	120	231	231	231	236	236
30	1	1	.17359E+03	13	13	13	13	12	13	12	12	12	12	13	13	14	14	14
30	2	2	.10793E+03	226	221	191	190	182	191	182	182	182	182	267	265	293	305	306
30	3	3	.75310E+03	126	126	125	125	125	125	125	125	125	125	234	234	240	240	240
31	1	1	.17405E+03	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
31	2	2	.12405E+03	74	73	68	68	66	68	66	66	66	66	82	82	88	89	90
31	3	3	.59007E+03	114	114	103	109	109	109	109	109	109	109	185	185	185	190	190
32	1	1	.17417E+03	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
32	2	2	.13200E+03	35	34	34	34	34	34	34	34	34	34	35	35	36	36	36
32	3	3	.68400E+03	41	41	38	38	38	38	38	38	38	38	64	64	66	66	66
33	1	1	.17420E+03	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
33	2	2	.13265E+03	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
33	3	3	.72259E+03	22	22	21	21	21	21	21	21	21	21	36	36	37	37	37
34	1	1	.17421E+03	11	11	10	10	10	10	10	10	10	10	11	11	11	11	11
34	2	2	.13277E+03	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
34	3	3	.78050E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

 * ZBEND MODEL *

EARTHQUAKE NO. 1

*TOTAL MOMENTS, AND FORCES(SRSS)

ELEM. NO.	FORCE CODE	FORCE (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	12	.39845E+05	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	12	.11221E+05	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	12	.24111E+05	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	12	.10023E+05	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	12	.21514E+05	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	12	.25169E+05	-13	-13	-11	-11	-11	-11	-11	-11	-11	21	21	21	21	21
7	12	.51560E+05	-8	-8	-6	-6	-6	-6	-6	-6	-6	15	15	15	15	15
8	12	.17352E+05	-8	-8	-6	-6	-6	-6	-6	-6	-6	14	14	14	14	14
9	12	.36087E+05	-8	-8	-6	-6	-6	-6	-6	-6	-6	14	14	14	14	14
10	12	.16475E+05	-8	-8	-6	-6	-6	-6	-6	-6	-6	18	18	18	18	18
11	12	.34842E+05	-8	-8	-6	-6	-6	-6	-6	-6	-6	18	18	18	18	18
12	12	.44218E+05	-9	-9	-8	-8	-8	-8	-8	-8	-8	14	14	14	14	14
13	12	.28083E+05	-6	-6	-4	-4	-4	-4	-4	-4	-4	12	12	12	12	12
14	12	.25763E+05	-11	-11	-8	-8	-8	-8	-8	-8	-8	16	16	16	16	16
15	12	.27732E+05	-13	-13	-10	-10	-10	-10	-10	-10	-10	17	17	17	17	17
16	12	.33787E+05	-11	-11	-9	-9	-9	-9	-9	-9	-9	24	24	24	24	24
17	18	.35248E+05	-9	-9	-7	-7	-7	-7	-7	-7	-7	31	31	31	31	31
18	12	.33328E+05	-10	-10	-9	-9	-9	-9	-9	-9	-9	32	32	33	33	33
19	12	.33184E+05	-10	-10	-9	-9	-9	-9	-9	-9	-9	33	33	33	34	34
20	12	.33493E+05	-10	-10	-9	-9	-9	-9	-9	-9	-9	34	34	34	34	34
21	12	.34502E+05	-10	-10	-8	-8	-8	-8	-8	-8	-8	34	34	34	34	34
22	12	.35222E+05	-10	-10	-8	-8	-8	-8	-8	-8	-8	33	33	34	34	34
23	12	.36460E+05	-10	-10	-8	-8	-8	-8	-8	-8	-8	31	31	31	31	31
24	18	.33576E+05	-9	-9	-6	-6	-6	-6	-6	-6	-6	32	32	32	32	32
25	12	.27775E+05	-8	-8	-4	-4	-4	-4	-4	-4	-4	38	38	39	38	39
26	12	.26021E+05	-6	-6	-1	-1	-1	-1	-1	-1	-1	38	38	38	38	38
27	12	.25446E+05	-5	-5	-1	-1	-1	-1	-1	-1	-1	36	36	36	36	36
28	12	.26616E+05	-3	-3	0	0	0	0	0	0	0	14	14	15	15	15
29	12	.98331E+04	-2	-2	0	0	0	0	0	0	0	7	7	8	9	9
30	12	.20149E+05	-2	-2	0	0	0	0	0	0	0	8	8	8	9	9
31	12	.10074E+05	-2	-2	0	0	0	0	0	0	0	7	7	7	8	8
32	12	.20951E+05	-2	-2	0	0	0	0	0	0	0	7	7	7	8	8
33	12	.32716E+05	-1	-1	0	0	0	0	0	0	0	6	6	7	8	8
34	12	.29795E+05	-13	-13	-11	-11	-11	-11	-11	-11	-11	19	19	19	19	19
35	12	.33298E+05	-10	-10	-9	-9	-9	-9	-9	-9	-9	34	34	34	34	34
36	12	.35886E+05	-10	-10	-8	-8	-8	-8	-8	-8	-8	32	32	32	32	32
37	12	.25009E+05	-4	-4	0	0	0	0	0	0	0	32	32	32	32	32
38	12	.47879E+05	-9	-9	-7	-7	-7	-7	-7	-7	-7	16	16	16	16	16
39	12	.33957E+05	-10	-10	-8	-8	-8	-8	-8	-8	-8	34	34	34	34	34

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 * Z9END MODEL *

EARTHQUAKE NO. 1

*TOTAL MOMENTS, AND FORCES(ABS. SUM)

ELEM. NO.	FORCE CODE	FORCE (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	12	.39845E+05	5	5	5	5	5	5	5	5	7	7	8	8	8	8
2	12	.11221E+05	10	10	10	10	10	10	10	10	16	16	16	16	16	16
3	12	.24111E+05	9	9	9	9	9	9	9	9	14	14	14	14	14	14
4	12	.10023E+05	15	15	15	15	15	15	15	15	25	25	25	25	25	25
5	12	.21514E+05	14	14	14	14	14	14	14	14	23	23	23	23	23	23
6	12	.25169E+05	21	21	24	24	24	24	24	24	62	62	62	62	62	62
7	12	.51560E+05	28	28	30	30	30	30	30	30	62	62	62	62	62	62
8	12	.17352E+05	28	28	30	30	30	30	30	30	61	61	61	61	62	62
9	12	.36087E+05	28	28	30	30	30	30	30	30	61	61	62	61	62	62
10	12	.16475E+05	28	28	31	31	31	31	31	31	65	65	65	65	65	65
11	12	.34842E+05	29	29	31	31	31	31	31	31	65	65	66	65	66	66
12	12	.44218E+05	26	26	29	29	29	29	29	29	60	60	60	60	61	61
13	12	.28083E+05	28	28	31	31	31	31	31	31	58	58	58	58	58	58
14	12	.25763E+05	25	25	29	29	29	29	29	29	62	62	62	62	62	62
15	12	.27732E+05	22	22	26	26	26	26	26	26	61	61	61	61	61	61
16	12	.33787E+05	23	23	26	26	26	26	26	26	66	66	66	66	66	66
17	18	.35248E+05	24	24	25	25	25	25	25	25	69	69	69	69	69	69
18	12	.33328E+05	19	19	20	20	20	20	20	20	65	65	65	65	66	66
19	12	.33184E+05	18	18	19	19	19	19	19	19	65	65	65	65	65	65
20	12	.33493E+05	17	17	19	19	19	19	19	19	65	65	65	65	65	65
21	12	.34502E+05	19	19	20	20	20	20	20	20	66	66	66	66	66	66
22	12	.35222E+05	20	20	22	22	22	22	22	22	67	67	67	67	67	67
23	12	.36460E+05	22	22	24	24	24	24	24	24	68	68	68	68	68	68
24	18	.33576E+05	24	24	27	27	27	27	27	27	71	71	71	71	71	71
25	12	.27775E+05	23	23	27	27	27	27	27	27	74	74	74	74	74	74
26	12	.26021E+05	29	29	34	34	34	34	34	34	78	78	79	79	79	79
27	12	.25446E+05	32	32	37	37	37	37	37	37	80	80	80	80	81	81
28	12	.26616E+05	32	32	37	37	37	37	37	37	62	62	62	63	63	63
29	12	.98331E+04	29	29	32	32	32	32	32	32	50	50	50	52	52	52
30	12	.20149E+05	30	30	33	33	33	33	33	33	51	51	51	53	53	53
31	12	.10074E+05	29	29	32	32	32	32	32	32	49	49	49	51	51	51
32	12	.20951E+05	29	29	32	32	32	32	32	32	49	49	49	51	51	51
33	12	.32716E+05	29	29	31	31	31	31	31	31	47	47	48	49	51	51
34	12	.29795E+05	21	21	25	25	25	25	25	25	61	61	61	61	62	62
35	12	.33298E+05	17	17	19	19	19	19	19	19	65	65	65	65	65	65
36	12	.35886E+05	21	21	23	23	23	23	23	23	68	68	68	68	68	68
37	12	.25009E+05	34	34	39	39	39	39	39	39	79	79	79	80	80	80
38	12	.47879E+05	27	27	30	30	30	30	30	30	63	63	63	63	63	63
39	12	.33957E+05	18	18	19	19	19	19	19	19	65	65	65	65	66	66

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 * ZBEND MODEL *

EARTHQUAKE NO. 1

*TOTAL MOMENTS, AND FORCES(SRSS)

ELEM. NO.	FORCE CODE	FORCE (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	.47552E+04	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	1	.90988E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	1	.55033E+03	-14	-14	-12	-12	-12	-12	-12	-12	20	20	20	20	20	20
4	1	.12335E+04	2	2	10	10	10	10	10	10	65	65	66	65	66	66
5	1	.42522E+05	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	1	.46784E+04	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	1	.14783E+04	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	1	.13225E+04	4	4	8	8	8	8	8	8	62	62	63	62	63	63
9	1	.11273E+05	2	2	10	10	10	10	10	10	65	65	66	65	66	66
10	1	.90753E+03	-1	-1	2	2	2	2	2	2	45	45	45	45	45	45
11	1	.95377E+04	0	0	0	0	0	0	0	0	0	0	1	1	1	1
12	1	.51887E+03	-1	-1	-2	-2	-2	-2	-2	-2	-1	-1	-1	-1	-1	-1
13	1	.63649E+03	0	0	0	0	0	0	0	0	2	2	3	4	4	4
14	1	.63968E+03	0	0	0	0	0	0	0	0	1	1	1	1	1	1
15	1	.12673E+05	-18	-18	-3	-3	-3	-3	-3	-3	53	53	53	53	53	53
16	1	.30162E+05	0	0	0	0	0	0	0	0	27	27	28	27	28	28
			0	0	0	0	0	0	0	0	2	2	2	4	4	4

 * ZBEND MODEL *

EARTHQUAKE NO. 1			*TOTAL MOMENTS, AND FORCES (ABS. SUM)													
ELEM. NO.	FORCE CODE	FORCE (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	.47552E+04	1	1	1	1	1	1	1	1	1	1	1	1	2	2
2	1	.90988E+03	5	5	4	4	4	4	4	4	5	5	5	6	6	6
3	1	.55033E+03	19	19	22	22	22	22	22	22	60	60	61	60	61	61
4	1	.12335E+04	28	28	37	37	37	37	37	37	93	93	93	93	93	93
5	1	.42522E+05	3	3	3	3	3	3	3	3	4	4	4	4	4	4
6	1	.46784E+04	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	1	.14783E+04	8	8	7	7	7	7	7	7	10	10	10	11	11	11
8	1	.13225E+04	34	34	38	38	38	38	38	38	94	94	94	94	94	94
9	1	.11273E+05	28	28	37	37	37	37	37	37	93	93	93	93	93	93
10	1	.90753E+03	36	36	40	40	40	40	40	40	87	87	87	87	87	87
11	1	.95377E+04	15	15	13	13	13	13	13	13	17	17	17	19	19	19
12	1	.51887E+03	11	11	7	7	7	7	7	7	11	11	11	14	14	14
13	1	.63649E+03	30	30	26	26	26	26	26	26	36	36	36	39	40	40
14	1	.63968E+03	23	23	26	26	26	26	26	26	79	79	80	79	80	80
15	1	.12673E+05	15	15	35	35	35	35	35	35	71	71	72	71	72	72
16	1	.30162E+05	29	29	26	26	26	26	26	26	35	35	35	38	38	38

 * BM1 MODEL *

EARTHQUAKE NO. 1

*TOTAL ACC. (SRSS)

NODE NO.	COMP. NO.	ACC(TL) (T.H.)	URS	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
				1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	.35980E+03	-24	7	7	7	7	7	7	7	7	7	7	7	7	7	7
1	2	.57680E+02	535	7	7	7	7	7	7	7	7	7	7	7	7	7	7
1	3	.15210E+03	24	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	1	.35500E+03	-23	8	8	7	7	7	7	7	7	8	8	8	8	8	8
2	2	.57603E+02	542	20	20	17	17	17	17	17	17	42	42	45	47	49	50
2	3	.15515E+03	23	0	0	0	0	0	0	0	0	1	1	1	3	3	3
3	1	.34287E+03	-6	14	14	9	9	8	9	8	9	21	21	22	27	27	28
3	2	.53070E+02	550	152	150	114	113	112	114	112	113	230	228	247	250	263	265
3	3	.16677E+03	47	18	17	1	1	0	1	0	1	31	30	34	41	43	45
4	1	.34102E+03	7	19	18	12	12	11	12	11	12	34	33	35	42	42	44
4	2	.53066E+02	650	152	150	114	113	112	114	112	113	230	228	247	250	263	265
4	3	.17175E+03	73	37	35	14	13	12	14	12	13	62	61	67	77	79	82
4	1	.33398E+03	43	34	32	22	21	20	22	20	22	70	68	72	84	82	86
5	1	.55517E+02	702	268	265	203	201	200	203	200	201	393	391	422	423	445	448
5	2	.20065E+03	107	61	58	31	29	27	31	27	29	104	102	111	122	126	130
5	3	.29482E+03	31	25	25	0	0	0	0	0	0	53	53	58	59	62	62
6	1	.78250E+02	369	3	3	3	3	3	3	3	3	3	3	3	3	3	3
6	2	.20710E+03	58	40	40	39	38	38	39	38	38	111	111	117	120	125	125
6	3	.31595E+03	48	33	31	19	17	16	19	16	18	75	73	77	80	89	93
7	1	.71688E+02	516	172	169	146	144	142	146	142	144	303	300	324	333	348	353
7	2	.22026E+03	83	48	46	28	27	26	28	26	27	103	101	109	115	118	122
7	3	.30647E+03	42	30	29	13	12	11	13	11	12	66	67	71	82	82	85
8A	1	.78268E+02	418	81	79	83	82	81	83	81	82	192	190	205	221	229	233
8A	2	.21955E+03	72	43	41	31	30	29	31	29	31	106	105	112	118	120	123
8A	3	.29593E+03	34	27	26	5	5	4	5	4	5	59	59	63	67	70	71
8	1	.75846E+02	391	8	7	26	26	25	26	25	26	74	74	78	97	100	101
8	2	.21136E+03	63	41	40	37	36	36	37	36	36	111	110	117	120	124	126
8	3	.29841E+03	32	25	25	0	0	-1	0	-1	0	53	52	57	59	62	63
9	1	.89011E+02	314	13	12	1	0	0	1	0	0	30	29	31	48	49	50
9	2	.20367E+03	63	43	42	44	43	43	44	43	44	118	117	123	129	133	134
9	3	.30358E+03	30	22	22	-12	-13	-13	-12	-13	-13	42	41	47	49	53	54
10	1	.11120E+03	239	20	19	24	23	22	24	22	23	83	82	88	115	117	119
10	2	.17735E+03	83	55	54	34	33	33	34	33	34	112	111	121	129	134	136
10	3	.27865E+03	25	16	16	-3	-3	-4	-3	-4	-3	44	44	52	52	57	58
11	1	.11202E+03	237	21	19	24	23	22	24	22	23	84	82	89	116	118	120
11	2	.17792E+03	60	31	31	5	4	4	5	4	5	80	79	93	89	98	99
11	3	.27055E+03	19	14	14	-6	-6	-6	-6	-6	-6	38	37	43	46	49	49
12	1	.15030E+03	146	11	11	2	1	1	2	1	1	50	49	52	72	72	73
12	2	.17597E+03	44	21	21	-5	-5	-6	-5	-6	-5	58	58	68	67	73	74
12	3	.31151E+03	37	16	15	2	1	0	2	0	1	60	59	73	75	83	86
13	1	.11581E+03	380	160	148	157	152	147	157	147	151	292	276	295	328	331	341
13	2	.18806E+03	95	57	54	54	53	52	54	52	53	138	137	158	159	171	176
13	3																

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 * BM1 MODEL *

EARTHQUAKE NO. 1

*TOTAL ACC. (SRSS)

NODE NO.	COMP. NO.	ACC(TL) (T.H.)	URS	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)														
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	
14	1	.25924E+03	12	12	12	-7	-7	-7	-7	-7	-7	-7	30	30	32	37	38	38
14	2	.21172E+03	74	8	3	0	0	0	0	0	0	0	23	23	23	37	38	38
14	3	.17202E+03	24	9	9	-17	-17	-17	-17	-17	-17	-17	32	32	36	39	42	42
15	1	.23710E+03	14	11	11	-10	-10	-10	-10	-10	-10	-10	31	31	31	40	40	40
15	2	.78250E+02	369	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
15	3	.20351E+03	-6	3	3	6	6	6	6	6	6	6	40	40	40	50	50	50
19	1	.23512E+03	15	11	11	-9	-9	-9	-9	-9	-9	-9	32	32	32	41	41	41
19	2	.80154E+02	358	3	3	0	0	0	0	0	0	0	4	4	4	6	6	6
19	3	.20399E+03	-6	3	3	5	5	5	5	5	5	5	40	40	40	50	50	50
21	1	.22969E+03	17	13	13	-6	-6	-6	-6	-6	-6	-6	33	33	33	42	42	42
21	2	.82822E+02	344	4	4	1	0	0	1	0	0	0	9	8	10	17	17	18
21	3	.20428E+03	-6	3	3	4	4	4	4	4	4	4	40	40	40	50	50	50
23	1	.23297E+03	61	41	40	24	24	24	24	24	24	24	62	61	69	78	81	82
23	2	.22707E+03	139	70	62	73	70	68	73	68	69	69	120	117	128	171	172	176
23	3	.17922E+03	217	158	153	98	95	94	98	94	95	222	220	246	248	265	268	268
25	1	.21600E+03	25	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
25	2	.28410E+03	29	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
25	3	.15260E+03	24	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
27	1	.20749E+03	34	14	14	10	10	10	10	10	10	10	22	22	23	35	35	35
27	2	.19867E+03	92	13	12	4	4	3	4	3	4	4	25	24	26	34	35	35
27	3	.20161E+03	15	9	8	-11	-11	-11	-11	-11	-11	-11	33	32	35	37	39	40
29	1	.19257E+03	40	11	11	15	15	15	15	15	15	15	35	35	35	52	52	52
29	2	.66060E+02	455	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	3	.25477E+03	-25	-9	-9	-13	-13	-13	-13	-13	-13	-13	4	4	4	19	19	19
33	1	.19135E+03	41	11	11	19	19	19	19	19	19	19	42	42	42	60	60	60
33	2	.38191E+02	864	3	0	133	132	132	135	132	132	132	221	221	223	239	240	240
33	3	.26260E+03	-26	-8	-8	-9	-9	-9	-9	-9	-9	-9	5	5	5	25	25	25
35	1	.19140E+03	41	12	11	20	20	20	20	20	20	20	43	43	43	61	61	61
35	2	.39771E+02	851	-1	-5	146	146	145	146	145	146	145	245	244	247	263	264	265
35	3	.26329E+03	-26	-8	-8	-8	-8	-8	-8	-8	-8	-8	5	5	5	27	27	27
37	1	.19097E+03	42	12	11	19	19	19	19	19	19	19	43	43	43	61	61	61
37	2	.66060E+02	455	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	3	.23848E+03	-20	4	4	20	20	20	20	20	20	20	35	35	35	52	52	52
16	1	.25044E+03	8	12	12	-5	-5	-5	-5	-5	-5	-5	29	29	29	34	34	34
16	2	.28410E+03	29	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
16	3	.18660E+03	1	-6	-6	-18	-19	-19	-18	-19	-19	-19	17	17	17	27	27	27
20	1	.25444E+03	123	74	74	106	104	103	106	103	105	105	251	248	267	272	278	283
20	2	.61770E+03	32	24	24	38	37	35	38	35	36	36	110	109	116	126	128	131
20	3	.17515E+03	202	120	119	182	179	177	182	177	181	181	385	379	408	420	428	436
22	1	.32870E+03	253	158	156	226	222	220	226	220	225	225	479	472	500	516	525	537
22	2	.95181E+03	97	69	68	81	80	76	81	76	78	78	207	204	217	226	230	235
22	3	.31865E+03	254	153	152	229	225	223	229	223	228	228	484	476	512	524	533	545

