

FOCAL MECHANISMS FOR EASTERN TENNESSEE EARTHQUAKES, 1981-1983

by

Alan Gaither Teague

Thesis submitted to the Faculty of the
Virginia Polytechnic Institute and State University
in partial fulfillment of the requirements for the degree of
Master of Geophysics

in

Department of Geological Sciences

APPROVED:

G. A. Bollinger, Chairman

J. Arthur Snoke

Edwin S. Robinson

Arch C. Johnston

December, 1984
Blacksburg, Virginia

FOCAL MECHANISMS FOR EASTERN TENNESSEE EARTHQUAKES, 1981-1983

by

Alan Gaither Teague

(ABSTRACT)

To understand better the faulting process in the Southern Appalachians, eleven single event focal mechanisms (SEFM) and seven composite focal mechanisms (CFM) are determined from 37 events that occurred in eastern Tennessee between September 1981 and July 1983. Both P-wave polarities and (Sv/P)_z amplitude ratios are input to a computer program that systematically searches the focal sphere for solutions acceptable within pre-set error limits. Hypocenter locations, azimuth and departure angles are taken from locations obtained by the Tennessee Earthquake Information Center (TEIC) with a four layer velocity model (GC01). A second velocity model (STEP2), developed to improve focal depth estimates and to acquire continuously varying departure angles, is used to relocate events for which SEFM and CFM solutions are obtained. The two different velocity models produced focal mechanisms with similar nodal plane and P-axis orientations, indicating stable and reliable results; the differences between average strike, dip, and rake angles of the two data sets range from 2° to 11°

Both SEFM and CFM solutions exhibit predominantly strike-slip motion along nearly vertical north-south (right-lateral) or east-west (left-lateral) oriented nodal planes. Standard deviations for average strike, dip, and rake angles are generally less than 20°. P-axis trends average

about N50°E, with a nearly horizontal average plunge, and both have standard deviations of 25° or less. Except for three events in the northernmost region, all earthquakes in the study area result from a maximum compressive stress trending between N40°E and N70°E and plunging between 10° and -30°.

ACKNOWLEDGMENTS

I would like to gratefully acknowledge the many people to whom I owe much gratitude. Dr. G. A. Bollinger proved to be both a skilled diplomat and an artful adviser as he tactfully, yet relentlessly, guided me through this project. I benefited as much from his character and wit as from his intellect and experience. Dr. Bollinger also provided me with imperative financial support.

Dr. J. A. Snoke contributed numerous computer programs without which this project would have been impossible. I thank him for this and for his many invaluable insights and discussions into the analysis and interpretation of the results. Further discussions and advice were presented to me by Mr. Jeff Munsey, Mr. Matthew Sibol, Mr. Martin Chapman, and Mr. Rick Davison. To these people I am grateful. I also thank Dr. E. S. Robinson for his critical review of this thesis.

I would like to thank Dr. Arch Johnston and Mr. William Seay, directors of the Tennessee Earthquake Information Center and Tennessee Valley Authority Seismological Data Centers, from which all the data for my thesis was collected. The Tennessee Valley Authority provided personal financial support throughout the project, for which I am grateful. I am indebted to Dr. Arch Johnston who offered many suggestions and recommendations.

Finally, I would like to thank my family for their broad and generous

contributions to my life. Especially to my wife, Karla, who continually supported me, and who repeatedly proofread and typed this manuscript, I am endeared and very appreciative.

This research was supported in part by the Office of Nuclear Regulatory Research under Contract NRC-04-77-134.

CONTENTS

INTRODUCTION 1

Regional Geology 4

Seismicity 6

DATA ACQUISITION 10

DATA PROCESSING 13

Testing of Velocity Models 16

Computer Focal Mechanism Determinations 20

Solution Selection 21

DISCUSSION OF RESULTS 22

Hypocentral Locations 23

Effect of Amplitude Ratios on Focal Mechanisms 23

Nodal Plane Orientations 24

In-situ Stresses 32

Geologic Model - Comparison to Giles County, Virginia 36

CONCLUSIONS 39

REFERENCES 42

APPENDIX A. FAMILIES OF SOLUTIONS AND PREFERRED SOLUTIONS	46
APPENDIX B. TESTING OF VELOCITY MODELS	65
APPENDIX C. SOLUTION SELECTION	70
APPENDIX D. INPUT DATA AND CALCULATIONS	74
Computer Input Data	74
STEP2 Event Relocations	88
Computer Output for Focal Mechanism Solutions	117
VITA	161

LIST OF ILLUSTRATIONS

Figure 1. Eastern Tennessee Seismicity	3
Figure 2. Seismicity and Generalized Geology	5
Figure 3. Location of Seismic Stations	8
Figure 4. Depth Distribution of Events Located with GCO1 and STEP2 Models	15
Figure 5. Velocity Models	17
Figure 6. SEFM Solutions for GCO1 and STEP2 Data	25
Figure 7. CFM Solutions for GCO1 and STEP2 Data	26
Figure 8. P-axis Versus Depth	30
Figure 9. Limits for the Maximum Compressive Stress	35
Figure 10. Event #2: 25 November 1981	47
Figure 11. Event #13: 24 September 1982	48
Figure 12. Event #14: 24 September 1982	49
Figure 13. Event # 22: 18 January 1983	50
Figure 14. Event #23: 27 January 1983	51
Figure 15. Event #28: 5 April 1983	52
Figure 16. Event #29: 16 May 1983	53
Figure 17. Event #30: 25 May 1983	54
Figure 18. Event #31: 26 May 1983	55
Figure 19. Event #34: 8 July 1983	56
Figure 20. Event #36: 15 July 1983	57
Figure 21. Composite #1	58
Figure 22. Composite #2	59
Figure 23. Composite #3	60
Figure 24. Composite #4	61
Figure 25. Composite #5	62
Figure 26. Composite #6	63
Figure 27. Composite #7	64

LIST OF TABLES

Table 1. SEFM and CFM P-axis and Nodal Plane Orientations . . . 27

Table 2. Percent of Nodal Planes within 30 Degrees of Vertical,
N-S or E-W Strike-slip Solution 28

INTRODUCTION

The record of historic seismicity for the southeastern United States depicts a diffuse regional distribution of low to moderate earthquake activity constrained roughly to zones trending both parallel and transverse to the regional Appalachian structure (Bollinger, 1973). Some clustering of events exists within these zones, most notably in the vicinity of Giles County, Virginia, and near Charleston, South Carolina, locus of the largest shock to occur in the region (MMI = X) in 1886. Recent seismic network monitoring has revealed seismicity patterns similar to those expressed in the historic record, except for the eastern Tennessee region, where the current level of seismicity is apparently higher. For the last three years, over one-third of all earthquakes recorded, and about one-third of all felt events in the Southern Appalachian region have occurred in eastern Tennessee. Unlike the Giles County Seismic Zone (Bollinger and Wheeler, 1982; Bollinger and Wheeler, 1983) 300 km to the northeast, hypocenters in eastern Tennessee exhibit no apparent lineations.

The purpose of this study is to obtain earthquake focal mechanism solutions for earthquakes in the eastern Tennessee region. Input data are P-wave polarities and (Sv/P)_z amplitude ratios as recorded by short-period vertical (SPZ) seismometers. Thirty-seven events that occurred between September 1981 and July 1983 in the region extending from 35.5° to 36.5° north latitude and from 83° to 85° west longitude are con-

sidered (Figure 1). HYP071 Horizontal and vertical error estimates for the foci of these earthquakes are less than 2 km. Duration magnitudes range from 0.8 to 3.5, and focal depths range from 3 to 23 km, averaging 13 km (Sibol and Bollinger, 1984; Nava and Everett, 1984).

The computer program, FOCMEC (Snoke and others, 1984), is used to determine families of permissible focal mechanism solutions that are consistent, within pre-defined error allowances, with the P-wave polarities and the (Sv/P)_z amplitude ratios. FOCMEC is a refinement of the FOCALSR program written by Tzeng and Long (1982), and features a more efficient and systematic searching algorithm, and a more complete and detailed output listing.

Twenty-eight of the original 37 events are used to determine 11 single event focal mechanisms (SEFM) and 7 composite focal mechanisms (CFM) using locations determined by a layered velocity model. The effects of various velocity model parameters on hypocentral locations, and ultimately on the resulting focal mechanism solutions, are evaluated. A gradient velocity model, approximated by 12-layers with variable V_p/V_s ratios, is also used to relocate earthquakes from which focal mechanisms are obtained. The resulting focal mechanism solutions are then compared to those solutions determined by using the original locations found by the Tennessee Earthquake Information Center (TEIC) employing the layered velocity model. Multiple solutions are obtained and collectively they place strong constraints on the possible orientations of the regional in-situ stresses.

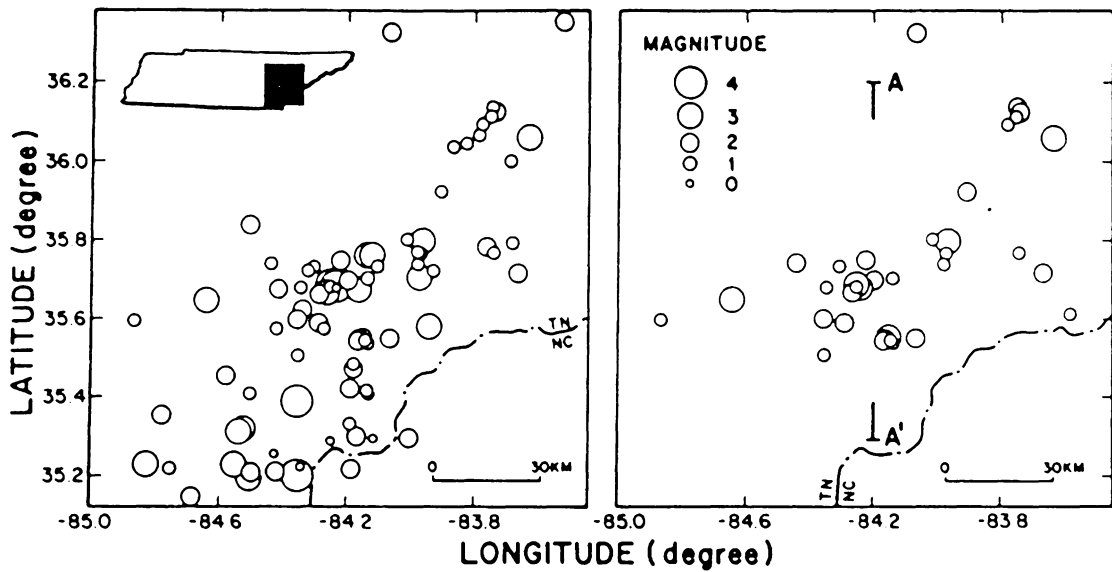


Figure 1: Eastern Tennessee Seismicity.

Left: Total seismicity in eastern Tennessee region between 1981 and 1983. Study area shown by inset (shaded) map. Right: Earthquakes used to obtain focal mechanisms in this study. Location of A-A' profile as shown in Figure 4. All epicenters (open circles) scaled according to duration magnitudes.

REGIONAL GEOLOGY

The geology of eastern Tennessee can be generalized into 3 major geologic divisions: the western portion of the Blue Ridge province, the Valley and Ridge province, and the eastern portion of the Cumberland Plateau province (Figure 2). The western portion of the Blue Ridge is characterized by an approximately 5 to 6 km thick allochthonous sheet of highly metamorphosed Proterozoic and lower Paleozoic volcanic, sedimentary, and plutonic rocks with metamorphic grade increasing eastward. Large thrust blocks have been transported tens to hundreds of kilometers westward along low angle thrust faults. The associated thrust faults coalesce into a single sole fault above relatively unmetamorphosed lower Paleozoic sediments (Cook and others, 1979), which are underlain by crystalline basement. The Blue Ridge thrust fault separates the Blue Ridge province to the east and the Valley and Ridge province to the west.

The Valley and Ridge province consists of an approximately 5 km thick sequence of unmetamorphosed and linearly folded sedimentary rocks. West to east imbricated thrust faults coalesce into a decollement above crystalline basement rocks (Harris, 1976). Fold and fault axes trend N45°E through most of eastern Tennessee. The intensity of folding and faulting decreases westward toward the Cumberland Plateau. That geologic division is composed of some 4 km of relatively flat-lying Paleozoic platform sedimentary rocks that overly Grenville basement, and marks the western extent of Appalachian style deformation.

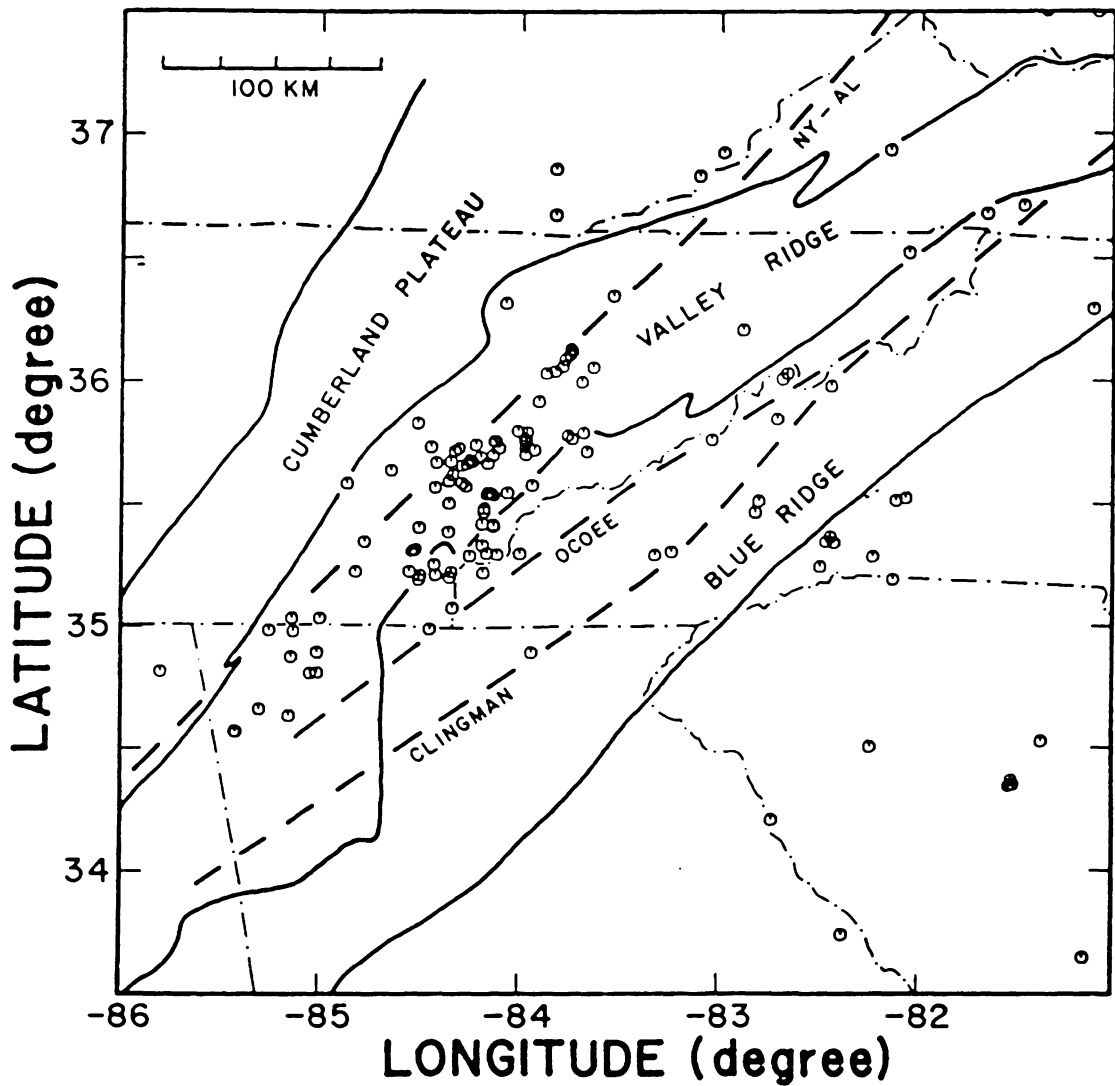


Figure 2: Seismicity and Generalized Geology.

Seismicity from 1981 through 1983 with general geologic provinces (between the heavy solid lines) and aeromagnetic lineaments (dashed lines: New York-Alabama (northernmost), Clingman (southernmost), and Ocoee (center); from Johnston and others, 1985).

SEISMICITY

The historic seismicity of the Southern Appalachian region can be characterized as a diffuse zone of moderate activity that extends from central Alabama to southern West Virginia, with epicenters concentrated in the Valley and Ridge province of Tennessee, the Blue Ridge province of North Carolina, and the Giles County region in the Valley and Ridge province of Virginia (Bollinger, 1973; Bollinger and Wheeler, 1983). The largest earthquake known to have occurred in the region is the MMI VIII, Mb 5.8 Giles County earthquake of 1897 (Bollinger and Wheeler, 1982). An intensity VII earthquake that occurred in 1913 is the largest known earthquake in the eastern Tennessee area of this study (Bollinger, 1973). Dewey and Gordon (1984) report the occurrence of 3 earthquakes with magnitudes greater than 4 in eastern Tennessee since 1925.

Until late-1981, most eastern Tennessee earthquakes were located either by widely spaced regional seismograph stations and/or by isoseismal maps, and thus have potentially large locational errors. (see Dewey and Gordon, 1984). Studies by Bollinger and others (1976) and Guinn (1980) of the 1973 eastern Tennessee earthquake sequence that was initiated by a 4.6 mainshock made use of temporary, portable seismograph networks. They were, however, unable to obtain definitive focal mechanism solutions. That is, the P-wave first motion data could not distinguish between primarily strike-slip motion along northeast or northwest trending nodal planes, and dip-slip motion along northwest trending nodal

planes for the mainshock (Bollinger and others, 1976). Aftershocks yielded mechanism solutions different from those found for the main shock (Bollinger and others, 1976; Guinn, 1980). Herrmann (1979), using primarily surface wave data, obtained a focal mechanism for the main shock that exhibited primarily strike-slip motion along north or east trending nodal planes (See Johnston and others, 1985, their Figure 8).

Installation of the Southern Appalachian Regional Seismic Network (SARSN) in eastern Tennessee and western North Carolina was initiated by the Tennessee Earthquake Information Center (TEIC) in early 1981, and was completed two years later (Figure 3). Additionally, the Tennessee Valley Authority (TVA) has also operated from 4 to 7 auxiliary stations in the area since the early 1980's. Good hypocenter location capability for the region was achieved by mid-1981. Over half the earthquakes occurring from September 1981 through 1983 are considered to be reliably located ($ERH < 2$ km) and to have good depth control ($ERZ < 2$ km; Johnston and others, 1985).

Most earthquakes that have been located thus far in eastern Tennessee are in the crystalline basement, well beneath the Appalachian decollement found at about 5 km depth. Focal depths range from 3 to 25 km with a mode and mean of 13 km. Between 80% and 90% of the 101 events located by TEIC from 1981 to 1983 lie between the northeast trending New York-Alabama (NY-AL) aeromagnetic lineament first identified by Watkins (1964) and later expanded by King and Zietz (1978), and the Clingman and Ocoee aeromagnetic lineaments defined by Nelson and Zietz (1983) and Butler (per-

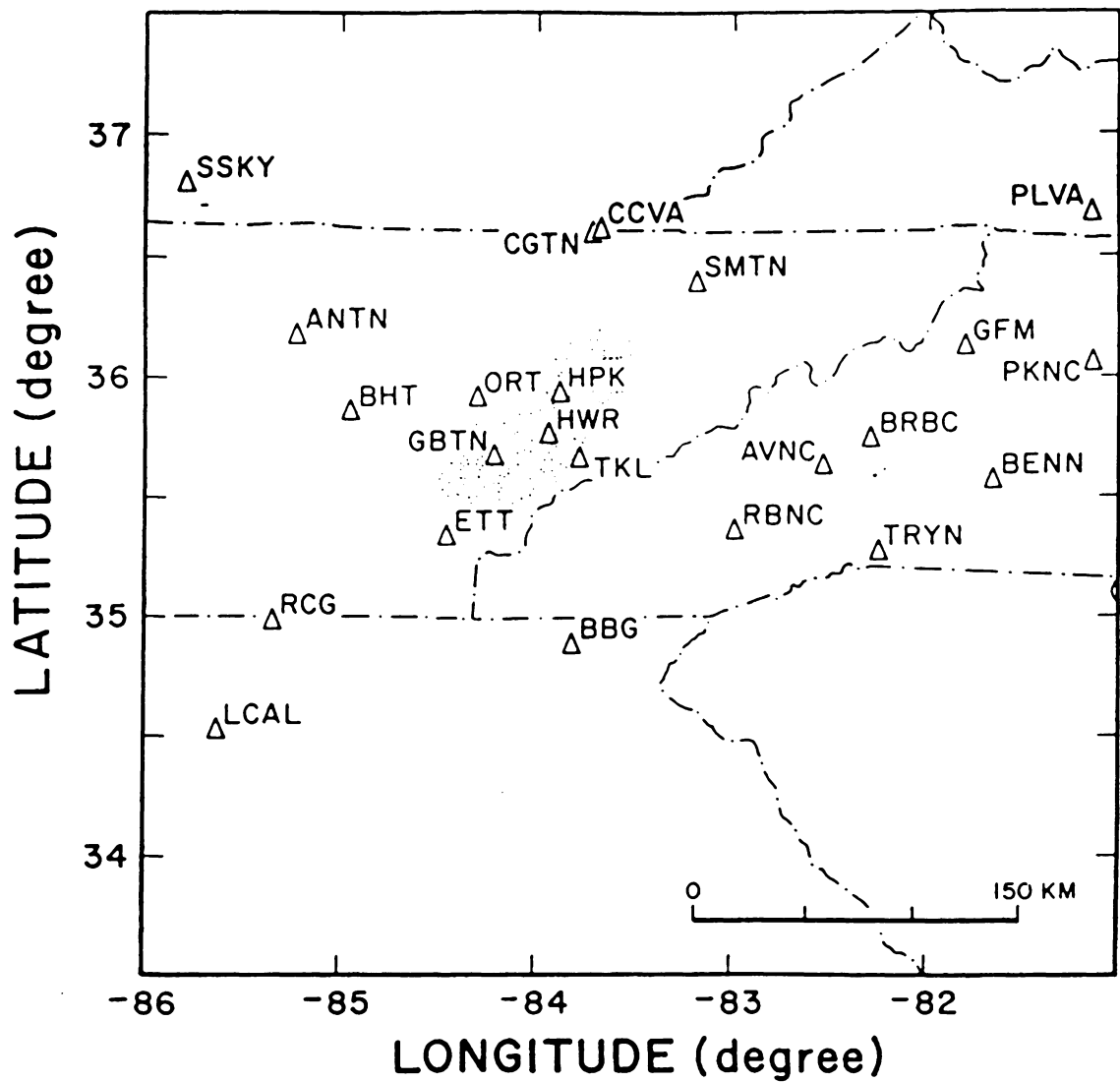


Figure 3: Location of Seismic Stations.

Locations of seismic stations (open triangles with 3 or 4 letter station code) from which data was derived. Stipled area indicates general location of the epicenters for the seismic events analyzed in this study.

sonal comm.; Johnston and others, 1985; Figure 2). According to Johnston and others (1985), these lineaments bound the Ocoee basement block in which a majority of earthquakes in the east Tennessee region are generated. The number of earthquake occurrences decreases eastward through the Blue Ridge and Piedmont provinces of North Carolina. The neighboring Cumberland Plateau province to the west is virtually aseismic.

Recently published focal mechanisms from the eastern Tennessee region exhibit generally north-south (right-lateral) or east-west (left-lateral), nearly vertical nodal planes, with predominantly strike-slip motion (Reinbold and others, 1983; Johnston and others, 1985). From the general north-south elongation of isoseismal contours from some felt shocks along with and the general northeast trend of epicenters, Johnston and others (1985) conclude that fault movement is probably along the north-south planes.

DATA ACQUISITION

Data were collected from visual and film recorders at TEIC and TVA data centers, telemetered from a total of 24 stations in Tennessee, North Carolina, Virginia, Kentucky, Georgia, and Alabama (see Figure 3). All TEIC polarity and amplitude ratio data were read by at least two independent observers. TVA data, which comprises less than 10% of the data base, were unavailable for verification reading.

Hypocenters were located by TEIC using the HYPO71 program (Lee and Lahr, 1975) and a crustal velocity model developed by Moore (1979). Arrival time data, epicenter to station azimuths, and departure angles (measured from downward vertical) are taken from the TEIC locations. Azimuths and departure angles not available in the TEIC listings were calculated by a similar ray tracing program (RAYFIND; Snoke, written comm., 1984).

P-wave polarities are considered reliable at all epicentral distances provided the first motions are impulsive. Theoretically, first motions are not altered by refractions, and therefore, no attempt to distinguish between direct and refracted arrivals was made.

P and S-wave amplitudes are altered in differing amounts as they propagate through the earth. Furthermore, differences in compressional and shear motion as measured at the earth's free surface on a vertical seismometer must also be taken into account. Thus, raypath (particularly

geometrical spreading) and free surface corrections must be applied to the recorded amplitude data to estimate the true amplitude source characteristics.

The effect on amplitude measurements of later arriving primary phase scatter is avoided, or at least significantly reduced, by choosing the largest P or S amplitude within the first one-and-a-half cycles of the respective phase. Emergent or ambiguous arrivals are eliminated. Because free surface corrections for incident angles between 30° and 37° vary rapidly, amplitudes that have calculated P or S wave surface incident angles between 27° and 40° are also not used. Arrival times are computed for both direct waves and head waves critically refracted off the first layer beneath the hypocenter. Possible interference of direct and refracted waves is then avoided by rejecting any data with calculated head wave arrival times within 0.2 to 0.3 seconds of the direct phase. Since there is no conclusive evidence of a geologic structure that corresponds to the middle velocity boundary which is capable of producing critically refracted head waves (see GC01, Figure 5), corrections for these head waves are probably less important than those for critical refractions off other boundaries, eg. Moho. According to Kisslinger (1980), refracted waves may theoretically be used to determine valid amplitude ratios. In this study, some amplitude ratios are obtained from head wave arrivals that are calculated to arrive 0.2 to 0.3 seconds before the direct wave. Free surface and geometrical spreading corrections are applied to the remaining data.

Other basic assumptions in this study are that the differences in anelastic attenuation and, hence, frequency content of P and S waves are negligible for epicentral distances less than 100 km (Kisslinger, 1980). At greater epicentral distances, these differences are assumed to be significant enough to prohibit the use of ratio data. Differences in the transmission of P and S-wave energy across a boundary are considered negligible. Finally, although departure angles for both P and S-waves differ slightly when variable V_p/V_s ratios are used, they are assumed the same. This difference is considered negligible.

DATA PROCESSING

Sets of valid focal mechanism solutions will change according to the distribution of data points on the focal sphere. That is, as azimuths and departure angles are changed, so too will the number and type of acceptable fault plane solutions change. This is especially true when a continuous type of data, such as amplitude ratios, is used to determine the mechanism. Whereas only those polarities near nodal planes constrain critically the focal mechanism, all of the amplitude ratios contribute to focal mechanism determinations, regardless of their location on the focal sphere. Furthermore, the free surface and raypath corrections applied to the amplitude ratios are path dependent, and any change in hypocenter location will, in general, also produce a change in the amplitude ratio value. Thus, relatively small changes in the focal sphere position of amplitude ratios, especially in those regions of the focal sphere where the ratios change rapidly, can alter dramatically the resulting focal mechanism solutions.

Departure angles depend on epicenter location and particularly on the generally less well determined focal depth. For small epicentral distances comparable to the focal depth, a small change in focal depth can produce a relatively large change in departure angle. This effect decreases as epicentral distances become larger, but it continues to influence the set of possible focal mechanisms.

Often the simplest velocity model calculated from arrival time data consists of only a few constant velocity layers bounded by large discontinuities, and may not adequately represent the true geologic structure. The data may collectively be "averaging over", and hence be insensitive to (with respect to time) these large velocity discontinuities. Thus, locations which are statistically good may, in fact, have large errors associated with them.

Nicholson and Simpson (1984) showed that for computer located earthquakes in California, the hypocenters were clustered distinctly above discontinuities in the velocity model. Conversely, velocity model-independent hypocenters computed from Wadati and Riznichenko plots were scattered more uniformly with depth. A model-dependent clustering of seismic events may be seen in eastern Tennessee where both the mode and mean depth of hypocenters are 13 km, near the 14.7 km velocity discontinuity (see Figure 4; Johnston and others, 1985). Nicholson and Simpson (1984) also found that, while P and S velocities tend to increase or decrease at the same depths, they do not do so proportionally. Closing of saturated microcracks due to increased lithostatic loading with depth, and changes in lithology both produce different rates of change in P and S velocities. Hence, to accurately model the local velocity structure, separate P and S velocities must be used (Nicholson and Simpson, 1984; Nicholson and others, 1984). This usually involves V_p/V_s ratios that vary from layer to layer.