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 * BM1 MODEL *

EARTHQUAKE NO. 1

*TOTAL ACC. (SRSS)

NODE NO.	COMP. NO.	ACC(TL) (T.H.)	URS	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
				1	2	3	4	5	6	7	8	9	10	11	12	13	14
24	1	.46291E+03	248	151	150	225	221	219	225	219	224	481	473	508	520	528	541
24	2	.11316E+04	141	102	101	115	113	110	115	110	112	273	270	287	297	302	307
24	3	.43784E+03	260	157	155	238	234	231	238	231	237	503	495	531	545	553	567
26	1	.51564E+03	228	133	131	216	211	209	216	209	215	465	456	489	505	510	524
26	2	.10875E+04	171	124	123	141	139	135	141	135	138	321	317	337	343	354	360
26	3	.47370E+03	249	145	143	239	234	231	239	231	238	504	495	531	549	554	569
28	1	.45885E+03	197	103	101	203	198	195	203	195	202	440	430	462	483	483	498
28	2	.89282E+03	168	119	118	141	139	135	141	135	138	322	318	339	351	356	363
28	3	.39816E+03	233	123	120	245	239	236	245	236	244	513	502	538	563	563	581
30	1	.43919E+03	83	21	19	106	102	99	106	99	105	265	257	280	297	295	307
30	2	.48866E+03	161	105	104	135	133	130	135	130	133	311	307	322	343	347	365
30	3	.23973E+03	221	93	89	277	270	265	277	265	275	564	550	592	624	622	643
32	1	.44371E+03	52	30	29	37	36	35	37	35	37	148	146	161	160	169	172
32	2	.57680E+02	536	7	7	7	7	7	7	7	7	7	7	7	7	7	7
32	3	.13319E+03	380	281	279	371	367	365	371	365	370	741	735	781	786	812	822
36	1	.44312E+03	75	52	52	44	44	44	44	44	44	164	164	176	173	184	185
36	2	.14269E+03	194	10	9	77	75	74	77	74	76	194	190	208	229	231	236
36	3	.14324E+03	392	305	304	348	346	345	348	345	347	702	705	742	740	771	775
38	1	.48359E+03	256	187	187	199	197	196	199	196	198	452	449	467	476	482	487
38	2	.86816E+03	35	-17	-18	85	83	82	85	82	84	200	197	213	247	248	252
38	3	.19843E+03	429	342	342	340	340	340	340	340	340	713	712	739	736	759	759
39	1	.55306E+03	283	181	180	251	247	245	251	245	250	542	535	557	583	584	596
39	2	.13624E+04	32	-15	-16	84	82	81	84	81	83	199	195	209	245	245	249
39	3	.21496E+03	433	327	326	369	367	366	369	366	366	268	268	288	603	591	616
40	1	.43260E+03	288	147	144	290	284	280	290	280	288	603	591	616	661	658	676
40	2	.13302E+04	33	-10	-11	80	79	77	80	77	79	193	190	203	238	236	241
40	3	.18159E+03	374	257	255	361	358	356	361	356	360	742	737	763	789	797	805
41	1	.26219E+03	253	112	108	275	267	253	275	263	273	561	548	566	623	616	636
41	2	.84731E+03	28	-6	-7	63	62	60	63	60	62	163	160	171	201	200	205
41	3	.15764E+03	166	99	98	220	218	218	220	218	219	470	468	483	500	506	509
43	1	.24518E+03	23	32	32	10	10	10	10	10	10	79	79	82	83	85	85
43	2	.36540E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43	3	.16218E+03	111	79	79	145	144	144	145	144	144	321	320	332	334	342	344
44	1	.41718E+03	153	106	105	113	111	110	113	110	112	290	288	298	308	311	314
44	2	.35465E+03	117	88	87	128	126	124	128	124	127	257	253	274	293	299	305
44	3	.19765E+03	292	219	218	247	244	243	247	243	246	523	519	538	547	554	561
45	1	.67273E+03	270	204	203	194	193	192	194	192	194	446	444	458	464	470	473
45	2	.46077E+03	154	112	111	147	144	141	147	141	144	308	303	328	343	351	358
45	3	.28931E+03	386	300	299	295	293	291	295	291	294	625	621	639	648	655	661
46	1	.93150E+03	310	239	239	218	218	217	218	217	218	493	492	505	509	515	517
46	2	.46045E+03	138	99	98	118	116	114	118	114	116	263	259	280	289	296	302
46	3	.38219E+03	422	333	333	310	309	308	310	308	310	660	658	674	681	687	691

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 * BM1 MODEL *

EARTHQUAKE NO. 1

*TOTAL ACC. (SRSS)

NODE NO.	COMP. NO.	ACC(TL) (T.H.)	URS	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
				1	2	3	4	5	6	7	8	9	10	11	12	13	14
47	1	.11131E+04	331	259	259	230	230	229	230	229	230	516	515	528	530	537	538
47	2	.32911E+03	38	30	30	31	31	30	31	30	31	67	66	71	73	75	76
47	3	.44719E+03	443	354	354	320	319	319	320	319	320	681	680	695	700	706	709
48	1	.10265E+04	327	256	256	227	226	226	227	226	226	509	509	521	524	531	532
48	2	.36540E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48	3	.42227E+03	379	294	294	283	282	282	283	282	283	606	605	624	627	635	638
49	1	.65831E+03	283	219	218	193	192	192	193	192	193	445	443	454	460	464	467
49	2	.36534E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
49	3	.55274E+03	155	66	64	167	163	158	167	158	164	357	349	383	398	406	419
50	1	.46156E+03	146	101	101	99	96	88	99	88	92	241	237	247	260	262	269
50	2	.36528E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	3	.98685E+03	210	141	141	166	164	160	166	160	163	372	368	391	398	408	415
51	1	.43548E+03	125	82	82	88	86	75	88	75	78	207	204	213	229	228	236
51	2	.39671E+03	33	21	21	14	14	13	14	13	14	62	62	64	66	67	67
51	3	.10900E+04	229	160	159	174	172	170	174	170	172	391	388	409	416	425	431
52	1	.37775E+03	111	73	73	70	68	61	70	61	63	180	178	185	196	198	203
52	2	.42999E+03	251	195	193	162	160	158	162	158	159	376	374	382	389	391	394
52	3	.99410E+03	257	178	178	203	201	200	203	200	202	446	443	464	472	480	485
53	1	.29741E+03	65	36	36	36	35	32	36	32	33	108	107	112	119	121	124
53	2	.30580E+03	303	229	226	194	191	187	194	187	189	432	428	438	449	449	455
53	3	.90515E+03	239	154	154	204	203	201	204	201	203	441	438	461	471	481	486
54	1	.20364E+03	39	14	14	26	25	25	26	25	25	44	43	44	48	48	49
54	2	.31206E+02	337	73	71	59	57	53	59	56	57	156	154	159	170	170	173
54	3	.86884E+03	194	108	108	181	179	173	181	173	175	381	379	402	417	435	439
55	1	.21740E+03	24	6	6	6	6	6	6	6	6	6	6	6	6	6	6
55	2	.78250E+02	369	3	3	3	3	3	3	3	3	3	3	3	3	3	3
55	3	.79241E+03	188	103	103	177	175	168	177	168	170	371	369	392	406	425	430
56	1	.32899E+03	55	38	35	17	15	12	17	12	14	93	90	94	103	101	106
56	2	.77991E+02	370	4	4	3	3	3	3	3	3	4	4	4	4	4	4
56	3	.40569E+03	188	103	103	176	174	168	176	168	170	368	366	389	404	421	426
57	1	.42675E+03	85	63	58	47	43	39	47	39	42	139	134	141	153	150	157
57	2	.77732E+02	372	4	4	4	4	4	4	4	4	4	4	4	4	4	4
57	3	.17609E+03	35	5	5	18	17	16	18	16	17	61	60	66	73	77	78
58	1	.42701E+03	67	51	47	38	35	31	38	31	33	116	112	117	129	127	132
58	2	.88997E+02	325	15	14	28	28	26	28	26	26	95	94	102	107	113	114
58	3	.15258E+03	24	1	1	1	1	1	1	1	1	1	1	1	1	1	1
59	1	.37677E+03	-11	8	7	3	3	2	3	2	2	20	19	20	24	23	24
59	2	.75857E+02	398	21	21	32	31	29	32	29	30	115	114	122	128	135	137
59	3	.15234E+03	24	1	1	1	1	1	1	1	1	1	1	1	1	1	1
60	1	.35980E+03	-24	7	7	7	7	7	7	7	7	7	7	7	7	7	7
60	2	.57680E+02	536	7	7	7	7	7	7	7	7	7	7	7	7	7	7
60	3	.15210E+03	24	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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 * BM1 MODEL *

EARTHQUAKE NO. 1

*TOTAL ACC. (ABS. SUM)

NODE NO.	COMP. NO.	ACC(TL) (T.H.)	URS	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
				1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	.35980E+03	-24	7	7	7	7	7	7	7	7	7	7	7	7	7	7
1	2	.57680E+02	536	7	7	7	7	7	7	7	7	7	7	7	7	7	7
1	3	.15210E+03	24	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	1	.35500E+03	-15	13	13	12	12	12	12	12	12	16	15	15	17	17	17
2	2	.57603E+02	617	65	64	56	55	55	56	55	55	99	98	103	106	110	111
2	3	.15515E+03	39	11	11	9	8	8	9	8	8	16	16	16	19	18	19
3	1	.34287E+02	28	43	42	37	36	36	37	36	37	62	61	62	71	70	72
3	2	.53070E+02	883	238	236	197	195	195	197	195	196	340	338	359	365	380	382
3	3	.16647E+03	107	65	63	40	39	38	40	38	39	85	84	89	100	102	104
4	1	.34132E+03	51	59	57	50	49	48	50	48	49	87	85	88	99	98	101
4	2	.53066E+02	883	238	236	197	196	195	197	195	196	340	338	359	365	380	382
4	3	.17175E+03	114	94	92	61	59	58	61	58	60	123	126	134	148	151	155
5	1	.33398E+03	99	88	85	72	71	39	73	69	72	140	138	143	159	158	163
5	2	.55517E+02	1015	357	354	299	296	295	299	295	297	533	531	564	569	593	596
5	3	.20065E+03	178	122	118	82	80	78	82	78	80	181	178	189	207	211	216
6	1	.29482E+03	85	75	75	39	39	39	39	39	39	115	115	122	124	129	129
6	2	.78250E+02	369	3	3	3	3	3	3	3	3	3	3	3	3	3	3
6	3	.20710E+03	120	98	98	93	93	92	93	92	93	197	197	206	210	217	217
7	1	.31595E+03	107	88	85	68	66	64	68	64	67	147	145	150	168	167	172
7	2	.71688E+02	754	232	229	241	238	236	241	236	238	455	451	478	498	515	521
7	3	.22026E+03	148	106	104	81	80	78	81	78	80	186	184	195	203	207	212
8A	1	.30647E+03	100	83	80	60	58	57	60	57	59	138	136	142	157	157	161
8A	2	.78268E+02	590	135	132	160	158	156	160	156	158	312	309	328	354	365	370
8A	3	.21955E+03	135	101	99	86	84	83	86	83	85	191	190	200	206	211	215
8	1	.29593E+03	90	77	76	47	47	46	47	46	47	125	124	130	137	140	142
8	2	.75846E+02	471	52	50	68	67	66	68	66	67	139	137	146	168	173	175
8	3	.21136E+03	125	100	98	92	91	90	92	90	91	198	197	207	211	217	219
9	1	.29841E+03	87	75	74	39	38	38	39	38	38	115	115	122	124	129	130
9	2	.89011E+02	356	41	40	24	24	23	24	23	24	67	66	71	89	92	93
9	3	.20367E+03	126	102	101	101	100	100	101	100	101	207	206	216	223	229	230
10	1	.30338E+03	84	71	71	22	22	21	22	21	22	100	100	109	111	117	118
10	2	.11120E+03	308	61	58	68	66	65	68	65	66	152	150	162	194	197	201
10	3	.17735E+03	155	120	118	90	89	88	90	88	89	200	199	212	224	231	234
11	1	.27865E+03	77	58	58	34	34	33	34	33	34	104	103	115	116	123	124
11	2	.11202E+03	306	62	59	68	66	65	68	65	67	153	151	162	194	198	202
11	3	.17792E+03	126	85	84	47	46	46	47	46	47	152	151	168	164	174	176
12	1	.27055E+03	65	51	50	29	27	27	28	27	27	93	92	102	104	109	110
12	2	.15030E+03	188	38	37	32	31	30	32	30	31	98	97	103	125	127	130
12	3	.17597E+03	103	68	68	33	33	32	33	32	33	124	123	136	136	144	146
13	1	.31151E+03	94	64	61	43	42	41	43	41	42	125	124	140	146	155	159
13	2	.11581E+03	577	215	202	255	249	243	255	243	248	430	423	445	489	492	504
13	3	.18806E+03	167	122	117	116	114	113	116	113	115	230	228	254	257	272	277

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 * BM1 MODEL *

EARTHQUAKE NO. 1

*TOTAL ACC. (ABS. SUM)

NODE NO.	COMP. NO.	ACC(TL) (T.H.)	URS	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
				1	2	3	4	5	6	7	8	9	10	11	12	13	14
14	1	.25924E+03	45	37	37	16	16	16	16	16	16	71	71	76	80	83	84
14	2	.21172E+03	96	24	24	18	17	17	19	17	17	53	52	55	70	70	72
14	3	.17202E+03	68	43	43	12	12	12	12	12	12	83	83	90	93	98	98
15	1	.23710E+03	19	15	15	-6	-6	-7	-6	-7	-6	37	37	38	47	47	47
15	2	.78250E+02	369	3	3	3	3	3	3	3	3	3	3	3	3	3	3
15	3	.20351E+03	-3	6	6	8	8	8	8	8	8	44	43	44	54	54	54
19	1	.23512E+03	18	14	13	-7	-7	-7	-7	-7	-7	35	35	36	44	44	44
19	2	.80164E+02	369	11	11	8	8	8	8	8	8	14	14	15	19	19	20
19	3	.20399E+03	0	9	8	10	10	10	10	10	10	48	48	49	59	59	59
21	1	.22969E+02	23	17	17	-3	-3	-3	-3	-3	-3	39	39	39	48	48	49
21	2	.82822E+02	382	28	26	24	23	23	24	23	23	40	39	43	54	54	56
21	3	.20428E+03	4	12	11	11	11	11	11	11	11	51	51	53	63	63	63
23	1	.23297E+03	128	99	97	72	71	70	72	70	71	129	128	139	149	156	157
23	2	.22707E+03	238	139	129	141	138	136	141	136	137	205	201	215	269	271	275
23	3	.17922E+03	304	237	232	165	162	161	165	161	162	335	332	361	371	390	394
25	1	.21600E+03	25	16	16	16	16	16	16	16	16	16	16	16	16	16	16
25	2	.28410E+03	29	8	8	8	8	8	8	8	8	8	8	8	8	8	8
25	3	.15260E+03	24	8	8	8	8	8	8	8	8	8	8	8	8	8	8
27	1	.20749E+03	62	36	36	27	27	27	27	27	27	49	49	52	64	66	66
27	2	.19867E+03	138	45	42	38	37	36	38	36	37	68	67	72	86	86	88
27	3	.20161E+03	61	48	47	19	19	18	19	18	19	81	81	87	89	93	93
29	1	.19257E+03	40	11	11	16	16	16	16	16	16	35	35	35	52	52	52
29	2	.66060E+02	455	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	3	.25477E+03	-75	-9	-9	-13	-13	-13	-13	-13	-13	4	4	4	20	20	20
33	1	.19135E+03	50	18	18	24	24	24	24	24	24	51	51	52	70	70	70
33	2	.38191E+02	941	43	39	191	189	189	191	189	189	299	298	306	335	337	338
33	3	.26260E+03	-14	0	0	-1	-1	-2	-1	-2	-1	17	17	18	39	39	39
35	1	.19140E+03	51	19	19	26	26	26	26	26	26	53	53	54	72	73	73
35	2	.38771E+02	943	38	33	214	212	211	214	211	212	336	334	343	374	375	378
35	3	.26399E+03	-10	4	4	1	1	1	1	1	1	21	20	22	44	45	45
37	1	.19097E+03	52	20	19	26	26	26	26	26	26	53	53	54	72	73	73
37	2	.66060E+02	455	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	3	.23848E+03	-16	7	7	23	23	23	23	23	23	39	39	39	56	56	53
16	1	.25044E+03	11	15	15	-2	-2	-2	-2	-2	-2	34	33	34	39	39	39
16	2	.28410E+03	29	8	8	8	8	8	8	8	8	8	8	8	8	8	8
16	3	.18660E+03	6	-2	-2	-15	-15	-15	-15	-15	-15	22	22	23	33	34	34
20	1	.25444E+03	202	145	144	182	180	179	182	179	182	368	365	386	394	400	406
20	2	.61770E+03	78	75	74	95	94	92	95	92	93	190	188	197	213	215	218
20	3	.17515E+03	290	196	194	276	273	271	276	271	274	519	514	544	570	578	587
22	1	.32870E+03	326	228	227	303	299	297	303	297	302	598	591	627	640	649	661
22	2	.95181E+03	131	115	115	138	137	133	138	133	135	284	281	295	312	316	320
22	3	.31865E+03	308	203	201	301	297	295	301	295	300	589	582	618	641	650	662

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 * BM1 MODEL *

EARTHQUAKE NO. 1

*TOTAL ACC. (ABS. SUM)

NODE NO.	COMP. NO.	ACC(TL) (T.H.)	URS	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
				1	2	3	4	5	6	7	8	9	10	11	12	13	14
24	1	.46291E+03	302	205	203	286	282	279	286	279	285	579	571	607	621	629	642
24	2	.11316E+04	171	141	141	166	164	160	166	160	163	342	339	350	373	378	384
24	3	.43784E+03	300	194	192	300	296	293	300	293	299	599	590	627	650	658	671
26	1	.51564E+03	276	183	181	272	268	265	272	265	271	560	551	585	603	606	622
26	2	.10875E+04	202	158	158	186	184	180	186	180	183	384	380	400	417	423	429
26	3	.47370E+03	287	180	178	301	296	293	301	293	300	605	596	632	658	663	678
28	1	.45885E+03	250	158	155	265	260	257	265	257	264	551	540	573	597	597	613
28	2	.89282E+03	206	149	148	179	177	173	179	173	176	377	373	395	410	416	423
28	3	.39816E+03	277	163	160	321	315	311	321	311	319	642	630	667	701	701	719
30	1	.43919E+03	134	69	66	166	161	159	166	159	165	374	366	391	410	409	422
30	2	.48866E+03	225	135	134	170	167	164	170	164	168	366	361	383	399	404	411
30	3	.23973E+03	290	152	148	395	387	382	395	382	393	772	756	802	845	843	866
32	1	.44371E+03	100	80	79	89	88	87	89	87	89	244	241	258	260	269	273
32	2	.57680E+02	536	7	7	7	7	7	7	7	7	7	7	7	7	7	7
32	3	.13319E+03	500	390	388	557	553	550	557	550	555	1075	1067	1123	1136	1168	1180
36	1	.44312E+03	125	106	106	97	97	96	97	96	97	263	262	276	274	287	288
36	2	.14269E+03	299	39	38	118	116	115	118	115	117	256	252	271	292	295	300
36	3	.14324E+03	506	409	408	523	521	519	523	519	521	1024	1020	1065	1069	1106	1112
38	1	.48359E+03	308	245	245	256	254	253	256	253	255	559	556	575	586	593	598
38	2	.86816E+03	70	-12	-13	101	99	98	101	98	100	229	225	241	276	277	281
38	3	.19843E+03	516	422	422	482	482	481	482	481	482	973	973	1002	1006	1030	1031
39	1	.55306E+03	329	233	231	300	296	294	300	294	299	632	624	647	675	677	689
39	2	.13624E+04	56	-8	-9	98	97	95	98	95	95	223	220	234	270	270	274
39	3	.21496E+03	514	401	400	503	501	500	503	500	503	1011	1007	1034	1056	1069	1075
40	1	.43260E+03	346	209	206	350	344	340	350	340	348	702	690	716	764	761	779
40	2	.13302E+04	58	2	1	99	97	95	99	95	98	220	217	230	266	264	269
40	3	.18159E+03	467	341	339	511	508	506	511	506	510	1013	1007	1035	1069	1078	1087
41	1	.26219E+03	341	195	190	363	355	351	363	351	361	695	681	700	759	752	772
41	2	.84731E+03	64	21	20	97	95	93	97	93	95	204	201	212	243	242	247
41	3	.15764E+03	258	171	176	352	350	349	352	349	351	705	702	722	746	753	757
43	1	.24518E+03	66	70	70	45	45	45	45	45	45	140	140	146	146	151	152
43	2	.36540E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43	3	.16218E+03	192	151	151	241	240	239	241	239	240	489	487	506	508	521	524
44	1	.41718E+03	209	165	164	161	159	158	161	158	160	376	373	385	396	399	403
44	2	.35465E+03	194	162	161	208	206	204	209	204	207	352	347	370	391	397	403
44	3	.19765E+03	376	297	296	367	364	363	367	363	366	726	722	742	755	763	771
45	1	.67273E+03	309	245	244	226	225	224	226	224	226	505	503	517	526	531	534
45	2	.46077E+03	221	180	178	216	212	209	216	209	213	386	381	407	424	432	439
45	3	.28931E+03	447	358	357	386	383	382	386	382	385	770	767	785	798	805	811
46	1	.93150E+03	338	270	270	243	242	242	243	242	243	537	537	549	557	563	565
16	2	.46045E+03	204	164	163	184	182	179	184	179	182	338	334	356	366	374	380
16	3	.38219E+03	469	379	378	381	380	379	381	379	380	772	770	787	796	802	806

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 * BM1 MODEL *

EARTHQUAKE NO. 1

*TOTAL ACC. (ABS.SUM)

NODE NO.	COMP. NO.	ACC(TL) (T.H.)	URS	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
				1	2	3	4	5	6	7	8	9	10	11	12	13	14
47	1	.11131E+04	355	285	284	253	252	252	253	252	253	553	552	565	574	581	582
47	2	.32911E+03	93	78	78	81	81	80	81	80	80	136	135	141	144	147	148
47	3	.44719E+03	484	394	393	582	381	380	382	380	381	780	778	793	801	808	811
48	1	.10265E+04	353	283	283	251	251	250	251	250	251	547	547	560	570	577	578
48	2	.36540E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48	3	.42227E+03	422	335	335	347	347	346	347	346	347	709	708	727	733	742	744
49	1	.65831E+03	322	257	256	227	226	225	227	225	227	495	493	504	518	522	525
49	2	.36534E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
49	3	.55274E+03	187	95	93	215	210	205	215	205	211	432	424	458	475	483	496
50	1	.46156E+03	198	148	148	142	140	132	142	132	135	300	296	307	324	326	333
50	2	.36528E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	3	.58685E+03	229	159	158	193	191	187	193	187	190	415	411	434	442	452	458
51	1	.43548E+03	179	130	129	134	131	120	134	120	123	267	264	273	292	291	299
51	2	.39671E+03	89	71	71	60	60	60	60	60	60	125	125	127	130	131	132
51	3	.10900E+04	245	175	175	198	196	194	198	194	196	429	426	447	454	464	469
52	1	.37775E+03	170	124	123	121	119	111	121	111	114	243	240	248	262	264	269
52	2	.42999E+03	326	250	248	211	209	207	211	207	208	439	437	445	461	463	467
52	3	.99410E+03	275	195	194	223	222	221	223	221	223	477	475	496	505	513	518
53	1	.29741E+03	129	89	89	91	90	85	91	85	87	176	175	181	190	193	196
53	2	.30580E+03	405	280	277	238	234	231	238	231	233	496	493	503	526	526	532
53	3	.90515E+03	259	171	171	223	222	220	223	220	222	468	466	489	503	513	517
54	1	.20364E+03	75	43	41	55	54	53	55	53	54	89	88	90	97	96	98
54	2	.91206E+02	472	140	138	122	120	117	122	117	119	238	236	242	262	262	265
54	3	.86884E+03	215	126	125	202	200	194	202	194	196	409	407	430	449	467	472
55	1	.21740E+03	24	6	6	6	6	6	6	6	6	6	6	6	6	6	6
55	2	.78250E+02	369	3	3	3	3	3	3	3	3	3	3	3	3	3	3
55	3	.79241E+03	211	122	122	199	197	190	199	190	192	400	397	421	441	459	464
56	1	.32899E+03	114	04	91	62	59	55	62	55	57	159	156	161	174	171	176
56	2	.77991E+02	372	5	5	5	5	5	5	5	5	6	6	6	6	7	7
56	3	.40569E+03	231	138	137	213	211	205	213	205	207	412	409	432	455	473	478
57	1	.42675E+03	137	121	116	97	93	89	97	89	91	206	201	208	225	222	228
57	2	.77732E+02	375	6	6	7	7	7	7	7	7	5	9	9	10	10	10
57	3	.17609E+03	89	45	45	66	66	64	66	64	65	123	123	129	139	145	146
58	1	.42701E+03	118	109	104	91	87	82	91	82	85	184	179	185	201	197	203
58	2	.88997E+02	418	62	62	80	79	77	80	77	78	162	161	170	176	183	184
58	3	.15258E+03	25	2	2	2	2	2	2	2	2	4	4	4	4	4	4
59	1	.37677E+03	24	42	40	35	34	32	35	32	33	66	65	67	73	71	74
59	2	.75857E+02	503	72	71	80	79	77	80	77	78	184	183	193	200	207	209
59	3	.15234E+03	25	2	2	2	2	2	2	2	2	2	2	2	2	3	3
60	1	.35980E+03	-24	7	7	7	7	7	7	7	7	7	7	7	7	7	7
60	2	.57680E+02	535	7	7	7	7	7	7	7	7	7	7	7	7	7	7
60	3	.15210E+03	24	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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 * BM1 MODEL *

EARTHQUAKE NO. 1

*TOTAL MOMENTS AND FORCES (SRSS)

ELEM. NO.	FORCE CODE	FORCE (T.H.)	URS	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
				1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	12	25547E+04	83	48	47	35	34	33	35	33	34	105	104	124	117	130	131
2	18	12654E+04	26	16	15	14	14	13	14	13	14	29	29	33	33	35	36
3	12	13511E+04	22	9	8	4	3	3	4	3	3	32	31	38	37	42	44
4	18	24802E+04	76	39	38	23	22	21	23	21	22	103	101	122	115	128	131
5	12	61944E+04	24	16	15	18	18	17	18	17	18	36	34	40	41	42	45
6	12	93513E+04	12	8	8	11	11	11	11	11	11	22	22	25	26	26	28
7	12	14872E+05	8	6	6	8	8	8	8	8	8	17	16	19	20	20	21
8	12	50637E+04	18	9	9	16	16	15	16	15	16	41	40	48	48	51	53
9	18	10257E+05	6	3	3	5	5	5	5	5	5	15	14	16	18	18	19
10	12	17741E+05	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
11	12	71568E+04	29	12	10	13	12	12	13	12	12	39	38	49	48	53	55
12	12	66822E+04	13	3	2	4	4	4	4	4	4	26	25	34	31	36	38
13	18	64930E+04	13	3	2	5	5	4	5	4	5	26	25	34	32	37	38
14	12	70239E+04	40	18	15	9	8	7	9	7	7	40	39	50	57	63	64
15	12	14337E+05	11	9	9	8	8	8	8	8	8	11	11	12	12	13	13
16	12	47681E+04	32	25	24	23	23	22	23	22	23	32	32	35	38	40	41
17	12	51986E+04	5	4	4	5	5	5	5	5	5	7	7	8	8	9	9
18	12	46295E+04	7	6	6	6	6	6	6	6	6	9	9	10	10	10	11
19	18	43495E+04	8	7	6	6	6	6	6	6	6	10	10	11	11	12	12
20	12	76699E-09	9897	9897	9897	9897	9897	9897	9897	9897	9897	9897	9897	9897	9897	9897	9897
21	12	14310E+05	5	1	1	6	5	5	6	5	5	19	19	22	23	24	25
22	12	30999E+04	64	45	45	67	66	66	67	66	67	147	145	160	165	169	173
23	12	31143E+04	28	13	13	21	21	20	21	20	21	79	77	87	88	92	94
24	12	35281E+04	87	45	44	77	75	73	77	73	76	206	201	217	228	230	237
25	12	31977E+04	142	80	79	139	136	133	139	133	138	319	312	336	354	355	366
26	12	26413E+04	151	80	78	167	163	160	167	160	166	367	358	386	411	412	424
27	12	18172E+04	142	67	65	190	185	182	190	182	188	394	384	414	449	447	461
28	12	19561E+04	133	89	88	139	137	134	139	134	136	297	293	320	331	341	347
29	12	38000E+04	175	122	121	172	169	167	172	167	171	351	345	376	386	394	403
30	18	18966E+04	126	87	87	122	121	118	122	118	120	269	267	294	295	311	314
31	12	24085E+04	119	69	68	131	129	128	131	128	130	295	292	321	331	344	348
32	12	35370E+04	91	27	25	129	127	125	129	125	128	290	286	302	337	337	344
33	12	30132E+04	82	6	4	134	130	128	134	128	132	297	291	300	348	342	351
34	12	97396E+03	345	244	242	308	305	302	308	302	307	633	626	664	680	693	703
35	12	26828E+04	223	160	160	191	190	190	191	190	191	414	413	443	447	464	466
36	12	21653E+04	122	65	64	157	155	153	157	153	156	336	331	353	385	389	396
37	12	18946E+04	145	76	74	179	175	172	179	172	178	378	370	400	430	432	443
38	12	17714E+04	240	161	159	217	214	211	217	211	216	462	455	489	502	512	522
39	12	18444E+04	227	151	151	181	179	176	181	176	179	402	398	421	429	439	445
40	18	15319E+04	224	150	149	174	172	170	174	170	172	389	387	407	413	424	429
41	12	99227E+03	315	232	231	241	239	237	241	237	236	523	520	536	549	557	562
42	12	10501E+04	346	256	256	269	268	267	269	267	268	578	576	600	606	617	621

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 * BM1 MODEL *

EARTHQUAKE NO. 1

*TOTAL MOMENTS AND FORCES (SRSS)

ELEM. NO.	FORCE CODE	FORCE (T.H.)	URS	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
				1	2	3	4	5	6	7	8	9	10	11	12	13	14
43	18	.20957E+04	346	257	256	267	266	265	267	265	267	576	573	595	603	613	617
44	12	.21698E+04	281	210	209	208	207	206	208	206	208	467	464	480	488	494	499
45	12	.16710E+04	240	169	168	190	188	187	190	187	189	422	419	439	447	454	460
46	12	.14158E+04	210	126	125	192	189	187	192	187	190	414	410	438	449	458	466
47	18	.11827E+01	215	133	132	195	192	190	195	100	194	418	413	444	454	463	472
48	12	.72195E+03	240	164	163	210	206	200	210	200	204	438	432	467	475	487	497
49	12	.20421E+04	171	83	83	166	164	161	166	161	163	361	358	384	395	409	414
50	18	.19976E+04	178	88	88	172	170	167	172	167	169	372	369	395	407	421	425
51	12	.93488E+03	186	137	137	142	140	138	142	138	140	319	315	330	338	344	350
52	12	.17783E+04	171	110	109	146	145	142	146	142	144	321	317	335	345	352	358
53	18	.64620E+04	13	3	2	5	5	5	5	5	5	25	25	33	31	36	37
54	12	.71218E+04	25	6	5	27	26	25	27	25	26	91	88	101	104	107	111
55	12	.12815E+05	9	6	6	9	9	8	9	8	9	18	17	20	21	21	22

 * BM1 MODEL *

EARTHQUAKE NO. 1

*TOTAL MOMENTS AND FORCES (ABS. SUM)

ELEM. NO.	FORCE CODE	FORCE (T.H.)	URS	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
				1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	12	.25547E+04	143	103	102	88	87	86	88	86	87	167	165	187	179	193	195
2	18	.12654E+04	75	55	54	51	50	49	51	49	50	81	81	87	88	90	92
3	12	.13511E+04	73	53	52	45	44	43	45	43	44	86	85	96	93	99	101
4	18	.24802E+04	114	76	74	59	58	57	59	57	58	142	141	161	154	168	171
5	12	.61944E+04	69	50	49	57	56	55	57	55	56	91	89	97	99	101	104
6	12	.93513E+04	44	32	31	42	41	40	42	40	42	68	66	72	75	75	78
7	12	.14872E+05	37	27	27	36	35	34	36	34	35	59	57	62	64	65	67
8	12	.50637E+04	61	42	41	59	58	57	59	57	58	100	98	110	109	113	116
9	18	.10257E+05	36	26	26	33	32	32	33	32	33	56	55	59	62	62	65
10	12	.17741E+05	15	11	10	11	11	11	11	11	11	18	18	20	21	22	22
11	12	.71568E+04	82	55	53	58	57	56	58	56	56	96	95	109	108	115	117
12	12	.66822E+04	59	39	39	43	42	42	43	42	43	78	77	89	86	93	95
13	18	.64930E+04	59	39	39	43	43	42	43	42	43	78	77	90	87	93	95
14	12	.70239E+04	93	67	63	54	52	51	54	51	52	93	91	104	112	119	121
15	12	.14337E+05	38	31	29	28	27	27	28	27	27	38	38	42	43	46	46
16	12	.47661E+04	80	65	63	60	59	58	60	58	59	81	80	87	92	95	96
17	12	.51986E+04	25	19	19	21	20	20	21	20	21	33	32	36	35	37	38
18	12	.46295E+04	30	23	23	23	23	23	23	23	23	36	36	40	39	41	42
19	18	.43495E+04	32	25	24	25	25	24	25	24	25	38	37	42	41	44	44
20	12	.76699E-09	9900	9899	9899	9900	9899	9899	9900	9899	9899	9901	9901	9902	9902	9902	9902
21	12	.14310E+05	35	23	23	37	36	36	37	36	37	66	65	71	72	74	75
22	12	.30999E+04	132	106	105	136	135	134	136	134	135	230	227	243	249	254	258
23	12	.31143E+04	81	60	59	72	71	70	72	70	71	111	139	150	151	156	158
24	12	.35281E+04	131	87	86	121	118	116	121	116	119	252	248	264	275	277	284
25	12	.31977E+04	172	110	109	169	166	163	169	163	168	350	343	367	385	387	397
26	12	.26413E+04	165	93	91	181	176	174	181	174	180	381	372	400	425	425	438
27	12	.18172E+04	173	96	94	220	215	212	220	212	219	425	415	445	480	479	493
28	12	.19561E+04	189	142	141	195	193	189	195	189	192	356	352	380	390	401	407
29	12	.38000E+04	260	202	200	258	255	252	258	252	256	446	440	471	482	489	499
30	18	.18966E+04	180	140	140	176	175	172	176	172	174	327	326	352	354	370	373
31	12	.24085E+04	153	102	101	165	163	163	165	163	164	331	328	357	367	379	383
32	12	.35370E+04	106	42	41	145	142	141	145	141	144	306	302	318	353	352	359
33	12	.30132E+04	91	16	14	143	140	138	143	138	142	307	300	310	358	352	361
34	12	.97396E+03	370	269	268	333	330	328	333	328	332	659	652	690	706	719	729
35	12	.26828E+04	241	179	179	210	209	209	210	209	209	433	432	462	467	483	485
36	12	.21653E+04	141	83	82	176	173	172	176	172	175	355	350	372	404	408	415
37	12	.18946E+04	162	93	91	196	192	190	196	190	195	395	387	417	448	449	460
38	12	.17714E+04	254	175	173	232	228	225	232	225	230	476	469	503	517	526	536
39	12	.18444E+04	240	164	164	194	192	189	194	189	192	415	411	434	442	452	458
40	18	.15319E+04	239	165	164	189	187	185	189	185	187	404	402	421	429	439	444
41	12	.99227E+03	335	252	251	261	259	256	261	256	259	543	540	559	569	578	583
42	12	.18501E+04	358	268	267	281	280	279	281	279	280	590	588	612	618	629	633