Another potential problem with unrealistically large velocity dis-

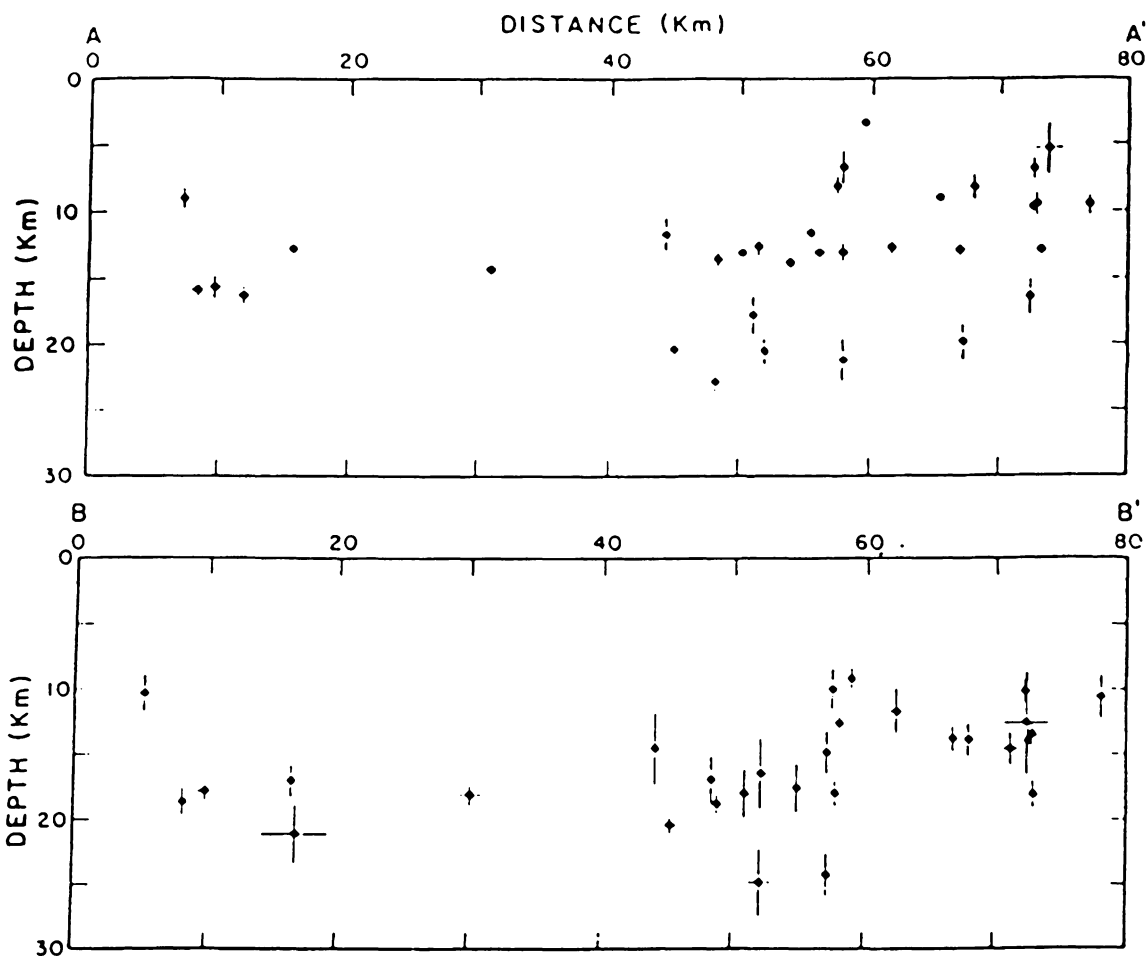


Figure 4: Depth Distribution of Events Located with GC01 and STEP2 Models.

Cross-section A-A' is the depth distribution of events located with GC01 velocity model (see Figure 5). Note the concentration of events above and the depletion of events at, and just below, the 14.7 km discontinuity. A-A' corresponds to profile lines in Figures 1 and 6. Cross-section B-B' is the depth distribution of events located with STEP2 velocity model (see Figure 5). Note the more continuous distribution of events near 15 km depth. The orientation of B-B' is similar to A-A', and is shown in Figure 6.

continuities is that critical refractions from such boundaries have the same departure angle regardless of epicentral distance. At epicentral distances found in eastern Tennessee, these refractions exert a strong control on the angles at which rays arrive at a distant station. This effect increases as hypocentral depth approaches the velocity discontinuities. Thus, a simple velocity model that is adequate for time-dependent locations may be inappropriate for raypath-dependent focal mechanism determinations.

In summary, focal mechanisms that utilize amplitude ratios are especially sensitive to hypocentral locations and thus are velocity model dependent. To obtain accurate focal mechanisms, independent P and S velocity models are often required (variable V_p/V_s ratios) and the effects of velocity layering on focal depth and raypath projections must be reduced.

TESTING OF VELOCITY MODELS

As previously mentioned, all SARSN events are located with the HYP071 locating program (Lee and Lahr, 1975) and the Moore (1979) crustal velocity model (GC01 in Figure 5). Three potential problems arise from the use of the Moore model to locate eastern Tennessee events: 1) the model was determined primarily in the Valley and Ridge province of southwestern Virginia while SARSN stations are located in the Blue Ridge province of North Carolina and the Valley and Ridge and Cumberland Plateau provinces of Ten-

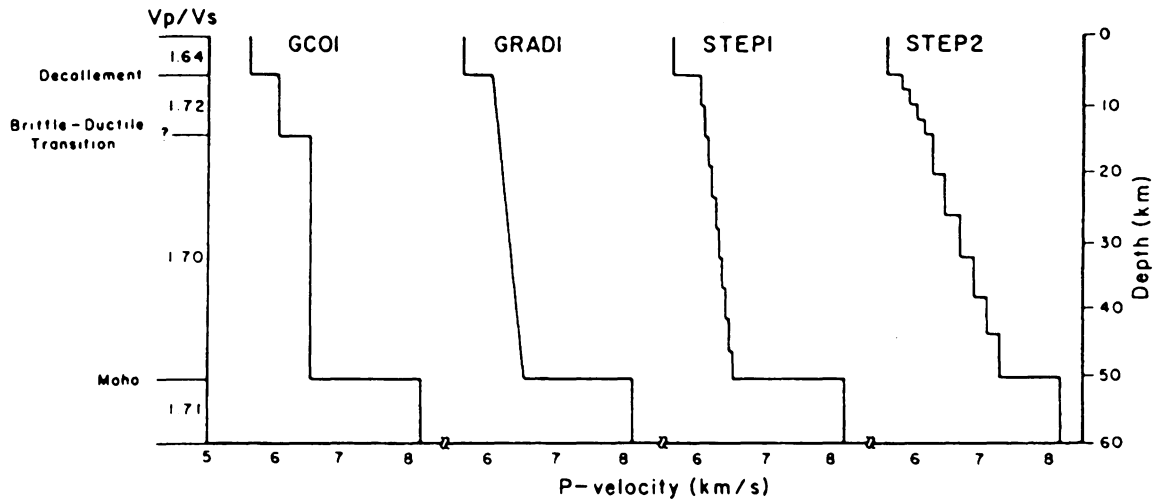


Figure 5: Velocity Models.

Velocity models used to determine hypocentral locations with generalized geologic interpretations and Vp/Vs ratios on left, and depth in km on right. The original TEIC locations used a constant Vp/Vs ratio value of 1.73.

nessee, 2) HYP071 uses a single Vp/Vs ratio for the entire velocity model rather than the layered Vp/Vs ratios defined by the Moore model, and 3) the middle boundary (14.7 km depth) influences hypocentral locations, especially the focal depth. However, TEIC conducted locational stability tests using the GC01 model, and determined that it performs reasonably well in eastern Tennessee (Brewer and others, 1982; see Appendix B).

The following summary of velocity model testing is discussed in more detail in Appendix B. The HYPOELLIPSE locating program (Lahr, 1984) was employed to locate 5 well recorded events utilizing the GC01 velocity model with variable Vp/Vs ratios and with a single Vp/Vs ratio. The constant Vp/Vs ratio appears to locate epicenters with error statistics comparable to those for variable Vp/Vs ratios. The variable Vp/Vs ratios, however, obtained generally deeper and statistically better depth estimates. Similar results were found by Nicholson and Simpson (1984) and Nicholson and others (1984) who relocated earthquakes in California and the New Madrid Seismic Zone using independent P and S velocity models. They found that epicentral locations were not significantly affected, but that focal depths increased noticeably and systematically.

The hypocentral control of the middle velocity boundary could be effectively eliminated with a gradient velocity increase between the upper and lower boundaries (see GRAD1 in Figure 5). Unfortunately, HYPOELLIPSE cannot simultaneously apply both a gradient velocity model and variable Vp/Vs ratios to locate events. It can, however, employ a 12-step velocity model with variable Vp/Vs ratios. Retaining the decolle-

ment and Moho velocity boundaries allows a gradient model to be approximated by 10 steps (see STEP1 in Figure 5). The accuracy of this approximation was tested by locating 5 well recorded events with both GRAD1 and STEP1 velocity models, and comparing the results. STEP1 was found to adequately substitute for GRAD1.

Two 12-layer velocity models were postulated (STEP1 and STEP2 in Figure 5) and used to locate 7 well recorded and 1 poorly recorded earthquakes. The STEP2 model was judged to be superior since it obtained horizontal (11 of 16) and vertical (6 of 8) error estimates that were smaller and quality evaluations, especially those for focal depth (6 of 7) that were consistently better.

STEP2 was then selected as a test velocity model for the study area. Its advantages include the use of variable V_p/V_s ratios and the elimination of the strong locational control of the middle velocity boundary. Earthquakes for which focal mechanisms had been previously obtained were relocated using the arrival time data from the original TEIC locations and the STEP2 velocity model. The new azimuths and departure angles were then used to obtain focal mechanisms. All polarity and amplitude data were processed in the same manner as was previously done, except that only head waves off the decollement or Moho layers were considered capable of interfering with direct arrivals. New amplitude ratio corrections consistent with the new hypocentral locations and velocity model were applied.

COMPUTER FOCAL MECHANISM DETERMINATIONS

FOCMEC (Snook and others, 1984) is a computer program that systematically searches the focal sphere for focal mechanisms consistent, within prescribed error limits, with the input polarity and amplitude ratio data. It is used to determine families of valid solutions. Input and output files for FOCMEC are presented in Appendix D. A searching algorithm examines the focal sphere for acceptable focal mechanism solutions by relating the observed data to a rotating set of orthogonal B, A, and N axes, where B is the null axis, and A and N are the normals to the nodal planes. The density of focal sphere coverage is controlled by a preset increment of axes rotation. The 5° increment of focal sphere coverage used for all events herein tests more than 25,000 possible nodal plane orientations within the focal sphere.

Polarity data are analyzed first to determine if they are consistent with each pair of nodal plane orientations. If the number of polarity errors is within a pre-specified number of allowable errors, then the difference between theoretical amplitude ratios and the corresponding observed ratios is compared to the preset error allowance. All ratios and ratio error allowances are represented as logarithms to insure linearity of the differences. If the number of ratio differences greater than the preset error allowance (number of ratio errors) is within a specified number of allowed ratio errors, a valid solution is declared. The B, A, and N axes are then incremented for the next iteration.

SOLUTION SELECTION

A complete search of the focal sphere generally results in a family of solutions. From this family of solutions, a preferred solution is selected by analyzing the root mean square (RMS) error for the ratios calculated by FOCMEC. This family, however, is nonunique, and is dependent primarily upon the polarity and amplitude ratio error limits. Varying these error limits can be expected to produce a different family of solutions. The problem would then arise of selecting the overall preferred solution for an event for which there were more than one family of solutions. The solution selection process is summarized below, and is explained in detail in Appendix C.

In general, the family of solutions with the least number of polarity errors is selected as the preferred family of solutions, from which the overall preferred solution is to be chosen. This is because polarities are a discrete type of data which are generally more easily determined, and hence, more objective than amplitude ratios, which depend upon 2 continuously varying observations (P and S-wave amplitudes) subject to coda interference and a number of velocity model dependent corrections. If, however, the family of solutions with an increased polarity error also has a reduction of two or more ratios and/or substantial improvement in the RMS statistics, then it would become the preferred family. The overall preferred solutions, plotted with the polarity and ratio data, are presented with their respective family of solutions in Figures 10 through 27.

DISCUSSION OF RESULTS

In this study, focal mechanisms have been obtained from two different earthquake location data sets, each generated with a different velocity model (GC01 and STEP2). The GC01 model was developed from a large crustal refraction arrival time data base, and has been stringently tested in different sub-regions of the Southern Appalachian region (Moore, 1979; Bollinger and Wheeler, 1982; Brewer and others, 1984; Chapman and Bollinger, 1985). Collectively, the Virginia Tech Seismological Observatory and TEIC have located over 150 earthquakes in the past five years with the GC01 model.

The STEP2 model was created to reduce certain biases in the GC01 model (single V_p/V_s ratio and hypocentral control of middle velocity boundary) in an effort to obtain better focal depth and departure angle estimates. The primary objective was to test the stability of the focal mechanism solutions derived from the GC01 data set. That is, how, and to what extent, did the assumptions used to develop the STEP2 velocity model affect focal mechanism solutions. The STEP2 model is, however, only speculative. The GC01 data set and its resulting focal mechanisms will therefore be considered and discussed as the definitive solutions, with the STEP2 set of mechanism solutions used primarily to test for stability.

HYPOCENTRAL LOCATIONS

Events relocated with the STEP2 model have consistently deeper focal depths and relatively unchanged epicentral locations. Both velocity models located nearly all of the earthquakes in the basement; only one of the 37 earthquakes in the study area is located in the upper sedimentary layers with the GCO1 model, and none of the 28 earthquakes relocated with the STEP2 model have focal depths less than 8 km. Thus, a great proportion of the seismic energy in the study area is being released within the crystalline basement below the detached upper layers. Johnston and others (1985) found that most of the earthquake activity in eastern Tennessee is likewise occurring in the basement.

EFFECT OF AMPLITUDE RATIOS ON FOCAL MECHANISMS

In this study, amplitude ratios were of great value in determining focal mechanism solutions in three important ways. First, over half (51% or 153 of 311) of the data used to obtain mechanism solutions are amplitude ratios. Hence, when amplitude ratios are included, more events have acceptably constrained mechanism solutions than when only polarities are used. For example, many events (8 of 18) have 5 or less polarities which cannot adequately constrain the nodal plane orientations. However, well constrained families of solutions are obtained for the same events when amplitude ratios are included.

Secondly, in every case, amplitude ratios constrain further the dip, strike and rake angles of solutions obtained with the polarity data. Since amplitude ratios become more sensitive to nodal plane orientations with increasing dip angle, they are very useful in determining dip and rake angles. In cases where the polarity data would allow both dip-slip and strike-slip solutions, the amplitude ratios consistently restricted the rake angles to those indicating predominantly strike-slip motion.

Finally, amplitude ratios provide an objective method of selecting a preferred solution through the use of the root mean square error (RMS) of the ratios. These statistics, discussed in Appendix C, have proved invaluable in accessing the fit of the solutions to the data.

NODAL PLANE ORIENTATIONS

Both SEFM and CFM solutions obtained for earthquakes located with the GC01 velocity model exhibit predominantly strike-slip motion along nearly vertical north-south (right-lateral) or east-west (left-lateral) oriented nodal planes (see Figures 6 and 7, and Table 1). Eighty-eight percent (45 of 51) of the strike, dip, and rake angles for both SEFM and CFM solutions lie within 30° of a perfectly vertical, north-south or east-west, strike-slip solution (see Table 2). Standard deviations for strike, dip, and rake angles range from 8° to 23° . P-axis trend and plunge angles average $N48^\circ E$, -4° for the SEFM solutions and $N54^\circ E$, -12° for the CFM solutions, with standard deviations ranging from 11° to 25° (Table 1). These

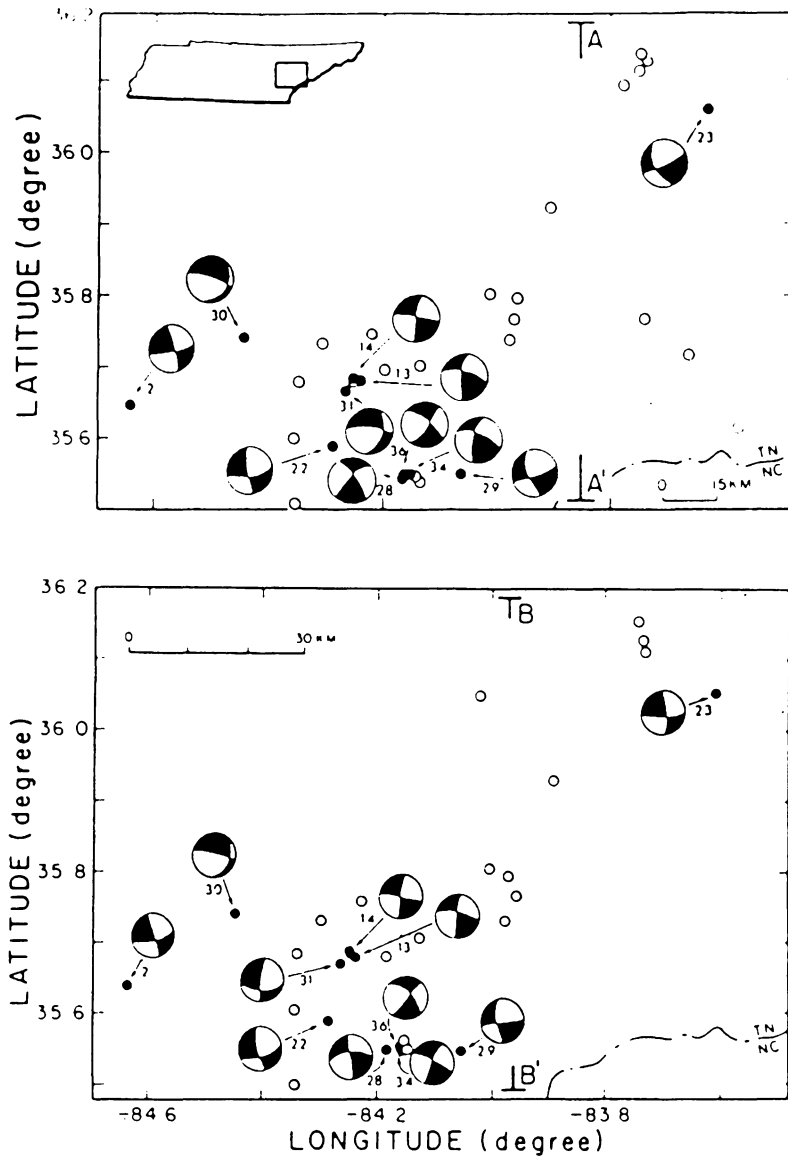


Figure 6: SEFM Solutions for GCO1 and STEP2 Data.

SEFM solutions for eastern Tennessee study region (inset map). Upper map shows GCO1 solutions, lower map shows STEP2 solutions. Note the slight changes in epicenter locations. Some events in upper map are not shown on lower map. Each solution is labeled with a chronologic event number. All solutions are equal area, lower hemisphere projections, with the compressional quadrant shaded. Vertical section plots along A-A' and B-B' are shown in Figure 4.

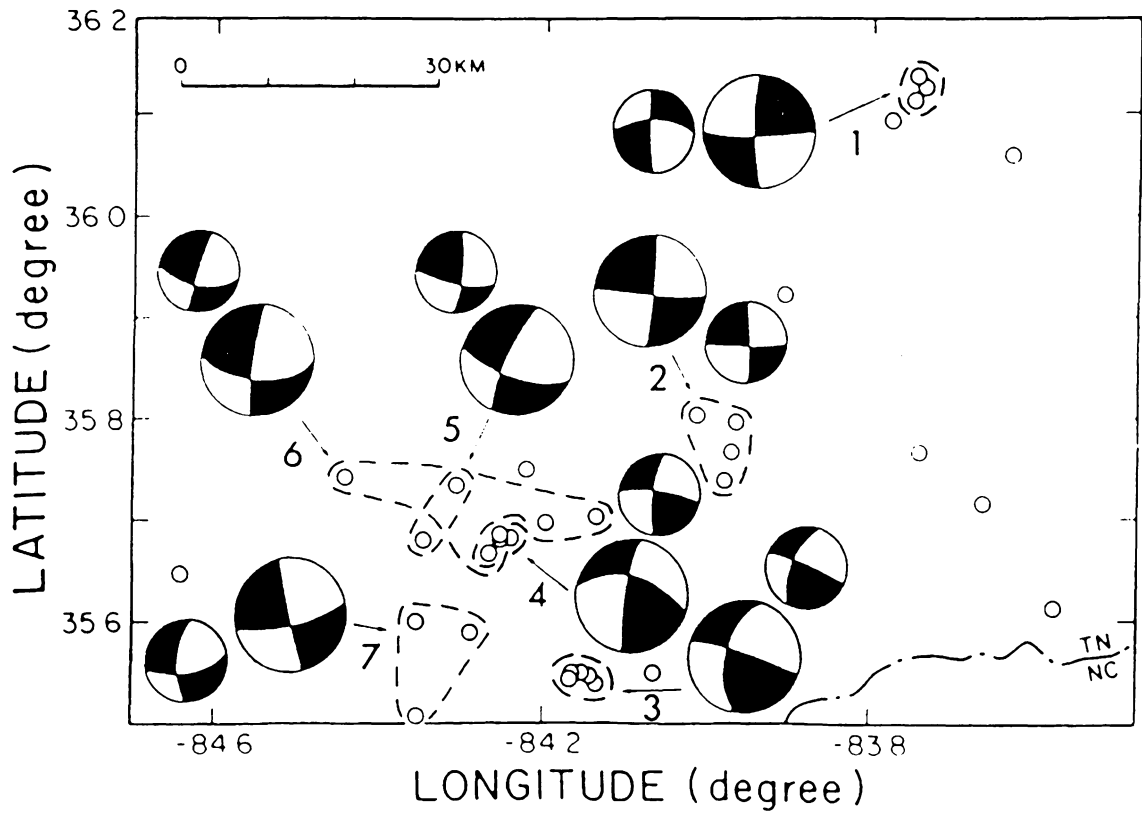


Figure 7: CFM Solutions for GC01 and STEP2 Data.

CFM solutions for the eastern Tennessee region. Events composited together are grouped by dashed lines. Large mechanism diagrams represent velocity model GC01 solutions, smaller mechanism diagrams represent velocity model STEP2 solutions. Map and mechanism projections the same as in Figure 6.

TABLE 1

SEFM and CFM P-axis and Nodal Plane Orientations *

	SEFM			CFM		
	GC01	STEP2	DIF/SD	GC01	STEP2	DIF/SD
P Trend	48 +- 23	49 +- 19	5	54 +- 11	52 +- 11	18
P Plunge	-4 +- 25	-2 +- 22	9	12 +- 16	13 +- 11	9
North						
Strike	8 +- 23	6 +- 18	11	8 +- 11	7 +- 11	9
Dip	65 +- 20	76 +- 19	58	79 +- 10	75 +- 9	44
Rake	16 +- 9	19 +- 11	33	19 +- 13	16 +- 8	38
East						
Strike	97 +- 23	95 +- 18	11	97 +- 11	98 +- 12	9
Dip	77 +- 8	72 +- 12	63	71 +- 13	75 +- 8	50
Rake	26 +- 20	15 +- 19	58	12 +- 10	16 +- 9	44

* P-axis and nodal plane orientations and standard deviations for SEFM and CFM from GC01 and STEP2 data set. Nodal plane orientations are divided into northernmost and easternmost trending planes. DIF/SD is the percent of difference between GC01 and STEP2 averages compared to the smallest standard deviation between the two.

TABLE 2

Percent of Nodal Planes within 30° of Vertical, N-S or E-W
Strike-slip Solution

	GC01			STEP2		
	Strike	Dip	Rake	Strike	Dip	Rake
SEFM	82	86	77	91	86	86
CFM	100	100	100	100	100	100
TOTAL	88	91	85	94	91	91
OVERALL	88%			92%		

* The percentage of strike, dip, and rake angles that are within 30° of a perfectly vertical, north-south or east-west, strike-slip solution for SEFM, CFM, and a combination of both SEFM and CFM for GC01 and STEP2 data sets. The overall percentage combines all strike, dip, and rake angles for both SEFM and CFM for GC01 and STEP2 data sets.

orientations are very similar to $N46^{\circ}E$, 13° average P-axis orientation determined for the Giles County, Virginia region (Munsey, 1984). P-axis orientation angles for SEFM solutions were plotted with respect to both time and depth. Within the constraints of the data, the orientations of P-axes cannot be shown to have a dependence with time, since all orientations may be produced by the same maximum compressive stress orientation. The orientations of P-axes do, however, have a suggestion of depth dependence (Figure 8). As depth increases, both P-axis trend and plunge angles appear to become systematically restricted to an apex near $N40^{\circ}$ to $50^{\circ}E$, and 5° to 10° , respectively. This aspect of the P-axis orientation will be discussed further in the next section. Similar plots of T-axis orientations indicates no dependence with either time or depth.

Primary exceptions to the general orientation of nodal planes are in the southernmost region of the study area where 2 SEFM events (#28 & 36) have nodal planes that are oriented more than one standard deviation clockwise of the regional average (see Figure 6), and in the northernmost region of the study area where the sense of slip for a CFM (#1) is opposite that of all other solutions (see Figure 7). A SEFM solution (#23) approximately 15 km southeast of CFM #1 exhibits an expected slip direction, i.e., right-lateral along north-south planes or left-lateral along east-west planes. Assuming that SEFM #23 resulted from the inferred regional stress field (approximately $N50^{\circ}E$), the slip direction exhibited by CFM #1, would require a change in the orientation of the regional stress field by 20° to 40° within a distance of 15 km. In any event, CFM

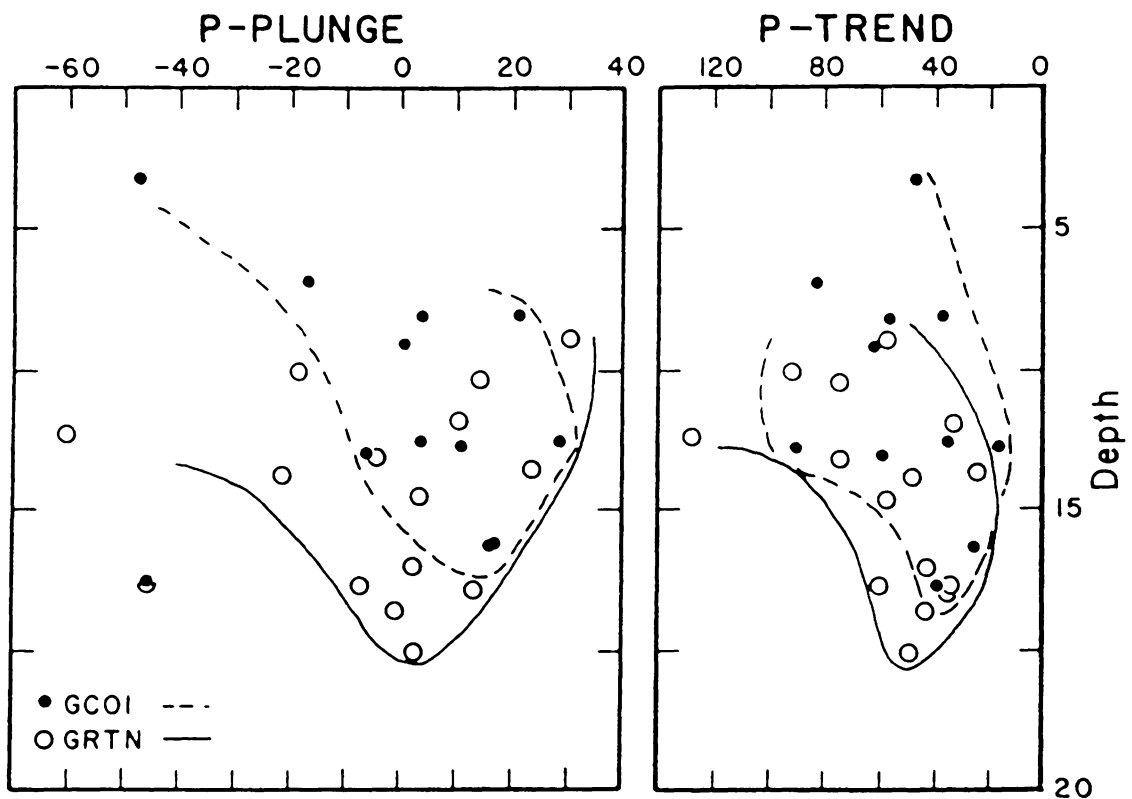


Figure 8: P-axis Versus Depth.

P-axis orientations (plunge and trend in degrees) versus focal depth in km for the mechanism solutions resulting from the use of the GCO1 and STEP2 velocity models. Solid and dashed lines are empirical bounds to P-axis orientations with depth, and are drawn by eye.

#1 is inconsistent with the inferred regional stress field, and this mechanism has therefore been omitted from all calculations of averages.

Other exceptions are SEFM #23, 30 and 31, whose north-south oriented nodal planes dip more horizontally than the regional average. This would indicate that either strike-slip motion occurred along an inclined north-south fault plane or that dip slip motion occurred along a vertical east-west plane.

SEFM and CFM solutions obtained for events located with the STEP2 velocity model are remarkably similar to those obtained with the GC01 model. Nodal plane and P-axis orientations are well within one standard deviation of those found with GC01 locations (see Figures 6 and 7, and Table 1). Strike, dip, and rake angles between the two sets of solutions (those obtained from GC01 and STEP2 locations) differ at most by 2° , 11° , and 11° , respectively, and P-axis trend and plunge angles differ by no more than 2° each. Similar to the GC01 results, the STEP2 set of solutions has exceptions in the southernmost region where one SEFM event (#36) has nodal planes that are oriented more clockwise than the regional average and in the northernmost region where the CFM solution (#1) exhibits a sense of slip opposite that of all other solutions. In addition, SEFM #30 has a near horizontal north-south trending nodal plane. Other exceptions are the sub-vertical dips exhibited by the east-west nodal planes of SEFM #31 and 28.

Apparently, the magnitude of change produced in event location (most notably in focal depth) by the two different velocity models does not sig-

nificantly affect the ultimate solution. This is because changes in the departure angle, which is the principal focal mechanism parameter altered by the relocations, produce only radial (along radii of the focal sphere) changes in the location of data on the focal sphere. For this case, polarities will only modify the dip angle and not the strike of nodal planes. Also, for predominantly strike-slip solutions such as those obtained for eastern Tennessee, amplitude ratios affect primarily the location of the B-axis (null axis) and only to a minor extent the nodal plane dip and strike. The combined effect of the polarities and ratios is to move the B-axis about with relatively minor changes in the nodal plane strike. The most notable changes would then be in the dip and rake angles of the nodal planes. For the solutions obtained in this study, the greatest differences between the solutions obtained from GC01 and STEP2 data sets are indeed the dip and rake angles (see Table 1, especially DIF/SD). Crosson and Endo (1982) likewise showed that small changes in event location produced by a gradient velocity model, principally those in focal depth, influence primarily dip-slip events and the dip angle of nodal planes. Strike-slip events with nearly vertical nodal planes remained relatively unchanged. Nevertheless, the similarity of solutions with two different velocity models supports stability in the mechanisms.

IN-SITU STRESSES

A homogeneous and fracture free material subjected to a triaxial

stress will fail along either of two planes oriented at an angle of 45° or less to the maximum compressive stress (MCS) and parallel to the intermediate compressive stress (eg. Anderson, 1951). The orientation of MCS would then correspond exactly to that of the P-axis determined from focal mechanism solutions. However, if the earthquake is caused by slip along a pre-existing fault, then the MCS is not simply related to the P-axis but may, in principle, lie anywhere in the quadrant containing P (McKenzie, 1969).

Assuming that earthquakes in eastern Tennessee occur along pre-existing fractures and that the orientation of stresses is generally uniform throughout the region and constant through the time frame of our observations, then the distribution of P-axes from numerous focal mechanisms should define a quadrant, or sector, wherein the MCS is located. The average P-axis orientation can further constrain the region of MCS, but may be biased by any concentrations present in the number and/or orientation of pre-existing fractures. However, because the MCS can lie anywhere in the quadrant containing the P-axis, then numerous nodal plane orientations could, in principle, limit the region in which the MCS can lie. The applicability of this "sector method" increases directly with the number of different fault orientations and slip directions, and is not biased directly by fault concentrations, since only those extreme fault orientations that will slip in a given stress regime will form the MCS limits.

The sector method was used to determine a region for the MCS from

both SEFM and CFM solutions obtained with GC01 locations (Figure 9). The CFM solutions (with only 12 nodal planes) constrained the region of MCS to the outer portions of the northeast and southwest quadrants. Addition of the SEFM solutions (with 22 nodal planes) further constrained the region of MCS to between N38°E and N63°E with plunges ranging from about 12° to -25°. Similar, but less constrained regions were found using nodal planes from STEP2 located events. These SEFM solutions restricted the region to between N38°E and N76°E, with plunge angles of about 15° to -40°. Thus, all earthquakes in the region (except those in the northernmost region, ie. CFM #1) could have been induced by a uniform MCS of northeasterly orientation, and sub-horizontal plunge. This orientation is very similar to that determined for the Giles County, Virginia region by Munsey (1984), and is consistent with the east to northeast MCS trend determined for the midcontinent region by Zoback and Zoback (1980).

Average P-axis orientations for SEFM and CFM from both locational models are plotted on each focal sphere containing the MCS limits, and all lie near the center of each region (Figure 9). This suggests that fractures in the region tend to be somewhat multi-directional but rather uniformly distributed throughout the region. That is because any nonuniform distribution or concentrations of fault plane orientations would bias the average P-axis orientation, and offset it from the center of the region of MCS.

If, as Raleigh and others (1972) suggest, the region in which the MCS is likely to be found is more reasonably restricted to near 35° about the

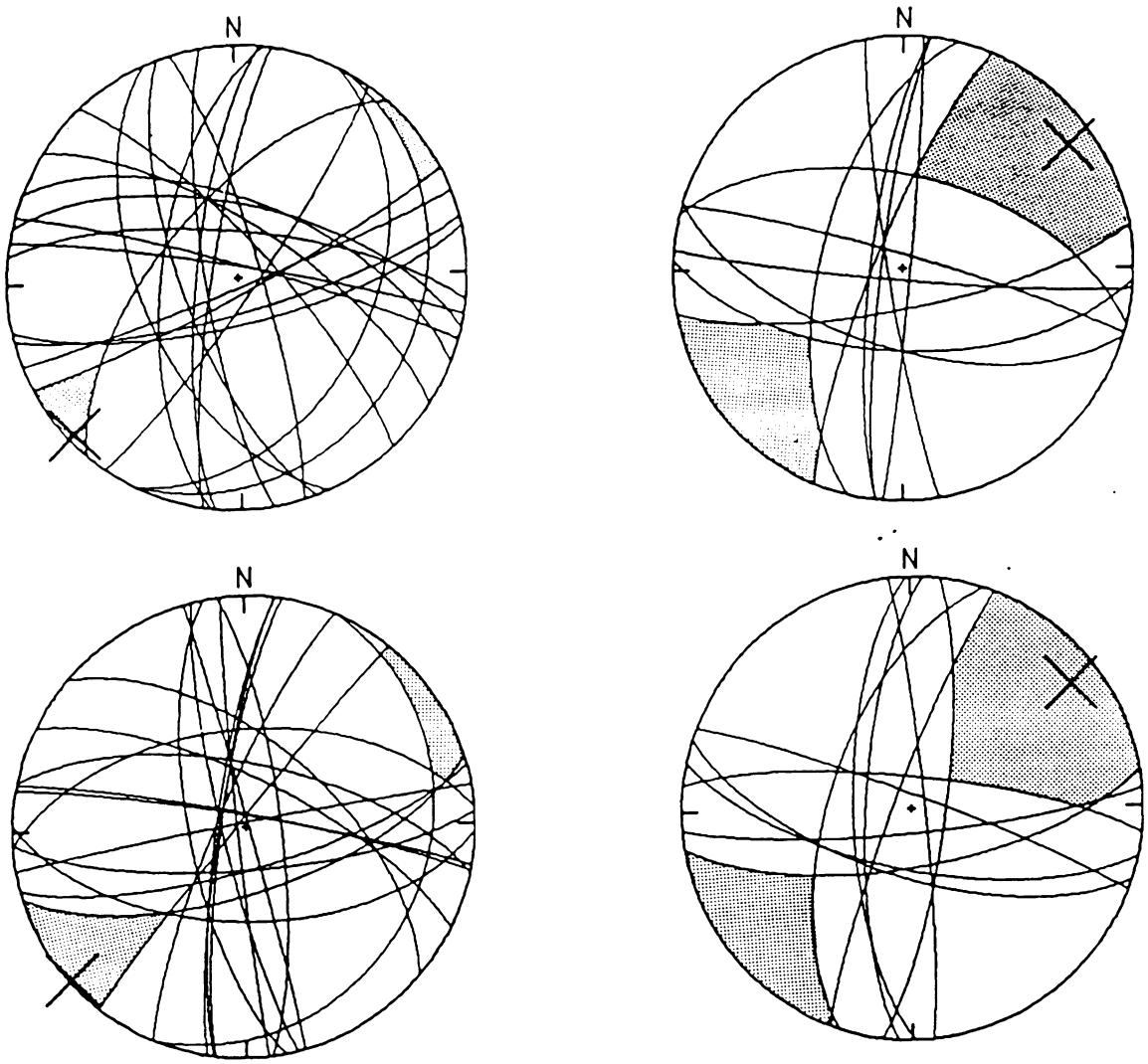


Figure 9: Limits for the Maximum Compressive Stress.

Regions in which the maximum compressive stress can exist based upon the assumptions that all fault movement in the study area is due to the same maximum compressive stress orientation, and that the maximum compressive stress can be located anywhere in the dilatational quadrant.

Top: GC01 data; SEFM on left and CFM on right.

Bottom: STEP2 data; SEFM on left and CFM on right.

computed P-axis, then the regional stress field would be further constrained to between N48°E and N53°E, with plunges ranging from about 0° to -15° (GCO1) or between N48°E and N66°E, with plunge angles from 5° to -30° (STEP2). The average P-axes would still be located within these further restricted regions.

One line of evidence supporting the general N48°E to N66°E orientation of the MCS indicated by the nodal planes is the systematic restriction of the P-axis trends to near N40 to 50°E with depth (see Figure 8). For vertical, strike-slip events, the MCS and least compressive stress are horizontal, and the intermediate compressive stress (ICS) is vertical. Assuming that the MCS remains constant with depth and the ICS increases with depth, then the possible orientations for which fault slip will occur will decrease with depth toward an angle of 30° from the MCS. The value at which the P-axis trend is restricted toward with depth (apex) should be 45° from this fault orientation, or 15° from the MCS. The apex values for the GCO1 and STEP2 data sets are N40°E and N50°E, respectively. Within the constraints of these data sets, which are in themselves biased with depth, the inferred MCS is consistent with the aforementioned N48°E to N53 (GCO1) to 66° (STEP2) E defined by the nodal planes.

GEOLOGIC MODEL - COMPARISON TO GILES COUNTY, VIRGINIA

The Giles County Seismic Zone, 300 km to the northeast, has been the subject of recent papers (Bollinger and Wheeler, 1982; Munsey, 1984; Mun-

sey and Bollinger, 1984) and is one of the better understood seismically active sub-regions in the Southern Appalachians. Bollinger and Wheeler (1982) suggested that seismicity in Giles County is occurring along compressionally reactivated normal faults restricted to a sub-vertical, tabular zone striking northeast. These faults probably formed during the Iapetan (Late Precambrian or Early Paleozoic) opening of the Proto-Atlantic. Munsey (1984) and Munsey and Bollinger (1984) have since proposed additional fault orientations and slip motion to the northeast and southwest of the zone. These new fault orientations (vertical, north-northwest trending faults with both right-lateral and reverse slip) are consistent with the stress regime inferred for the main north-northeast striking zone.

Wheeler and Bollinger (1984) have suggested that the current seismicity in the eastern Tennessee-North Carolina border area may also be occurring along compressionally reactivated extensional fractures that formed during the rifting of the Proto-Atlantic. By analogy with the North American Mesozoic and other passive margin normal faults, Bollinger and Wheeler (1982) established that Iapetan normal faults should strike northeast to north-northeast, dip steeply, and may be formed as far inland as 250 to about 450 km from the continental edge. Eastern Tennessee focal mechanisms exhibit generally northerly, steeply dipping nodal planes. Furthermore, the band of eastern Tennessee seismicity is located from 250 to 350 km cratonwards (westward), and trends approximately parallel to, the Piedmont gravity and magnetic lineaments, which have been interpreted

to mark the eastern edge of the North American craton (Rankin, 1975; Hatcher and Zietz, 1980).

A major distinction between the two sub-regions is the linear trend of hypocenters in Giles County, and the diffuse distribution of hypocenters in eastern Tennessee. Other dissimilarities are the underlying basement rock types and the proximity of each sub-region to the Precambrian continental margin. Giles County is underlain by granitic Grenville basement, and is located about 100 km nearer the Piedmont gravity and magnetic lineaments than the eastern Tennessee sub-region, which is underlain by Ocoee basement rocks which are separated from Grenville basement by the New York-Alabama and Clingman lineaments (see Johnston and others, 1985). These dissimilarities, however, may be interrelated. That is, the granitic Grenville rocks may have undergone a different magnitude of extension and may have reacted differently to such a stress than the probably petrologically different Ocoee rocks. Such differences may be reflected in the patterns of seismicity observed in each area.

In short, the seismicity of eastern Tennessee may be due to compressionally reactivated Iapetan normal faults similar to those proposed for the Giles County Seismic Zone, but the evidence is inconclusive. Future delineation of northerly striking faults from reflection profiles or hypocenter lineations would support this view.

CONCLUSIONS

Eleven SEFM and 7 CFM were obtained from 2 different data sets that were determined with a 4 layer velocity model (GCO1) using a constant Vp/Vs ratio and with a 12-layer velocity model (STEP2) using variable Vp/Vs ratios. STEP2 was defined in an effort to obtain better depth estimates and a more uniform distribution of ray departure angles. The individual earthquakes analyzed were the same for each set of solutions.

On the average, the resulting focal mechanisms for individual events are quite similar between the GCO1 and STEP2 data sets. While a few events may show significant differences, a majority (29 of 36) of the focal mechanism solutions have strike, dip, and rake angles that differ by less than one standard deviation between themselves.

The (Sv/P)_z amplitude ratios significantly improved the determination of focal mechanism solutions in three important ways. First, the addition of amplitude ratio data allows more events to have acceptably constrained solutions than when only polarity data are used. Secondly, ratios restrict, at least to some extent, the strike, dip, and rake angles determined by polarities, producing better constrained results. In this study, amplitude ratios were often necessary to distinguish between primarily strike-slip and dip-slip events. Thirdly, the RMS and other statistics generated from the amplitude ratio data provide an objective method in selecting a preferred solution from the family of solutions gen-

erally obtained.

The detailed geologic structures involved in the earthquake process remain unresolved. The general orientation of fault planes and some insights into the faulting process, however, have been described. Below, in summary form, are the basic conclusions of this study.

- 1) A large proportion of the seismic energy release in the study area has occurred in the basement, below the detached upper sedimentary layers. Both GC01 and STEP2 locations confirm this.
- 2) Fault motion for SEFM and CFM solutions is predominantly strike-slip along nearly vertical north-south (right-lateral) or east-west (left-lateral) nodal planes. The average P-axis trend is about N50°E, with a nearly horizontal plunge. This orientation is consistent with both the P-axis orientation determined for the nearby Giles County, Virginia region (Munsey, 1984) 300 km to the northeast and the inferred trend of the MCS for the midcontinent region (Zoback and Zoback, 1980).
- 3) Limits placed by the GC01 focal mechanism results on the region in which the maximum compressive stress can exist, based on the assumption that it may lie anywhere in the quadrant containing the P-axis, were about N38°E to N63°E, with plunges ranging from about 12° to -30°. The STEP2 data set constrained the region from about

N38°E to N76°E, with plunge angles of about 15° to -40°. The average P-axis orientation for SEFM and CFM solutions from both locational models each lie near the center of these regions of maximum compressive stress. That the average P-axis, which may be biased by concentrations in fault plane orientations, is so located suggests that fractures in the region are rather uniformly distributed throughout the region.

- 4) Two sub-regions of the study area have exceptions to the preceding general orientation of nodal planes and/or P-axes. First, nodal planes for some events in the southernmost region are oriented more clockwise than the regional average. These focal mechanisms are, nevertheless, consistent with the inferred regional stress regime. Secondly, the CFM in the northernmost study area exhibits a sense of slip that is opposite that of all other solutions and is thereby inconsistent with the inferred regional stress field. We have no explanation for the source of the apparent local variation in the regional stress field.

REFERENCES

- Anderson, E. M. (1951). The Dynamics of Faulting. , Edinburgh, Oliver and Boyd, 206pp.
- Bollinger, G. A. (1973). Seismicity of the Southeastern United States, Bull. Seismol. Soc. Am. , 63, 1785-1808.
- Bollinger, G. A., C. J. Langer, and S. T. Harding (1976). The eastern Tennessee earthquake sequence of October through December, 1973, Bull. Seismol. Soc. Am. , 66, 525,547.
- Bollinger, G. A. and R. L. Wheeler (1982). The Giles County, Virginia, Seismogenic Zone - Seismological Results and Geological Interpretations, U.S. Geol. Survey Open-File Report 82-585 , 136pp.
- Bollinger, G. A. and R. L. Wheeler. The Giles County, Virginia, seismic zone, Science , 219, 1063-1065.
- Brewer, S., J. Cornwell, and A. C. Johnston (1983). A study of the reliability of depth determinations using SARSN data, Tenn. Eq. Info. Center Spec. Report # 10 , 26pp.
- Chapman, M. C., and G. A. Bollinger (1985). Reliability of focal depth estimates from a small network, Eqke. Notes, abstr. , in press.
- Cook, F. A., D. S. Albaugh, L. D. Brown, S. Kaufman, and J. Oliver (1979). Thin-skinned tectonics in the crystalline southern Appalachians; COCORP seismic-reflection profiling of the Blue Ridge and Piedmont, Geology , 7, 563-567.
- Crosson, R. S., and E. T. Endo (1982). Focal mechanisms and locations of earthquakes in the vicinity of the 1975 Kalapana earthquake aftershock zone 1970-1979: implications for tectonics of the south flank of Kilauea Volcano, Island of Hawaii, Tectonics , 1, 495-542.
- Dewey, J. W. and D. W. Gordon (1984). Maps showing recomputed hypocenters of earthquakes in the eastern and central United States and adjacent Canada, 1925-1980, U. S. Geol. Survey Misc. Field Studies, Map MF-1699.
- Guinn, S. A. (1980). Earthquake focal mechanisms in the southeastern United States, U. S. Nuclear Regulatory Commission report NUREG/CR-1503 , Washington, D. C., 150pp.

- Harris, L. D. (1976). Thin-skinned tectonics and potential hydrocarbon traps-illustrated by a seismic profile in the Valley and Ridge province in Tennessee, Jour Research U. S. Geol. Survey , 4, 379-386.
- Hatcher, R. D., Jr., and I. Zietz (1980). Tectonic implications of regional aeromagnetic and gravity data from the southern Appalachians, in The Caledonides in the U.S.A. , Wones, D. R., ed., VPI&SU Memoir #2, Blacksburg, VA, 235-244.
- Herrmann, R. B. (1979). Surface wave focal mechanisms for eastern North American earthquakes with tectonic implications, J. Geophys. Res. , 84, 3543-3552.
- Johnston, A. C., D. J. Reinbold, and S. I. Brewer (1984). Seismotectonics of the Southern Appalachians, being edited for publication in Bull. Seismol. Soc. Am. , 23pp.
- King, E. R., and I. Zietz (1978). The New York-Alabama lineament: geophysical evidence for a major crustal break in the basement beneath the Appalachian basin, Geology , 6, 312-318.
- Kisslinger, C. (1980). Evaluation of S to P amplitude ratios for determining focal mechanisms from regional network observations, Bull. Seismol. Soc. Am. , 70, 999-1014.
- Lahr, J. C. (1984). HYPOELLIPSE/VAX: A computer program for determining local earthquake hypocentral parameters, magnitude, and first motion pattern, U.S. Geol. Survey Open-File Report 84-?? , 60pp.
- Lee, W. H. K., and Lahr, J. C. (1975). HYPO71 (revised): A Computer Program for Determining Hypocenter, Magnitude, and First Motion Pattern of Local Earthquakes, U. S. Geol. Survey Open-File Report 75-311 , 114pp.
- McKenzie, D. P. (1969). The relation between fault plane solutions for earthquakes and the directions of the principal stresses, Bull. Seismol. Soc. Am. , 59, 591-601.
- Moore, T. P. (1979). Crustal velocity structure in southwestern Virginia, Virginia Polytechnic Institute and State University, M. S. Thesis , 75pp.
- Munsey, J. W., (1984). Focal mechanisms for Virginia earthquakes, Virginia Polytechnic and State University, M. S. Thesis , ??pp.
- Munsey, J. W., and G. A. Bollinger (1984). Focal mechanisms for Giles County, Virginia and vicinity, Eqke. Notes, abstr. , in press.

- Nava, S., and S. Everett, ed. (1984). us. Tenn. Eqke. Info. Center Qtrly. Seismol. Bull. , 5, #1, 48pp.
- Nelson, A. E., and I. Zietz (1983). The Clingman lineament, other aeromagnetic features, and major lithotectonic units in part of the southern Appalachian mountains, Southeastern Geology , 24, 147-157.
- Nicholson, C., and D. W. Simpson (1984). Changes in Vp/Vs with depth: implications for appropriate velocity models, improved earthquake locations, and material properties of the upper crust, Bull. Seismol. Soc. Am. , in press.
- Nicholson, C., D. W. Simpson, S. Singh, and J. E. Zollweg (1984). Crustal studies, velocity inversions and tectonics: results from a microearthquake survey in the New Madrid Seismic Zone, J. Geophys. Res. , 89, 4545-4558.
- Raleigh, C. B., J. H. Healy, and J. D. Bredhoeft (1972). Faulting and Crustal Stress at Rangely, Colorado, in Flow and Fracture of Rocks , Heard, H. C., I. Y. Borg, N. L. Carter, and C. B. Raleigh, ed., Am. Geophys. Union, Washington, D. C. , 275-284.
- Rankin, D. W. (1975). The continental margin of eastern North America in the Southern Appalachians: the opening and closing of the proto-Atlantic ocean, Am. Jour. Sci. , 275-A, 298-336.
- Reinbold, D., and J. Cornwell (1983). The Greenback, Tennessee earthquakes of 24 September 1982 and their tectonic associations, Tenn. Eqke. Info. Center Spec. Report # 9 , 32pp.
- Sibol, M. S., and Bollinger, G. A., ed. (1984). Hypocenter listing from Southeastern U. S. Seismic Network Bulletins no. 1-12, SEUSS Bull. , 12A, 44pp.
- Snoke, J. A., J. W. Munsey, A. G. Teague, and G. A. Bollinger (1984). A program for focal mechanism determination by combined use of polarity and Sv-P amplitude ratio data, Eqke. Notes, abstr. , in press.
- Tzeng, W. S. and L. T. Long (1982). Investigation of SV- to P-wave amplitude ratio for determining focal mechanism, Eqke. Notes , 53, 39-40.
- Watkins, J. S. (1964). Regional geologic implications of the gravity and magnetic fields of a part of eastern Tennessee and southern Kentucky, U.S. Geol. Survey Prof. Paper 516A, 17p.
- Wheeler, R. L. and G. A. Bollinger (1984). Seismicity and suspect terranes in the southeastern United States, Geology , 12, 323-326.

Zoback, M. L. and M. Zoback (1980). State of stress in the conterminous United States, J. Geophys. Res. , 85, 6113-6156.

APPENDIX A. FAMILIES OF SOLUTIONS AND PREFERRED SOLUTIONS

Figures 10 through 27 exhibit the nodal plane and P, T, and B axis orientations for the family of solutions and the preferred solution and data for each event for both velocity model data sets (GC01 and STEP2). Each figure is identically formatted, and they will therefore be discussed here as a group.

All solutions are equal area, lower hemisphere projections. GC01 located mechanism solutions are shown above the STEP2 located mechanism solutions. The preferred family of nodal planes and P, T, and B axes are shown to the left and to the right, respectively, and the preferred solution with its corresponding data are shown in the center for both velocity model data sets. Circles are compressions, triangles are dilatations, and the crosses indicate the relative values of the amplitude ratios. For events with two families of solutions from which a single preferred solution could not be readily distinguished, eg. Figures 14, 15, 22, 23, both families of solutions are shown. The preferred solution from each of these families are include in the center. The solution that was subjectively judged to be the better of the two is shown as a solid line, and the other solution is shown as a dashed line. Only the better solution is used in calculating averages (see Discussion of Results).