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 * BM1 MODEL *

EARTHQUAKE NO. 1

*TOTAL MOMENTS AND FORCES (ABS. SUM)

ELEM. NO.	FORCE CODE	FORCE (T.H.)	URS	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
				1	2	3	4	5	6	7	8	9	10	11	12	13	14
43	18	.20957E+04	356	267	266	277	276	275	277	275	276	585	583	605	613	623	627
44	12	.21698E+04	288	217	216	215	214	213	215	213	215	474	471	488	495	502	506
45	12	.16710E+04	257	185	185	206	205	203	206	203	206	440	436	456	464	471	477
46	12	.14158E+04	242	157	156	224	221	219	224	219	222	447	442	471	482	491	499
47	18	.11827E+04	254	172	171	234	232	229	234	229	233	459	454	485	495	504	513
48	12	.72195E+03	271	195	194	241	237	230	241	230	235	470	464	499	507	519	529
49	12	.20421E+04	183	96	95	178	176	173	178	173	175	373	371	396	408	422	426
50	18	.19976E+04	191	102	101	185	184	181	185	181	183	386	383	409	421	435	439
51	12	.93488E+03	256	205	204	209	207	205	209	205	208	392	389	404	412	418	424
52	12	.17783E+04	240	174	173	213	211	209	213	209	211	393	390	407	418	426	431
53	18	.64620E+04	57	38	36	43	43	42	43	42	43	77	77	89	85	92	93
54	12	.71218E+04	76	50	49	78	77	76	78	76	78	153	150	164	168	171	175
55	12	.12815E+05	37	27	26	37	36	35	37	35	37	61	59	64	66	66	69

 * BM1 MODEL *

EARTHQUAKE NO. 1

*TOTAL MOMENTS AND FORCES (SRSS)

ELEM. NO.	FORCE CODE	FORCE (T.H.)	URS	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
				1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	.18516E+03	64	30	28	22	21	20	22	20	22	91	89	106	103	113	118
2	1	.19096E+03	12	9	9	11	10	10	11	10	10	22	21	24	25	25	27
3	1	.24274E+03	36	14	13	5	4	4	5	4	5	57	55	68	64	72	75
4	1	.24612E+04	62	30	29	24	23	22	24	22	23	83	81	100	94	105	109
5	1	.22030E+04	47	19	16	16	15	13	16	13	15	44	42	46	54	52	57
6	1	.26699E+04	56	36	36	35	34	34	35	34	35	78	76	91	88	96	99
7	1	.58801E+03	-2	-3	-3	-3	-3	-3	-3	-3	-3	-2	-2	-2	-2	-2	-2
8	1	.17897E+04	6	5	5	5	5	5	5	5	5	12	12	13	14	14	15
9	1	.24554E+03	69	39	38	58	56	54	58	54	57	154	150	169	172	177	184
10	1	.15900E+04	12	9	9	11	10	10	11	10	10	23	23	25	26	27	27
11	1	.74137E+03	18	16	16	16	16	16	16	16	16	20	20	21	21	22	22
12	1	.18216E+03	6	-10	-11	-9	-9	-10	-9	-10	-9	8	7	16	19	23	25
13	1	.95120E+02	11	5	4	0	0	0	0	0	0	11	11	15	14	17	17
14	1	.24486E+03	9	8	8	8	8	8	8	8	8	9	9	10	10	11	11
15	1	.21382E+04	-3	-3	-3	-3	-3	-3	-3	-3	-3	-2	-2	-2	-2	-2	-2
16	1	.30515E+03	23	20	19	20	20	20	20	20	20	24	23	25	28	29	29
17	1	.10312E+04	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
18	1	.24906E+04	2	1	1	2	2	2	2	2	2	3	3	4	4	4	4
19	1	.11961E+03	104	70	69	77	76	72	77	72	73	202	201	215	222	228	231
20	1	.30444E+02	6	2	1	0	0	0	0	0	0	5	5	7	7	8	9
21	1	.47862E+02	8	7	7	7	7	7	7	7	7	10	10	11	11	11	12
22	1	.97006E+02	302	231	231	217	216	216	217	216	217	485	484	505	502	515	517
23	1	.12273E+03	65	13	13	91	91	91	91	91	91	217	217	247	257	272	273
24	1	.59005E+02	124	40	35	150	143	139	150	139	148	330	317	350	376	373	392
25	1	.83748E+02	238	165	164	184	183	182	184	182	183	419	417	439	443	452	455
26	1	.87298E+02	275	200	200	217	216	212	217	212	214	462	461	479	487	501	503
27	1	.23011E+02	174	125	123	126	124	122	126	122	123	289	286	300	305	309	312
28	1	.11507E+03	135	57	56	133	131	129	133	129	131	301	299	320	331	343	347
29	1	.10326E+03	160	72	71	158	156	154	158	154	156	350	346	372	384	394	401
30	1	.17622E+04	105	48	48	104	103	101	104	101	102	234	233	250	258	267	271
31	1	.83976E+03	278	216	215	199	196	193	199	193	197	440	433	445	459	459	469
32	1	.44334E+03	64	41	40	37	37	35	37	35	36	130	129	139	140	145	147

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 * BM1 MODEL *

EARTHQUAKE NO. 1

*TOTAL MOMENTS AND FORCES (ABS. SUM)

ELEM. NO.	FORCE CODE	FORCE (T.H.)	URS	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
				1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	.18516E+03	112	76	73	66	65	64	66	64	66	141	139	157	154	164	169
2	1	.19096E+03	46	37	36	41	40	40	41	40	41	68	67	71	73	74	76
3	1	.24274E+03	85	59	58	48	47	46	48	46	47	108	107	121	117	125	128
4	1	.24612E+04	119	82	80	74	73	72	74	72	74	142	140	161	155	166	171
5	1	.22030E+04	106	68	63	64	62	59	64	59	62	102	99	105	116	113	119
6	1	.26699E+04	124	92	91	91	89	88	91	88	90	149	147	165	161	170	174
7	1	.58801E+03	7	4	3	4	4	4	4	4	4	9	9	11	11	12	12
8	1	.17897E+04	33	27	27	29	29	29	29	29	29	49	49	52	52	54	54
9	1	.24554E+03	128	93	92	115	113	111	115	111	115	221	216	236	238	245	252
10	1	.15900E+04	46	38	38	42	42	41	42	41	42	71	70	74	76	77	78
11	1	.74137E+03	44	36	36	36	36	36	36	36	36	51	51	54	54	57	58
12	1	.18216E+03	50	25	23	27	26	25	27	25	26	53	52	63	67	71	75
13	1	.95120E+02	55	42	40	31	30	30	31	30	30	54	54	62	59	65	65
14	1	.24496E+03	25	20	19	22	22	22	22	22	22	29	29	32	33	35	36
15	1	.21382E+04	5	3	3	4	3	3	4	3	3	9	9	10	10	11	11
16	1	.30515E+03	55	45	43	48	47	47	48	47	47	59	58	63	70	73	73
17	1	.10312E+04	14	10	9	10	10	10	10	10	10	18	18	20	20	21	22
18	1	.24906E+04	15	12	12	13	13	13	13	13	13	23	23	24	24	25	25
19	1	.11961E+03	141	106	106	114	113	108	114	108	110	240	239	254	260	267	270
20	1	.30444E+02	42	32	31	23	23	22	23	22	23	40	40	45	44	48	48
21	1	.47862E+02	25	19	19	23	23	23	23	23	23	35	34	38	38	40	41
22	1	.97006E+02	309	237	237	224	223	223	224	223	223	491	490	512	509	521	523
23	1	.12273E+03	78	26	26	104	104	104	104	104	104	230	230	261	271	286	289
24	1	.59005E+02	133	49	45	160	153	149	160	149	158	340	327	360	385	383	402
25	1	.83748E+02	260	186	186	205	204	203	205	203	205	441	439	461	464	474	477
26	1	.87298E+02	317	241	241	259	258	254	259	254	255	505	504	522	530	544	547
27	1	.23011E+02	245	194	191	194	192	190	194	190	191	364	361	376	380	384	389
28	1	.11507E+03	168	89	88	166	165	162	166	162	164	375	333	355	366	377	381
29	1	.10326E+03	164	76	75	162	160	155	162	158	161	354	351	376	389	398	405
30	1	.17622E+04	169	105	105	168	167	165	168	165	166	305	304	321	330	339	343
31	1	.83976E+03	337	275	273	257	253	250	257	250	255	501	494	506	520	520	530
32	1	.44334E+03	113	88	87	84	83	82	84	82	83	182	181	192	192	198	200

09-III

*
 * BM2 MODEL *
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EARTHQUAKE NO. 1

*TOTAL ACC. (SRSS)

NODE NO.	COMP. NO.	ACC(TL) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	.66662E+03	15	15	15	15	15	15	15	15	15	15	15	15	15	15
1	2	.44464E+03	4	4	4	4	4	4	4	4	4	4	4	4	4	4
1	3	.66662E+03	15	15	15	15	15	15	15	15	15	15	15	15	15	15
2	1	.66650E+03	16	16	16	16	16	16	16	16	16	16	16	16	16	16
2	2	.44581E+03	5	5	5	5	5	5	5	5	6	6	6	6	6	6
2	3	.66657E+03	16	16	15	15	15	15	15	15	16	16	16	16	16	16
3	1	.69679E+03	18	18	20	20	19	20	19	20	26	25	26	27	27	27
3	2	.44616E+03	19	19	15	15	15	15	15	15	24	24	25	25	26	26
3	3	.69605E+03	17	17	17	17	17	17	17	17	21	21	22	23	23	23
4	1	.72002E+03	21	21	24	24	23	24	23	24	35	34	35	37	36	37
4	2	.44617E+03	19	19	15	15	15	15	15	15	24	24	25	25	26	26
4	3	.71890E+03	21	21	21	21	20	21	20	21	29	29	29	31	31	32
5	1	.78702E+03	28	28	34	33	33	34	33	33	54	54	54	58	57	58
5	2	.44759E+03	41	41	32	32	32	32	32	32	52	51	54	54	55	56
5	3	.78294E+03	27	27	28	28	27	28	27	28	45	44	45	48	48	49
6	1	.66643E+03	35	35	29	29	29	29	29	29	41	41	42	43	44	44
6	2	.44464E+03	4	4	4	4	4	4	4	4	4	4	4	4	4	4
6	3	.66680E+03	34	34	29	28	28	29	28	29	40	40	42	41	42	42
7	1	.77650E+03	29	28	34	34	33	34	33	34	54	54	54	58	56	58
7	2	.45581E+03	36	36	28	28	28	28	28	28	46	46	48	54	56	56
7	3	.77291E+03	28	27	27	27	27	27	27	27	43	43	44	47	47	48
8A	1	.75160E+03	28	28	32	32	31	32	31	32	50	49	50	52	52	53
8A	2	.45597E+03	19	19	16	16	15	16	15	15	26	26	27	35	36	36
8A	3	.74894E+03	28	28	27	27	27	27	27	27	41	41	42	45	45	45
8	1	.70508E+03	31	31	29	29	29	29	29	29	43	43	44	45	45	46
8	2	.45134E+03	5	5	5	5	5	5	5	5	7	7	7	13	13	13
8	3	.70396E+03	30	30	27	27	27	27	27	27	39	39	40	41	42	42
9	1	.63756E+03	40	40	32	32	32	32	32	32	47	47	48	48	49	50
9	2	.43895E+03	6	6	5	5	5	5	5	5	6	6	7	12	12	12
9	3	.63887E+03	38	38	32	32	32	32	32	32	46	46	47	47	48	48
10	1	.47043E+03	77	77	55	54	54	55	54	54	89	89	92	92	94	94
10	2	.43120E+03	9	9	9	9	9	9	9	9	15	14	15	28	28	29
10	3	.47156E+03	72	72	55	55	54	55	54	55	88	88	90	91	92	93
11	1	.34005E+03	96	96	81	81	81	81	81	81	154	154	159	156	159	160
11	2	.43078E+03	9	9	10	10	9	10	9	10	15	15	15	29	29	29
11	3	.33554E+03	97	97	77	77	76	77	76	77	148	148	152	149	153	153
12	1	.33716E+03	92	92	78	78	78	78	78	78	149	149	152	150	152	153
12	2	.46531E+03	0	0	1	1	1	1	1	1	5	5	5	22	22	23
12	3	.33297E+03	92	92	74	74	74	74	74	74	145	145	148	146	148	149
13	1	.33119E+03	89	88	91	89	87	91	87	89	165	162	173	180	184	188
13	2	.22836E+03	190	186	191	187	184	191	184	188	292	286	289	310	305	313
13	3	.36214E+03	77	77	70	69	68	70	68	69	134	132	141	140	144	147

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 * BM2 MODEL *

EARTHQUAKE NO. 1

*TOTAL ACC. (SRSS)

NODE NO.	COMP. NO.	ACC(TL) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
14	1	.33467E+03	86	86	75	75	75	75	75	75	145	145	146	145	146	146
14	2	.46628E+03	0	0	0	0	0	0	0	0	3	3	3	19	19	19
14	3	.33261E+03	85	85	72	72	72	72	72	72	141	141	142	141	142	142
15	1	.34862E+03	19	19	8	8	8	8	8	8	22	22	22	24	24	24
15	2	.25138E+03	11	11	11	11	11	11	11	11	11	11	11	11	11	11
15	3	.36279E+03	15	15	10	10	10	10	10	10	16	16	16	18	18	18
19	1	.34986E+03	18	18	9	9	9	9	9	9	21	21	21	24	24	24
19	2	.25188E+03	10	10	12	12	12	12	12	12	14	14	14	15	15	15
19	3	.36160E+03	15	15	11	11	11	11	11	11	17	17	17	20	20	20
21	1	.35408E+03	17	17	10	10	10	10	10	10	19	19	19	23	23	23
21	2	.25274E+03	10	10	15	15	15	15	15	15	21	21	21	26	26	26
21	3	.36014E+03	15	15	11	11	11	11	11	11	19	19	19	22	22	22
23	1	.37481E+03	57	56	54	52	52	54	52	53	81	79	83	85	86	88
23	2	.26936E+03	60	53	139	128	127	139	127	134	217	202	206	239	231	242
23	3	.34925E+03	167	165	151	147	147	151	147	149	232	227	237	238	241	245
25	1	.37688E+03	12	12	12	12	12	12	12	12	12	12	12	12	12	12
25	2	.25138E+03	11	11	11	11	11	11	11	11	11	11	11	11	11	11
25	3	.37688E+03	12	12	12	12	12	12	12	12	12	12	12	12	12	12
27	1	.37548E+03	16	16	14	14	14	14	14	14	18	18	18	19	19	19
27	2	.24683E+03	21	20	27	25	25	27	25	26	43	41	42	49	48	50
27	3	.37979E+03	27	27	24	24	24	24	24	24	36	35	37	37	38	38
29	1	.37689E+03	12	12	12	12	12	12	12	12	12	12	12	12	12	12
29	2	.25138E+03	11	11	11	11	11	11	11	11	11	11	11	11	11	11
29	3	.37688E+03	12	12	12	12	12	12	12	12	12	12	12	12	12	12
33	1	.37719E+03	12	12	13	13	13	13	13	13	13	13	13	13	13	13
33	2	.25283E+03	10	10	13	13	13	13	13	13	17	16	17	19	19	19
33	3	.37626E+03	13	13	13	13	13	13	13	13	14	14	15	15	15	15
35	1	.37723E+03	12	12	13	13	13	13	13	13	13	13	13	14	14	14
35	2	.25300E+03	10	10	14	14	14	14	14	14	18	17	18	20	20	20
35	3	.37607E+03	14	14	14	14	14	14	14	14	16	16	16	16	16	16
37	1	.37723E+03	13	13	13	13	13	13	13	13	13	13	13	14	14	14
37	2	.25138E+03	11	11	11	11	11	11	11	11	11	11	11	11	11	11
37	3	.37673E+03	12	12	12	12	12	12	12	12	13	13	13	13	13	13
16	1	.32611E+03	87	87	79	79	79	79	79	79	149	149	149	149	149	149
16	2	.44464E+03	4	4	4	4	4	4	4	4	4	4	4	4	4	4
16	3	.32602E+03	86	86	75	75	75	75	75	75	144	144	144	144	144	144
20	1	.32212E+03	134	134	133	132	132	133	132	132	222	222	233	227	235	236
20	2	.36321E+03	36	35	43	42	42	43	42	42	70	69	75	114	114	116
20	3	.31031E+03	141	140	137	136	136	137	136	136	227	227	239	232	240	241
22	1	.34403E+03	247	247	240	240	239	240	239	240	387	386	414	399	419	420
22	2	.35808E+03	77	75	91	90	87	91	87	89	165	163	177	228	225	231
22	3	.28759E+03	309	309	299	298	297	299	297	298	469	468	502	482	506	508

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 * BM2 MODEL *

EARTHQUAKE NO. 1

*TOTAL ACC. (SRSS)

NODE NO.	COMP. NO.	ACC(TL) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
24	1	.41736E+03	333	333	309	309	308	309	308	309	500	500	532	515	538	540
24	2	.40947E+03	87	85	102	100	96	102	96	99	195	192	208	258	255	262
24	3	.40464E+03	339	339	314	313	313	314	313	313	506	505	538	520	544	545
26	1	.53790E+03	350	350	312	312	311	312	311	312	516	515	539	528	545	547
26	2	.39108E+03	96	93	111	108	104	111	104	107	213	209	230	277	274	283
26	3	.50832E+03	368	368	328	327	327	328	327	327	536	536	561	551	568	569
28	1	.64101E+03	361	361	315	315	314	315	314	315	524	523	537	536	544	545
28	2	.31051E+03	94	92	108	105	100	108	100	104	210	207	231	272	269	279
28	3	.59269E+03	390	390	340	340	339	340	339	340	559	559	573	573	582	583
30	1	.74063E+03	354	354	307	307	307	307	307	307	512	511	517	523	526	526
30	2	.21208E+03	66	64	70	68	64	70	64	67	146	143	163	191	190	197
30	3	.65442E+03	405	405	351	351	351	351	351	351	577	577	583	590	594	594
32	1	.80072E+03	346	346	300	300	300	300	300	300	500	500	503	511	512	513
32	2	.17158E+03	18	18	18	18	18	18	18	18	18	18	18	18	18	18
32	3	.67867E+03	417	417	363	363	363	363	363	363	593	593	596	606	608	608
36	1	.81237E+03	342	342	296	296	296	296	296	296	495	495	497	506	507	507
36	2	.17169E+03	18	18	27	27	26	27	26	26	39	38	41	48	47	49
36	3	.67969E+03	419	419	364	364	364	364	364	364	595	595	597	608	610	610
38	1	.81609E+03	314	314	270	270	270	270	270	270	457	457	466	468	473	474
38	2	.27861E+03	34	33	74	71	65	74	65	70	148	144	166	192	189	199
38	3	.66048E+03	418	418	362	362	362	362	362	362	594	594	598	607	609	610
39	1	.67988E+03	292	292	256	256	255	256	255	256	434	434	455	446	461	462
39	2	.38216E+03	40	39	76	74	70	76	70	73	158	155	170	210	207	215
39	3	.60357E+03	409	409	353	353	353	353	353	353	581	581	587	594	598	598
40	1	.44483E+03	285	285	273	273	271	273	271	272	443	442	484	456	489	491
40	2	.38254E+03	43	41	74	71	67	74	67	70	153	150	161	205	200	208
40	3	.52107E+03	392	392	338	338	338	338	338	338	559	559	566	572	576	577
41	1	.29674E+03	144	144	173	172	170	173	170	172	268	266	303	279	308	312
41	2	.27787E+03	42	40	68	65	58	68	58	63	135	131	152	177	172	183
41	3	.42953E+03	370	370	317	317	317	317	317	317	526	526	529	539	541	541
43	1	.21873E+03	264	264	240	240	240	240	240	240	395	395	396	405	406	407
43	2	.17158E+03	18	18	18	18	18	18	18	18	18	18	18	18	18	18
43	3	.35111E+03	356	356	305	305	305	305	305	305	505	505	508	519	520	520
44	1	.30033E+03	287	286	254	253	252	254	252	253	431	430	450	444	457	459
44	2	.17619E+03	81	79	99	94	86	99	86	93	163	158	184	201	199	213
44	3	.33623E+03	332	332	287	287	287	287	287	287	477	477	488	490	497	497
45	1	.39587E+03	232	231	208	207	205	208	205	206	367	366	406	383	409	412
45	2	.18522E+03	132	128	157	150	138	157	138	148	255	247	293	311	313	333
45	3	.39504E+03	257	256	220	220	220	220	220	220	380	379	399	391	404	405
46	1	.48690E+03	164	163	152	151	151	152	151	151	284	284	336	302	337	339
46	2	.16746E+03	121	118	138	133	125	138	125	132	223	217	263	273	281	295
46	3	.45909E+03	212	212	181	181	181	181	181	181	324	324	347	335	351	352