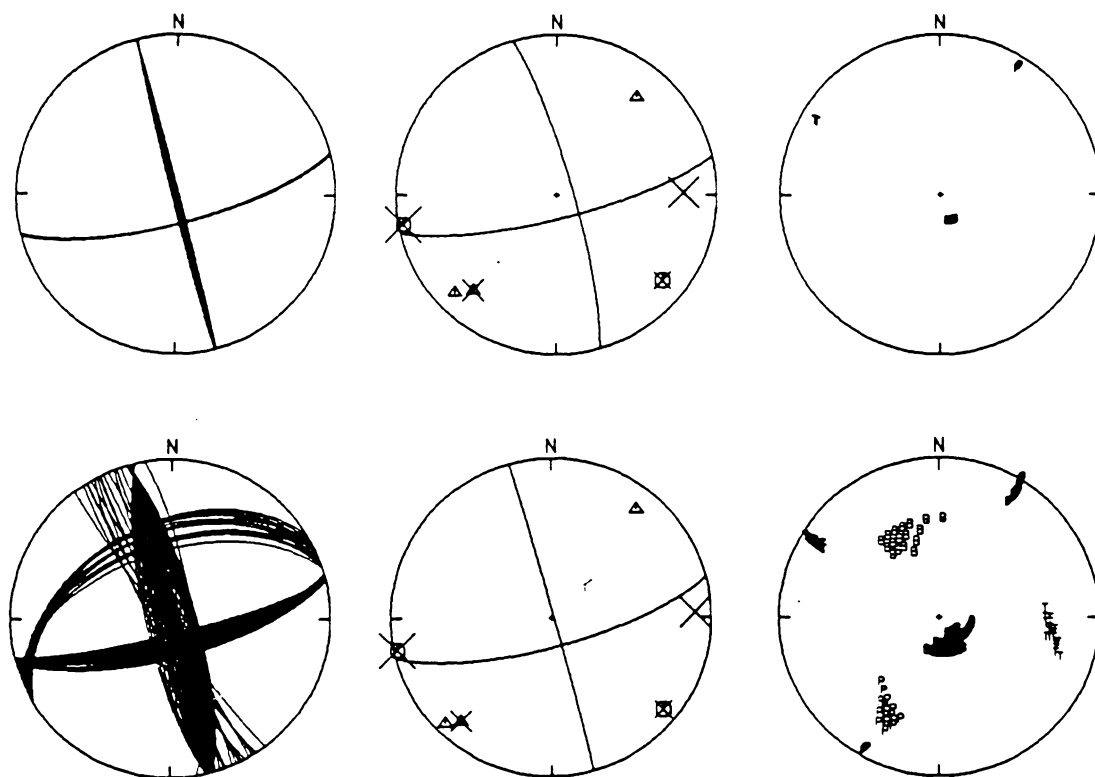


Figure 10. Event #2: 25 November 1981

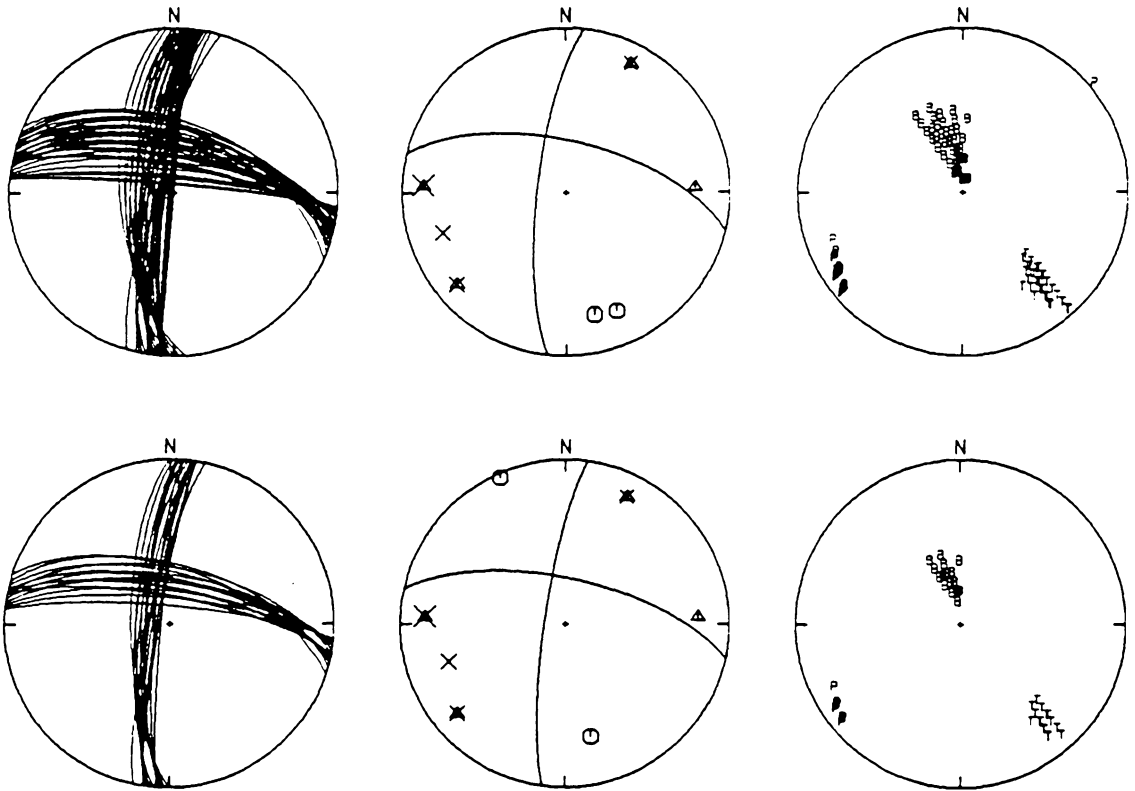


Figure 11. Event 13: 24 September 1982

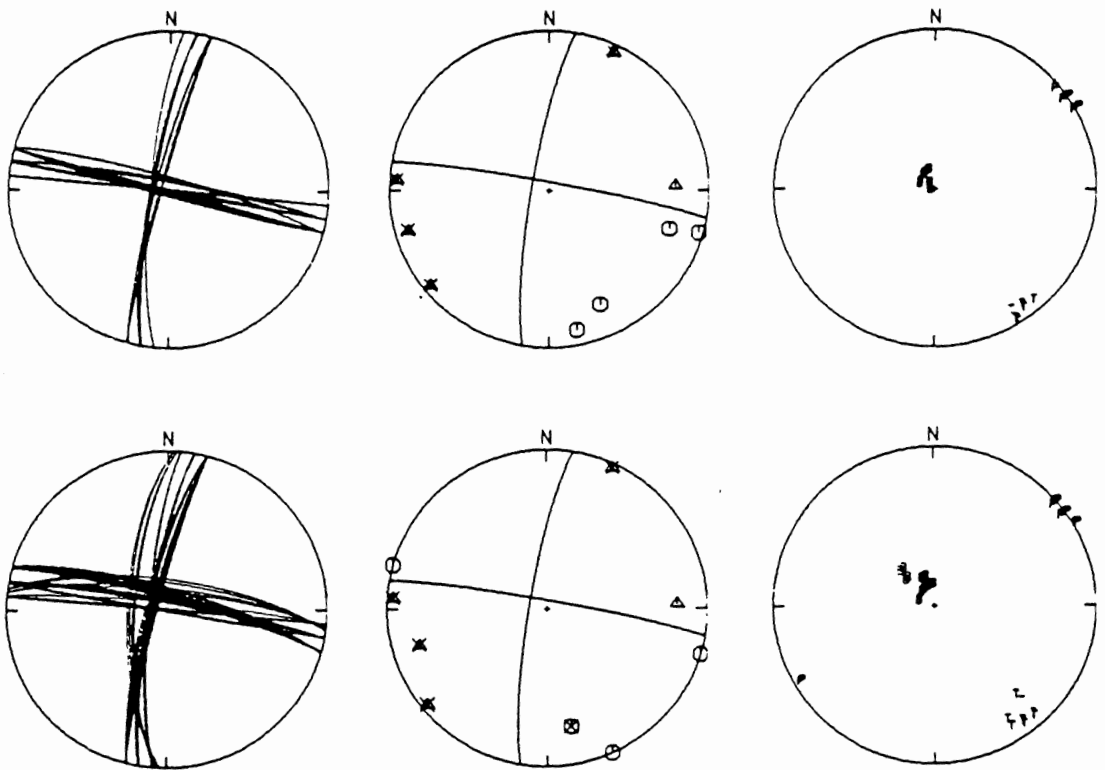


Figure 12.. Event #14 : 24 September 1982

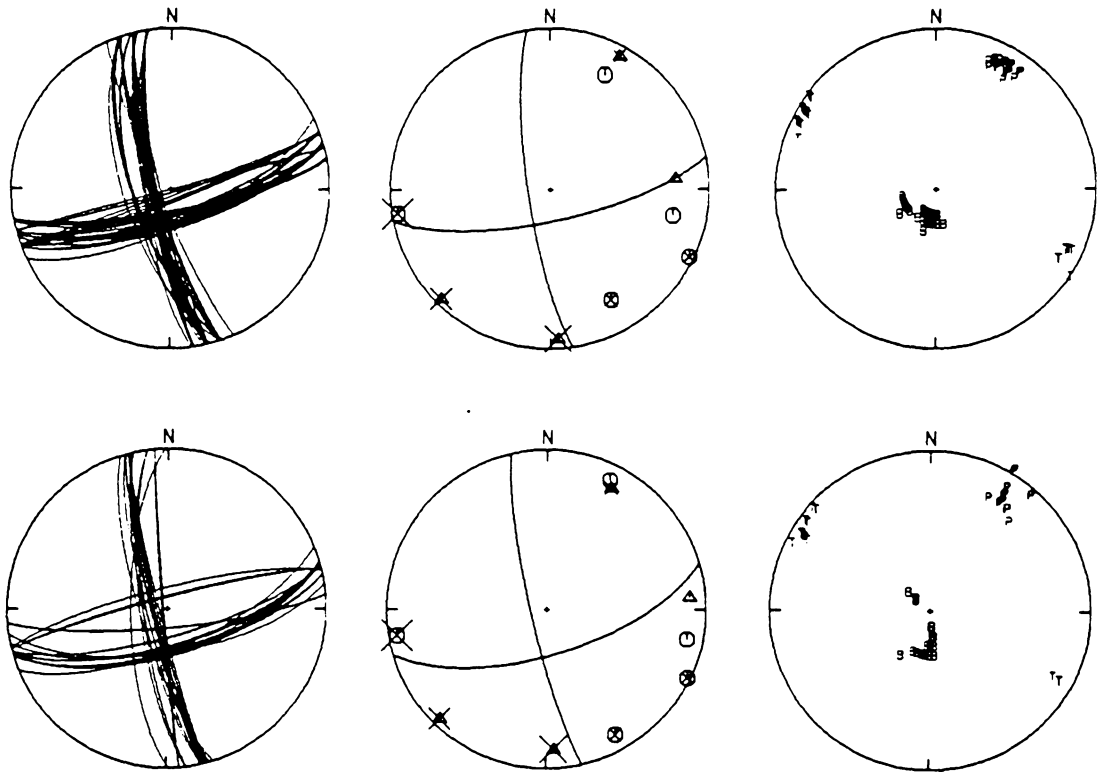


Figure 13. Event #22: 18 January 1983

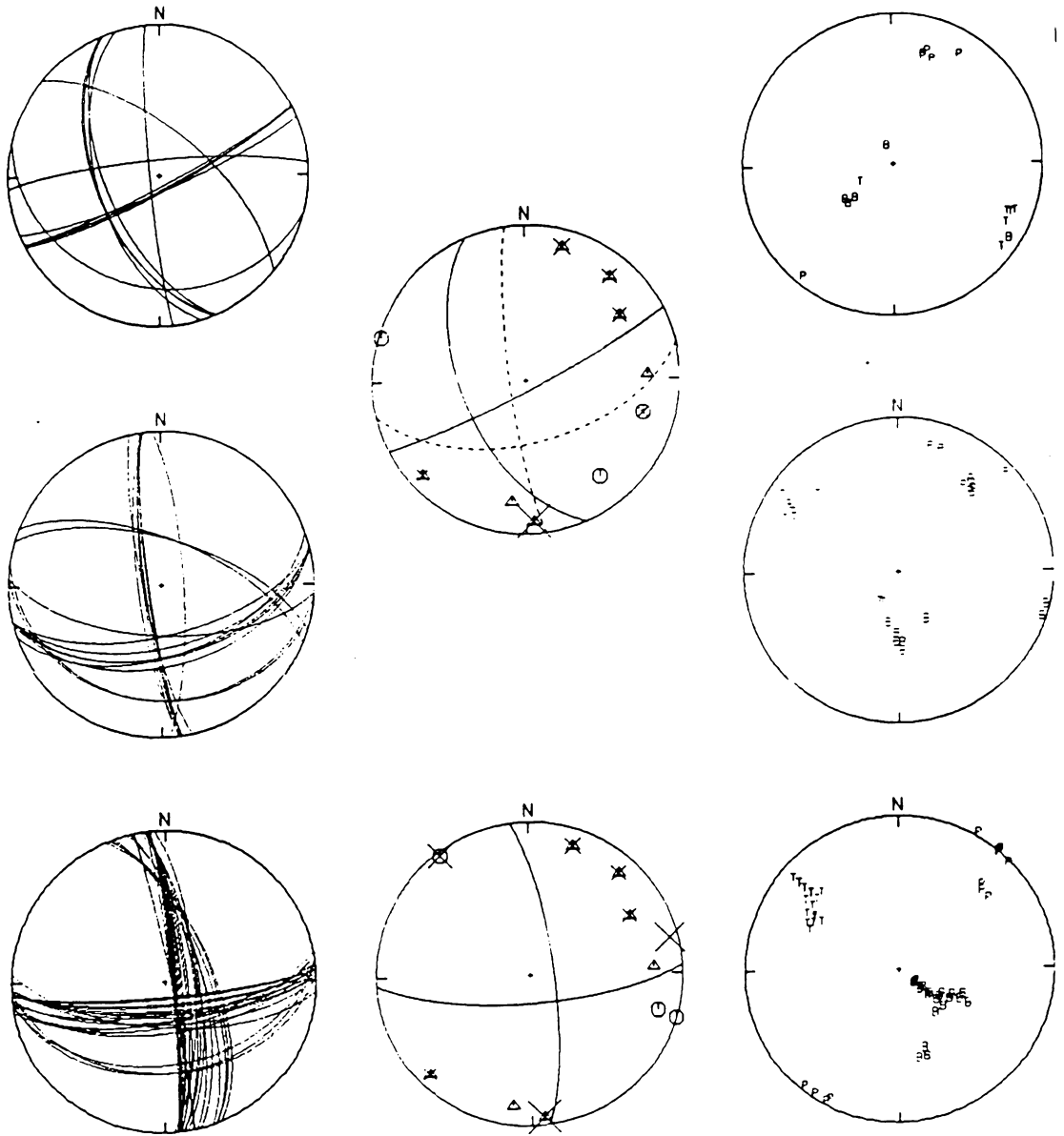


Figure 14. Event #23: 27 January 1983

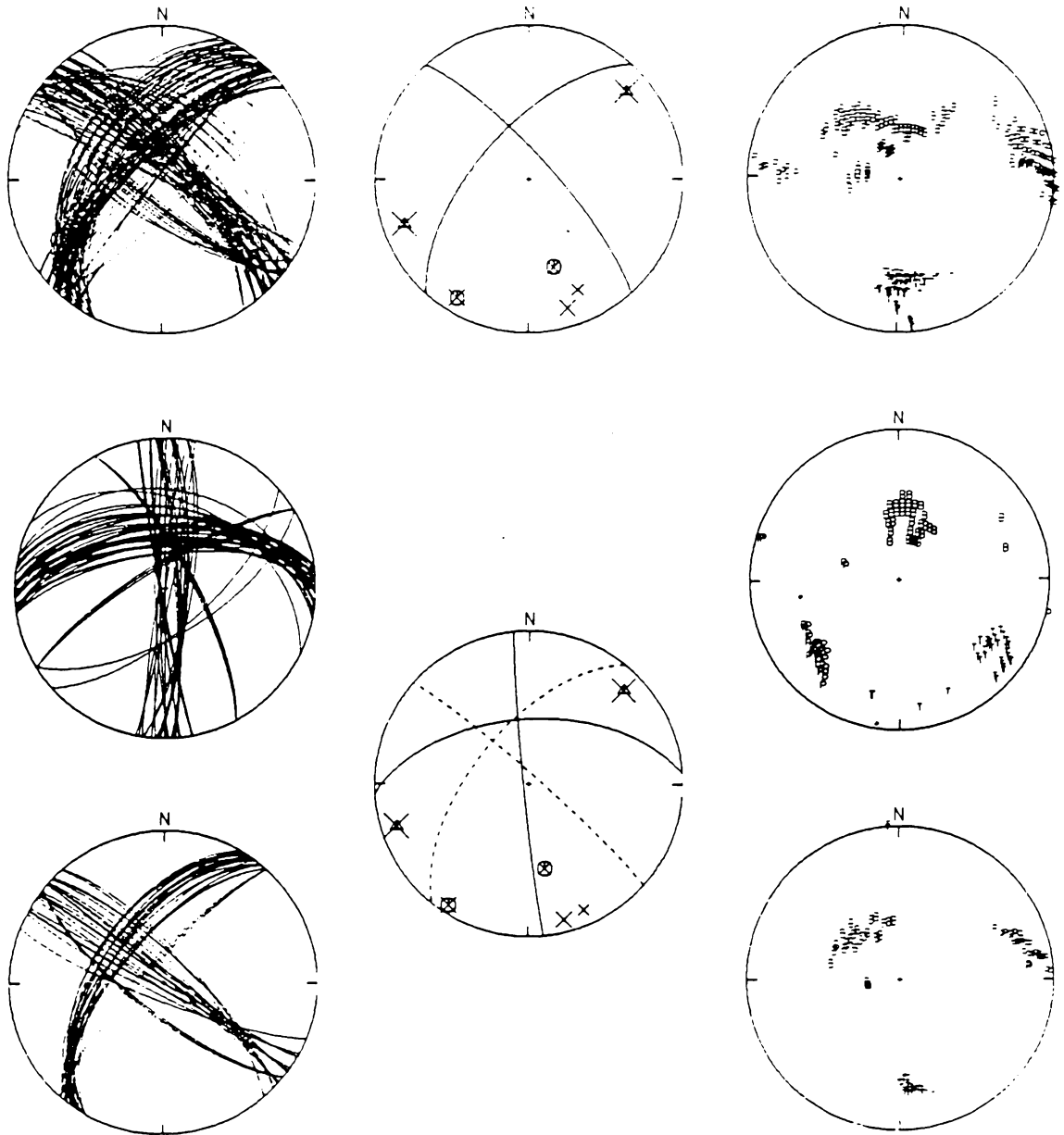


Figure 15. Event #28: 5 April 1983

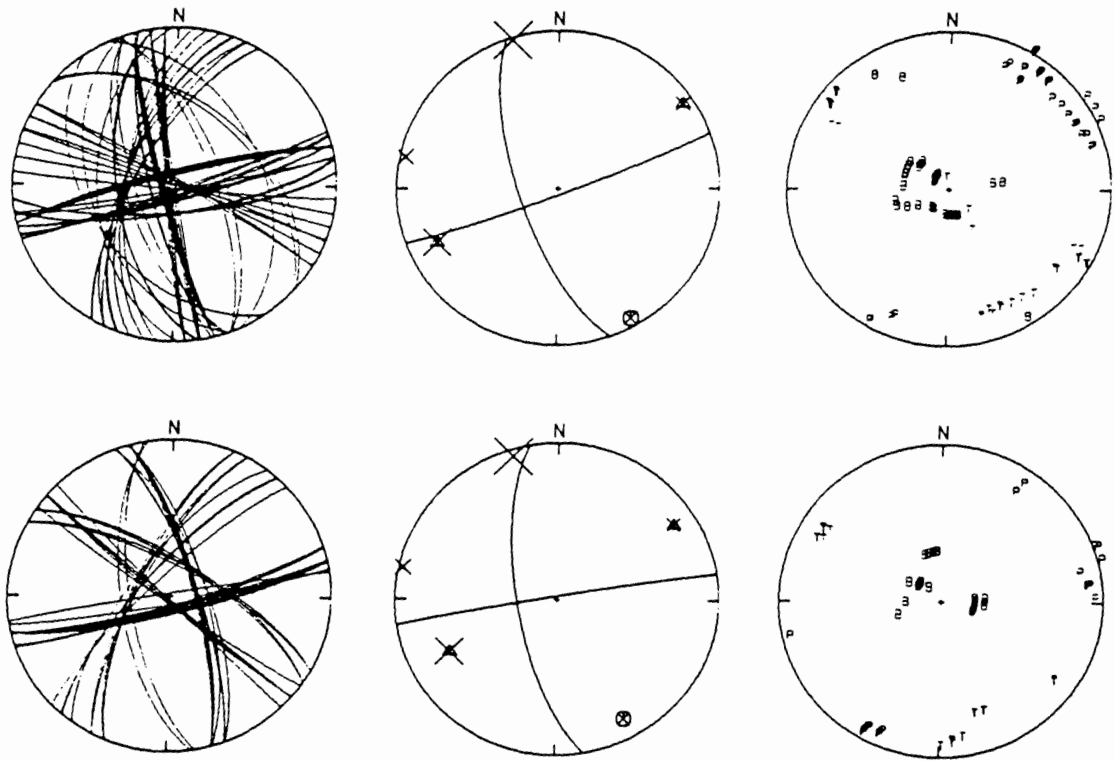


Figure 16. Event #29: 16 May 1983

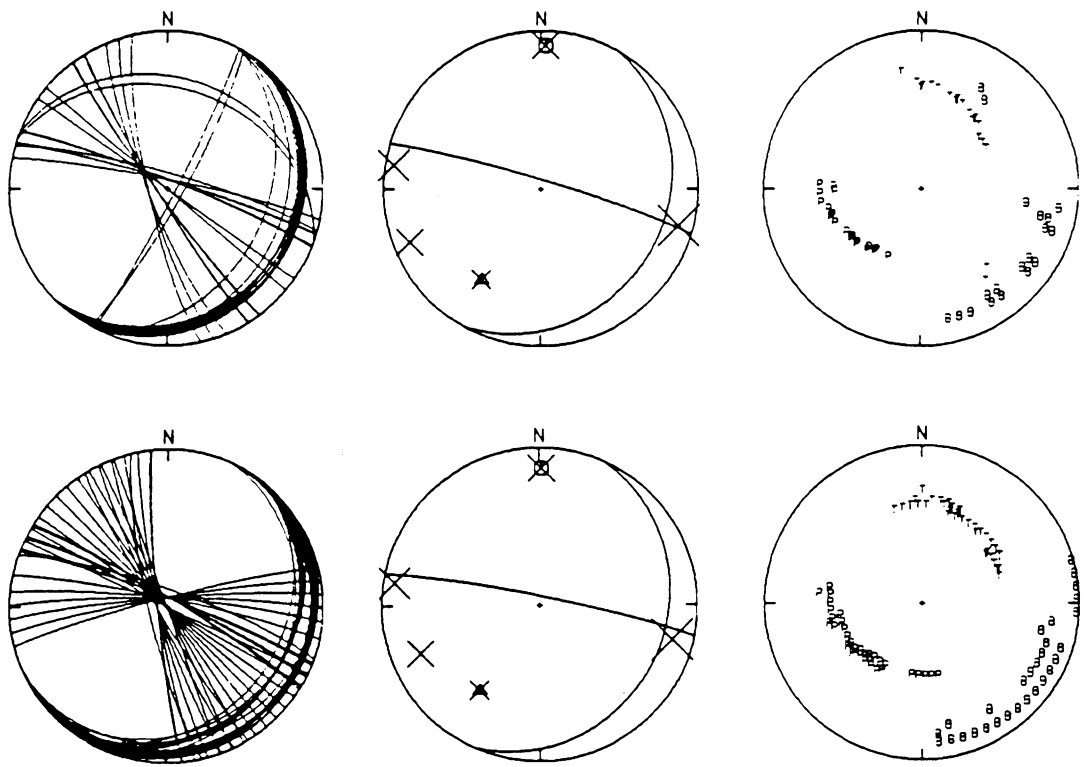


Figure 17. Event #30: 25 May 1983

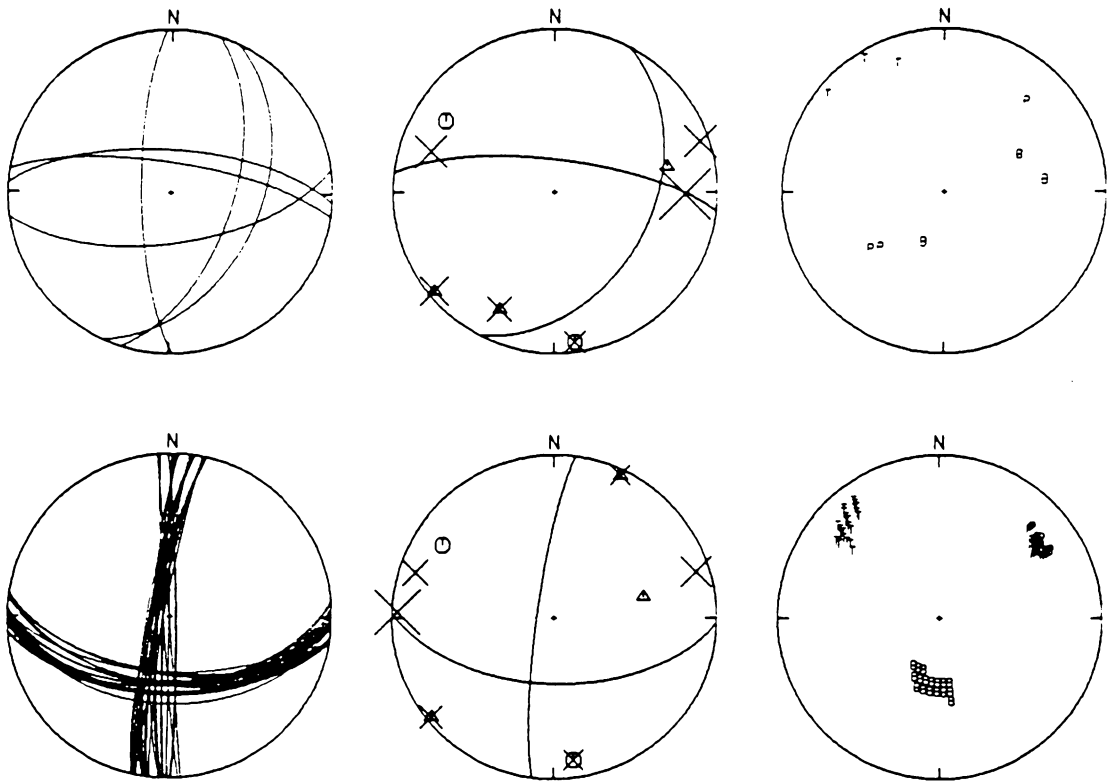


Figure 18. Event #31: 26 May 1983

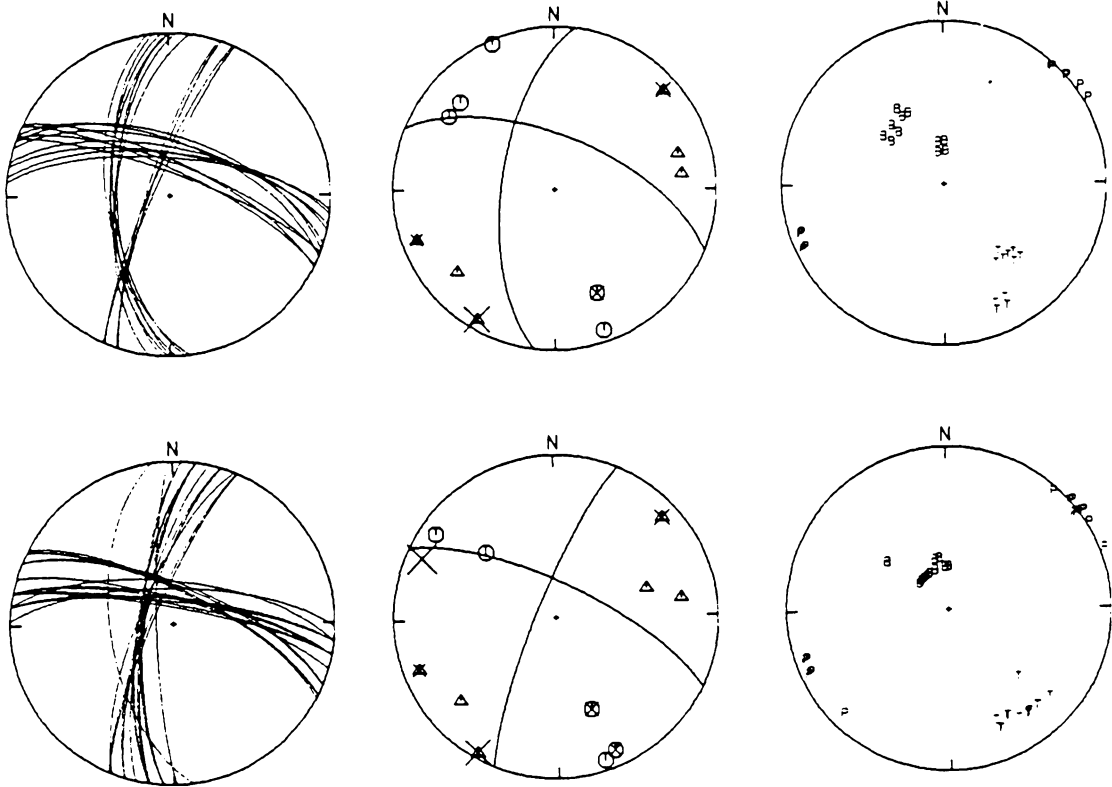


Figure 19. Event #34: 8 July 1983

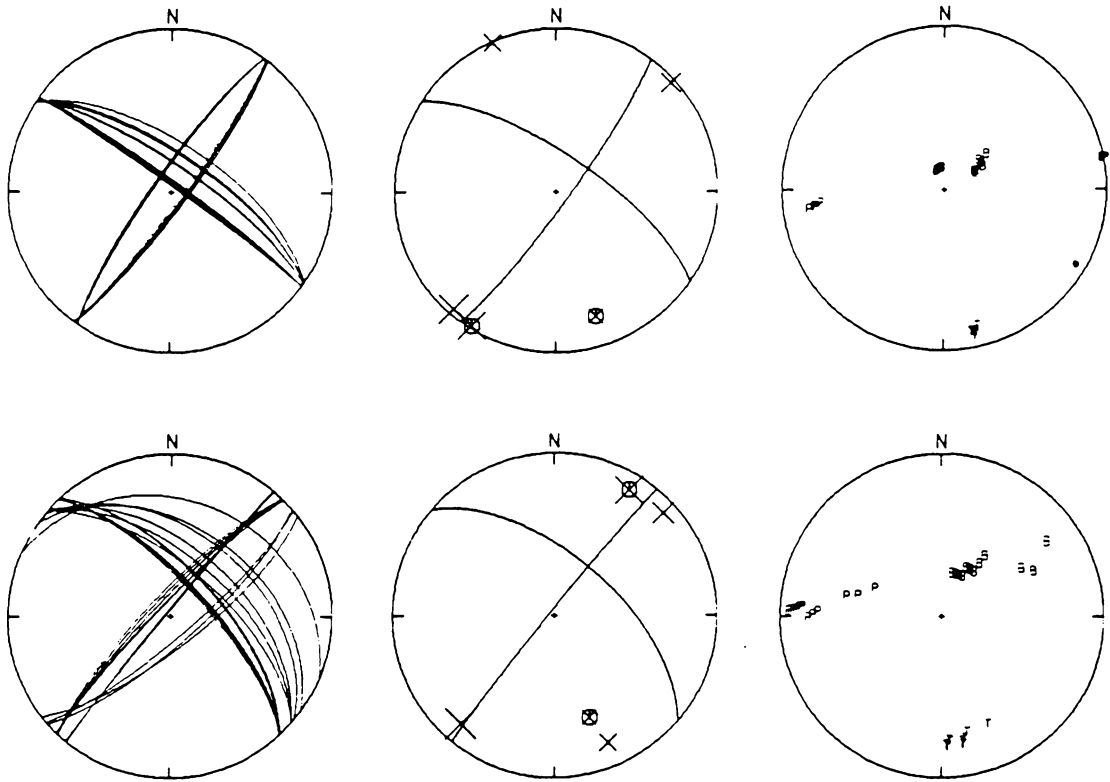


Figure 20. Event #36: 15 July 1983

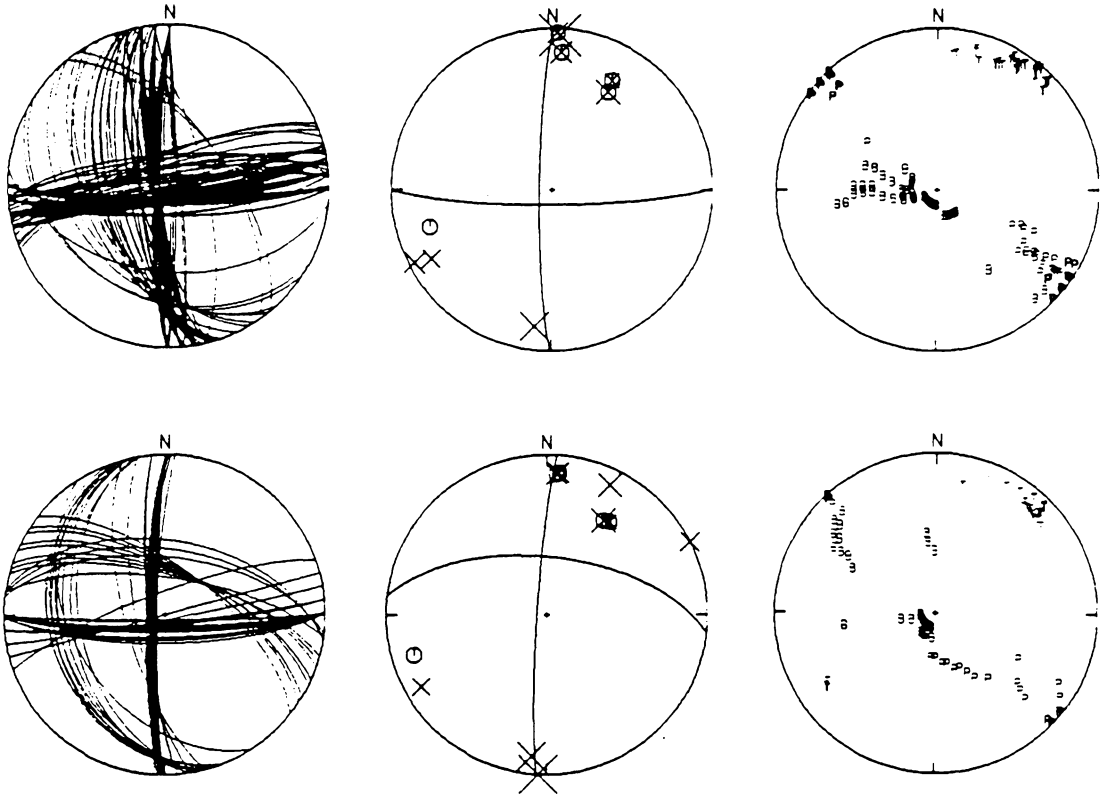


Figure 21. Composite #1

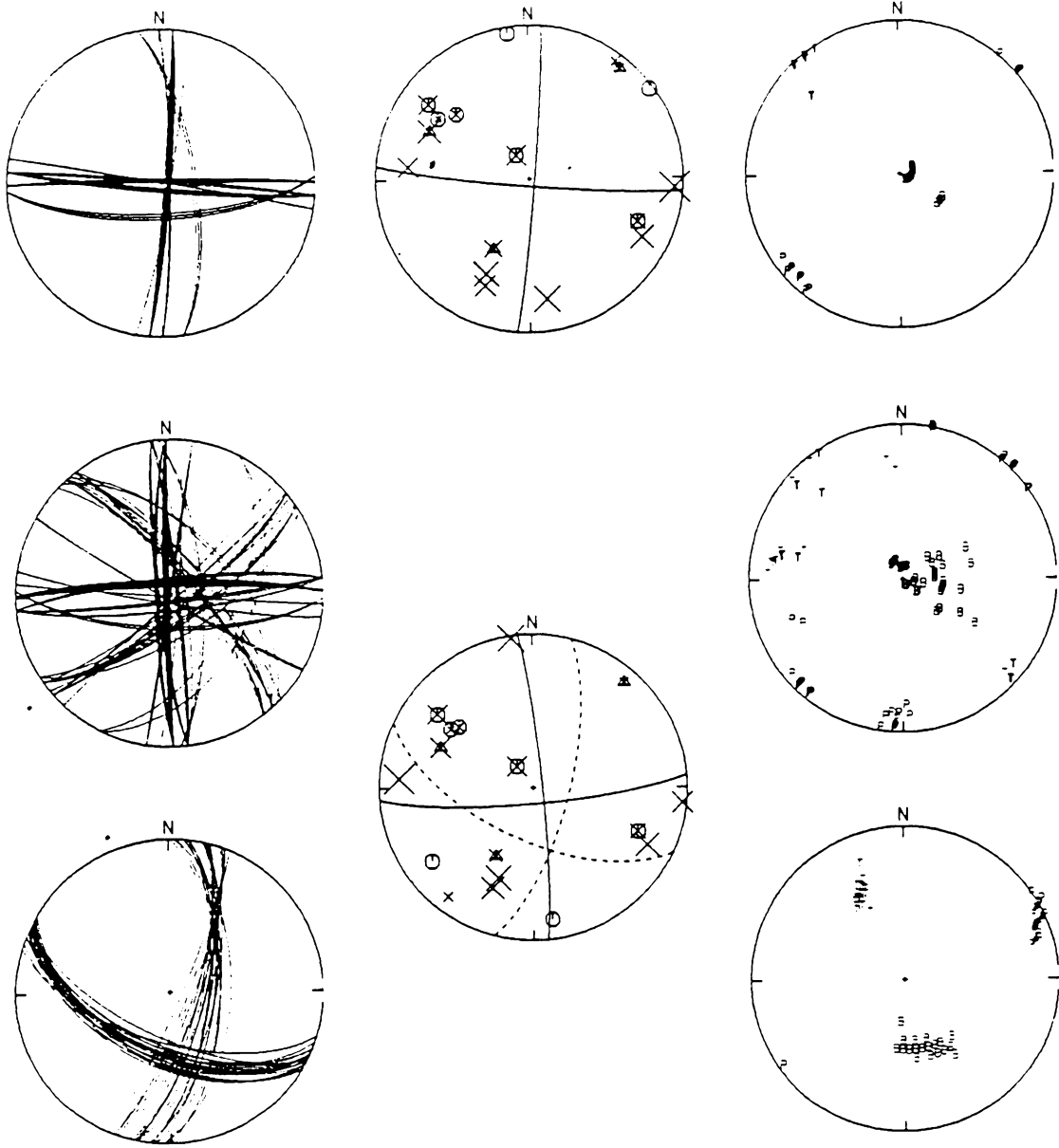


Figure 22. Composite #2

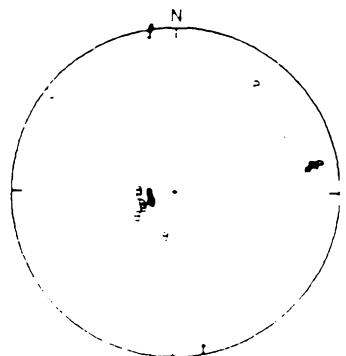
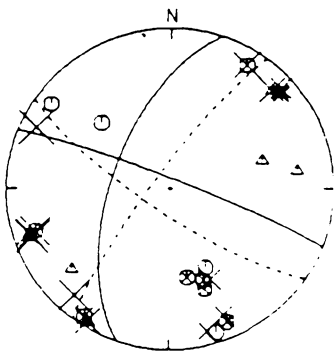
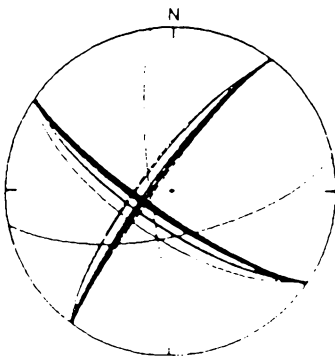
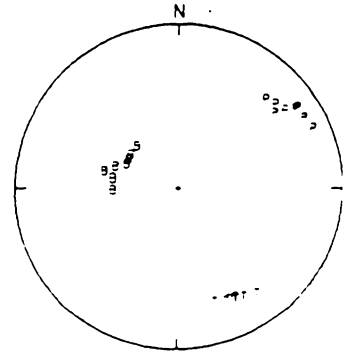
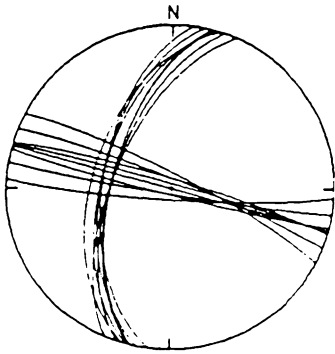
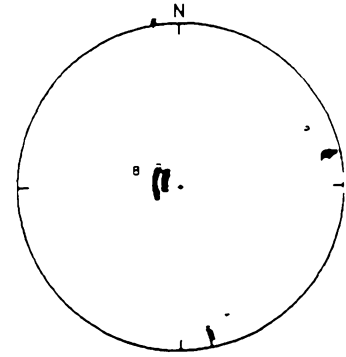
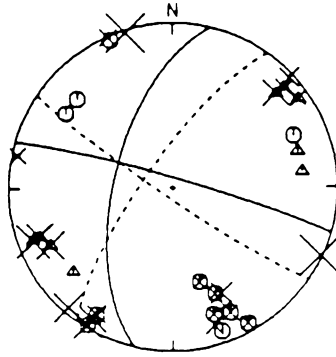
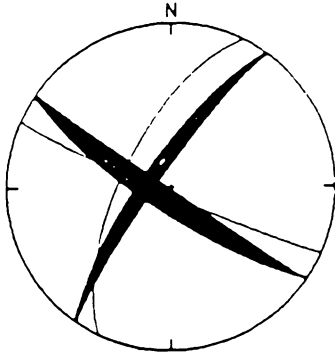
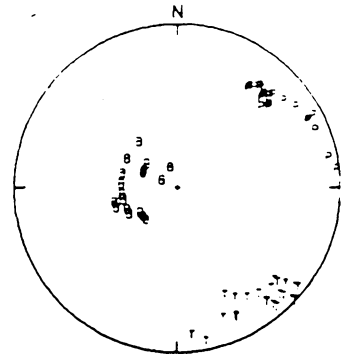
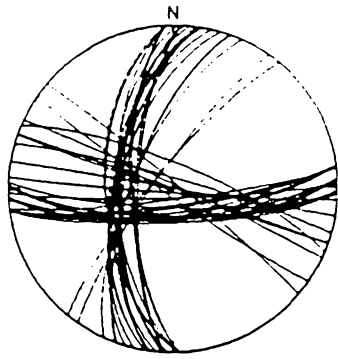


Figure 23. Composite #3

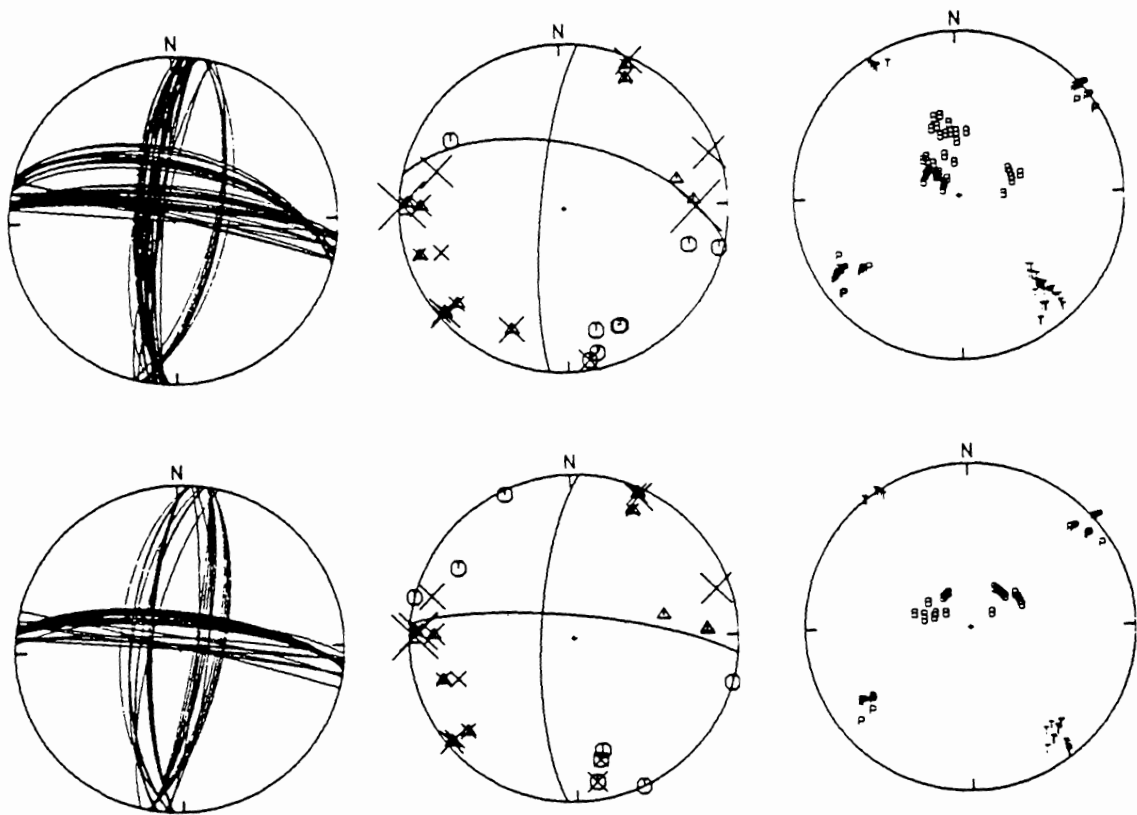


Figure 24. Composite #4

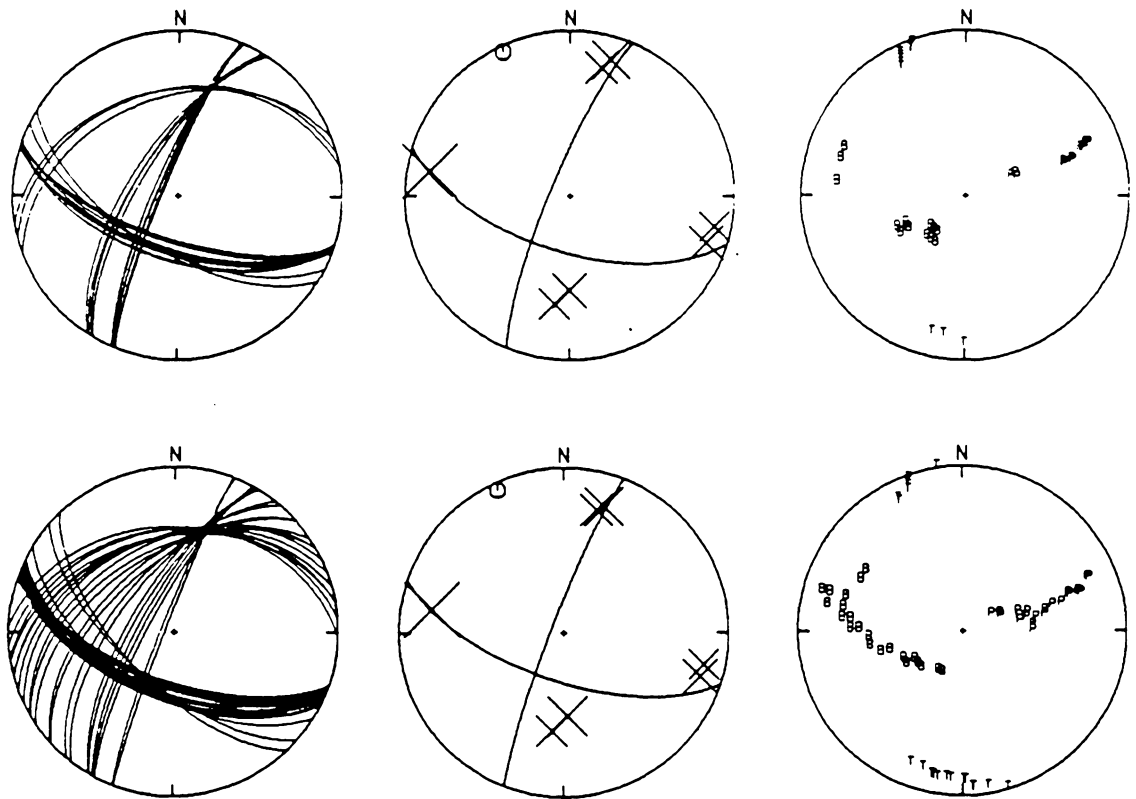


Figure 25. Composite #5

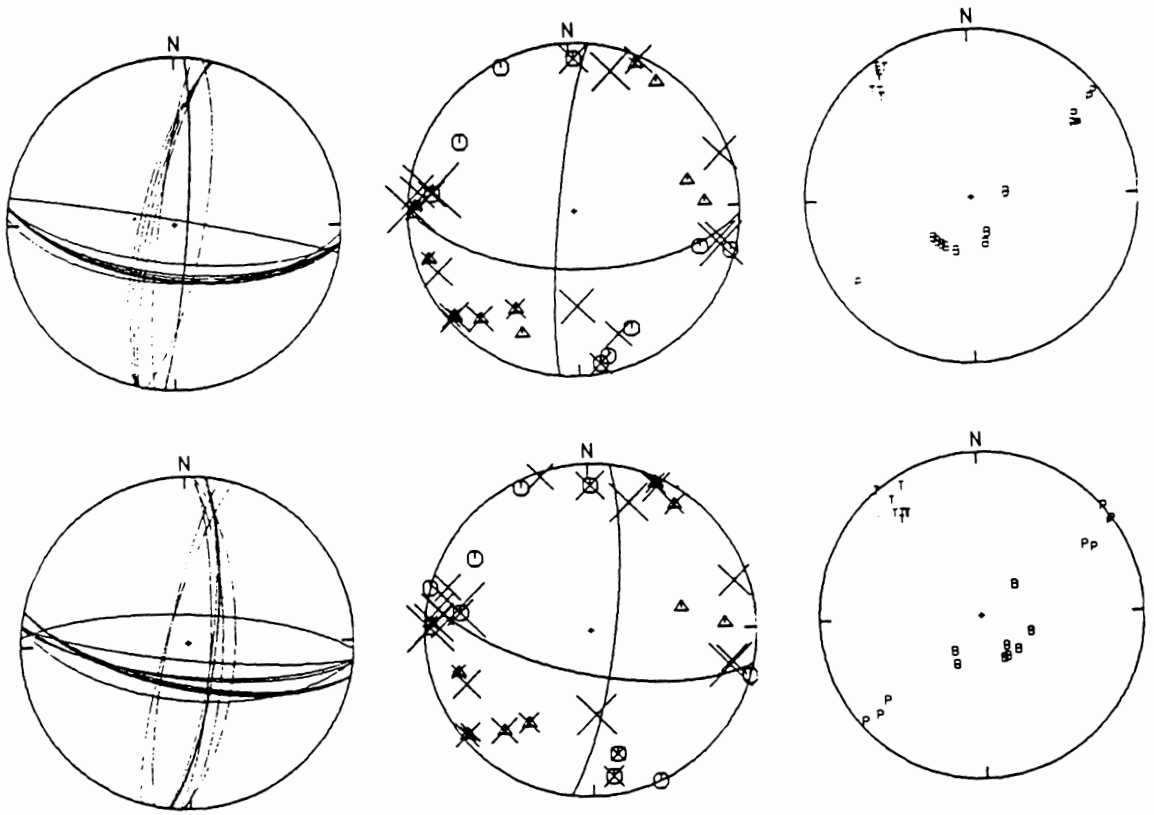


Figure 26. Composite #6

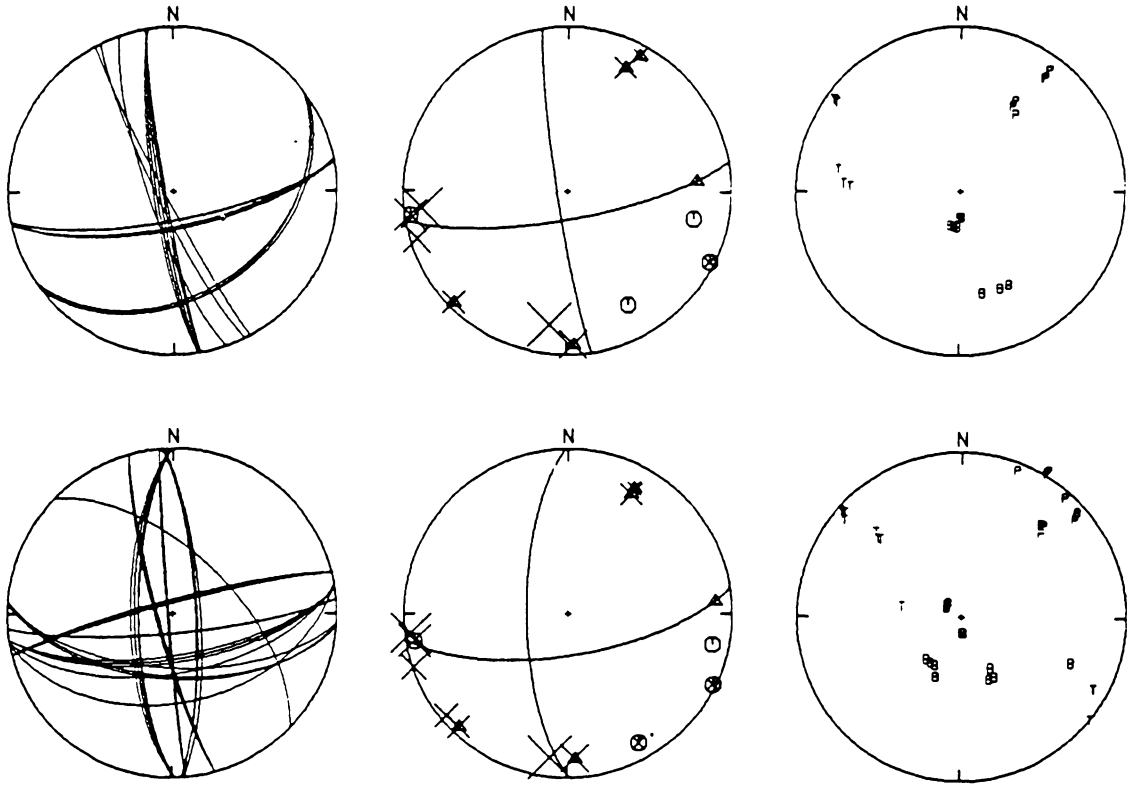


Figure 27. Composite #7

APPENDIX B. TESTING OF VELOCITY MODELS

The Moore crustal velocity model (GC01 in Figure 5) used to locate SARSN events consists of three layers over a half space, with P velocities and V_p/V_s ratios that are constant for each layer but variable for different layers. The uppermost and lowermost boundaries are interpreted to be due probably to the Appalachian decollement and the Moho, respectively. The middle velocity boundary has not yet been correlated with any specific geologic feature, but may represent layering associated with the brittle-ductile crustal transition.

Three potential problems arise from the use of the Moore model to locate eastern Tennessee events: 1) the model was determined in the Valley and Ridge and Cumberland Plateau provinces of southwestern Virginia and West Virginia, while SARSN stations are located in the Blue Ridge province of North Carolina and the Valley and Ridge and Cumberland Plateau provinces of Tennessee, 2) TEIC locates events with the HYP071 program which uses a single V_p/V_s ratio for the entire velocity model rather than the layered V_p/V_s ratios defined by the Moore model, and 3) the middle boundary (14.7 km depth) influences hypocentral locations, especially the focal depth. However, TEIC conducted locational stability tests using the Moore model (Brewer and others, 1983). RMS residuals were plotted against fixed depth and final depths were plotted against variable starting depths. Known quarry blasts were located consistently within HYP071's

horizontal and vertical error estimates. For most earthquakes, consistent final depths were found for all starting depths and RMS residuals showed clear minima at these final depths. Thus, the Moore model performs reasonably well in eastern Tennessee.

A constant V_p/V_s ratio appears to locate epicenters as well as, or better than variable V_p/V_s ratios for the TEIC network in eastern Tennessee. The velocity model with a constant V_p/V_s ratio produced consistently smaller RMS residuals, generally smaller horizontal error estimates (8 of 10), roughly similar HYPOELLIPSE horizontal and DRMS quality evaluations (the differences in the RMS values at the hypocenter and points on a sphere centered about the hypocenter), and generally required fewer iterations to arrive at a solution. However, most vertical error estimates (4 of 5) and all HYPOELLIPSE vertical quality evaluations (5 of 5) indicate that variable V_p/V_s ratios obtained better depth estimates. Differences in epicentral locations between the two models ranged from only 0.02 to 0.25 km, but variable V_p/V_s ratios model located 4 of 5 events from 0.23 to 1.80 km deeper (averaging 0.67 km or 11%) than the constant V_p/V_s ratio model. Similar results were found by Nicholson and Simpson (1984) and Nicholson and others (1984) who relocated earthquakes in California and New Madrid Seismic Zone using independent P and S velocity models. They found that epicentral locations were not significantly affected, but that focal depths increased noticeably and systematically.

The hypocentral control of the middle velocity boundary remains to be resolved. A gradient velocity increase between the upper and lower bound-

aries would effectively eliminate the middle boundary, yet retain a velocity increase. Unfortunately, HYPOELLIPSE cannot simultaneously apply both a gradient velocity model and variable Vp/Vs ratios to locate events. It can, however, simultaneously employ a 12-step velocity model with variable Vp/Vs ratios. Retaining the decollement and Moho velocity boundaries allows a gradient model to be approximated by 10 steps.

The accuracy of such an approximation was tested by locating three well recorded events using a simple gradient velocity increase model and a 10-layer approximation of the gradient model, both utilizing a constant Vp/Vs ratio. Hypocenter locations and origin times were fixed. Departure angles obtained with both models were in agreement (within 3°) except for those angles between 95° and 70°, which differed by as much as 12°. Departure angles found using the gradient model were more continuous through 95° and 70°, whereas those found using the multi-layer model were concentrated between 95° and 90° and between 75° and 70°, with few or none between 90° and 75°. Apparently, velocity discontinuities control more strongly the departure angles of near horizontal travelling rays.

A similar test was conducted using a realistic velocity model (GRAD1 in Figure 5) that consists of a constant velocity layer (upper sedimentary layer) above a gradient velocity increase (basement) above a constant velocity half-space (mantle). HYPOELLIPSE can employ a gradient over a constant half-space velocity model, but cannot apply an additional constant velocity upper layer. However, topographic elevations are corrected for by using a constant velocity. Thus, a constant velocity upper

layer can be devised by increasing station elevations by the upper layer thickness (5.7 km). An analogous 12-layer velocity model (STEP1 in Figure 5) was developed which approximated the gradient velocity increase with 10 steps.