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 * BM2 MODEL *

EARTHQUAKE NO. 1

*TOTAL ACC. (SRSS)

NODE NO.	COMP. NO.	ACC(TL) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
47	1	.55404E+03	115	115	118	118	118	118	118	118	229	229	288	250	290	291
47	2	.17066E+03	25	25	26	25	25	26	25	25	34	34	39	41	43	44
47	3	.51431E+03	195	195	166	166	166	166	166	166	302	302	328	313	331	332
48	1	.50802E+03	113	113	117	117	116	117	116	117	227	226	285	247	287	288
48	2	.17158E+03	19	18	18	18	18	18	18	18	18	18	18	18	18	18
48	3	.47119E+03	229	229	196	196	196	196	196	196	348	348	373	359	377	377
49	1	.33525E+03	130	130	122	122	121	122	121	122	237	236	283	254	285	286
49	2	.17157E+03	18	18	18	18	18	18	18	18	18	18	18	18	18	18
49	3	.36740E+03	346	346	302	301	300	302	300	301	508	507	552	528	557	560
50	1	.20209E+03	221	219	196	194	192	196	192	194	345	343	411	392	424	429
50	2	.17156E+03	18	18	18	18	18	18	18	18	18	18	18	18	18	18
50	3	.47850E+03	269	268	236	235	233	236	233	234	409	407	469	436	473	476
51	1	.19795E+03	220	218	198	196	193	198	193	195	344	341	412	400	430	436
51	2	.16983E+03	27	26	26	26	25	26	25	26	41	41	50	47	51	52
51	3	.51478E+03	235	234	206	205	204	206	204	205	365	363	425	393	429	432
52	1	.17675E+03	153	150	136	134	132	136	132	134	247	245	299	291	313	318
52	2	.20451E+03	168	155	178	170	157	178	157	168	291	284	325	328	330	350
52	3	.42573E+03	181	181	163	162	161	163	161	162	305	304	364	330	367	369
53	1	.16142E+03	62	61	55	54	52	55	52	53	113	112	139	137	147	150
53	2	.15927E+03	245	226	253	242	222	253	222	238	397	387	424	444	434	463
53	3	.38402E+03	110	110	110	109	107	110	107	108	228	227	290	264	297	300
54	1	.15401E+03	11	9	11	11	9	11	9	10	22	21	22	28	26	29
54	2	.10814E+03	23	20	20	19	16	20	16	18	46	45	50	55	53	58
54	3	.38793E+03	125	121	127	124	120	127	120	123	244	241	280	312	318	325
55	1	.15347E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
55	2	.10236E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
55	3	.35229E+03	132	129	134	130	127	134	127	129	252	249	287	323	328	335
56	1	.15338E+03	122	110	122	115	102	122	102	112	196	189	197	225	208	228
56	2	.10246E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
56	3	.20659E+03	106	103	106	103	100	106	100	103	205	202	235	263	267	273
57	1	.15476E+03	258	235	257	243	219	257	219	238	391	378	394	442	413	448
57	2	.10256E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	3	.14205E+03	14	14	13	13	13	13	13	13	21	21	24	27	27	28
58	1	.15454E+03	233	211	231	219	196	231	196	214	354	342	355	401	373	406
58	2	.94924E+02	12	12	12	12	12	12	12	12	19	19	21	25	26	26
58	3	.15329E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	1	.15368E+03	44	39	44	41	35	44	35	39	76	73	75	90	81	90
59	2	.95224E+02	11	11	11	11	11	11	11	11	18	17	20	24	24	25
59	3	.15338E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	1	.15347E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	2	.10236E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	3	.15347E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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 * BM2 MODEL *

EARTHQUAKE NO. 1

*TOTAL ACC. (ABS. SUM)

NODE NO.	COMP. NO.	ACC(TL) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	
1	1	.66662E+03	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
1	2	.44464E+03	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
1	3	.66662E+03	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
2	1	.66650E+03	21	21	21	21	21	21	21	21	23	23	23	24	23	24	24
2	2	.44581E+03	21	21	19	19	19	19	19	19	24	24	25	25	26	26	26
2	3	.66657E+03	21	20	20	20	20	20	20	20	22	22	22	23	22	23	23
3	1	.69679E+03	48	47	50	50	49	50	49	50	64	64	64	66	65	67	67
3	2	.44616E+03	63	62	55	55	54	55	54	55	72	72	74	74	75	76	76
3	3	.69605E+03	46	46	43	43	43	43	43	43	54	54	55	57	57	57	57
4	1	.72002E+03	61	60	64	63	62	64	62	63	84	83	84	88	86	88	88
4	2	.44617E+03	63	62	55	55	54	55	54	55	72	72	74	74	75	76	76
4	3	.71890E+03	60	59	56	56	56	56	56	56	117	116	117	123	121	123	123
5	1	.78702E+03	79	78	85	85	83	85	83	85	115	114	117	118	120	121	121
5	2	.44759E+03	99	99	86	86	8	86	86	86	102	102	103	107	107	108	108
5	3	.78294E+03	77	77	75	75	74	75	74	75	102	102	103	107	107	108	108
6	1	.66643E+03	86	86	75	75	75	75	75	75	97	96	99	99	101	101	101
6	2	.44464E+03	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
6	3	.66680E+03	84	84	73	73	73	73	73	73	95	95	97	96	98	98	98
7	1	.77650E+03	79	79	86	85	84	86	84	85	117	116	117	122	120	123	123
7	2	.45581E+03	92	92	80	80	79	80	79	80	107	107	110	118	120	121	121
7	3	.77291E+03	78	77	74	74	73	74	73	74	100	100	101	105	105	107	107
8A	1	.75160E+03	78	78	81	81	80	81	80	81	110	109	111	114	113	115	115
8A	2	.45597E+03	64	64	56	56	55	56	55	56	75	75	77	87	88	89	89
8A	3	.74894E+03	77	77	73	72	72	73	72	72	97	97	98	102	102	103	103
8	1	.70508E+03	80	80	76	76	75	76	75	76	100	99	101	102	103	104	104
8	2	.45134E+03	26	26	23	23	23	23	23	23	30	30	31	37	38	38	38
8	3	.70396E+03	80	79	72	72	71	72	71	72	94	93	95	97	98	99	99
9	1	.63756E+03	94	94	81	81	80	81	80	81	106	106	108	108	109	110	110
9	2	.43895E+03	18	18	16	16	16	16	16	16	20	20	21	26	27	27	27
9	3	.63887E+03	90	90	80	79	79	80	79	80	104	104	106	106	107	108	108
10	1	.47043E+03	147	146	115	114	114	115	114	114	166	165	169	169	172	173	173
10	2	.43120E+03	31	31	33	32	32	33	32	32	44	44	46	60	60	62	62
10	3	.47156E+03	138	138	113	113	112	113	112	113	162	162	165	167	168	169	169
11	1	.34005E+03	164	164	146	145	145	146	145	146	241	241	251	244	252	253	253
11	2	.43078E+03	31	31	33	33	32	33	32	33	45	44	46	61	61	63	63
11	3	.33554E+03	165	165	139	138	138	139	138	139	232	231	241	234	242	243	243
12	1	.33716E+03	149	149	132	132	131	132	131	132	221	221	230	224	230	231	231
12	2	.46531E+03	14	14	17	16	16	17	16	16	24	24	26	43	44	45	45
12	3	.33297E+03	149	149	126	126	125	126	125	126	214	214	222	216	223	223	223
13	1	.33119E+03	166	165	166	164	162	166	162	165	272	269	283	294	300	304	304
13	2	.22836E+03	308	303	311	305	301	311	301	307	453	445	449	478	471	482	482
13	3	.36214E+03	149	147	139	138	136	139	136	138	230	227	239	238	243	247	247

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 * BM2 MODEL *

EARTHQUAKE NO. 1

*TOTAL ACC. (ABS. SUM)

NODE NO.	COMP. NO.	ACC(TL) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
14	1	.33467E+03	123	123	109	109	109	109	109	109	190	190	195	191	195	196
14	2	.46629E+03	7	7	9	9	8	9	8	9	14	14	15	31	32	32
14	3	.33261E+03	122	122	103	103	103	103	103	103	183	183	188	184	188	188
15	1	.34862E+03	23	23	14	14	14	14	14	14	29	29	29	32	32	32
15	2	.25138E+03	11	11	11	11	11	11	11	11	11	11	11	11	11	11
15	3	.36279E+03	17	17	13	13	13	13	13	13	19	19	19	22	22	22
19	1	.34986E+03	21	21	12	11	11	12	11	12	25	25	25	28	28	28
19	2	.25188E+03	14	14	17	16	16	17	16	16	20	20	20	22	22	22
19	3	.36160E+03	20	20	17	16	16	17	16	17	25	25	25	28	28	28
21	1	.35408E+03	22	22	15	15	15	15	15	15	26	26	26	30	30	30
21	2	.25274E+03	23	23	31	30	30	31	30	31	42	41	42	48	47	48
21	3	.36514E+03	23	23	20	20	20	20	20	20	31	31	31	34	34	35
23	1	.37481E+03	122	121	117	115	115	117	115	116	156	153	159	162	163	166
23	2	.26936E+03	124	116	227	214	212	227	212	220	323	306	310	353	344	356
23	3	.34925E+03	254	252	239	234	234	239	234	237	343	336	348	350	354	359
25	1	.37688E+03	12	12	12	12	12	12	12	12	12	12	12	12	12	12
25	2	.25138E+03	11	11	11	11	11	11	11	11	11	11	11	11	11	11
25	3	.37688E+03	12	12	12	12	12	12	12	12	12	12	12	12	12	12
27	1	.37548E+03	41	41	37	37	37	37	37	37	47	47	48	49	49	50
27	2	.24683E+03	52	50	73	69	69	73	69	71	100	96	98	109	107	110
27	3	.37979E+03	71	70	66	65	64	66	64	65	87	86	88	89	90	91
29	1	.37689E+03	12	12	12	12	12	12	12	12	13	13	13	13	13	13
29	2	.25138E+03	11	11	11	11	11	11	11	11	11	11	11	11	11	11
29	3	.37688E+03	12	12	12	12	12	12	12	12	12	12	12	12	12	12
33	1	.37719E+03	20	20	19	19	19	19	19	19	22	22	22	22	23	23
33	2	.25283E+03	19	19	30	29	30	29	30	29	39	38	39	43	42	43
33	3	.37626E+03	27	27	26	26	26	26	26	26	32	31	32	32	32	33
35	1	.37723E+03	21	21	20	20	20	20	20	20	23	23	24	24	24	24
35	2	.25308E+03	22	21	34	33	32	34	32	33	44	43	44	48	47	48
35	3	.37607E+03	32	32	30	30	30	30	30	30	38	37	38	38	39	39
37	1	.37723E+03	21	21	21	20	20	21	20	21	24	24	24	24	24	24
37	2	.25138E+03	11	11	11	11	11	11	11	11	11	11	11	11	11	11
37	3	.37673E+03	16	16	16	16	16	16	16	16	17	17	17	17	17	17
16	1	.32611E+03	91	91	83	83	83	83	83	83	154	154	154	154	154	154
16	2	.44464E+03	4	4	4	4	4	4	4	4	4	4	4	4	4	4
16	3	.32602E+03	89	89	79	79	78	79	78	79	149	149	149	149	149	149
20	1	.32212E+03	225	225	223	222	222	223	222	222	348	348	367	356	369	371
20	2	.36321E+03	80	79	90	88	87	90	87	88	134	132	143	192	192	195
20	3	.31031E+03	234	233	229	228	227	229	227	227	356	355	375	383	377	379
22	1	.34403E+03	377	377	372	371	370	372	370	371	569	568	601	585	608	610
22	2	.35808E+03	149	147	171	168	165	171	165	168	273	270	287	361	358	365
22	3	.28759E+03	464	464	452	452	450	452	450	451	681	680	719	699	726	726

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 * BM2 MODEL *

EARTHQUAKE NO. 1

*TOTAL ACC. (ABS. SUM)

NODE NO.	COMP. NO.	ACC(TL) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)															
			1	2	3	4	5	6	7	8	9	10	11	12	13	14		
24	1	.41736E+03	455	455	433	433	432	433	432	433	432	433	672	671	706	693	718	719
24	2	.40947E+03	155	153	177	174	170	177	177	177	177	173	200	297	315	387	383	391
24	3	.40464E+03	464	464	437	437	436	437	436	437	436	437	675	675	710	695	720	721
26	1	.53790E+03	448	448	412	412	411	412	411	412	412	412	658	658	683	675	692	694
26	2	.39108E+03	162	159	180	177	172	180	172	172	176	313	310	332	397	394	403	403
26	3	.50832E+03	471	471	428	428	428	428	428	428	428	673	673	699	695	713	714	714
28	1	.64101E+03	443	443	398	398	397	398	397	398	397	398	646	646	660	661	670	671
28	2	.31051E+03	163	160	174	171	165	174	165	174	165	170	308	304	331	387	384	394
28	3	.59269E+03	477	477	424	424	423	424	423	424	423	424	673	672	687	696	705	706
30	1	.74063E+03	423	423	377	377	376	377	376	377	376	377	617	617	622	631	634	634
30	2	.21208E+03	134	132	136	133	128	136	128	132	132	238	234	257	298	296	305	305
30	3	.65442E+03	481	481	423	423	423	423	423	423	423	676	676	682	698	702	702	702
32	1	.80072E+03	407	407	362	362	362	362	362	362	362	362	596	596	598	609	611	611
32	2	.17158E+03	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
32	3	.67867E+03	487	487	427	427	427	427	427	427	427	427	685	684	687	706	708	708
36	1	.81237E+03	402	401	356	356	356	356	356	356	356	587	587	590	601	602	603	603
36	2	.17169E+03	42	41	58	57	55	58	55	56	56	82	80	86	97	96	99	99
36	3	.67969E+03	488	488	427	427	427	427	427	427	427	427	685	685	688	707	708	708
38	1	.81609E+03	367	367	323	323	322	323	322	323	322	323	538	537	547	552	558	558
38	2	.27861E+03	82	80	136	133	126	136	126	132	132	227	222	247	281	279	290	290
38	3	.66048E+03	486	486	422	422	422	422	422	422	422	422	682	682	686	703	705	706
39	1	.67988E+03	349	349	311	311	310	311	310	311	310	311	514	513	534	529	545	546
39	2	.38216E+03	79	77	127	125	120	127	120	124	124	223	220	236	284	281	289	289
39	3	.60357E+03	479	479	413	413	413	413	413	413	413	413	670	670	676	692	695	695
40	1	.44483E+03	358	358	348	348	346	348	346	347	347	537	536	579	554	587	590	590
40	2	.38254E+03	82	80	123	120	116	123	116	120	120	214	210	222	273	268	277	277
40	3	.52107E+03	468	468	402	402	402	402	402	402	402	402	653	653	660	675	680	680
41	1	.29674E+03	226	226	265	264	261	265	261	263	263	376	374	414	390	420	425	425
41	2	.27787E+03	94	91	126	123	115	126	115	121	121	204	199	222	252	247	259	259
41	3	.42953E+03	455	455	388	388	388	388	388	388	388	388	629	629	633	652	654	654
43	1	.21873E+03	367	367	354	354	354	354	354	354	354	543	543	545	560	561	561	561
43	2	.17158E+03	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
43	3	.35111E+03	453	453	387	387	387	387	387	387	387	387	619	619	621	644	645	645
44	1	.30033E+03	359	359	337	336	335	337	335	337	335	336	547	547	547	567	580	582
44	2	.17619E+03	155	152	177	172	161	177	161	170	170	253	247	277	297	295	310	310
44	3	.33623E+03	431	431	369	369	369	369	369	369	369	369	592	592	603	613	620	621
45	1	.39587E+03	282	281	264	263	261	264	261	262	262	453	452	492	474	501	504	504
45	2	.18522E+03	215	210	241	234	220	241	220	231	231	349	341	389	411	413	434	434
45	3	.39504E+03	339	339	289	289	289	289	289	289	289	289	479	479	498	497	510	511
46	1	.48690E+03	201	200	192	191	190	192	190	191	191	350	349	402	372	408	409	409
46	2	.16746E+03	207	203	225	220	210	225	210	218	218	321	315	365	378	387	402	402
46	3	.45909E+03	283	283	241	241	241	241	241	241	241	413	413	438	429	446	446	446

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 * BM2 MODEL *

EARTHQUAKE NO. 1

*TOTAL ACC. (ABS. SUM)

NODE NO.	COMP. NO.	ACC(TL) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
47	1	.55404E+03	144	144	151	151	150	151	150	150	282	282	342	306	347	348
47	2	.17066E+03	55	58	60	60	59	60	59	60	81	80	91	93	97	99
47	3	.51431E+03	258	258	221	221	221	221	221	221	388	388	414	403	421	421
48	1	.50802E+03	144	144	151	151	150	151	150	151	281	281	341	306	347	348
48	2	.17158E+03	18	18	18	18	18	18	18	18	18	18	18	18	18	18
48	3	.47119E+03	299	298	257	257	256	257	256	257	442	442	468	458	476	476
49	1	.33525E+03	174	174	167	167	166	167	166	167	309	308	356	331	362	363
49	2	.17157E+03	19	19	19	19	19	19	19	19	19	19	19	19	19	19
49	3	.36740E+03	434	433	377	377	375	377	375	376	628	627	674	653	682	685
50	1	.20209E+03	290	288	266	264	261	266	261	263	453	450	521	506	538	544
50	2	.17156E+03	19	19	19	19	19	19	19	19	19	19	19	19	19	19
50	3	.47850E+03	334	334	292	291	290	292	290	291	501	499	562	531	568	571
51	1	.19795E+03	291	288	268	266	263	268	263	265	450	447	521	513	544	550
51	2	.19983E+03	67	65	69	68	66	69	66	67	97	96	111	106	113	115
51	3	.51478E+03	294	293	256	255	254	256	254	255	447	446	509	477	514	517
52	1	.17675E+03	225	223	207	205	203	207	203	205	345	343	400	397	419	425
52	2	.20451E+03	237	223	234	227	212	234	212	224	364	357	399	404	406	427
52	3	.42573E+03	241	241	208	207	205	208	205	207	381	380	441	408	446	448
53	1	.16142E+03	127	125	117	116	114	117	114	115	193	191	223	223	235	239
53	2	.15927E+03	318	298	307	296	275	307	275	292	473	463	501	524	513	543
53	3	.38402E+03	163	162	146	145	143	146	143	145	290	288	352	329	367	366
54	1	.15401E+03	48	45	49	47	44	49	44	47	70	68	70	79	75	80
54	2	.10814E+03	73	68	70	67	62	70	62	66	107	104	112	119	115	122
54	3	.38793E+03	168	164	160	157	153	160	153	156	290	287	327	360	366	373
55	1	.15347E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
55	2	.10236E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
55	3	.35229E+03	177	174	170	167	163	170	163	166	300	297	335	373	378	385
56	1	.15398E+03	199	185	198	190	175	198	175	187	281	274	282	315	297	318
56	2	.10246E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
56	3	.20659E+03	170	167	165	162	158	165	158	161	275	272	306	335	340	346
57	1	.15476E+03	344	320	342	328	302	342	302	322	486	473	489	543	514	549
57	2	.10256E+03	0	0	0	0	0	0	0	0	0	0	0	1	1	1
57	3	.14205E+03	43	43	42	42	41	42	41	42	62	62	68	73	74	75
58	1	.15454E+03	317	295	315	302	278	315	278	297	448	436	449	500	472	505
58	2	.94924E+02	40	40	41	41	40	41	40	40	59	58	64	71	72	73
58	3	.15329E+03	1	1	1	1	1	1	1	1	1	1	1	1	1	1
59	1	.15368E+03	104	96	103	99	91	103	91	97	146	142	144	162	153	163
59	2	.95224E+02	38	38	39	39	38	39	38	39	56	56	62	68	69	70
59	3	.15338E+03	1	1	1	1	1	1	1	1	1	1	1	1	1	1
60	1	.15347E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	2	.10236E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	3	.15347E+03	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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 * BM2 MODEL *

EARTHQUAKE NO. 1

*TOTAL MOMENTS, AND FORCES(SRSS)

ELEM. NO.	FORCE CODE	FORCE (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	
1	12	.40303E+05	-1	-1	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2
2	18	.36310E+05	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2
3	12	.33853E+05	-1	-1	-1	-1	-1	-1	-1	-1	-1	0	0	0	0	0	0
4	18	.31518E+05	5	5	4	4	4	4	4	4	9	8	10	9	10	10	10
5	12	.42707E+05	0	0	-1	-1	-1	-1	-1	-1	1	1	2	2	2	2	2
6	12	.48599E+05	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2
7	12	.58647E+05	4	4	3	3	3	3	3	3	5	5	6	5	6	6	6
8	12	.30577E+05	15	15	13	13	13	13	13	13	23	23	23	23	24	24	24
9	12	.47036E+05	1	1	0	0	0	0	0	0	4	4	5	5	5	5	5
10	12	.15564E+06	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
11	12	.41977E+05	14	14	14	14	14	14	14	14	18	18	19	18	19	19	19
12	12	.81625E+04	130	130	114	114	114	114	114	114	184	184	194	188	197	198	198
13	18	.83734E+04	122	122	107	107	107	107	107	107	174	174	184	178	187	187	187
14	12	.58093E+04	125	122	132	125	125	132	125	129	212	203	221	221	230	237	237
15	12	.40541E+04	112	110	113	108	108	113	108	110	187	181	197	193	206	212	212
16	12	.32977E+04	65	63	70	66	65	70	65	68	123	118	128	129	134	138	138
17	12	.18494E+04	182	182	157	157	157	157	157	157	265	264	270	271	276	277	277
18	12	.15738E+04	202	202	177	176	176	177	176	176	291	290	297	298	304	305	305
19	18	.14459E+04	213	212	187	186	187	186	187	186	305	304	312	312	319	321	321
20	12	.55007E-08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	12	.30201E+05	55	55	46	46	46	46	46	46	87	87	88	90	90	90	90
22	12	.62976E+04	408	408	352	352	352	352	352	352	579	579	580	591	592	592	592
23	12	.32801E+04	391	391	337	337	337	337	337	337	557	557	559	569	569	570	570
24	12	.88611E+03	173	172	180	178	174	180	174	177	317	314	358	349	370	377	377
25	12	.23841E+04	433	433	378	378	377	378	377	377	619	619	632	635	643	644	644
26	12	.44410E+04	436	436	378	378	378	378	378	378	619	619	623	632	634	634	634
27	12	.61260E+04	425	425	368	368	368	368	368	368	603	603	605	616	616	616	616
28	12	.71742E+04	417	417	360	360	360	360	360	360	591	591	592	603	604	604	604
29	12	.93819E+04	415	415	358	358	358	358	358	358	589	589	591	601	602	602	602
30	18	.72495E+04	415	415	358	358	358	358	358	358	588	588	589	600	601	601	601
31	12	.65318E+04	398	398	343	343	343	343	343	343	567	567	568	578	579	579	579
32	12	.45868E+04	371	371	320	320	320	320	320	320	532	532	537	543	545	547	547
33	12	.15642E+04	262	262	253	252	251	253	251	252	433	432	455	449	466	469	469
34	12	.26934E+04	421	421	364	364	364	364	364	364	598	597	603	610	613	613	613
35	12	.68073E+04	409	409	353	353	353	353	353	353	581	581	583	593	594	594	594
36	12	.55744E+04	402	402	347	347	347	347	347	347	572	572	573	583	584	584	584
37	12	.42262E+04	397	397	343	343	342	343	342	343	565	565	568	577	579	579	579
38	12	.27045E+04	406	406	352	352	351	352	351	352	579	579	585	592	595	596	596
39	12	.13336E+04	375	375	327	326	326	327	326	326	539	538	560	555	568	569	569
40	18	.10417E+04	354	354	309	309	309	309	309	309	510	509	538	528	544	545	545
41	12	.13847E+04	387	387	335	335	335	335	335	335	553	552	569	566	576	576	576
42	12	.26525E+04	325	325	280	280	280	280	280	280	471	471	488	483	494	494	494

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 * BM2 MODEL *

EARTHQUAKE NO. 1

*TOTAL MOMENTS, AND FORCES(SRSS)

ELEM. NO.	FORCE CODE	FORCE (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
43	18	.28742E+04	318	318	274	274	274	274	274	274	463	463	479	475	485	485
44	12	.19422E+04	296	296	256	256	255	256	255	256	436	436	455	449	461	461
45	12	.10975E+04	328	328	288	287	287	288	287	287	479	478	504	494	509	510
46	12	.16542E+04	345	345	300	299	299	300	299	299	493	493	499	505	508	508
47	18	.18641E+04	333	333	288	288	287	288	287	288	476	476	480	487	488	489
48	12	.18179E+04	344	344	297	297	296	297	296	297	492	492	498	504	506	507
49	12	.19813E+04	333	333	289	289	288	289	288	288	463	482	497	497	505	506
50	18	.19014E+04	338	338	293	293	292	293	292	293	489	489	503	504	512	513
51	12	.13368E+04	400	400	346	346	346	346	346	346	570	570	576	583	585	586
52	12	.13095E+04	338	338	294	293	292	294	292	293	491	490	508	506	516	517
53	18	.10222E+05	88	88	77	77	76	77	76	76	130	130	137	133	139	140
54	12	.94103E+04	353	353	306	306	306	306	306	306	498	498	500	509	509	510
55	12	.54973E+05	2	2	2	2	2	2	2	2	4	4	4	4	4	4

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 * BM2 MODEL *

EARTHQUAKE NO. 1

*TOTAL MOMENTS, AND FORCES (ABS. SUM)

ELEM. NO.	FORCE CODE	FORCE (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	12	.40303E+05	22	22	19	19	19	19	19	19	30	30	32	30	32	32
2	18	.36310E+05	3	3	2	2	2	2	2	2	5	5	5	5	5	5
3	12	.33853E+05	5	5	4	4	4	4	4	4	7	6	7	7	7	7
4	18	.31518E+05	33	33	29	29	29	29	29	29	43	43	46	44	46	46
5	12	.42707E+05	21	21	18	18	18	18	18	18	29	29	30	30	31	31
6	12	.43599E+05	19	19	17	17	17	17	17	17	27	27	27	27	28	28
7	12	.58647E+05	21	21	20	20	19	20	19	20	28	28	29	29	29	30
8	12	.30577E+05	53	53	48	48	47	48	47	48	69	69	71	70	71	71
9	18	.47036E+05	26	26	23	23	23	23	23	23	36	36	37	37	37	38
10	12	.15564E+06	2	2	1	1	1	1	1	1	3	3	3	3	3	3
11	12	.41977E+05	39	39	39	39	39	39	39	39	52	51	54	53	54	55
12	12	.81625E+04	219	219	200	200	199	200	199	200	282	282	293	286	297	297
13	18	.83734E+04	209	209	191	190	190	191	190	190	269	269	280	274	283	284
14	12	.58093E+04	184	182	193	185	185	193	185	189	276	266	284	284	294	301
15	12	.40541E+04	181	179	182	177	176	182	176	179	261	255	272	268	282	287
16	12	.32977E+04	123	121	128	124	123	128	123	126	187	181	192	193	198	203
17	12	.18494E+04	268	268	241	241	240	241	240	241	356	355	361	362	367	368
18	12	.15738E+04	293	293	265	264	264	265	264	265	387	386	394	394	401	402
19	18	.14459E+04	306	306	278	277	277	278	277	278	404	403	411	411	419	420
20	12	.55007E-08	2	2	1	1	1	1	1	1	2	2	3	3	3	3
21	12	.30201E+05	119	119	106	106	106	106	106	106	159	159	160	162	162	162
22	12	.62976E+04	423	423	367	367	367	367	367	367	594	594	595	606	607	607
23	12	.32801E+04	411	411	358	358	358	358	358	358	577	577	579	589	590	590
24	12	.88611E+03	214	213	221	219	215	221	215	219	360	357	401	395	413	421
25	12	.23841E+04	440	440	385	385	384	385	384	385	627	626	640	642	650	651
26	12	.44410E+04	444	444	386	385	385	386	385	385	627	626	631	640	642	642
27	12	.61260E+04	435	435	377	377	377	377	377	377	613	613	614	625	626	626
28	12	.71742E+04	428	428	371	371	371	371	371	371	602	602	603	615	615	615
29	12	.93819E+04	428	428	371	371	371	371	371	371	602	602	604	614	615	615
30	18	.72495E+04	425	425	369	369	369	369	369	369	599	599	600	611	611	611
31	12	.65318E+04	407	407	352	352	352	352	352	352	576	576	577	587	588	588
32	12	.45868E+04	379	379	328	328	328	328	328	328	540	540	545	552	555	555
33	12	.15642E+04	298	298	269	268	267	269	267	268	449	448	471	465	482	485
34	12	.26934E+04	430	430	374	374	374	374	374	374	607	607	613	620	623	623
35	12	.68073E+04	415	415	359	359	359	359	359	359	587	587	589	600	600	600
36	12	.55744E+04	407	407	352	352	352	352	352	352	577	577	579	589	590	590
37	12	.42262E+04	407	407	352	352	352	352	352	352	575	575	578	587	588	589
38	12	.27045E+04	429	429	374	374	374	374	374	374	602	601	608	615	618	618
39	12	.13336E+04	435	435	386	386	386	386	386	386	600	600	621	617	629	630
40	18	.10417E+04	430	429	384	383	383	384	383	383	587	586	615	605	621	622
41	12	.13847E+04	437	437	385	385	385	385	385	385	603	603	620	617	627	627
42	12	.26525E+04	350	350	305	305	305	305	305	305	497	497	513	508	519	519

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 * EM2 MODEL *

EARTHQUAKE NO. 1

*TOTAL MOMENTS, AND FORCES(ABS. SUM)

ELEM. NO.	FORCE CODE	FORCE (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
43	18	.28742E+04	339	339	294	294	294	294	294	294	484	484	499	495	505	506
44	12	.19422E+04	307	307	267	267	266	267	266	266	447	447	466	459	471	472
45	12	.10975E+04	395	394	354	353	352	354	352	353	547	546	572	562	577	579
46	12	.16542E+04	425	424	378	378	378	378	378	378	575	.75	581	587	590	590
47	18	.18641E+04	408	408	362	362	362	362	362	362	553	553	558	564	566	566
48	12	.18179E+04	403	402	354	354	354	354	354	354	552	552	557	563	566	566
49	12	.19813E+04	384	384	339	339	338	339	338	339	534	534	548	548	557	557
50	18	.19014E+04	385	385	340	339	339	340	339	339	537	537	551	552	560	561
51	12	.13368E+04	422	422	367	367	367	367	367	367	592	592	597	604	607	607
52	12	.13095E+04	377	377	333	332	331	333	331	332	530	530	547	546	555	557
53	18	.10222E+05	164	164	149	149	149	149	149	149	214	214	222	217	225	225
54	12	.94103E+04	448	448	400	400	400	400	400	400	597	597	599	608	608	609
55	12	.54973E+05	20	20	18	18	18	18	18	18	27	27	28	27	28	28

 * BM2 MODEL *

EARTHQUAKE NO. 1

*TOTAL MOMENTS, AND FORCES(SRSS)

ELEM. NO.	FORCE CODE	FORCE (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	.20591E+03	219	219	188	187	186	188	186	187	314	313	341	322	345	349
2	1	.32842E+03	8	8	7	7	7	7	7	7	9	9	9	9	10	10
3	1	.66319E+03	43	43	34	34	34	34	34	34	67	66	73	69	74	75
4	1	.23518E+05	2	2	0	0	0	0	0	0	6	6	8	7	8	8
5	1	.47812E+04	-28	-29	-26	-27	-29	-26	-29	-27	-2	-4	-1	2	0	4
6	1	.32655E+05	-3	-3	-4	-4	-4	-4	-4	-4	1	1	1	-1	0	0
7	1	.60392E+04	1	1	1	1	1	1	1	1	10	10	11	11	11	11
8	1	.27559E+04	8	8	8	8	8	8	8	8	10	10	11	11	11	11
9	1	.75129E+03	162	162	136	136	136	136	136	136	242	242	244	247	249	249
10	1	.35233E+04	0	0	0	0	0	0	0	0	0	0	1	0	1	1
11	1	.19961E+04	5	5	4	4	4	4	4	4	7	7	8	7	8	8
12	1	.79857E+03	29	29	29	29	29	29	29	29	33	33	34	33	35	35
13	1	.26587E+02	313	311	293	286	286	293	286	290	428	419	457	436	460	468
14	1	.28764E+02	363	361	340	335	334	340	334	337	549	543	565	565	598	605
15	1	.55596E+04	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	1	.13708E+03	54	52	74	68	68	74	68	71	138	131	141	147	161	166
17	1	.27726E+04	1	1	1	1	1	1	1	1	2	2	2	2	2	2
18	1	.96542E+04	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	1	.70716E+02	13	11	13	11	10	13	10	11	64	63	82	98	100	103
20	1	.26476E+01	801	795	742	726	724	742	724	734	1033	1012	1087	1050	1093	1111
21	1	.17066E+02	198	198	173	172	172	173	172	172	287	287	292	294	300	301
22	1	.21735E+03	384	384	332	331	331	332	331	331	549	549	553	560	562	562
23	1	.34974E+02	75	74	86	86	85	86	85	86	175	174	221	219	241	242
24	1	.44142E+02	309	308	268	268	266	268	266	267	455	454	477	470	482	486
25	1	.11279E+03	363	363	313	313	313	313	313	313	521	521	532	533	540	540
26	1	.89382E+02	205	205	176	176	175	176	175	176	315	315	354	331	357	358
27	1	.46217E+02	104	103	88	87	86	88	86	87	164	164	170	171	173	175
28	1	.41405E+02	202	201	187	186	184	187	184	186	339	337	416	376	424	427
29	1	.41009E+02	124	123	123	122	119	123	119	121	245	243	304	279	312	316
30	1	.51538E+03	202	201	188	186	185	188	185	186	339	338	416	376	424	427
31	1	.11308E+04	341	341	295	294	294	296	294	294	492	491	501	504	508	510
32	1	.50328E+03	370	370	319	319	319	319	319	319	529	529	532	540	542	542

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 * BM2 MODEL *

EARTHQUAKE NO. 1

*TOTAL MOMENTS AND FORCES(ABS. SUM)

ELEM. NO.	FORCE CODE	FORCE (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	.20591E+03	252	251	220	219	218	220	218	219	347	346	374	355	378	382
2	1	.32842E+03	26	26	25	24	24	25	24	24	32	31	34	33	35	35
3	1	.66319E+03	102	102	90	89	89	90	89	89	132	132	140	135	141	142
4	1	.23518E+05	33	33	28	28	28	28	28	28	43	43	46	44	47	47
5	1	.47812E+04	-13	-14	-11	-12	-14	-11	-14	-12	12	11	13	17	16	19
6	1	.32655E+05	18	18	15	15	15	15	15	15	25	25	27	25	27	27
7	1	.60392E+04	2	2	2	2	2	2	2	2	3	3	3	3	3	3
8	1	.27559E+04	30	30	28	28	28	28	28	28	38	38	40	39	41	41
9	1	.75129E+03	234	234	207	207	207	207	207	207	317	317	320	323	324	324
10	1	.35233E+04	14	14	13	13	13	13	13	13	20	20	22	21	22	22
11	1	.19961E+04	27	27	24	24	24	24	24	24	34	34	37	35	37	37
12	1	.79857E+03	57	57	57	57	56	57	56	57	71	70	73	72	75	76
13	1	.26587E+02	427	425	405	398	398	405	398	402	547	538	577	556	581	589
14	1	.28764E+02	394	392	371	366	365	371	365	368	581	574	596	597	630	636
15	1	.55596E+04	4	4	3	3	3	3	3	3	5	5	5	5	5	5
16	1	.13708E+03	108	106	130	124	123	130	123	127	199	191	202	208	222	228
17	1	.27726E+04	12	12	11	11	11	11	11	11	16	15	16	16	17	17
18	1	.96542E+04	4	4	3	3	3	3	3	3	6	6	6	6	6	6
19	1	.70716E+02	36	35	36	35	33	36	33	35	89	87	107	123	125	128
20	1	.26473E+01	967	962	907	892	889	907	889	900	1203	1183	1258	1221	1265	1283
21	1	.17066E+02	290	290	262	262	262	262	262	262	385	384	390	392	398	399
22	1	.21735E+03	387	387	334	334	334	334	334	334	551	551	556	563	565	565
23	1	.34974E+02	21	121	133	133	132	133	132	133	225	224	272	270	292	293
24	1	.44142E+02	25	325	285	284	282	285	282	284	472	471	494	486	499	502
25	1	.11279E+03	399	399	349	349	349	349	349	349	557	557	569	569	576	576
26	1	.89382E+02	206	206	177	177	176	177	176	177	316	316	355	332	357	359
27	1	.46217E+02	171	169	153	152	151	153	151	152	236	235	241	242	245	247
28	1	.41405E+02	247	245	232	231	229	232	229	230	385	383	462	422	470	473
29	1	.41009E+02	167	166	166	165	162	166	162	164	290	288	350	325	358	362
30	1	.51538E+03	247	246	232	231	229	232	229	231	385	383	462	422	470	473
31	1	.11308E+04	378	377	331	331	330	331	330	330	528	528	537	541	545	547
32	1	.50328E+03	438	408	357	357	357	357	357	357	567	567	571	578	580	580