Five well recorded events were then located using each model. The hypocentral locations differed slightly, and depths acquired with the gradient model were somewhat deeper. Hypocenters appear to be better located by the multi-layer model; RMS residuals (5 of 5) and horizontal (10 of 10) and vertical (4 of 5) error estimates from the multi-layer model were smaller than those found with the gradient model. Furthermore, quality evaluations were consistently better with the multi-layer model, especially for focal depth (5 of 5). Departure angles differed by less than in the previous test, especially for those angles between 70° and 90° . One advantage of the multi-layer model is that it can include variable V_p/V_s ratios whereas the gradient model cannot. Furthermore, the gradient velocity model considers the upper 5.7 km layer as topographic elevation above sea level, and as such, cannot locate hypocenters above this depth. Thus, although a gradient velocity model might intuitively seem the preferable model, a multi-layer model appears to be the better choice.

Two such 12-layer velocity models were devised and used to locate 8 well recorded earthquakes. One model is the same model used in the previously discussed test, but with variable V_p/V_s ratios (STEP1). The second model is slightly different, and it also uses variable V_p/V_s ratios (STEP2

in Figure 5). The second model was judged to better locate hypocenters since horizontal (11 of 16) and vertical (6 of 8) error estimates were smaller and quality evaluations, especially those for focal depth (6 of 7) were consistently better. STEP2 was then selected as the preferred velocity model for the study area.

APPENDIX C. SOLUTION SELECTION

A complete search of the focal sphere results generally in a family of valid solutions from which a preferred solution may be selected. This family of solutions is obviously not unique, as it depends upon the focal sphere coverage density and the polarity and amplitude ratio error limits. Because the systematic search of the focal sphere for valid solutions is kept constant in all cases, it has no effect on the selection of a preferred solution. The allowable error limits and the number of allowed errors for amplitude ratios also have relatively minor effects on the choice of a preferred solution. If the number of polarity errors is held constant and if there is a moderate to large family of solutions (20 to 50 solutions), then those solutions with the lowest RMS statistics generally are included in all other families of solutions for which the allowable error limits have been adjusted. That is, the solution which would be chosen as the preferred solution would probably be found in each family of solutions regardless of the allowable error in the number and magnitude of the amplitude ratios. To produce more objective results, the allowable error limit for amplitude ratios is held constant (0.23 for SEFM and 0.30 for CFM) unless the family of solutions thus obtained is too small (<10) or too large (>50). For most cases, however, only the number (and not the magnitude) of allowed errors is varied.

Unlike focal sphere coverage density and the amplitude ratio error

limits, changes in the number of allowable polarity errors can produce major changes in both the family of solutions and the subsequent choice of a preferred solution. The problem then arises of selecting the overall preferred solution for each event, given more than one family of solutions, each with a different set of error limits. Thus, a procedure had to be developed to choose, as objectively as possible, a preferred solution within and between families of solutions.

With respect to the density of focal sphere coverage used in this study (5° increments), a convenient number of solutions for each family turns out to be between 15 and 50, with the optimum being about 30. This results in a moderate amount of data to review, and still gives confidence that the best solutions are probably included. A search for solutions is made by first using the smallest number of polarity errors possible, and then adjusting the number of ratio errors to obtain approximately the desired number of solutions. The smallest number of polarity errors possible is usually determined by an examination of the polarity data plotted on the focal sphere. Zero polarity errors are usually allowed on the first run. The next step is to add a polarity error and again adjust the number of ratio errors to obtain the desired number of solutions. This process is repeated until the number of ratio errors cannot be further reduced. In many cases (10 of 36), the first run used zero polarity errors and zero ratio errors, and no further runs were necessary.

When a solution is accepted, the square root of the sum of the squared log ratio differences, divided by the number of ratios (RMS) is

calculated both for the set of ratios within the preset error allowance (RMSA) and for the set of all ratios (RMSB). This data is written into an output file that includes the theoretical and observed ratio data, and the list of stations for which polarity and ratio data were in error. A preferred solution is chosen from each family of solutions by consideration of these RMS statistics and the general consistency of all solutions. If the ratio(s) found to be in error are consistently at the same station(s) for all or most of the solutions, then only the RMSA statistics (those using only ratios not in error) are used to determine a preferred solution. If the ratio(s) in error are not consistently at the same station(s), then both types of RMS statistics are used, with the RSMB statistics (those using all ratios) given priority. The solution with the smallest RMS values is chosen as the preferred solution. If two or more solutions have similar RMS statistics, then the Kisslinger statistics (19??) calculated by FOCMEC may aid in choosing a preferred solution. Finally, the preferred solution is compared to the entire family of solutions. If it is reasonably similar to a majority of other solutions within the set, it is accepted. Instances of dissimilarity between the preferred solution and the majority of the family of solutions are handled on a case by case basis. This procedure has been used for each family of solutions.

If only one family of solutions is being considered, then its preferred solution becomes the preferred solution for the event. If two or more families of solutions exist from which preferred solutions have been

picked, a single, overall preferred solution must be chosen. Generally, the solution with the least polarity errors is designated as the overall preferred solution unless one or both of the following conditions exists. First, if the family of solutions with an increased polarity error has a reduction of 2 or more ratio errors, then the polarity(s) is probably, indeed in error. Secondly, if the family of solutions with an increased polarity error exhibits a substantial improvement in the RMS statistics, then again, the polarity(s) is probably, indeed in error. If either of these two cases exist, then the overall preferred solution is chosen by RMS statistics. This selection is further strengthened if the polarity(s) in error is consistently at the same station(s) for most solutions in the set. If two families of solutions have preferred solutions with very close RMS statistics, then the slightly better solution is designated as the overall preferred solution (shown as solid line in Figures 10 through 27) and the other solution is designated as the auxiliary preferred solution (shown as a dashed line in the figures). Only the overall preferred solutions are used in determining nodal plane orientation and P-axis statistics.