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 * BM3 MODEL *

EARTHQUAKE NO. 1

*TOTAL ACC. (SRSS)

NODE NO.	COMP. NO.	ACC(TL) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	.20720E+03	86	86	86	86	86	86	86	86	86	86	86	86	86	86
1	2	.13820E+03	86	86	86	86	86	86	86	86	86	86	86	86	86	86
1	3	.20720E+03	86	86	86	86	86	86	86	86	86	86	86	86	86	86
2	1	.20720E+03	86	86	86	86	86	86	86	86	86	86	86	86	86	86
2	2	.13791E+03	117	117	117	117	117	117	117	117	117	117	117	117	117	117
2	3	.20621E+03	87	87	87	87	87	87	87	87	87	87	87	87	87	87
3	1	.20663E+03	89	89	89	89	89	89	89	89	89	89	89	89	89	89
3	2	.13750E+03	149	149	149	149	149	149	149	149	149	149	149	149	149	149
3	3	.20463E+03	89	89	89	89	89	89	89	89	89	89	89	89	89	89
4	1	.20720E+03	86	86	86	86	86	86	86	86	86	86	86	86	86	86
4	2	.13751E+03	157	157	157	157	157	157	157	157	157	157	157	157	158	158
4	3	.20720E+03	86	86	86	86	86	86	86	86	86	86	86	86	86	86
5	1	.22311E+03	119	119	120	119	119	120	119	119	120	120	122	121	122	123
5	2	.13751E+03	157	157	157	157	157	157	157	157	158	158	158	158	158	158
5	3	.22191E+03	116	115	115	114	114	115	114	115	117	116	118	117	123	124
6	1	.23747E+03	127	126	128	128	127	128	127	128	131	130	134	131	134	135
6	2	.14017E+03	156	156	157	156	156	157	156	157	157	157	158	157	159	159
6	3	.22492E+03	129	128	128	127	127	128	127	128	130	129	132	131	138	139
7	1	.50308E+03	55	55	108	108	108	108	108	108	151	150	151	151	152	152
7	2	.13820E+03	86	86	86	86	86	86	86	86	86	86	86	86	86	86
7	3	.22507E+03	130	129	128	128	128	128	128	128	131	130	133	131	139	140
8	1	.50635E+03	56	56	109	109	109	109	109	109	152	152	153	153	153	153
8	2	.14407E+03	83	83	83	82	82	82	83	82	83	84	83	84	84	84
8	3	.22716E+03	124	123	123	122	122	123	122	123	126	124	128	126	134	136
9	1	.50630E+03	56	56	109	109	109	109	109	109	152	152	153	153	153	153
9	2	.45900E+03	84	72	74	62	62	62	74	88	76	83	91	85	98	98
9	3	.40125E+03	124	111	120	107	107	120	107	120	132	118	125	139	137	152
10	1	.50603E+03	56	56	109	109	109	109	109	109	152	152	153	153	153	153
10	2	.39139E+03	81	73	68	59	59	68	59	68	78	78	85	90	87	97
10	3	.39538E+03	121	109	119	107	107	119	107	118	134	122	129	140	140	153
11	1	.50581E+03	56	56	109	109	109	109	109	109	152	152	153	153	153	153
11	2	.13820E+03	86	86	86	86	86	86	86	86	86	86	86	86	86	86
11	3	.20715E+03	86	86	86	86	86	86	86	86	86	86	86	86	86	86
12	1	.50553E+03	56	56	109	109	109	109	109	109	152	152	153	153	153	153
12	2	.34625E+03	115	112	88	84	84	88	84	88	120	117	122	123	128	132
12	3	.19938E+03	326	318	345	337	337	345	337	344	368	361	370	374	390	399
13	1	.50523E+03	56	56	109	109	109	109	109	109	152	152	153	153	153	153
13	2	.64565E+03	90	87	59	55	55	59	55	59	96	93	96	98	99	103
13	3	.17953E+03	121	121	126	126	126	126	126	126	131	131	131	136	136	136
14	1	.48208E+03	55	55	106	106	106	106	106	106	147	147	148	148	148	149
14	2	.63654E+03	91	87	59	56	55	59	55	59	96	93	96	99	99	103
14	3	.19778E+03	97	97	99	98	98	99	98	98	100	100	100	103	104	104

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 * BM3 MODEL *

EARTHQUAKE NO. 1

*TOTAL ACC. (SRSS)

NODE NO.	COMP. NO.	ACC(TL) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
15	1	.21078E+03	83	83	82	82	82	82	82	82	83	83	83	83	83	83
15	2	.35115E+03	93	90	66	62	62	66	62	66	98	95	99	101	102	106
15	3	.19777E+03	97	97	99	98	98	99	98	98	100	100	100	103	104	104
16	1	.23886E+03	138	137	175	174	174	175	174	174	247	246	251	250	255	257
16	2	.14947E+03	77	77	77	77	77	77	77	77	80	80	81	81	81	81
16	3	.19775E+03	97	97	99	98	98	99	98	98	100	100	100	103	104	104
17	1	.25314E+03	137	136	177	175	175	177	175	176	249	248	253	252	258	259
17	2	.13820E+03	86	86	86	86	86	86	86	86	86	86	86	86	86	86
17	3	.20758E+03	86	86	86	86	86	86	86	86	86	86	86	86	86	86
18	1	.25300E+03	138	136	177	176	175	177	175	176	249	248	254	252	258	260
18	2	.22540E+03	175	173	173	171	169	173	169	170	229	227	255	252	265	267
18	3	.32782E+03	105	103	107	104	102	107	102	103	153	149	163	165	172	174
19	1	.25265E+03	138	136	177	176	175	177	175	176	249	248	254	252	258	260
19	2	.10951E+03	176	170	165	159	156	165	156	160	187	179	185	219	217	224
19	3	.16929E+03	202	195	200	187	176	200	176	185	265	248	264	279	274	288
20	1	.23675E+03	141	140	176	175	174	176	174	175	249	248	253	252	257	259
20	2	.11433E+03	161	156	152	146	144	152	144	147	169	162	166	198	195	200
20	3	.15870E+03	190	183	190	179	169	190	169	177	251	235	249	264	258	271
21	1	.13276E+03	130	128	123	119	116	123	116	119	172	167	173	174	179	184
21	2	.11430E+03	161	156	152	146	144	152	144	147	169	162	166	198	194	200
21	3	.13263E+03	100	100	100	100	100	100	100	100	100	100	103	101	107	107
22	1	.12329E+03	78	77	72	71	70	72	70	71	88	87	89	89	92	93
22	2	.97745E+02	119	117	116	114	114	116	114	115	121	119	120	129	128	129
22	3	.13264E+03	100	100	100	100	100	100	100	100	101	101	103	101	107	107
23	1	.12791E+03	52	51	51	51	51	51	51	51	52	52	52	52	52	52
23	2	.85911E+02	124	124	124	124	124	124	124	124	124	124	124	124	124	124
23	3	.13265E+03	100	100	100	100	100	100	100	100	101	101	103	101	107	107
24	1	.12937E+03	49	49	50	50	50	50	50	50	51	51	51	51	51	51
24	2	.85470E+02	129	129	129	129	129	129	129	129	130	130	130	133	133	134
24	3	.13447E+03	98	98	98	98	98	98	98	98	100	100	104	101	112	112
25	1	.12937E+03	49	49	50	50	50	50	50	50	51	51	51	51	51	51
25	2	.89241E+02	132	131	132	131	131	132	131	131	136	135	137	145	149	149
25	3	.13994E+03	99	98	99	98	97	99	97	98	104	103	109	108	122	123
26	1	.12936E+03	49	49	50	50	50	50	50	50	51	51	51	51	51	51
26	2	.10863E+03	270	267	259	254	251	259	251	252	274	270	274	305	311	312
26	3	.15752E+03	203	198	192	185	181	192	181	183	206	200	202	230	233	235
27	1	.13039E+03	50	50	51	51	51	51	51	51	51	51	52	52	52	52
27	2	.10585E+03	257	253	246	241	238	246	238	239	260	256	259	289	292	294
27	3	.15903E+03	210	205	199	192	188	199	188	190	214	208	210	239	242	244
28	1	.13442E+03	75	74	73	73	72	73	72	72	76	76	81	78	82	83
28	2	.96118E+02	177	175	172	169	168	172	168	168	179	177	178	194	196	197
28	3	.15902E+03	210	205	199	192	188	199	188	190	214	208	210	239	242	244

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 * BM3 MODEL *

EARTHQUAKE NO. 1

*TOTAL ACC. (SGSS)

NODE NO.	COMP. NO.	ACC(TL) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
29	1	.13835E+03	119	117	116	114	113	116	113	113	123	121	134	126	137	137
29	2	.87705E+02	125	125	125	125	125	125	125	125	126	125	125	127	127	127
29	3	.15902E+03	210	205	199	192	188	199	188	190	214	208	210	239	242	244
30	1	.13846E+03	124	123	121	120	118	121	118	118	129	127	141	131	143	144
30	2	.85938E+02	124	124	124	124	124	124	124	124	124	124	124	124	124	124
30	3	.15661E+03	192	188	183	176	172	183	172	174	196	190	192	219	223	224
31	1	.12880E+03	49	49	49	49	49	49	49	49	49	49	49	49	49	49
31	2	.85910E+02	124	124	124	124	124	124	124	124	124	124	124	124	124	124
31	3	.12880E+03	49	49	49	49	49	49	49	49	49	49	49	49	49	49
32	1	.13321E+03	136	133	129	125	121	129	121	124	182	173	182	184	188	193
32	2	.11501E+03	167	161	157	151	149	157	149	152	175	167	171	206	203	208
32	3	.13263E+03	100	100	100	100	100	100	100	100	100	100	103	101	107	107
33	1	.13313E+03	139	136	133	128	125	133	125	128	188	182	188	191	193	198
33	2	.11516E+03	170	165	160	154	152	160	152	156	178	171	174	211	208	213
33	3	.13262E+03	100	99	100	100	100	100	100	100	100	100	103	101	107	107
34	1	.13080E+03	134	131	130	125	121	130	121	124	184	178	181	186	185	190
34	2	.11286E+03	168	163	158	153	151	158	151	155	175	168	171	208	205	210
34	3	.13260E+03	99	99	99	99	99	99	99	99	100	100	102	100	106	107
35	1	.12910E+03	52	52	52	51	51	52	51	52	53	53	54	53	55	55
35	2	.88325E+02	124	124	124	123	123	124	123	124	124	125	124	125	129	130
35	3	.13251E+03	98	97	98	98	98	98	98	98	98	98	101	99	105	105
36	1	.12878E+03	50	50	50	50	50	50	50	50	50	50	50	50	50	50
36	2	.85910E+02	124	124	124	124	124	124	124	124	124	124	124	124	124	124
36	3	.13080E+03	83	83	83	83	83	83	83	83	83	83	84	83	84	84
37	1	.12879E+03	50	50	50	50	50	50	50	50	50	50	50	50	50	50
37	2	.93294E+02	192	181	193	182	182	193	182	192	194	184	185	201	199	210
37	3	.13863E+03	114	107	114	107	107	114	107	114	115	108	111	116	118	125
38	1	.12880E+03	49	49	49	49	49	49	49	49	49	49	49	49	49	49
38	2	.85910E+02	124	124	124	124	124	124	124	124	124	124	124	124	124	124
38	3	.12880E+03	49	49	49	49	49	49	49	49	49	49	49	49	49	49

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 * BM3 MODEL *
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EARTHQUAKE NO. 1

*TOTAL ACC. (ABS.SUM)

NODE NO.	COMP. NO.	ACC(TL) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUFS)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	.20720E+03	86	86	86	86	86	86	86	86	86	86	86	86	86	86
1	2	.13820E+03	86	86	86	86	86	86	86	86	86	86	86	86	86	86
1	3	.20720E+03	86	86	86	86	86	86	86	86	86	86	86	86	86	86
2	1	.20720E+03	86	86	86	86	86	86	86	86	86	86	86	86	86	86
2	2	.13791E+03	198	198	198	198	198	198	198	198	198	198	198	198	198	198
2	3	.20621E+03	89	89	89	89	89	89	89	89	89	89	89	89	90	90
3	1	.20663E+03	119	119	119	119	119	119	119	119	119	119	119	119	119	119
3	2	.13750E+03	251	251	251	251	251	251	251	251	252	252	252	252	252	252
3	3	.20463E+03	97	97	97	97	97	97	97	97	98	98	98	98	99	99
4	1	.20720E+03	86	86	86	86	86	86	86	86	86	86	86	86	86	86
4	2	.13751E+03	263	263	263	263	263	263	263	263	264	264	264	264	264	264
4	3	.20720E+03	86	86	86	86	86	86	86	86	86	86	86	86	86	86
5	1	.22311E+03	208	207	208	207	207	208	207	207	209	208	212	210	212	213
5	2	.13751E+03	264	264	264	264	264	264	264	264	264	264	265	264	265	265
5	3	.22191E+03	202	201	201	200	200	201	200	201	203	202	206	204	213	215
6	1	.23747E+03	221	220	223	222	222	223	222	222	226	225	231	227	231	232
6	2	.14017E+03	263	263	263	263	263	263	263	263	263	263	266	264	266	267
6	3	.22492E+03	224	223	222	221	221	222	221	222	225	224	229	226	237	239
7	1	.50308E+03	117	117	186	186	186	186	186	186	242	242	242	242	243	243
7	2	.13820E+03	86	86	86	86	86	86	86	86	86	86	86	86	86	86
7	3	.22507E+03	224	223	223	221	221	223	221	222	226	225	229	227	238	239
8	1	.50635E+03	118	118	187	187	187	187	187	187	243	243	244	244	245	245
8	2	.14407E+03	120	117	118	115	115	118	115	118	121	118	120	122	121	124
8	3	.22716E+03	217	215	214	213	212	214	212	214	218	217	222	220	231	233
9	1	.50630E+03	118	118	187	187	187	187	187	187	243	243	244	244	245	245
9	2	.45900E+03	131	118	122	108	108	122	108	121	137	124	131	140	133	147
9	3	.40125E+03	199	184	194	180	179	194	179	194	207	192	199	216	214	230
10	1	.50603E+03	118	118	187	187	187	187	187	187	243	243	244	244	245	245
10	2	.39139E+03	135	126	121	111	111	121	111	121	142	133	140	145	143	153
10	3	.39538E+03	196	182	193	180	180	193	180	193	210	197	205	218	218	232
11	1	.50581E+03	118	118	187	187	187	187	187	187	243	243	244	244	245	245
11	2	.13820E+03	86	86	86	86	86	86	86	86	86	86	86	86	86	86
11	3	.20715E+03	93	93	93	93	93	93	93	93	93	93	93	94	94	94
12	1	.50553E+03	118	118	187	187	187	187	187	187	243	243	244	244	245	245
12	2	.34625E+03	176	172	145	140	140	145	140	145	181	178	183	185	190	194
12	3	.19938E+03	474	465	496	488	487	496	487	495	523	516	525	536	553	563
13	1	.50523E+03	118	118	187	187	187	187	187	187	243	243	244	244	245	245
13	2	.64565E+03	125	122	90	86	86	90	86	90	131	128	132	135	135	139
13	3	.17953E+03	162	162	178	177	177	178	177	178	191	191	192	196	198	198
14	1	.48208E+03	117	117	185	185	185	185	185	185	239	239	240	240	241	241
14	2	.63654E+03	126	122	91	87	87	91	87	91	132	129	132	135	136	140
14	3	.19778E+03	118	117	122	121	121	122	121	121	128	127	129	132	133	133

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 * BM3 MODEL *

EARTHQUAKE NO. 1

*TOTAL ACC. (ABS. SUM)

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NODE NO.	COMP. NO.	ACC(TL) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
15	1	.21078E+03	92	92	92	91	91	92	91	91	94	94	95	95	95	95
15	2	.35115E+03	151	148	119	116	115	119	115	119	157	154	158	160	161	166
15	3	.19777E+03	117	117	121	121	121	121	121	121	128	127	129	132	133	133
16	1	.23886E+03	225	224	248	247	246	248	246	247	345	344	350	348	354	355
16	2	.14947E+03	111	111	109	109	108	109	108	109	118	117	121	120	121	122
16	3	.19775E+03	117	117	121	121	121	121	121	121	128	127	129	131	133	133
17	1	.25314E+03	219	218	244	242	242	244	242	243	340	339	345	344	350	352
17	2	.13820E+03	86	86	86	86	86	86	86	86	86	86	86	86	86	86
17	3	.20758E+03	91	91	91	91	91	91	91	91	91	91	91	91	91	91
18	1	.25300E+03	220	218	244	242	242	244	242	243	341	339	345	344	350	352
18	2	.22540E+03	259	256	245	242	240	245	240	241	322	319	349	346	361	362
18	3	.32782E+03	179	177	179	175	173	179	173	174	240	237	252	254	262	265
19	1	.25265E+03	220	218	244	243	242	244	242	243	341	339	346	344	350	352
19	2	.10951E+03	289	281	275	266	262	275	262	268	304	293	300	344	343	350
19	3	.16929E+03	297	288	290	276	264	290	264	274	364	346	363	382	377	392
20	1	.23675E+03	226	224	245	244	243	245	243	244	343	342	348	348	352	354
20	2	.11433E+03	269	262	256	248	245	256	245	250	279	270	274	315	311	318
20	3	.15870E+03	286	278	284	272	260	284	260	270	353	336	351	370	364	378
21	1	.13276E+03	226	222	213	208	204	213	204	208	278	272	279	280	287	292
21	2	.11430E+03	268	262	256	248	245	256	245	250	279	270	274	315	311	318
21	3	.13263E+03	182	182	183	183	182	183	182	183	184	183	187	184	193	193
22	1	.12329E+03	138	137	132	130	128	132	128	129	160	157	161	161	166	168
22	2	.97745E+02	191	188	185	182	180	185	180	183	183	183	184	184	187	185
22	3	.13264E+03	183	183	183	183	183	183	183	183	183	184	184	187	185	193
23	1	.12791E+03	63	63	62	62	62	62	62	62	62	66	65	67	66	68
23	2	.85911E+02	124	124	124	124	124	124	124	124	124	124	124	124	124	124
23	3	.13265E+03	183	183	183	183	183	183	183	183	183	184	184	188	185	193
24	1	.12937E+03	62	62	63	63	62	63	62	62	66	65	66	66	68	68
24	2	.85470E+02	166	165	164	162	162	164	162	163	170	168	170	178	178	180
24	3	.13447E+03	180	180	180	180	180	180	180	180	183	182	188	185	200	200
25	1	.12937E+03	62	62	63	63	62	63	62	62	66	65	66	66	68	68
25	2	.89241E+02	201	199	201	198	197	201	197	198	210	208	212	224	233	234
25	3	.13994E+03	181	180	181	180	179	181	179	180	188	186	195	194	213	214
26	1	.12936E+03	63	62	63	63	62	63	62	63	66	65	66	67	68	68
26	2	.10863E+03	403	398	390	384	380	390	380	382	408	402	407	446	451	453
26	3	.15752E+03	299	294	288	280	276	288	276	278	303	297	299	330	333	335
27	1	.13039E+03	77	77	77	76	76	77	76	76	79	78	80	80	81	81
27	2	.10585E+03	389	385	377	371	367	377	367	369	393	388	392	428	433	435
27	3	.15903E+03	307	301	295	287	283	295	283	284	311	304	306	339	343	345
28	1	.13442E+03	143	142	141	140	138	141	138	139	146	145	154	149	156	157
28	2	.96118E+02	292	290	284	280	278	284	278	279	295	291	294	316	318	320
28	3	.15902E+03	307	301	295	287	283	295	283	284	311	304	306	339	343	345