APPENDIX D. INPUT DATA AND CALCULATIONS

COMPUTER INPUT DATA

This part of Appendix D contains the GCO1 located data input to FOC-MEC to determine the focal mechanism solutions. Each set of data is labeled at the top with the chronologic event number, date, time, north latitude, west longitude, focal depth, and duration magnitude for the event. The data include the 3 or 4 letter station code (STA), the epicenter to station azimuth (AZM), the departure angle measured from the downward vertical (DEP), the type of data (SYM), and the individual P and S amplitudes read from visual (VIS) and/or developeorder (DEV) recorders. The data type is either a polarity (C = compression, D = dilatation, + and - represent ambiguous compressions and dilatations, respectively, and e = emergent) or an (Sv/P)_z amplitude ratio (R). An asterisk (*) indicates the amplitude ratios that were used to determine solutions. The other amplitudes were read, but because of certain restrictions placed on their ratios, were not used to determine the solutions. The original locations determined by TEIC using HYPO71 (Lee and Lahr, 1975) and the GCO1 velocity model with a constant V_p/V_s (1.73) are in the Southeastern U. S. Seismic Network (SEUSS) Bulletin 12A (see Sibol and Bollinger, 1984).

2) 25 NOV 81 35.647 84.642 D=12.67 M=2.9

STA	AZM	DEP	SYM	P	S
BHT	309.000	106.000	C		
BHT	309.000	106.000	R*	28.3	46.8
ORT	46.000	103.000	D		
RCG	221.000	68.000	D		
RCG	221.000	68.000	R*	6.7	17.6
CGTN	39.000	68.000	D		
HWR	78.900	93.400	C		
HWR	78.900	93.400	R*	1.3	29.8
TKL	89.000	68.000	+		
TKL	89.000	68.000	R*	2.6	19.8
AVNC	91.000	68.000	e		

3) 30 JAN 82 35.796 -83.964 D=20.40 M=2.8

STA	AZM	DEP	SYM	VIS		DEV	
				P	S	P	S
HWR	151.000	166.000	C				
HWR	151.000	166.000	R*	13.2	8.1		
HPK	28.000	138.000	D				
TKL	132.000	127.000	C				
TKL	132.000	127.000	R*	165.0	186.0	69.0	70.0
ORT	292.000	115.000	C				
ORT	292.000	115.000	R*	11.8	32.8		
ETT	220.000	98.000	D				
ETT	220.000	98.000	R*	17.8	10.8	22.0	16.5
BBG	172.000	95.000	C				
BBG	172.000	95.000	R			34.0	36.5
RCG	234.000	93.000	C				
RCG	234.000	93.000	R			16.0	43.0
BHT	274.000	96.000	-				
BHT	274.000	96.000	R*			2.5	29.5
BENN	97.000	92.000	e				
BENN	97.000	92.000	R	0.6	8.0	3.0	28.0
CGTN	14.500	93.000	e				
CGTN	14.500	93.000	R			7.5	33.5

5) 24 FEB 82 12:10Z 35.733 -84.304 D=20.46 M=1.5

STA	AZM	DEP	SYM	VIS		DEV	
				P	S	P	S
BBG	155.000	94.000	C				
BBG	155.000	94.000	R*	2.2	2.1		
ORT	360.000	132.000	e				
ORT	360.000	132.000	R*	2.2	20.6		
ETT	197.000	105.000	e				
ETT	197.000	105.000	R*	0.3	7.6	1.5	6.5
TKL	100.000	105.000	e				
TKL	100.000	105.000	R*	0.2	13.3	0.3	30.8
BHT	282.000	101.000	e				
BHT	282.000	101.000	R*			1.5	9.5

7) 15 MAY 82 3:54Z 35.679 -84.345 D=21.23 M=1.0

STA	AZM	DEP	SYM	VIS		DEV	
				P	S	P	S
ETT	194.000	111.000	+				
ETT	194.000	111.000	R*	0.8	11.7	2.5	17.0
ORT	8.000	124.000	e				
ORT	8.000	124.000	R*	0.5	3.3		
BHT	289.000	103.000	e				
BHT	289.000	103.000	R*	0.2	2.8	1.5	9.0

8) 30 MAY 82 7:11Z 35.702 -84.135 D=11.59 M=1.4

STA	AZM	DEP	SYM	VIS		DEV	
				P	S	P	S
TKL	99.000	105.000	C				
TKL	99.000	105.000	R*	2.8	11.3	5.5	21.0
HPK	43.000	105.000	D				
HPK	43.000	105.000	R*	0.8	3.1		
ETT	215.000	99.000	D				
ETT	215.000	99.000	R			2.5	4.0
BBG	162.000	68.000	+				
BBG	162.000	68.000	R*			1.0	2.5

10) 19 JUL 82 4:34Z 35.738 -83.978 D=12.55 M=0.9

STA	AZM	DEP	SYM	VIS		DEV	
				P	S	P	S
TKL	116.000	119.000	D				
TKL	116.000	119.000	R*	3.8	11.8	8.0	14.0
HPK	23.000	116.000	e				
HPK	23.000	116.000	R*	1.2	3.7		
BBG	171.000	68.000	+				
BBG	171.000	68.000	R*	0.3	0.3	1.5	1.5

12) 21 SEP 82 1:07Z 36.1134 -83.750 D=15.65 M=1.4

STA	AZM	DEP	SYM	VIS		DEV	
				P	S	P	S
HPK	209.000	114.000	C				
HPK	209.000	114.000	R*	3.2	3.6		
TKL	182.000	93.000	C				
TKL	182.000	93.000	R*	2.9	5.8	9.5	26.5
ETT	216.000	90.000	e				
ETT	216.000	90.000	R	0.4	0.8		
BHT	255.000	90.000	e				
BHT	255.000	90.000	R			1.0	4.0
BBG	182.000	90.000	+				
BBG	182.000	90.000	R	0.3	0.9	1.5	2.5
BRBC	107.000	90.000	+				
BRBC	107.000	90.000	R	0.6	0.5	1.0	1.0
GFM	90.000	90.000	e				
GFM	90.000	90.000	R	0.4	0.7		

13) 24 SEPT 82 (A) 21:57Z 35.680 -84.238 D=13.13 M=3.4

STA	AZM	DEP	SYM	VIS		DEV	
				P	S	P	S
TKL	93.000	104.000	D				
TKL	93.000	104.000	R*	33.0	90.0		
BBG	157.000	68.000	C				
BRBC	88.000	68.000	D				
BRBC	88.000	68.000	R	27.0	50.0		
ORT	347.000	114.000	C				
ETT	207.000	103.000	D				
ETT	207.000	103.000	R*	103.0	112.0		
HPK	50.000	104.000	D				
HPK	50.000	104.000	R*	20.4	26.3		
HWR	72.000	112.000	e				
HWR	72.000	112.000	R*	22.8	23.3		
BHT	286.000	68.000	e				
RBNC	107.000	68.000	e				
RBNC	107.000	68.000	R	8.0	35.5		

14) 24 SEP 82 (B) 22:19Z 35.684 -84.251 D=8.12 M=3.5

STA	AZM	DEP	SYM	VIS		DEV	
				P	S	P	S
HWR	74.0	99.0	D				
HWR	74.0	99.0	R*	23.8	25.8		
HPK	51.0	95.0	D				
HPK	51.0	95.0	R*	23.8	27.8		
TKL	94.0	95.0	D				
TKL	94.0	95.0	R*	85.0	92.0		
ETT	205.0	95.0	D				
ETT	205.0	95.0	R*	106.0	110.0		
BHT	286.0	93.0	C				
BBG	156.0	68.0	C				
RBNC	108.0	68.0	C				
RBNC	108.0	68.0	R	15.0	65.0		
BRBC	88.0	68.0	D				
BRBC	88.0	68.0	R	84.0	105.0		
ORT	348.7	100.75	C				

15) 24 SEP 82 (C) 22:54Z 35.68 84.25 D=6.65 M=1.5

STA	AZM	DEP	SYM	VIS		DEV	
				P	S	P	S
ETT	205.399	91.920	+				
ETT	205.399	91.920	R*	1.3	8.5	2.2	9.0
TKL	93.103	91.940	e				
TKL	93.103	91.940	R*	0.2	15.3	1.0	19.0
HPK	50.844	91.930	R*	0.9	1.8		

17) 2 NOV 82 8:44Z 35.766 -83.970 D=13.61 M=1.2

STA	AZM	DEP	SYM	VIS		DEV	
				P	S	P	S
TKL	124.000	120.000	C				
TKL	124.000	120.000	R*			11.5	6.5
HPK	25.000	123.000	-				
HPK	25.000	123.000	R*	1.3	4.8		
BHT	276.000	68.000	e				
BHT	276.000	68.000	R*	0.1	1.2		
BBG	172.000	68.000	e				
BBG	172.000	68.000	R*	0.1	0.9		
ORT	297.845	108.470	R*	1.1	3.3		

20) 6 DEC 82 10:52Z 36.136 -83.747 D=8.96 M=1.7

STA	AZM	DEP	SYM	VIS		DEV	
				P	S	P	S
SMTN	62.000	94.000	+				
SMTN	62.000	94.000	R*	0.3	0.9		
BHT	253.000	68.000	C				
BHT	253.000	68.000	R	2.8	1.9		
HPK	207.000	103.000	+				
HPK	207.000	103.000	R	1.0	3.3		
TKL	183.000	95.000	-				
TKL	183.000	95.000	R*	0.2	6.0		
ORT	330.700	95.300	e				

21) 15 DEC 82 35.749 84.220 13.13 2.1

STA	AZM	DEP	SYM	VIS		DEV	
				P	S	P	S
TKL	104.000	104.000	C				
TKL	104.000	104.000	R*	4.4	15.4	11.0	39.0
ETT	204.000	101.000	-				
ETT	204.000	101.000	R			14.0	17.5
BBG	159.000	94.000	D				
BBG	159.000	94.000	R	1.0	1.4	4.5	5.5
SMTN	53.000	94.000	-				
SMTN	53.000	94.000	R	0.6	4.4		
ORT	337.000	122.000	C				
ORT	337.000	122.000	R*	9.1	25.0		
RBNC	111.000	94.000	e				
RBNC	111.000	94.000	R			3.0	3.0
HWR	87.676	114.270	e				
HWR	87.676	114.270	R*	0.3	15.4		
HPK	57.498	106.270	R*	4.9	11.6		
BHT	279.000	98.000	R	2.5	6.0		

22) 18 JAN 83 5:09Z 35.589 -84.287 D=8.22 M=2.3

STA	AZM	DEP	SYM	VIS		DEV	
				P	S	P	S
ETT	208.000	97.000	D				
TKL	81.000	94.000	C				
TKL	81.000	94.000	R*	2.0	19.3	7.0	61.0
BBG	151.000	68.000	C				
BBG	151.000	68.000	R*	1.9	2.3	9.0	7.5
RBNC	102.000	68.000	C				
RBNC	102.000	68.000	R			4.5	13.5
BRBC	85.000	68.000	D				
BRBC	85.000	68.000	R	0.6	1.9	2.5	11.0
BHT	296.000	93.000	C				
BHT	296.000	93.000	R*	3.5	3.3		
HPK	45.000	94.000	D				
HPK	45.000	94.000	R*	0.9	2.8		
ORT	357.000	97.000	D				
ORT	357.000	97.000	R*	3.6	19.1		
CCVA	26.000	68.000	C				
CCVA	26.000	68.000	R	1.8	1.3	13.0	14.0

23) 27 JAN 83 22:09Z 34.059 -83.631 D=12.76 M=3.1

STA	AZM	DEP	SYM	VIS		DEV	
				P	S	P	S
TKL	196.000	102.000	D				
TKL	196.000	102.000	R*	27.0	45.0		
SMTN	48.000	100.000	D				
SMTN	48.000	100.000	R*	54.0	59.0		
CCVA	357.000	99.000	D				
CCVA	357.000	99.000	R*	3.5	46.0		
RBNC	143.000	68.000	C				
RBNC	143.000	68.000	R*	5.0	27.0	21.0	31.0
BRBC	106.000	68.000	C				
BRBC	106.000	68.000	R	30.0	41.5		
BBG	187.000	68.000	D				
BBG	187.000	68.000	R	4.0	17.0		
GFM	88.000	68.000	D				
GFM	88.000	68.000	R	2.5	51.0		
BENN	107.000	92.000	C				
BENN	107.000	92.000	R			9.0	10.0
HPK	236.400	118.000	D				
HPK	236.400	118.000	R*	17.3	21.9		
HWR	219.700	106.000	D				
HWR	219.700	106.000	R*	11.1	16.7		
ORT	255.000	68.000	e				
ORT	255.000	68.000	R	5.8	47.0		
BHT	259.000	94.000	+				
BHT	259.000	94.000	R	4.5	23.5		
PLVA	73.000	68.000	e				
PLVA	73.000	68.000	R	0.6	5.3		

24) 29 JAN 83 18:08Z 36.125 -83.737 D=15.93 M=2.1

STA	AZM	DEP	SYM	VIS		DEV	
				P	S	P	S
TKL	184.000	106.000	C				
TKL	184.000	106.000	R*	5.3	14.3	19.0	44.0
BRBC	108.000	67.000	+				
BRBC	108.000	67.000	R*	0.8	1.2	4.5	5.0
HPK	210.000	121.000	C				
HPK	210.000	121.000	R*	2.7	9.8		
CCVA	7.000	106.000	-				
CCVA	7.000	106.000	R*	0.7	4.6	6.0	34.0
SMTN	60.000	105.000	R*	2.8	10.8		
ETT	216.000	67.000	e				
ETT	216.000	67.000	R*			1.5	6.0
BBG	183.000	67.000	e				
BBG	183.000	67.000	R*	0.4	1.3	2.0	5.0
GFM	90.000	49.000	e				
GFM	90.000	49.000	R	0.6	1.3	4.5	8.0

25) 4 MARCH 83 14:03Z 35.599 -84.354 D=12.87 M=2.5

STA	AZM	DEP	SYM	VIS		DEV	
				P	S	P	S
TKL	83.000	102.000	+				
TKL	83.000	102.000	R*	0.3	8.3	1.5	25.0
HPK	50.000	102.000	C				
HPK	50.000	102.000	R*	1.2	4.3		
ORT	7.000	109.000	+				
ORT	7.000	109.000	R*	1.7	49.6		
SMTN	51.000	67.000	e				
SMTN	51.000	67.000	R*	0.8	4.0		

26) 13 MAR 83 3:53Z 35.508 -84.356 D=10.3 M=1.3

STA	AZM	DEP	SYM	VIS		DEV	
				P	S	P	S
ETT	205.000	108.000	D				
ETT	205.000	108.000	R*	4.8	9.8	9.0	25.0
TKL	72.000	95.000	e				
TKL	72.000	95.000	R*	0.4	1.8	1.0	6.0
BBG	145.000	68.000	-				
BBG	145.000	68.000	R*	0.4	0.2		

27) 13 MAR 83 B 14:21Z 35.802 -84.013 D=11.68 M=1.1

STA	AZM	DEP	SYM	VIS		DEV	
				P	S	P	S
TKL	127.000	110.000	C				
TKL	127.000	110.000	R*	2.9	8.3	8.5	18.5
ETT	217.000	96.000	e				
ETT	217.000	96.000	R*	0.9	0.7	4.0	3.5

28) 5 APRIL 83 3:17Z 35.542 -84.166 D=12.89 M=2.0

STA	AZM	DEP	SYM	VIS		DEV	
				P	S	P	S
ETT	228.000	106.000	D				
ETT	228.000	106.000	R*	6.3	10.7	19.0	33.0
TKL	70.000	105.000	D				
TKL	70.000	105.000	R*	2.4	11.3	7.0	35.0
BBG	156.000	68.000	-				
BBG	156.000	68.000	R*			5.0	15.0
GBTN	344.000	130.000	C				
GBTN	344.000	130.000	R*	100.0	93.0		
ORT	343.000	103.000	+				
ORT	343.000	103.000	R*	3.2	5.6		
HPK	31.000	101.000	C				
HPK	31.000	101.000	R*	1.0	1.9		

29) 16 MAY 83 6:50Z 35-54.70 84-18.40 D=16.36 M=1.9

STA	AZM	DEP	SYM	VIS		DEV	
				P	S	P	S
TKL	65.000	109.000	D				
TKL	65.000	109.000	R*	3.0	18.8	9.0	37.0
ETT	235.000	97.000	D				
ETT	235.000	97.000	R*	4.5	6.3	13.0	12.0
ORT	331.000	96.000	C				
ORT	331.000	96.000	R*	2.1	2.1		
HPK	22.000	97.000	e				
BBG	163.000	92.000	e				
BBG	163.000	92.000	R*	0.2	2.8	1.5	9.0
RBNC	101.900	94.400	-				
RBNC	101.900	94.000	R*			1.5	2.0

30) 25 MAY 83 10:46Z 35.741 84.441 17.8 1.6

STA	AZM	DEP	SYM	VIS		DEV	
				P	S	P	S
ETT	182.000	100.000	C				
ETT	182.000	100.000	R*	1.3	8.8	5.0	18.0
TKL	99.000	96.000	-				
TKL	99.000	96.000	R*	0.4	3.8	2.0	14.0
ORT	33.000	122.000	D				
ORT	33.000	122.000	R*	2.0	4.0		
BHT	285.000	100.000	e				
BHT	285.000	100.000	R*	0.2	2.8		
ANTN304.000	96.500	-					
ANTN304.000	96.000	R				3.5	2.5
HPK	67.900	101.400	e				
HPK	67.900	101.400	R*	0.4	2.0		

31) 26 MAY 83 12:30Z 35.666 -84.264 3.3 2.5

STA	AZM	DEP	SYM	VIS		DEV	
				P	S	P	S
ETT	205.000	69.000	D				
ETT	205.000	69.000	R*	18.0	45.0		
RCG	232.000	60.000	e				
RCG	232.000	60.000	R	2.9	3.7	7.5	9.0
TRYN104.000	60.000	e					
ORT	352.000	97.000	C				
ORT	352.000	97.000	R*	13.6	28.6		
ANTN303.000	69.000	C					
GFM	77.000	60.000	D				
GFM	77.000	60.000	R	0.6	3.5	12.0	22.0
HPK	50.400	94.200	D				
HPK	50.400	94.200	R*	2.8	10.8		
HWR	70.870	84.000	-				
HWR	70.870	84.000	R*	1.4	9.4		
RBNC106.000	60.000	+					
RBNC106.000	60.000	R				3.5	11.0
BRBC	87.000	60.000	e				
BRBC	87.000	60.000	R			3.0	11.0
TKL	91.000	69.000	-				
TKL	91.000	69.000	R*	0.8	38.8		
BHT	288.000	69.000	e				
BHT	288.000	69.000	R*	1.8	8.8		
BBG	155.000	69.000	-				
BBG	155.000	69.000	R	2.0	6.3	4.5	12.5
SMTN	51.000	60.000	R	1.8	3.3		

33) 2 JUL 83 6:46Z 35.690 -84.191 D=12.84 M=1.8

STA	AZM	DEP	SYM	VIS		DEV	
				P	S	P	S
BBG	159.000	68.000	+				
BBG	159.000	68.000	R*	0.8	1.5		
BHT	284.000	68.000	e				
BHT	284.000	68.000	R	0.2	0.3		
TKL	96.000	105.000	e				
TKL	96.000	105.000	R*	0.3	7.3	1.0	29.0
ETT	211.000	102.000	-				
ETT	211.000	102.000	R	4.1	4.4	9.5	17.0
HPK	47.000	105.000	C				
HPK	47.000	105.000	R*	0.7	2.0		
GBTN213	000	165.000	D				
GBTN213	000	165.000	R*	14.0	30.0		

34) 8 JULY 83 19:29Z 35.548 84.154 D=9.25 M=3.4

STA	AZM	DEP	SYM	VIS		DEV	
				P	S	P	S
GBTN338	000	121.000	C				
GBTN338	000	121.000	R*	100.0	100.0		
TKL	70.000	100.000	D				
TKL	70.000	100.000	R*	60.0	60.0		
ETT	228.000	100.000	D				
ETT	228.000	100.000	R*	80.0	106.0		
BBG	157.000	93.000	C				
BBG	157.000	93.000	R	66.0	64.0		
RBNC	101.000	68.000	+				
RBNC	101.000	68.000	R	5.1	60.0		
BRBC	83.000	68.000	D				
BRBC	83.000	68.000	R	32.0	45.0		
GFM	74.000	68.000	D				
GFM	74.000	68.000	R	6.8	28.8		
ORT	341.000	98.000	C				
HPK	31.000	97.000	D				
HPK	31.000	97.000	R*	13.0	60.0		
ANTN305	000	68.000	C				
LCAL230	000	68.000	D				
SSKY313	000	68.000	C				
BENN	90.000	68.000	e				
BENN	90.000	68.000	R	1.0	23.5	5.0	31.0
BHT	295.000	94.000	+				
BHT	295.000	94.000	R	6.5	46.8		
COTN276	000	48.000	e				

35.0) 9 JUL 83 3:28Z 35.545 -84.142 D=9.76 M=1.0

STA	AZM	DEP	SYM	VIS		DEV	
				P	S	P	S
ETT	229.000	100.000	e				
ETT	229.000	100.000	R*	0.8	1.4	3.5	4.5
TKL	69.000	100.000	e				
TKL	69.000	100.000	R*	0.1	2.9		
GBTN335.000	120.000	120.000	e				
GBTN335.000	120.000	120.000	R*	22.8	54.8		

35.5) 9 JULY 83 9:57Z 35.535 -84.135 D=4.93 M=1.6

STA	AZM	DEP	SYM	VIS		DEL	
				P	S	P	S
GBTN335.000	107.000	107.000	C				
GBTN335.000	107.000	107.000	R*	39.0	56.0		
ETT	232.000	69.000	e				
ETT	232.000	69.000	R*	1.7	1.3	3.5	3.5
TKL	67.000	69.000	C				
TKL	67.000	69.000	R*	0.7	2.8	1.7	9.5

36) 15 JULY 83 19:32Z 35.548 -84.164 D=6.98 M=2.7

STA	AZM	DEP	SYM	VIS		DEV	
				P	S	P	S
HPK	32.000	92.000	C				
HPK	32.000	92.000	R*	1.3	7.3		
GBTN342	000	110.000	C				
GBTN342	000	110.000	R*	45.0	40.0		
HWR	41.000	94.000	e				
HWR	41.000	94.000	R*	0.4	3.0		
ETT	227.000	93.000	-				
ETT	227.000	93.000	R*	9.8	25.3		
BRBC	83.000	68.000	-				
BRBC	83.000	68.000	R	2.0	4.0		
GFM	74.000	68.000	e				
GFM	74.000	68.000	R	0.7	2.2		
RBNC101	000	68.000	+				
RBNC101	000	68.000	R	0.6	4.3		
BHT	295.000	91.000	e				
BHT	295.000	91.000	R	0.2	4.8		
BENN	90.000	68.000	e				
BENN	90.000	68.000	R	0.4	1.4		
BBG	156.638	90.810	e				
BBG	156.638	90.810	R*	6.3	10.8		

STEP2 EVENT RELOCATIONS

All events for which a preferred focal mechanism solution was obtained from the GCO1 data were relocated with HYPOELLIPSE (Lahr, 1984) and the STEP2 velocity model (see Figure 5). These relocations are shown below. Focal mechanism solutions were obtained by replacing the azimuth and departure angles shown in the previous section with those determined by the relocations herein. The same polarity and amplitude data were used. Different velocity model dependent amplitude ratio corrections were applied to each velocity model data set, however.

-----BEGIN-----

81/11/25 11/54 2) 25 NOV 81 GRTN

(-----ADJUSTMENTS IN PRINCIPAL DIRECTIONS-----) (ADJUSTMENTS) (ADJUST) (TAKE)

I	LAT	LONG	DEPTH	RMS	NO	PRMS	DAMP	AZ/DP	STEP	SE	AZ/DP	STEP	SE	AZ/DP	STEP	SE	DLAT	DLOX	DZ	DLAT	DLOX	DZ
1	50.8	36.7	10.0	0.43	26	893	10E-02	321/23	-23.8	6.68	81/27	-21.2	2.52	261/52	21.83	2.87	-22	-26	18.2	-21.7	-26	18.2
2	39.1	39.3	28.2	0.95	26	368	10E-02	261/3	-1.63	1.04	143/26	4.720	1.33	332/64	-13.3	3.03	-86	-1.6	-14	-0.9	-1.6	-1.4
3	38.6	38.3	13.9	0.0	34	308	10E-02	261/0	1.948	783	149/20	4886	986	331/70	-3.38	3.33	71	-17	-3.3	-0.7	-1.1	
4	38.3	38.3	10.6	0.0	31	304	10E-02	261/0	0.889	755	149/15	0.024	974	345/74	1.160	3.71	240	143	1.13	-0.4	-1.1	
5	38.3	38.3	11.7	0.0	31	301	10E-02	261/0	0.089	756	149/20	1166	946	334/70	-1.59	3.37	-41	-18	-1.3	-0.4	-1.1	
6	38.3	38.3	10.7	0.0	31	000	10E-01	261/0						334/70								
7	38.3	38.3	11.7	0.0	31	000	10E-01	261/0	0.089	756	149/20	1165	946	334/70	-1.59	3.37	-40	-18	-1.3	-0.4	-1.1	
8	38.3	38.3	11.7	0.0	31	000	10E+00	261/0						334/70								
9	38.3	38.3	10.5	0.0	31	000	10E+01	261/0	0.088	753	149/20	1140	939	334/70	-1.20	3.11	-29	-12	-1.2	-0.4	-1.1	
10	38.3	38.3	11.7	0.0	31	000	10E+01	261/0						334/70								
11	38.3	38.3	11.6	0.0	31	306	10E+01	261/0	0.036	491	149/20	0.357	532	334/70	-0.40	6.29	012	013	-0.6	-0.4	-1.1	
12	38.3	38.3	11.6	0.0	31	306	10E+01	261/0	0.022	490	149/20	0.243	531	334/70	-0.47	6.28	004	007	-0.4	-0.4	-1.1	
13	38.4	38.3	11.6	0.0	31	305	10E+01	261/0	0.013	490	149/20	0.163	531	334/70	-0.46	6.27	0.00	0.02	-0.5	-0.4	-1.1	
14	38.4	38.3	11.6	0.0	31	301	10E-02	261/0	0.032	755	149/20	0.532	946	334/70	-1.54	3.59	-43	-23	-1.3	-0.4	-1.1	

HORIZONTAL * VERTICAL SINGLE VARIABLE (100%) 8% CHD SQUARE CONFIDENCE INTERVALS
 SE = 0.40 SE = 0.81 SE = 1.81 QUALITY = 0
 AZ = -117 AZ = -27

CHI SQUARE (8% CRDF) ELLIPSE SEMIAXES = 0.62 KM AND 1.24 KM
 SE OF ORIG = 0.09 TOTAL NUMBER OF ITERATIONS = 8 DMAX = 400.00 SEQUENCE NUMBER =
 AT THE CLOSEST STATION USED IN THE SOLUTION BOTH PLANES WERE USED THE S MINUS I INTERVAL EQUALS 4.69

DATE ORIGIN LAT.639 LONG.638 DEPTH MAG NO 11 GAP D RMS ERH EPZ Q SGD ADJ IN NR AVR AAR NM AVAR SSAR DE FMP FMOE
 811125 1154 26 01 35N38 35 84W38.27 11 59 26 38 74 1 0 31 0.8 1.8 C C C C 05 10 40 0.00 0.25 0 0 0 0 0 0

(--- STATION DATA ---) (----- P-WAVE TRAVEL-TIME DATA AND DELAYS -----) VARI (---- S-WAVE TRAVEL-TIME DATA ---) (--- MAGNITUDE DATA ---)

STN	DIST	AZM	AIN	PSEC	PRMK	TCOR=0	TTOB	TTCL	C-DLAY	EDLY	P-RES	P-WT	THIC	SSEC	SRMK	TTOB	TTCL	S-RES	S-WT	AMX	PR	YMAX	R	FMP	FMOE
BHT	36.1	310	100	32	51		6.50	6.52	1	0.59	-0.09	2.573	37.20			11.19	11.01	0.10	1.930						
ORT	42.5	45	97	33	70		7.69	7.57	1	0.26	0.09	2.573	39.10			11.09	12.78	0.28	1.448						
HFK	75.6	65	79	38	80		12.79	12.98	1	0.22	-0.22	2.210	48.40			12.09	22.10	0.26	1.243						
TKL	78.3	88	79	39	26		13.19	13.41	1	0.22	-0.25	2.175	49.30			12.39	22.83	0.42	1.223						
RCC	98.0	221	75	42	38		12.37	16.57	1	0.37	-0.24	1.916	54.68			12.67	28.16	0.46	1.078						
CRG	108.9	177	75	44	06	1	17.99	18.30	1	0.33	-0.34	1.335	57.20			11.19	31.10	0.04	1.335						
CGTN	134.3	38	75	47	63	3	21.60	22.35	1	0.36	-0.80	0.371	63.70			13.69	37.79	-0.38	0.834						
AVNC	190.8	90	66	56	70	1	30.69	31.03	1	0.90	-0.43	0.689	78.90			12.89	32.72	0.03	0.689						
OCA	199.4	236	62	57	80	1	31.79	32.31	1	0.26	-0.34	0.423	81.30			15.29	34.89	0.36	0.473						
BEV	244.7	134	48	4	30	1	39.69	37.89	1	0.20	0.58	0.253	93.30			16.49	64.53	0.93	0.000						
L&KY	254.3	256	48	4	30	1	39.69	39.07	1	0.20	0.58	0.253	94.53			16.49	66.54	0.93	0.000						
HVA	265.6	288	48	7	00	1	45.99	40.33	1	0.25	0.24	0.193	99.50			17.79	68.01	4.22	0.000						
TDA	265.6	288	48	7	00	1	41.39	40.39	1	0.23	0.24	0.095	97.88			17.79	68.01	4.22	0.000						
EP1	269.9	133	48	8	30	4	42.39	40.97	1	0.17	1.06	0.000	98.10			17.09	69.79	2.7	0.000						
PRM	270.2	129	48	7	30	1	41.49	41.01	1	0.22	0.45	0.265	98.00			17.09	69.07	3.36	0.000						
REC	271.4	154	48	7	90	1	41.89	41.15	1	0.23	0.71	0.174	99.00			17.09	70.10	3.36	0.000						
QNV	293.9	15	48	10	65	1	44.64	43.91	1	0.23	0.23	0.118	43.65			17.64	74.82	3.13	0.000						
SNS	300.2	134	48	11	00	1	44.64	44.48	1	0.15	0.24	0.157	43.65			17.64	76.13	1.74	0.000						
PNLA	320.0	258	48	15	00	1	48.79	47.10	1	0.24	1.06	0.000	47.76			18.59	80.29	1.07	0.000						
NAV	391.5	61	48	20	20	4	57.19	55.84	1	0.79	1.06	0.000	66.75			19.69	85.95	-1.65	0.000						

DATE ORIGIN LAT LONG DEP P SGAP DMF SEI A1 A2 A3 AXZG MAG(D)
 811125 1154 26 01 35N38 35 84W38 2711 517 9 74 38 300 0 0 27 0 0 1 88 0 0

***** EVALUATION *****

BEGIN-----

ADJUSTMENTS IN PRINCIPAL DIRECTIONS-----										(ADJUSTMENTS) (ADJUST)												
-AZ/DP--STEP--SE					=AZ/DP**STEP**SE					-AZ/DP--STEP--SE					DLAT DLON DZ							
1	45.3	56.3	10.0	1.19	21	263	10E-02	143/8	2.969	.846	261/37	5.914	.815	43/52	8.018	1.64	3.48	2.44	9.49	3.5	2.4	5.3
2	47.4	57.9	19.5	0.27	21	241	10E-02	153/20	.1930	.904	261/35	.7682	.806	39/48	.6842	1.61	.375	.409	.888	0.4	0.4	3.9
3	47.6	58.2	20.4	0.24	21	242	10E-02	151/20	.0018	.917	261/36	-.007	.809	38/47	-.030	1.62	-.01	.008	-.03	0.0	0.0	0.0
3	47.6	58.2	20.4	0.24	21	242	10E-02	151/20	.0018	.917	261/36	-.007	.809	38/47	-.030	1.62	-.01	.008	-.03	0.0	0.0	0.0

HORIZONTAL & VERTICAL SINGLE VARIABLE (1DOF) 68% CHI SQUARE CONFIDENCE INTERVALS
 SE = 0.47 SE = 0.67 SE = 0.70 QUALITY = A
 AZ = -50 AZ = 24

CHI SQUARE 68% (2DOF) ELLIPSE SEMIAXES = 0.73 KM AND 1.03 KM
 SE OF ORIG = 0.09 TOTAL NUMBER OF ITERATIONS = 3 DMAX = 400.00 SEQUENCE NUMBER =
 AT THE CLOSEST STATION USED IN THE SOLUTION BOTH P AND S WERE USED. THE S MINUS P INTERVAL EQUALS 2.00

DATE	ORIGIN	LAT	LONG	DEPT	MAG	NO	D1	GAP	D	RMS	EPH	EP2	Q	SGD	ADJ	IN	NR	AVR	AAR	NM	AVKM	SDKM	HP	ALPH	DEPT							
B20130	1239	12	81	83487	54	83458	17	20	37	21	5	96	1	0	24	0	7	0	7	B	B	1	05	10	34	0	00	0	18	0	0	0

STATION DATA										S-WAVE TRAVEL-TIME DATA										S-WAVE TRAVEL-TIME DATA									
STN	DIST	AZM	MIN	SECS	PRM	TCUR	Q=TRUP	TICAL	C-DLAY	ELY=P	RES	P-WT	THIS	SECS	SRMK	TTOB	TICAL	S-RES	S-WT	AMP	PR	XMAG	P	PR	PR				
HWR	14	8	143	145	16	90	6	4	09	3	5	1	1	10	90	0	6	09	5	23	0	07	1	369					
HFL	16	8	29	106	13	30	6	4	48	4	1	1	1	20	0	7	39	7	50	0	18	1	369						
TKL	23	8	130	117	19	10	6	1	39	5	1	1	1	50	0	6	69	8	72	0	11	1	369						
GRT	32	8	92	117	19	20	6	1	39	5	1	1	1	90	0	11	05	10	24	0	08	1	369						
ETI	68	8	321	117	1	10	2	11	05	11	2	1	1	00	0	20	19	19	27	0	15	1	232						
BHT	38	4	274	117	55	1	1	14	74	14	5	1	1	45	0	35	64	25	25	0	21	1	085						
BBC	102	8	122	117	91	0	1	17	10	17	18	1	1	00	0	29	19	29	15	0	13	0	986						
RCC	154	6	434	117	74	0	1	24	92	25	11	1	1	80	0	42	99	42	64	0	28	0	505						
BENN	210	5	96	50	45	95	0	33	14	32	80	1	1	00	0	58	19	55	03	2	18	0	000						
LDV	217	0	147	50	47	30	3	34	49	33	60	1	1	90	0	62	09	57	19	4	86	0	000						
BEV	220	1	149	50	47	30	3	34	39	33	98	1	1	10	0	61	29	57	84	3	41	0	000						
GLT	236	3	286	50	49	60	3	36	79	35	96	1	1	30	0	64	49	61	23	3	22	0	000						
EP1	243	8	146	50	51	00	4	38	19	36	87	1	1	80	0	67	99	62	79	5	17	0	000						
CH6	248	4	148	50	51	20	3	38	39	37	44	1	1	90	0	70	09	63	76	6	30	0	000						
L6KY	248	6	342	50	0	00	4	112	81	37	46	1	1	60	0	67	79	63	79	3	99	0	000						
OCA	259	8	240	50	0	00	4	112	81	38	83	1	1	20	0	68	39	66	14	2	20	0	000						
CH9	274	3	146	50	59	00	4	46	19	40	60	1	1	30	0	78	49	69	16	9	30	0	000						

DATE	ORIGIN	LAT	LONG	DEP	P	SGAP	DMRES	AZ1	AZ2	AXZ	AXZG	MAG(D)					
B20130	123912	835N47	54	83W58	1720	413	8	96	4	28E	0	7	33	0.5	0.74	0	0

QUALITY EVALUATION

DIAGONALS IN ORDER OF STRENGTH	NE	7	N	SE	NW	E	SW
AVE OF END POINTS	0.55	0.73	0.98	0.93	0.94	1.04	1.06

NUMBER	RMS	MIN	DRMS	AVE	DRMS	QUALITY
1	0.24	0.51	0.00	0.00	0.00	B

-----BEGIN-----

82/ 5/15										3/54										7) 15 MAY 82										GRTN										82/ 5/15										3/54									
										ADJUSTMENTS IN PRINCIPAL DIRECTIONS										(ADJUSTMENTS)										(ADJUSTMENTS)																													
I	LAT	LONG	DEPTH	RMS	NO	PRMS	DAMP	AZ/DP	STEP	SE	AZ/DP	STEP	SE	AZ/DP	STEP	SE	DLAT	DLOM	DZ	DLAT	DLOM	DZ	DLAT	DLOM	DZ	DLAT	DLOM	DZ	DLAT	DLOM	DZ																												
1	34.6	18.3	10.0	4.47	9	368	10E-02	261/16	6.12	2	62	33/33	-1.75	8.13	261/33	28.82	26	-21	-3	7	20	4	-21	-3	7	20	4	-21	-3	7	20	4																											
2	43.2	15.7	30.4	0.66	9	175	10E-02	261/11	6.908	1	88	163/14	-1.36	1.11	23/73	-7.02	4	05	-3	9	7	36	-5	4	-21	-3	7	20	4	-21	-3	7	20	4																									
3	41.1	20.4	24.0	0.16	5	128	10E-02	261/11	7.779	1	88	167/13	1.115	1.744	27/73	-1.03	4	05	-0	2	-3	9	-1	5	36	-5	4	-21	-3	7	20	4	-21	-3	7	20	4																						
4	41.1	20.4	24.0	0.13	5	100	10E-01	261/11	0.226	1	85	167/10	0.015	0.189	27/73	53.95	0	23	102	-0	3	536	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																					
5	41.1	20.4	24.0	0.13	5	128	10E-01	261/11	0.226	1	85	167/10	0.015	0.189	27/73	53.95	0	23	101	-0	3	526	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																					
6	41.1	20.4	24.0	0.13	5	128	10E+00	261/11	0.226	1	85	167/10	0.015	0.189	27/73	53.95	0	23	101	-0	3	526	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																					
7	41.1	20.4	24.0	0.13	5	128	10E+00	261/11	0.226	1	85	167/10	0.015	0.189	27/73	53.95	0	23	101	-0	3	526	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																					
8	41.1	20.4	24.0	0.13	5	128	10E+00	261/11	0.226	1	85	167/10	0.015	0.189	27/73	53.95	0	23	101	-0	3	526	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																					
9	41.1	20.4	24.0	0.13	5	128	10E+01	261/11	0.226	1	85	167/10	0.015	0.189	27/73	53.95	0	23	101	-0	3	526	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																					
10	41.1	20.4	24.0	0.13	5	128	10E+02	261/11	0.226	1	85	167/10	0.015	0.189	27/73	53.95	0	23	101	-0	3	526	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																				

HORIZONTAL AND VERTICAL ERROR VARIABLE COEFFICIENTS ARE CHS SQUARE CONFIDENCE INTERVALS
 SE = 0.4 SE = 0.71 SE = 1.70 QUALITY = 2
 AZ = -125 AZ = -110

CHI SQUARE 48% CENTER ELLIPSE DENAXED = 0.78 KM AND 1.09 KM
 SE OF ORIG = 0.15 TOTAL NUMBER OF ITERATIONS = 5 DMAX = 400.00 SEQUENCE NUMBER =
 AT THE CLOSEST STATION USED IN THE SOLUTION BOTH P AND S WERE USED THE S MINUS P INTERVAL EQUALS 4.30

DATE ORIGIN LAT LONG DEPTH MAG NO DI GAP D RMS ERH ERZ Q SQD ADJ IN NR AVR AAR NM AVXM SDXM NC AVDM DEPT
 820515 354 47 03 35N41 10 84W20 36 24 11 9 25 145 1 0.13 0 7 1.7 C B C 0 25 10 16 0.00 0.12 0 0.0 0

(- STATION DATA -) (----- P-WAVE TRAVEL-TIME DATA AND DELAYS -----) VAPI (---- S-WAVE TRAVEL-TIME DATA ----) (--- MAGNITUDE DATA ---)

STN	DIST	AZM	AIN	SEC	PRMS	TCOR	D-TTOB	TICAL	C-DLAY	EBLY	P-RES	P-WT	THIC	SSEC	SRMK	TTOB	TICAL	S-RES	S-WT	AMX	PR	XMAG	S	FMS	FMAG
ORI	25	1	130	1.2	707	450		5.87	5.75	1	0.49	-0.12	1.297	57.00	0	9.97	9.73	-0.16	0	973					
ETI	41	2	145	1.24				7.92	7.07	1	0.63	-0.11	1.297	60.40	0	13.37	13.33	-0.05	0	973					
TLI	41	2	145	1.18				-47.03	8.11	1	0.54	-0.19	0.000	50.50	4	16.47	13.74	-2.65	0	000					
BHI	52	6	153	1.18				10.18	10.23	1	0.75	-0.18	1.241	60.70	0	17.67	17.41	-0.14	0	931					
BBC	102	0	152	0.91				17.89	17.03	1	1.21	-0.14	0.941	18.00	0	28.97	28.70	-0.10	0	705					
CRC	116	0	191	0.93				12.97	19.17	1	0.37	-0.24	0.000	18.00	0	32.77	32.56	-0.16	0	641					
RMC	174	2	211	0.70				12.97	27.85	1	0.35	-0.14	0.000	34.00	4	48.97	47.29	-1.63	0	000					
HGA	209	6	221	0.53				12.97	32.33	1	0.49	-0.19	0.000	35.00	4	51.97	55.04	-3.15	0	000					

DATE ORIGIN LAT LONG DEPTH SCAL DMRSD A1A21 AXZ AXZG MVELE
 820515 35447 035N41 10 84W20 3624 1 4 0.145 25 100 C 0.25 0.5 1.78 0.0

QUALITY EVALUATION
 DIAGONALS IN ORDER OF PRIORITY
 AVE OF ERR POINTS

NUMBER	TIME	MIN	DRMS	AVE	ERMS	QUALITY
7	13	0.19				A

STATION ORIGIN FOR QUALITY EVALUATION

-----BEGIN-----
 B2/ 5/30 7/11 B) 30 MAY 82 GRIN BEST (-----ADJUSTMENTS IN PRINCIPAL DIRECTIONS-----)(ADJUSTMENTS)(ADJUST TAKEN)
 I LAT LONG DEPTH RMS NO PRMS DAMP (-AZ/DP--STEP--SE =AZ/DP==STEP==SE -AZ/DP--STEP--SE DLAT DLON DZ DLAT DLON DZ
 1 54.6 18.3 10.0 3.44 18 .561 .10E-02 261/13 -3.04 1.92 349/38 -9.18 4.77 144/49 29.47 2.59 -22. -16. 16.0 -21.6 -15. 5.16 0
 2 42.9 8.0 26.0 0.53 18 .342 .10E-02 261/18 -1.91 1.19 135/19 .4695 1.60 2/63 -5.10 3.21 -.85 -1.0 -9.3 -0.6 -1.0 -5.3
 3 42.4 7.3 20.7 0.31 18 .265 .10E-02 140/13 7897 1.18 261/17 -.342 .855 16/68 -2.07 3.31 .047 .442 -2.2 0.0 -0.4 -2.2
 4 42.5 7.6 18.5 0.28 18 .273 .10E-02 145/ 8 -.052 1.19 261/ 9 -1.107 .876 13/77 -1.03 3.51 -.20 -.07 -1.0 -0.2 -0.1 -1.0
 5 42.3 7.6 17.5 0.27 18 .273 .10E-02 145/ 8 .0235 1.18 261/ 9 -0.13 .864 15/78 -.032 3.63 .020 .005 -0.4 0.0 0.0 0.0
 5 42.3 7.6 17.5 0.27 18 .273 .10E-02 145/ 8 .0235 1.18 261/ 9 -0.13 .864 15/78 -.032 3.63 .019 .005 -0.4 0.0 0.0 0.0

HORIZONTAL & VERTICAL SINGLE VARIABLE (DOF) 68% CHI SQUARE CONFIDENCE INTERVALS
 SE = 0.50 SE = 0.70 SE = 1.90 QUALITY = 8
 AZ = -102 AZ = -13

CHI SQUARE 68% (DOF) ELLIPSE SEMIAXES = 0.60 KM AND 1.07 KM
 SE OF ORIG = 0.15 TOTAL NUMBER OF ITERATIONS = 5 DMAX = 300.00 SEQUENCE NUMBER =
 AT THE CLOSEST STATION USED IN THE SOLUTION BOTH P AND S WERE USED THE 5 MINUTE P INTERVAL EQUALS 3.90

DATE ORIGIN LAT LONG DEPTH MAG NO OF GAP B RMS ERH EFG GGB ADJ IN NR AFR AAR NM AVXM SDXN DE AFR B2
 B20530 711 58 94 80582 94 848 7.58 17.87 18 18 89 1.0 27 0.7 1.9 B B B 1 03 10 28 0.00 0.18 0 0.0 0

STATION DATA -- S-WAVE TRAVEL-TIME DATA AND DELAYS (---) S-WAVE TRAVEL-TIME DATA --- (---) MAGNITUDE DATA ---
 STN DIST AZM AIN SEC FROM +COR-DE TROPICAL DELAY-ELAY-P-RES P-WT THIC SSEC ERMK TTOP TICAL S-RES S-WT AMX PR XMAX R FR XMAX
 HHR 18 0 71 113 0.00 0 0.14 4.00 1 0.41 -0.00 0.000 2.13 7.26 7.16 -0.04 1.119
 CRT 27 8 325 112 0.10 0 0.25 5.00 1 0.40 -0.00 1.119 8.06 9.16 9.03 -0.28 1.119
 TKL 32 3 99 112 0.10 0 0.26 8.14 1 0.35 0.03 1.492 4.46 10.56 10.47 0.03 1.119
 LBT 32 4 235 111 0.20 0 0.28 6.00 1 0.34 0.12 1.492 10.10 2.11 26.10 46 0.71 0.560
 HPK 33 1 42 112 0.10 0 0.26 6.30 1 0.30 -0.08 1.492 9.70 10.86 10.67 0.14 1.119
 ETT 51 6 215 100 0.00 0 0.16 9.13 1 0.50 -0.02 1.479 14.35 0.15 51 15.47 -0.03 1.109
 BHT 75 7 282 95 0.00 4 1.16 12.93 1 0.66 -11.84 0.000 21.30 1.22 46 21.93 0.44 0.721
 DCT 77 0 200 95 0.00 3 14.16 13.14 1 0.41 0.97 0.318 22.50 4.23 66 22.30 1.30 0.000
 SFC 96 6 163 92 0.00 0 16.16 16.25 1 1.08 -0.20 1.121 26.25 1.27 41 27.58 -0.32 0.631
 RHC 97 8 27 93 0.00 0 16.36 16.44 1 0.24 -0.10 1.113 26.30 1.27 46 27.00 -0.47 0.626
 RBNC 110 4 110 70 0.00 4 1.16 18.44 1 1.45 -17.43 0.000 25.00 4.30 36 31.00 -1.18 0.000
 BRNC 166 6 88 70 0.00 4 1.16 27.00 1 1.90 -26.08 0.000 45.00 3.46 91 45.00 0.69 0.249
 TVC 182 3 216 70 0.00 4 35.97 29.40 1 0.31 6.53 0.000 50.60 4.51 96 49.53 1.98 0.000
 GFM 214.1 77 50 0.00 4 1.16 33.54 1 2.22 -32.61 0.000 58.80 4.59 96 57.02 2.52 0.000

(ERROR ELLIPSE)
 DATE ORIGIN LAT LONG DEPTH MAG NO OF GAP B RMS ERH EFG GGB ADJ IN NR AFR AAR NM AVXM SDXN DE AFR B2
 B20530 71158 9480582 94 848 7.5817 5.810 89 18 89 0 7.13 0 3 1 98 0.0

QUALITY EVALUATION
 DIAGONALS IN ORDER OF STRENGTH
 AVE OF END POINTS 0.34 0.54 0.58 0.77 0.87 0.98 1.00

NUMBER OF STATIONS MINIMUM AVE RMS QUALITY
 31 1.0 0.31 0.98

-----BEGIN-----

82/ 7/19 4/34 10) 19 JUN 82 CRTN (-----ADJUSTMENTS IN PRINCIPAL DIRECTIONS-----) (ADJUSTMENTS) (ADJUST. TAKEN)

I	LAT	LONG	DEPTH	RMS	NO	PRMS	DAMP	-AZ/DP--STEP--SE	=AZ/DP==STEP==SE	-AZ/DP--STEP--SE	-AZ/DP--STEP--SE	SE	DLAT	DLO	DZ	DLAT	DLO	DZ					
1	39.5	46.4	10.0	2.97	6	.054	10E-02	331/23	18.15	.684	81/23	7.904	2.12	261/57	10.10	846	6.95	17.0	12.5	6.9	17.0	12.5	
2	43.2	57.7	22.5	0.43	6	.076	10E-02	144/3	2.137	1.05	261/28	-2.55	1.48	48/62	-5.36	3	98	1.30	1.28	-6.0	1.3	1.3	-5.0
3	43.9	58.6	16.4	0.09	6	.087	10E-02	321/0	-0.137	1.07	261/20	-0.27	1.56	50/70	-0.110	5	46	-1.1	-0.08	-1.1	-0.1	-0.1	-0.1
4	43.9	58.5	16.3	0.09	6	.087	10E-02	321/0	-0.002	1.07	261/20	0.030	1.55	51/70	0.080	5	49	0.00	0.00	0.00	0.00	0.00	0.00
4	43.9	58.5	16.3	0.09	6	.087	10E-02	321/0	-0.002	1.07	261/20	0.030	1.55	51/70	0.080	5	49	0.00	0.00	0.00	0.00	0.00	0.00

HORIZONTAL & VERTICAL SIMULTANEOUS VARIABLE (GROUP) CHI SQUARE CONFIDENCE INTERVALS

SE = 0.57 SE = 1.27 SE = 2.77 QUALITY = C

AZ = -39 AZ = -129

CHI SQUARE 68% (GROUP) ELLIPSE SEMIAXES = 0.87 KM AND 1.95 KM

SE OF ORIG = 0.00 TOTAL NUMBER OF ITERATIONS = 4 DMAX = 300.00 SEQUENCE NUMBER = 1

AT THE CLOSEST STATION USED IN THE SOLUTION BOTH P AND S WERE USED THE 5 MINUS P INTERVAL BECAME 2.85

DATE ORIGIN LAT LONG DEPTH MAG DD IS GAP D RMS ERR EF2 G SMD ADJ IN NE ANP AAR NM AVAD SDXM NO A-ERR S1

820719 43442 104443 82 5858 16.32 1 5 90 211 1 0.09 1.3 2.8 0 0 0 15 10 10 0.00 0.08 0 0.0 0

STATION DATA P-WAVE TRAVEL-TIME DATA AND DELAYS S-WAVE TRAVEL-TIME DATA MAGNITUDE DATA

STN	DIST	AZM	AZP	POFP	PSMP	TOC	NO	TIC	EDLY	EDLY	P-RES	P-WT	THIC	SSEC	SRMP	TTOE	TIC	S-RES	S-WT	AMX	PR	AKAG	P	PH	PL
HWR	4.5	49	134	47.00	0	4.50	3.8	1	0.53	1.00	0.000	0.00	0.00	0.00	4.42	15	4.55	-47.04	0.000						
TKL	20.0	114	134	46.00	0	4.55	4.87	1	0.42	0.33	1.199	49.50	0	7.40	7.38	-6.05	0.899								
HPK	23.3	22	136	47.00	0	4.90	4.81	1	0.34	0.25	1.199	50.20	0	8.10	8.14	-6.10	0.899								
ORT	35.7	304	107	0.00	4	-42.10	6.62	1	0.34	-48.76	0.000	53.40	0	11.00	11.23	0.01	0.899								
BBG	96.3	171	92	58.30	0	16.20	16.19	1	0.108	-0.10	0.903	71.25	4	29	15	27	48	1.52	0.000						

(ERROR ELLIPSE)

DATE ORIGIN LAT LONG DEP P SCAP DMRSD AX1AZ1 AX2 AXZQ MAG(D)

820719 43442 104443 82 5858 16.32 19 100 1.5 51 0.2 2.80 0.0

QUALITY EVALUATION

DIAGONALS IN ORDER OF STRENGTH

AVE. OF END POINTS Z E NE NW SW SE N

0.46 0.50 0.54 0.67 0.97 1.00 1.22

NUMBER RMS MIN PRMS AVE RMS QUALITY

6 0.05 0.48 0.62 0.62 A

-----BEGIN-----

82/ 9/21		1/ 7		12) 21 SEP 82		GRTN		-----ADJUSTMENTS IN PRINCIPAL DIRECTIONS-----												82/ 9/21		1/ 7	
I	LAT	LONG	DEPTH	RMS	NO	PRMS	DAMP	-AZ/DP	-STEP	-SE	=AZ/DP	=STEP	=SE	-AZ/DP	-STEP	-SE	(ADJUSTMENTS)	(ADJUST.	TRAVEL				
																	DLAT	DLON	DZ	DLAT	DLON		
1	59.6	52.7	10.0	2.52	21	524	10E-02	261/17	-12.7	1.81	353/33	21.48	3.41	138/51	7.901	2.25	18.0	-13	14.2	18.0	-12.7	14.2	
2	5.3	44.3	24.2	0.42	21	207	10E-02	349/ 4	2.015	1.55	81/12	-7.69	809	261/77	-5.63	1.68	2.68	-1.5	-5.2	2.7	-1.5	-5.2	
3	6.7	43.3	19.0	0.20	21	188	10E-02	81/10	4.025	7.25	345/19	-3.27	1.39	261/68	-7.50	1.47	1.11	2.35	-.87	-0.1	0.0	0.0	
4	6.7	43.3	18.1	0.19	21	187	10E-02	81/10	0.086	7.22	346/10	-0.38	1.39	261/76	-1.91	1.52	0.00	-0.03	-.19	0.0	0.0	0.0	
5	6.7	43.3	17.9	0.19	21	186	10E-02	81/11	-0.003	7.15	344/16	-0.09	1.36	261/70	-1.16	1.61	0.29	-0.02	-.11	0.0	0.0	0.0	
6	6.7	43.3	17.8	0.19	21	000	10E-01	81/11			344/16			261/70						0.0	0.0	0.0	
6	6.7	43.3	17.9	0.19	21	186	10E-01	81/11	-0.003	7.15	344/16	-0.09	1.36	261/70	-1.16	1.61	0.29	-0.02	-.11	0.0	0.0	0.0	
5	6.7	43.4	17.8	0.19	21	000	10E+00	81/11			344/16			261/70						0.0	0.0	0.0	
6	6.7	43.5	17.9	0.19	21	186	10E+00	81/11	-0.003	7.04	344/16	-0.09	1.29	261/70	-1.00	1.50	0.25	-0.02	-.10	0.0	0.0	0.0	
7	6.7	43.4	17.8	0.19	21	186	10E+00	81/11	-0.001	7.04	344/16	-0.018	1.29	261/70	-0.13	1.50	0.06	0.00	-.01	0.0	0.0	0.0	
7	6.7	43.4	17.8	0.19	21	186	10E-02	81/11	-0.001	7.15	344/16	-0.018	1.36	261/70	-0.15	1.62	0.07	0.00	-.01	0.0	0.0	0.0	

HORIZONTAL & VERTICAL SINGLE VARIABLE (1DOF) 68% CHI SQUARE CONFIDENCE INTERVALS
 SE = 0.41 SE = 0.74 SE = 0.84 QUALITY = 4
 AZ = -101 AZ = -11

CHI SQUARE 68% (2DOF) ELLIPSE SEMIAXES = 4.43 KM AND 1.13 KM
 SE OF ORIG = 0.11 TOTAL NUMBER OF ITERATIONS = 7 DMAX = 400.00 SEQUENCE NUMBER =
 AT THE CLOSEST STATION USED IN THE SOLUTION WITH P AND S WERE USED THE 5 MINUS F INTERVAL EQUALS 3.60

DATE	ORIGIN	LAT	LONG	DEPTH	MAG	NO	D1	GAP	D	RMS	ERH	ERZ	Q	SGD	ADJ	IN	NR	AVR	AAR	NM	AUXM	SDXM	NE	AVR	CL
820921	1 7 17 87	36N	6 68	83W43 44	17.81	21	25	194	1	0.19	0.7	0.8	0.5	0	10	10	22	0.60	0.15	0	0	0	0	0	0

P-STATION DATA												P-WAVE TRAVEL-TIME DATA AND DELAYS												S-WAVE TRAVEL-TIME DATA												MAGNITUDE DATA											
STN	DIST	AZM	AIN	PSEC	PRMK	+TCOR	-D	TTOT	TICAL	C	CLAY	EDLY	P	RES	P	WT	VARI	THIC	SSEC	SRMK	TTOT	TICAL	S	RES	S	WT	AMX	PR	XMAG	R	ERR	PRAG															
HPK	24.9	214	121	23.10				5.23	5.15	1			0.035	0.04	1.700			26.70	8.83	8.71	0.07	1.275																									
TKL	50.5	185	102	26.75				8.88	8.97	1			0.030	-0.12	1.695			33.40	1.15	53	15.20	-0.29	0.954																								
CBT	89.4	225	94	32.90				15.03	15.11	1			0.029	-0.11	1.339			43.50	25.63	25.64	-0.05	1.004																									
TLT	103.2	210	93	34.90		1		17.03	17.29	1			0.041	-0.31	0.917			47.20	29.33	29.35	-0.08	0.917																									
RENC	107.1	141	76	36.11				18.24	17.91	1			0.162	0.17	1.191			48.50	30.63	30.40	0.00	0.893																									
ETL	109.4	117	76	35.95		0		18.08	18.21	1			0.052	-0.24	1.172			48.80	0.30	93	31.01	-0.15	0.879																								
SHT	114.0	155	76	37.34		1		19.48	18.91	1			0.073	-0.44	0.852			50.49	1.32	62	32.20	0.31	0.639																								
DCI	133.1	108	76	39.80				21.68	21.52	1			0.045	-0.05	0.988			55.30	37.43	37.23	0.13	0.741																									
BBEC	136.2	107	76	40.50		0		22.63	22.40	1			0.175	-0.05	0.966			56.30	0.38	43	38.03	0.15	0.724																								
BBG	137.5	183	76	40.30		1		22.43	22.60	1			0.120	-0.29	0.717			56.60	38.73	38.37	0.19	0.717																									
GFM	172.6	89	70	45.75		0		27.88	27.93	1			0.166	-0.22	0.718			67.95	4.50	08	47.44	2.39	0.000																								