 * BM3 MODEL *

EARTHQUAKE NO. 1

*TOTAL ACC. (ABS. SUM)

NODE NO.	COMP. NO.	ACC(TL) (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
29	1	.13835E+03	208	206	204	202	200	204	200	201	214	212	228	217	231	232
29	2	.87705E+02	170	169	168	166	166	168	166	166	170	169	170	175	176	176
29	3	.15902E+03	307	301	295	287	283	295	283	284	311	304	306	339	343	345
30	1	.13846E+03	215	213	211	209	207	211	207	208	221	219	236	224	239	240
30	2	.85938E+02	125	125	125	125	125	125	125	125	125	125	125	125	125	125
30	3	.15661E+03	289	283	278	270	266	278	266	268	293	287	289	317	323	325
31	1	.12880E+03	49	49	49	49	49	49	49	49	49	49	49	49	49	49
31	2	.85910E+02	124	124	124	124	124	124	124	124	124	124	124	124	124	124
31	3	.12880E+03	49	49	49	49	49	49	49	49	49	49	49	49	49	49
32	1	.13321E+03	233	229	221	216	211	221	211	215	290	283	290	293	297	303
32	2	.11501E+03	275	268	262	254	251	262	251	257	285	276	280	325	320	327
32	3	.13263E+03	182	182	183	182	182	182	182	182	183	183	187	184	192	193
33	1	.13313E+03	237	233	226	220	215	226	215	220	297	290	296	300	302	309
33	2	.11516E+03	280	273	266	259	256	266	256	261	289	280	284	330	326	333
33	3	.13262E+03	182	182	182	182	182	182	182	182	183	183	187	184	192	193
34	1	.13080E+03	230	226	223	217	211	223	211	216	293	285	289	296	294	300
34	2	.11286E+03	278	271	265	258	255	265	255	260	287	278	281	327	323	330
34	3	.13260E+03	182	182	182	182	182	182	182	182	183	183	186	184	192	192
35	1	.12910E+03	79	78	79	78	77	79	77	78	84	83	85	84	88	89
35	2	.88325E+02	169	167	169	166	166	169	166	168	173	171	172	181	185	187
35	3	.13251E+03	179	179	180	179	179	180	179	179	180	180	184	181	189	190
36	1	.12878E+03	50	50	50	50	50	50	50	50	50	50	50	50	50	50
36	2	.85910E+02	124	124	124	124	124	124	124	124	124	124	124	124	124	124
36	3	.13080E+03	156	156	156	156	156	156	156	156	156	156	157	157	158	158
37	1	.12879E+03	50	50	50	50	50	50	50	50	50	50	50	50	50	50
37	2	.93294E+02	313	297	315	299	299	315	299	314	317	302	303	325	323	338
37	3	.13863E+03	202	193	202	193	193	202	193	202	203	195	198	205	207	216
38	1	.12880E+03	49	49	49	49	49	49	49	49	49	49	49	49	49	49
38	2	.85910E+02	124	124	124	124	124	124	124	124	124	124	124	124	124	124
38	3	.12880E+03	49	49	49	49	49	49	49	49	49	49	49	49	49	49

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 * BM3 MODEL *

EARTHQUAKE NO. 1

*TOTAL MOMENTS, AND FORCES(SRSS)

ELEM. NO.	FORCE CODE	FORCE (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	12	.17501E+04	51	48	79	77	77	79	77	79	115	113	116	116	117	120
2	18	.17452E+04	37	35	70	68	68	70	68	70	104	103	105	105	106	108
3	12	.41938E+04	48	43	46	41	41	46	41	45	67	63	68	70	71	76
4	12	.25729E+04	96	90	90	84	84	90	84	90	125	120	125	128	128	134
5	18	.25526E+04	115	106	108	98	98	108	98	108	141	132	139	144	143	153
6	12	.65261E+04	67	60	78	72	72	78	72	78	107	102	105	110	109	115
7	18	.58744E+04	65	58	78	72	72	78	72	78	107	102	104	110	108	114
8	12	.73197E+04	101	90	88	76	76	88	76	88	111	99	107	115	112	124
9	12	.72774E+04	137	134	108	104	104	108	104	108	158	154	156	161	161	166
10	12	.90666E+04	104	93	93	83	82	93	82	93	119	109	115	123	120	131
11	12	.67941E+04	83	80	126	123	123	126	123	126	173	171	174	175	175	178
12	12	.14175E+05	46	46	95	95	95	95	95	95	141	140	142	141	142	142
13	18	.12059E+05	52	51	98	98	98	98	98	98	145	144	146	146	146	146
14	12	.15044E+05	36	35	77	77	77	77	77	77	119	118	120	120	121	122
15	12	.62155E+04	116	115	126	126	125	126	125	126	182	181	185	185	187	188
16	18	.54547E+04	135	134	131	130	129	131	129	130	188	187	193	192	195	196
17	12	.63914E+04	150	150	150	150	150	150	150	150	150	150	150	150	150	150
18	12	.54107E+04	106	105	130	129	129	130	129	130	186	186	190	189	192	192
19	18	.49692E+04	103	102	108	107	107	108	107	107	160	159	164	163	166	167
20	12	.12259E+05	121	121	199	199	198	199	198	199	269	268	271	270	272	273
21	12	.30033E+04	167	164	226	223	222	226	222	223	287	285	294	297	329	330
22	12	.36991E+04	131	129	190	188	187	190	187	187	249	248	254	255	281	282
23	18	.34734E+04	135	133	195	193	192	195	192	192	256	254	260	262	285	286
24	12	.27783E+04	143	141	205	202	201	205	201	202	268	266	272	274	291	293
25	12	.92322E+03	332	320	315	299	290	315	290	294	341	328	345	383	397	402
26	18	.95808E+03	282	272	272	258	251	272	251	254	301	289	306	337	358	362
27	12	.16174E+04	89	85	95	89	87	95	87	88	116	112	118	133	156	158
28	12	.23399E+04	34	32	55	54	53	55	53	53	80	79	85	89	109	110
29	18	.22394E+04	38	37	61	60	60	61	60	60	88	87	94	96	118	119
30	12	.60154E+04	179	174	171	163	160	171	160	161	187	181	183	212	226	228
31	12	.13535E+05	132	129	193	190	189	193	189	190	255	253	260	264	271	273
32	12	.13311E+05	138	135	196	192	191	196	191	192	259	256	264	269	275	278
33	12	.12348E+05	148	144	203	199	197	203	197	199	268	264	272	280	285	288
34	12	.10122E+05	104	103	185	184	184	185	184	184	249	249	251	250	256	256
35	18	.10455E+05	110	110	190	189	189	190	189	189	256	255	258	258	263	264
36	12	.65994E+04	104	94	123	114	113	123	113	122	144	136	144	149	191	201
37	12	.90108E+04	100	92	134	127	127	134	127	133	167	161	169	170	212	220

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 * BM² MODEL *

EARTHQUAKE NO. 1

*TOTAL MOMENTS, AND FORCES(ABS. SUM)

ELEM. NO.	FORCE CODE	FORCE (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	12	.17501E+04	60	57	89	87	87	89	87	89	124	122	126	126	127	129
2	18	.17452E+04	46	44	79	78	78	79	78	79	113	112	115	114	116	117
3	12	.41938E+04	52	48	50	45	45	50	45	50	72	67	73	74	76	31
4	12	.25729E+04	102	96	96	90	90	96	90	96	132	126	131	134	135	141
5	18	.25526E+04	121	112	114	104	104	114	104	113	147	138	144	150	149	159
6	12	.65261E+04	73	67	84	78	78	84	78	84	114	108	111	117	115	121
7	18	.58744E+04	72	65	85	79	79	85	79	85	114	109	111	117	115	121
8	12	.73197E+04	104	93	91	79	79	91	79	91	114	102	110	118	115	127
9	12	.72774E+04	140	137	111	107	107	111	107	111	161	157	161	164	165	169
10	12	.90666E+04	109	98	95	87	87	98	87	98	124	114	120	128	124	135
11	12	.67941E+04	92	89	135	132	132	135	132	135	182	180	183	184	184	187
12	12	.14175E+05	57	57	106	106	106	106	106	106	152	152	153	153	153	153
13	18	.12059E+05	65	65	112	112	112	112	112	112	158	158	159	159	159	160
14	12	.15044E+05	47	47	89	89	89	89	89	89	131	130	132	132	133	134
15	12	.62155E+04	151	150	162	161	161	162	161	161	218	217	221	221	223	224
16	18	.54547E+04	180	180	176	175	175	176	175	175	235	234	239	238	241	242
17	12	.63914E+04	172	172	172	172	172	172	172	172	172	172	172	172	172	172
18	12	.54107E+04	132	131	156	155	155	156	155	156	213	212	216	215	218	219
19	18	.49692E+04	127	126	132	131	131	132	131	132	184	184	188	188	191	192
20	12	.12259E+05	158	158	237	237	236	237	236	237	307	306	310	309	311	311
21	12	.30033E+04	199	197	259	256	254	259	254	255	320	318	327	330	362	363
22	12	.36991E+04	161	159	221	219	217	221	217	218	281	279	285	286	312	313
23	18	.34734E+04	166	164	227	224	223	227	223	223	287	285	291	293	317	318
24	12	.27783E+04	175	172	237	234	232	237	232	233	300	298	304	306	323	325
25	12	.92322E+03	341	330	324	308	300	324	300	304	351	338	354	392	407	411
26	18	.95808E+03	295	285	285	271	264	285	264	267	314	302	319	350	371	375
27	12	.16174E+04	100	96	106	101	98	106	98	100	128	123	130	144	167	169
28	12	.23399E+04	47	46	68	67	66	68	66	67	94	92	98	102	123	123
29	18	.22394E+04	52	51	76	75	74	76	74	74	102	101	108	110	133	133
30	12	.60154E+04	184	179	175	168	164	175	164	166	192	186	188	216	231	232
31	12	.13535E+05	167	164	229	226	225	229	225	226	292	289	297	301	307	309
32	12	.13311E+05	172	169	230	227	225	230	225	227	294	291	299	304	310	313
33	12	.12348E+05	180	177	236	232	230	236	230	232	301	298	305	313	319	322
34	12	.10122E+05	139	138	221	220	220	221	220	220	286	285	287	287	293	293
35	18	.10455E+05	144	143	224	224	223	224	223	224	291	290	293	293	298	299
36	12	.65994E+04	120	110	139	129	129	139	129	137	160	152	160	165	207	217
37	12	.90108E+04	120	112	154	148	147	154	147	153	188	182	190	191	233	241

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 * BM3 MODEL *

EARTHQUAKE NO. 1

*TOTAL MOMENTS, AND FORCES(SRSS)

ELEM. NO.	FORCE CODE	FORCE (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	.20592E+02	75	72	60	56	56	60	56	60	84	80	90	86	91	95
2	1	.64447E+02	90	90	88	88	88	88	88	88	91	91	103	92	103	103
3	1	.23149E+02	25	19	23	17	17	23	17	23	31	25	29	34	36	43
4	1	.77965E+03	42	34	38	30	30	38	30	38	46	38	43	50	51	60
5	1	.18606E+04	9	8	49	49	49	49	49	49	82	81	83	83	83	84
6	1	.14491E+04	135	132	124	121	16	22	16	22	124	140	137	156	141	156
7	1	.11894E+03	11	5	22	16	16	22	16	22	36	30	35	37	36	42
8	1	.22582E+03	30	22	29	22	22	29	22	29	37	30	34	41	41	49
9	1	.14320E+03	60	56	40	35	35	40	35	40	65	60	66	67	68	73
10	1	.19819E+03	52	41	43	31	31	43	31	43	55	44	49	58	51	63
11	1	.12238E+03	172	157	206	193	193	206	193	206	244	232	238	250	247	260
12	1	.83961E+03	27	26	75	74	74	75	74	74	115	115	116	116	117	118
13	1	.98579E+02	82	81	80	79	79	80	79	80	123	122	132	129	133	134
14	1	.13307E+03	53	50	78	75	75	78	75	77	112	109	120	115	122	125
15	1	.12125E+03	103	98	132	128	127	132	127	129	172	167	174	192	217	221
16	1	.56673E+03	1	1	2	2	1	2	1	2	5	4	11	6	23	24
17	1	.11920E+03	82	79	112	109	106	112	106	108	167	163	171	169	177	181
18	1	.11182E+03	88	81	130	124	124	130	124	129	166	161	166	168	213	222
19	1	.10680E+03	73	64	78	69	69	78	69	77	89	81	90	90	123	133
20	1	.20140E+04	99	93	106	100	98	106	98	101	133	127	134	163	179	182
21	1	.67899E+04	62	54	69	61	61	69	61	68	82	74	84	83	117	125
22	1	.71303E+04	91	85	140	136	135	140	135	140	182	178	184	184	226	234
23	1	.25571E+03	95	94	163	162	161	163	161	162	225	224	228	226	230	232
24	1	.17512E+03	54	49	44	38	35	44	35	38	64	57	76	87	88	90
25	1	.23797E+02	85	82	83	78	75	83	75	76	99	94	111	111	132	133
26	1	.40723E+02	122	119	149	145	143	149	143	144	186	183	189	199	243	244
27	1	.86379E+02	114	110	113	107	105	113	105	106	129	125	127	148	172	173
28	1	.57634E+04	181	176	172	165	161	172	161	163	189	183	184	214	229	230
29	1	.55998E+03	167	163	157	152	148	157	148	150	174	169	182	194	204	206
30	1	.17056E+04	147	142	138	131	128	138	128	129	153	148	160	172	184	185

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 * BM3 MODEL *

EARTHQUAKE NO. 1

*TOTAL MOMENTS, AND FORCES(ABS SUM)

ELEM. NO.	FORCE CODE	FORCE (T.H.)	CASE NUMBERS (PERCENTAGE OVER TIME HISTORY (T.H.) VALUES)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	.20592E+02	78	74	62	59	58	62	58	62	86	83	93	88	93	97
2	1	.84447E+02	90	90	88	88	88	88	88	88	91	91	103	92	103	104
3	1	.23149E+02	26	20	24	18	18	24	18	24	32	25	30	35	37	44
4	1	.77965E+03	42	34	39	31	31	39	31	38	47	39	43	51	52	61
5	1	.18606E+04	18	17	58	58	58	58	58	58	91	90	92	92	92	93
6	1	.14491E+04	137	134	126	122	122	126	122	125	142	138	157	143	158	161
7	1	.11894E+03	15	9	26	20	20	26	20	25	39	34	39	41	40	46
8	1	.22582E+03	31	24	31	23	23	31	23	31	38	31	35	42	43	51
9	1	.14320E+03	60	56	40	35	35	40	35	40	65	60	66	67	68	73
10	1	.19819E+03	52	41	43	32	32	43	32	43	56	44	50	58	52	63
11	1	.12238E+03	185	171	219	207	206	219	206	219	257	245	251	263	260	273
12	1	.83961E+03	38	38	86	86	86	86	86	86	127	127	128	128	129	129
13	1	.98579E+02	86	85	84	83	83	84	83	83	127	126	136	133	137	137
14	1	.13307E+03	55	52	80	78	77	80	77	79	114	111	122	117	124	127
15	1	.12125E+03	118	113	147	142	141	147	141	144	186	182	189	207	232	236
16	1	.56673E+03	4	4	5	4	4	5	4	4	8	7	14	9	26	27
17	1	.11920E+03	103	101	134	131	128	134	128	130	189	185	194	192	199	203
18	1	.11182E+03	110	102	152	146	145	152	145	151	188	183	188	190	235	241
19	1	.10680E+03	79	70	84	76	75	84	75	84	95	87	97	97	129	139
20	1	.20140E+04	120	115	128	122	119	128	119	122	154	149	156	185	201	204
21	1	.67899E+04	70	62	76	68	68	76	68	76	89	82	91	90	124	133
22	1	.71303E+04	115	109	165	160	160	165	160	164	207	203	208	209	251	258
23	1	.25571E+03	120	119	188	187	187	188	187	187	250	249	254	252	256	257
24	1	.17512E+03	60	55	50	44	41	50	41	45	71	64	82	94	94	99
25	1	.23797E+02	93	89	90	85	82	90	82	83	106	102	118	118	139	141
26	1	.40723E+02	142	139	169	165	163	169	163	164	206	203	209	219	264	265
27	1	.86379E+02	121	117	120	115	112	120	112	113	137	133	135	155	180	181
28	1	.57634E+04	186	180	177	170	166	177	166	167	193	188	189	219	233	235
29	1	.55998E+03	170	167	160	155	152	160	152	153	177	172	185	197	207	209
30	1	.17056E+04	151	147	142	136	132	142	132	134	158	152	165	177	188	190

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7. AUTHOR(S) M. Subudhi, P. Bezler, Y. K. Wang and R. Alforque				3. RECIPIENT'S ACCESSION NO. 5. DATE REPORT COMPLETED MONTH May YEAR 1984	
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16. ABSTRACT (200 words or less) <p> Independent support motion methodologies have been used to analyse piping systems subjected to multiple support excitations. Methods to compute both the dynamic and pseudo-static components of response were investigated. In order to formulate a general procedure for predicting seismic response, a sample of six piping systems, two of which were subjected to thirty-three earthquakes, were analyzed. The dynamic component of response was evaluated considering fourteen variations of the combination sequence and procedure between modes, directions and support groups. The pseudo-static component of response was predicted using, five different methods constituting nine different cases. In addition, a combination procedure between the two response components was developed in order to obtain the total seismic response. The study also provides a comparison of the above results with time history results as well as with results developed using the current SRP methodology.</p> <p> Recommendations concerning the use of independent support motion methods in the evaluation of piping response are included.</p>				14. (Leave blank)	
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