(ERROR ELLIPSE)
 DATE ORIGIN LAT LONG DEF P SGA6 DMRECD AX1AZ1 AX2 AXZG MAG·D1
 820921 1 7 17 87 36N 6 60 83W43 44 17.81 21 25 194 0 7 10 0 4 0 84 0 0

QUALITY EVALUATION

DIAGONALS IN ORDER OF STRENGTH
 AVE OF END POINTS Z NE NW N E SE SW
 0.35 0.50 0.50 0.51 0.51 0.64 0.48

NUMBER RMS MIN PRMS AVE PRMS QUALITY
 21 0.19 0.26 0.53 A

-----BEGIN-----

82/ 9/24		21/57		13) 24 SEP 82 A GRTN										82/ 9/24		21/57					
														(ADJUSTMENTS)				(ADJUST)		TAKEN	
I	LAT	LONG	DEPTH	RMS	NO	PRMS	DAMP	(-AZ/DP--STEP--SE	=AZ/DP--STEP--SE	=AZ/DP--STEP--SE	=AZ/DP--STEP--SE	=AZ/DP--STEP--SE	=AZ/DP--STEP--SE	DLAT	DLOD	DZ	DLAT	DLOD			
1	32.4	25.2	10.0	3.47	24	367	10E-02	127/ 4	-3.26	1.67	36/10	21.94	1.02	261/80	8.593	2.44	14.6	-14	12.3	14.6	-14.6
2	40.3	15.9	22.3	0.46	24	188	10E-02	261/ 2	-2.56	5.72	136/ 3	-444	993	350/87	-4.72	1.81	1.17	-2.2	-4.8	1	1.1
3	40.9	14.4	17.6	0.20	24	196	10E-02	261/ 3	1870	567	137/ 7	-189	979	341/82	2460	1.84	-22	0.21	329	-0.6	0.0
4	40.8	14.4	17.9	0.20	24	196	10E-02	261/ 3	0094	567	136/ 8	0012	981	341/82	0255	1.80	0.00	0.00	0.00	0.00	0.00
4	40.8	14.4	17.9	0.20	24	196	10E-02	261/ 3	0094	567	136/ 8	0012	981	341/82	0255	1.80	0.00	0.00	0.00	0.00	0.00

HORIZONTAL & VERTICAL SINGLE VARIABLE (1DOF) 68% CHI SQUARE CONFIDENCE INTERVALS
 SE = 0.31 SE = 0.34 SE = 0.75 QUALITY = A
 AZ = -132 AZ = -42

CHI SQUARE 68% (2DOF) ELLIPSE SEMIAXES = 0.47 KM AND 0.82 PK
 SE OF ORIG = 0.06 TOTAL NUMBER OF ITERATIONS = 4 DMAX = 500.00 SEQUENCE NUMBER =
 S AND P ARE NOT BOTH USED AT CLOSEST STATION

DATE ORIGIN LAT LONG DEPTH MAG NO IN GAP D RMS ERH ERZ Q SGP ADJ IN NR A/R AAR NM AVAR SD* M INT AVEP
 820924 2157 42 16 35N40.78 84W14.44 17.88 24 23 63 1 0 20 0 5 1 0 B B 0 40 10 38 0 00 0 14 0 0 0 0 0 0

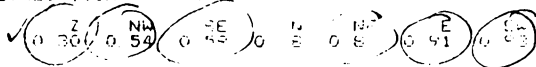
(- STATION DATA -) (----- P-WAVE TRAVEL-TIME DATA AND DELAYS -----) VAFI (----- S-WAVE TRAVEL-TIME DATA -----) (--- MAGNITUDE DATA ---)

STN	DIST	AZM	AIN	PSEC	PRMK+TCOR=0	TIOB-TTCAL	C-DLAY-EDLY=P-RES	P-WT	THIC	SSEC	SRMK	TIOB	TTCAL	S-RES	S-WT	AM1	PR	AMAG	ERR	ERR2
CBT	22.6	226	124	47.00	0	4.84	4.85	1	0.43	-0.05	1.455	0.00	4-42 16	8.20	-50	43	0.000			
ORT	26.1	347	120	47.50	0	5.34	5.33	1	0.41	-0.03	1.455	0.00	4-42 16	9.01	-51	24	0.000			
HWR	28.7	72	117	48.00	0	5.84	5.68	1	0.33	0.12	1.455	0.00	4-42 16	9.63	-51	85	0.000			
TLT	42.2	185	106	49.90	0	7.74	7.68	1	0.46	0.01	1.455	53.20	0 13.04	13.02	-0.05	1.092				
TKL	42.3	93	106	49.92	0	7.74	7.70	1	0.32	-0.03	1.455	53.40	0 13.24	13.06	0.13	1.092				
HPK	42.6	50	106	49.70	0	7.34	7.74	1	0.28	-0.23	1.455	53.30	0 13.14	13.13	-0.04	1.092				
ETT	43.8	206	105	50.00	0	7.84	7.94	1	0.53	-0.16	1.455	56.00	1 13.84	13.45	0.32	0.819				
RCT	53.2	226	101	51.60	0	9.44	9.40	1	0.22	0.02	1.429	58.80	2 16.64	15.92	0.68	0.536				
BHT	66.3	286	97	53.80	0	11.64	11.46	1	0.67	0.11	1.323	0.00	4-42 16	19.44	-61	70	0.000			
RHT	88.6	221	94	56.90	1	14.74	14.99	1	0.24	-0.38	0.864	0.00	4-42 16	25.44	-67	63	0.000			
BBC	97.6	156	93	58.55	0	16.39	16.40	1	1.08	-0.13	1.087	72.20	4 30.04	27.84	-2	05	0.000			
CRG	117.5	195	76	1.50	0	19.34	19.51	1	0.37	-0.21	0.948	15.10	0 32.94	33.11	-0	23	0.711			
RBNC	119.3	107	76	2.21	0	20.05	19.79	1	0.62	-0.09	0.936	0.00	4 17.84	33.00	-16	00	0.000			
TVG	174.0	214	70	10.20	0	28.04	28.13	1	0.31	-0.13	0.607	0.00	4 17.84	47.78	-29	59	0.000			
BRBC	177.0	87	70	10.92	0	28.76	28.59	1	0.19	-0.02	0.591	31.90	3 49.74	48.55	0	91	0.111			
HGA	215.2	223	50	16.30	1	34.14	33.62	1	0.49	0.46	0.304	42.00	4 59.84	57.23	0	53	0.000			
GFM	224.9	77	50	17.70	1	35.54	34.81	1	0.22	0.50	0.273	45.30	4 63.14	58.26	0	53	0.000			
L&KY	254.6	348	50	22.30	4	40.14	38.44	1	0.11	1.65	0.000	0.00	4 17.84	65.47	-4	64	0.000			
PWLA	356.2	259	50	34.72	4	52.56	50.86	1	0.26	1.67	0.000	0.00	4 17.84	86.71	-68	91	0.000			

(ERROR ELLIPSE)
 DATE ORIGIN LAT LONG DEP F SCAP DMRSSD AX1 AX2 AX3 MAG(D)
 820924215742 235N40 78 84W14.4417 917 7 63 22 288 0 4-41 0 3 1 0A 0 0

QUALITY EVALUATION

DIAGONALS IN ORDER OF STRENGTH
 AVE OF END POINTS



NUMBER RMS MIN DRMS AVE DRMS QUALITY
 21 0.20 0.27 0.71 B

-----BEGIN-----

82/ 9/24 22/19 14) 24 SEP 82 B GRTN										82/ 9/24 22/19																													
										(ADJUSTMENTS IN PRINCIPAL DIRECTIONS) (ADJUSTMENTS)																													
I	LAT	LONG	DEPTH	RMS	NO	PRMS	DAMP	(AZ/DP)	STEP	SE	AZ/DP	STEP	SE	AZ/DP	STEP	SE	DLAT	DLON	DZ	DLAT	DLON	DZ																	
1	45	56	3	10	0	4	29	20	526	10E-02	129/	4	16	28	2	36	220/23	23	8	1	70	29/67	6	014	4	13	13	9	26	9	14	4							
2	42	33	14	1	24	4	0	53	20	211	10E-02	141/	3	1	333	1	36	243/	4	1	931	1	754	17/88	1	785	1	51	1	64	1	1	48	1	7	7			
3	41	2	15	1	16	7	0	20	20	187	10E-02	261/	1	1	160	1	614	140/	1	1	114	1	64	17/88	1	785	1	51	1	64	1	1	48	1	7	7			
4	41	1	15	0	15	2	0	18	20	177	10E-02	320/	0	0	249	982	261/	1	1	0025	574	53/89	1	1	74	005	0	05	1	1	2	0	0	0	0	0	0		
4	41	2	15	0	14	0	0	18	20	000	10E-01	320/	0	0	248	982	261/	1	1	0025	574	53/89	1	1	74	005	0	05	1	1	2	0	0	0	0	0	0		
5	41	1	15	0	15	2	0	18	20	177	10E-01	320/	0	0	248	982	261/	1	1	0025	574	53/89	1	1	74	005	0	05	1	1	2	0	0	0	0	0	0		
4	41	2	15	0	14	0	0	18	20	000	10E+00	320/	0	0	248	982	261/	1	1	0025	574	53/89	1	1	74	005	0	05	1	1	2	0	0	0	0	0	0	0	
5	41	1	15	0	15	2	0	18	20	178	10E+00	320/	0	0	248	982	261/	1	1	0025	574	53/89	1	1	74	005	0	05	1	1	2	0	0	0	0	0	0	0	
6	41	2	15	0	14	4	0	18	20	177	10E+00	320/	0	0	248	982	261/	1	1	0025	574	53/89	1	1	74	005	0	05	1	1	2	0	0	0	0	0	0	0	
7	41	2	15	0	14	7	0	18	20	177	10E+00	319/	0	0	103	950	261/	3	3	0036	562	57/87	3	3	050	1	66	0	0	0	0	0	0	0	0	0	0		
7	41	1	15	0	14	1	0	18	20	000	10E+01	261/	1	1	0072	565	139/	1	1	0001	950	348/89	1	1	42	0	02	0	02	1	60	0	0	0	0	0	0	0	
8	41	2	15	0	14	7	0	18	20	179	10E+01	261/	1	1	0023	322	139/	1	1	0000	361	348/89	1	1	00	0	00	0	00	0	02	1	60	0	0	0	0	0	
8	41	2	15	0	14	7	0	18	20	176	10E-02	261/	1	1	0074	568	139/	1	1	0001	975	348/89	1	1	10	0	00	0	00	0	02	1	60	0	0	0	0	0	0

HORIZONTAL % VERTICAL SINGLE VARIABLE (1DOF) 68% CHI SQUARE CONFIDENCE INTERVALS
 SE = 0.30 SE = 1.66 QUALITY = 6
 AZ = -130.0 AZ = -40.0

CHI SQUARE 68% (2DOF) ELLIPSE SEMIAXES = 0.47 KM AND 0.80 KM
 SE OF ORIG = 0.06 TOTAL NUMBER OF ITERATIONS = 8 DMAX = 400.00 SEQUENCE NUMBER =
 S AND P ARE NOT BOTH USED AT CLOSEST STATION

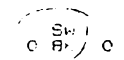
DATE	ORIGIN	LAT	LONG	DEPTH	MAG	NO	D1	GAP	D	RMS	ERH	ERZ	Q	SGD	ADJ	IN	NR	AVR	AAR	NM	AVXM	SDXM	NF	AVFM	SEFM
820924	2219	16.71	35N41.16	84W14.99	14.74	20	29	125	1	0.18	0.5	1.7	B	B	B	0.68	10	36	0.00	0.14	0	0.0	0	0	0

(- STATION DATA -)										P-WAVE TRAVEL-TIME DATA AND DELAYS										VARI										S-WAVE TRAVEL-TIME DATA										MAGNITUDE DATA									
STN	DIST	AZM	AIN	PSEC	PRMK	+TCOR	-D	TTDB	TTCAL	C-DLAY	EDLY	P-RES	P-WT	THIC	SSEC	SRMK	TTDB	TTCAL	S-RES	S-WT	AMX	PR	XMAG	P	FRM	FRM2																							
HWR	29	3	74	108	222	60	1	3	89	9	58	1	029	0	29	1	097	4	16	71	9	45	26	20	0	000																							
TLT	42	8	184	94	224	40	0	7	69	7	68	1	041	0	00	1	462	0	12	99	13	02	10	08	1	097																							
HPK	42	8	51	94	224	20	0	7	49	7	68	1	024	0	01	1	462	0	13	09	13	02	00	04	1	097																							
TKL	43	2	94	94	224	45	0	7	74	7	74	1	028	0	02	1	462	0	13	19	13	02	00	03	1	097																							
ETI	44	1	205	93	224	53	0	7	82	7	88	1	047	0	10	1	462	0	13	19	13	02	00	03	1	097																							
RCT	53	1	225	90	226	20	0	9	49	9	33	1	021	0	00	1	336	0	4	16	71	15	01	3	0	000																							
BHT	65	4	284	90	228	11	0	11	40	11	37	1	065	0	06	1	337	0	4	16	71	19	13	02	00	000																							
RHT	88	6	221	90	231	40	1	14	69	14	97	1	024	0	00	0	868	0	4	16	71	25	4	1	42	14	0	000																					
BBC	98	5	156	90	233	30	0	16	49	16	55	1	107	0	16	1	085	45	0	00	28	29	28	09	0	06	0	814																					
CRC	117	9	195	90	236	20	0	19	49	19	63	1	033	0	17	0	950	0	4	16	71	33	02	50	07	0	000																						
RBNC	120	3	107	90	236	78	0	20	07	20	01	1	145	0	08	0	934	0	4	16	71	33	02	50	08	0	000																						
BRBC	177	8	88	70	45	50	1	28	79	28	08	1	190	0	27	0	442	60	4	16	71	49	79	49	04	0	47	0	332																				
IVA	208	4	138	50	50	10	0	33	39	33	12	1	022	0	25	0	438	74	4	16	71	58	07	1	69	0	000																						
HGA	215	1	223	50	51	00	1	34	29	33	94	1	049	0	31	0	306	0	4	16	71	57	07	1	54	0	000																						
OCA	231	9	240	50	50	00	4	-16	71	35	94	1	032	52	73	0	000	81	4	16	71	61	03	0	07	0	000																						
L6KY	253	7	349	50	56	80	4	40	09	38	66	1	000	0	00	0	000	0	4	16	71	65	03	0	54	0	000																						
SBKY	283	2	6	50	0	75	4	44	04	42	21	1	000	0	00	0	000	0	4	16	71	65	03	0	54	0	000																						
HVA	294	9	232	50	1	90	4	45	19	43	69	1	025	1	48	0	000	0	4	16	71	64	03	1	18	0	000																						

DATE ORIGIN LAT LONG DEP F SGAP LMRSSD AX1 AX2 AX3G MAG(D)
 820924221916 735N41 16 84W14 9914 714 6125 29 28E 0 5-40 0 3 1 7B 0 0

QUALITY EVALUATION

DIAGONALS IN ORDER OF STRENGTH
 AM OF END POINTS



82/ 9/24 22/54 -----BEGIN----- 15) 24 SEP 82 C GRN -----ADJUSTMENTS IN PRINCIPAL DIRECTIONS----- (ADJUSTMENTS) (ADJUST TAKEN) 82/ 9/24 22/54

I	LAT	LONG	DEPTH	RMS	NO	PRMS	DAMP	-AZ/DP--STEP--SE	-AZ/DP--STEP--SE	-AZ/DP--STEP--SE	-AZ/DP--STEP--SE	DLAT	DLON	DZ	DLAT	DLON	DZ																
1	18	17	0	5.62	11	.685	10E-02	81/28	-34	1	3	51	297/28	19	30	4	49	171/48	5	292	6	26	26	1	-6.2	29	1	26	1	-6.2	29	1	
2	32	12	9	39	1	1.50	11	.150	10E-02	261/	1	-6.99	1	07	332/19	11	56	1	24	148/71	-20	4	3	25	18.7	2	43	-16.	18.7	2	4	-15.6	
3	42	3	14	5	23	5	0.46	11	.165	10E-02	3/	3	-3	40	1	24	273/	6	-1	14	.987	124/83	-10	1	6	09	-2.8	.041	-10.	-2.8	0	0	-10.4
4	40	8	14	5	13	1	0.12	11	.100	10E-02	355/	0	.1077	.670	265/	3	-.050	.544	90/87	-3	18	3	31	.111	.134	-3.2	0	.1	0	1	-3.2		
5	40	8	14	6	9	9	0.12	11	.115	10E-02	359/	8	.2241	.738	267/10	.0787	.602	128/78	-.089	3	06	.230	.098	-.04	0	.2	0	1	0	0	0		
6	41	0	14	7	9	9	0.12	11	.117	10E-02	359/	8	-.002	.753	268/10	.0034	.613	128/78	-.018	3	14	0.00	.006	-.02	0	0	0	0	0	0	0	0	
6	41	0	14	7	9	9	0.12	11	.117	10E-02	359/	8	-.002	.753	268/10	.0034	.613	128/78	-.018	3	14	0.00	.006	-.02	0	0	0	0	0	0	0	0	0

HORIZONTAL & VERTICAL SINGLE VARIABLE (1DOF) 68% CHI SQUARE CONFIDENCE INTERVALS
 SE = 0.37 SE = 0.51 SE = 1.64 QUALITY = B
 AZ = -130 AZ = -40

CHI SQUARE 68% (2DOF) ELLIPSE SEMIAXES = 0.56 KM AND 0.78 KM
 SE OF ORIG = 0.07 TOTAL NUMBER OF ITERATIONS = 6 DMAX = 400.00 SEQUENCE NUMBER =
 AT THE CLOSEST STATION USED IN THE SOLUTION BOTH P AND S WERE USED. THE S MINUS P INTERVAL EQUALS 5.30

DATE	ORIGIN	LAT	LONG	DEPTH	MAG	NO	D1	GAP	D	RMS	ERH	ERZ	Q	SGD	ADJ	IN	NR	AVR	AAR	NM	AVXM	SDXM	NF	AVFM	SDFM	
820924	2254	11.57	35N40.95	84W14.70	9.88	11	42	167	1	0.12	0.5	1	6	C	B	C	0.25	10	12	0.00	0.09	0	0	0	0	0

(- STATION DATA -) (----- P-WAVE TRAVEL-TIME DATA AND DELAYS -----) VARI (----- S-WAVE TRAVEL-TIME DATA --) (--- MAGNITUDE DATA ---)

STN	DIST	AZM	AIN	PSEC	PRMK+TCOR-D	TT0B	TTCAL	C-DLAY	EDLY	P-RES	P-WT	THIC	SSEC	SRMK	TT0B	TTCAL	S-RES	S-WT	AMX	PR	XMAG	R	FMP	FMAG
TLT	42.5	195	97	19.10		7.53	7.54	1	.031	-0.05	1.263	24.40			12.83	12.70	0.09	0.947						
TKL	42.7	94	96	19.20		7.63	7.59	1	.021	0.02	1.263	24.42			12.85	12.78	0.04	0.947						
ETT	43.9	206	96	19.20	1	7.63	7.80	1	.035	-0.21	0.947	24.80			13.23	13.11	0.08	0.947						
RCT	53.2	225	79	20.70	1	9.13	9.33	1	.018	-0.22	0.930	0.00			4-11	57	15.76	-27.35	0.000					
BHT	65.9	286	79	23.10		11.53	11.42	1	.055	0.05	1.151	31.12			19	55	19.38	0.11	0.863					
DCT	71.5	193	79	23.90		12.33	12.35	1	.034	-0.05	1.113	32.80			1	21.23	20.97	0.22	0.626					

(ERROR ELLIPSE)
 DATE ORIGIN LAT LONG DEP P SGAP DMRSSD AX1AZ1 AX2 AXZG MAG(D)
 820924225411.635N40.95 84W14.70 9.9 6 5167 42.18C 0.5-39 0.4 1.68 0.0

QUALITY EVALUATION

DIAGONALS IN ORDER OF STRENGTH
 AVE OF END POINTS 0.16 0.47 0.61 0.68 0.71 0.72 1.07

NUMBER	RMS	MIN	DRMS	AVE	DRMS	QUALITY
11	0.12		0.13		0.66	C

82/11/ 2 8/44 -----BEGIN-----
 17) 2 NOV 82 GRTN

82/11/ 2 8/44

										-----ADJUSTMENTS IN PRINCIPAL DIRECTIONS-----										(ADJUST TAKEN)							
										(ADJUSTMENTS)																	
I	LAT	LONG	DEPTH	RMS	NO	PRMS	DAMP			-AZ/DP	-STEP	-SE	AZ/DP	-STEP	-SE	-AZ/DP	-STEP	-SE	DLAT	DLON	DZ	GLAT	GLON	DZ			
1	55.6	52.7	10.0	3.05	9	.183	.10E-02			126/	2	-4.03	1.85	81/38	4	226	4.40	261/52	20.54	1.17	-15	6.69	13	6-15	0	6.7	13.6
2	47.4	57.2	23.6	0.31	9	.081	.10E-02			316/	0	-1.87	.832	261/22	-	362	.525	45/68	-7.34	2.31	-3.0	.407	-6.9	-3.0	0	4	4.9
3	45.8	57.4	16.7	0.11	9	.107	.10E-02			317/	3	0.572	.941	261/17	-	140	.620	56/72	2300	3.85	.174	-11	.181	0	3	-0.1	0.2
4	45.9	57.4	16.9	0.11	9	.105	.10E-02			317/	3	-.009	.928	226/18	-	616	.612	53/72	0111	3.72	-.02	.002	0.15	0.0	0	0	0.0
4	45.9	57.4	16.9	0.11	9	.105	.10E-02			317/	3	-.009	.928	226/18	-	616	.612	53/72	0111	3.72	-.02	.002	0.15	0.0	0	0	0.0

HORIZONTAL & VERTICAL SINGLE VARIABLE (DDOF) 68% CHI SQUARE CONFIDENCE INTERVALS
 SE = 0.46 SE = 0.69 SE = 1.90 QUALITY = 5
 AZ = -30 AZ = -120

CHI SQUARE 68% (DDOF) ELLIPSE SEMIAXES = 0.75 KM AND 1.05 KM
 SE OF ORIG = 0.18 TOTAL NUMBER OF ITERATIONS = 4 DMAX = 400.00 SEQUENCE NUMBER =
 AT THE CLOSEST STATION USED IN THE SOLUTION BOTH P AND S WERE USED. THE S MINUS P INTERVAL EQUALS 2.80

DATE ORIGIN LAT LONG DEP P SGAP DRMSD AX1AZ1 AX2 AXZ0 MAG(D)
 821102 844 45 33N45 50 83W57 37 16.87 9 19 142 1.0 11 0.7 1.9 0.5 1.28 10 12 0.00 0.09 0

STATION DATA (----- P-WAVE TRAVEL-TIME DATA AND DELAYS -----) VARI (----- S-WAVE TRAVEL-TIME DATA -----) (MAGNITUDE DATA)

STN	DIST	AZM	WID	PSEC	DRMS	TCOR	0-TTDR	TICAL	C-DLAY	DELY	P-RUC	P-WT	TRIC	SSEC	SPRM	ITOB	TICAL	S-RES	S-WT	AMP	PP	MAG	ERR	ERR
HPR	19.2	21	126	49.70			4.40	4.01	1	.038	0.05	1.218	52.50		7.20	7.28	-0.15	0.913						
TRK	20.3	126	126	49.90			4.60	4.46	1	.043	0.05	1.218	52.95	0	7.65	7.55	0.04	0.913						
GBT	49.0	239	108	54.00			8.70	8.65	1	.030	-0.02	1.218	60.20		14.90	14.75	0.11	0.913						
BTI	66.5	223	98	56.90			11.60	11.46	1	.047	0.09	1.106	64.63		19.33	19.44	-0.17	0.829						
BHT	89.8	276	93	0.00	4		-45.30	15.16	1	.066	-60.53	0.000	72.21	4	26.91	25.75	1.07	0.000						
BBG	99.7	172	90	0.00	4		-45.30	16.73	1	.108	-62.14	0.000	73.70		28.40	28.42	-0.17	0.672						

(ERROR ELLIPSE)
 DATE ORIGIN LAT LONG DEP P SGAP DRMSD AX1AZ1 AX2 AXZ0 MAG(D)
 821102 84445 33N45 90 83W57 3716 4 4 5145 19 180 0.7 21 0.5 1.98 0.0

QUALITY EVALUATION

DIAGONALS IN ORDER OF STRENGTH N Z NW SE NE E SW
 AVE OF END POINTS 0.50 0.52 0.71 0.72 0.85 1.12 1.12

NUMBER RMS MIN DRMS AVE DRMS QUALITY
 7 0.11 0.49 0.82 A

-----BEGIN-----

82/12/ 6 10/52										20 6 DEC 82 GRIN										82/12/ 6 10/52									
										(-----ADJUSTMENTS IN PRINCIPAL DIRECTIONS-----)										(ADJUSTMENTS)									
I	LAT	LONG	DEPTH	RMS	NO	PRMS	DAMP	-AZ/DP	STEP	SE	=AZ/DP	STEP	SE	-AZ/DP	STEP	SE	DLAT	DLON	DZ	DLAT	DLON	DZ	DLAT	DLON	DZ				
1	55.6	52.7	10.0	3.68	14	575	.10E-02	222/28	16.79	2.34	112/33	-12.2	3.82	344/44	22.50	3.53	22.6	-15	14.3	22.6	-14	9	14.3	22.6	-14	9	14.3		
2	7.8	42.8	24.3	0.76	14	242	.10E-02	261/ 6	-1.34	1.11	321/37	-2.80	2.28	128/53	-11.9	2.68	3.59	3.35	-11.	3.6	-3	4	-1	3	3.6	-3	4	-1	3
3	9.7	45.0	13.0	0.28	14	202	.10E-02	261/ 5	-1.57	.863	318/17	-2.20	1.80	122/72	-2.39	2.78	-1.1	-90	-2.9	-1.1	-90	-2.9	-1.1	-90	-2.9	-1.1	-90	-2.9	
4	9.1	44.4	10.1	0.20	14	199	.10E-02	261/ 0	0209	.835	316/14	2225	1.78	135/76	2306	2.19	.102	.125	.278	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
4	9.2	44.5	10.4	0.20	14	000	.10E-01	261/ 0			316/14			135/76						-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
5	9.1	44.4	10.1	0.20	14	199	.10E-01	261/ 0	0209	.835	316/14	2220	1.78	135/76	2301	2.19	.102	.125	.277	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
4	9.2	44.5	10.4	0.20	14	000	.10E+00	261/ 0			316/14			135/76						-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
5	9.1	44.4	10.1	0.20	14	199	.10E+00	261/ 0	0209	.835	316/14	1941	1.67	135/76	1880	1.98	.090	.112	.230	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
6	9.2	44.5	10.3	0.20	14	200	.10E+00	261/ 5	-0.03	0.03	318/19	0142	1.64	121/70	-0.32	2.44	0.17	0.16	-0.03	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
6	9.2	44.5	10.3	0.20	14	200	.10E-02	261/ 5	-0.03	0.03	318/19	0162	1.75	121/70	-0.44	2.86	0.21	0.21	-0.04	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

HORIZONTAL & VERTICAL SINGLE VARIABLE (DIFF) CHI SQUARE CONFIDENCE INTERVALS
 SE = 0.44 SE = 1.01 SE = 1.47 QUALITY = B
 AZ = 44 AZ = 46

CHI SQUARE 28% (100) FIDUCIAL SEMIAXES 1.05 1.05
 SE OF ORIG = 0.12 TOTAL NUMBER OF ITERATIONS = 2 DMAX = 200.00 SEQUENCE NUMBER =
 AT THE CLOSEST STATION USED IN THE SOLUTION BOTH P AND S WERE USED THE C MINUS F INTERVAL EQUALS 0.35

DATE	ORIGIN	LAT	LONG	DEPTH	P	SCAP	DMRSSD	AX1	AX2	AX3	RMS	ERR	EFZ	Q	SGD	ADD	IN	NR	AVR	AAF	NH	AVM	SD	M	NE	AFM	SPR		
821206	1052	34	16	9	16	93W44	50	10	0	0	14	8	001	1	20	1	1	5	0	0	0	2	10	16	0	00	0	12	0

STN	DIST	AZM	ALT	PSEC	PRMK	TCOR	O	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	
HPK	28.0	206	101	39	90			5	33	5	18	1	022	0	13	1	576	43	25	8	68	8	69	-0	04	1	182			
TKL	55.0	183	90	44	20			9	63	9	60	1	023	0	01	1	531	50	80	16	23	16	27	-0	06	1	148			
SMTN	56.4	63	90	44	80	1		10	23	9	84	1	051	0	35	1	139	51	00	1	16	43	16	66	-0	28	0	854		
CBT	91.6	222	75	50	00			15	43	15	61	1	028	-0	20	1	223	61	50	1	26	93	26	55	-0	35	0	688		
TLF	106.4	228	75	50	00	1		17	63	17	56	1	041	-0	37	0	831	65	00	0	30	43	30	55	-0	17	0	831		
BHT	113.7	253	75	50	00	1		24	92	24	12	1	065	5	75	0	000	67	13		32	58	32	51	-0	02	0	791		
DCF	136.5	207	75	57	30			21	75	22	74	1	040	-0	08	0	893	73	50		38	93	38	67	-0	31	0	670		
BDC	142.0	183	75	10	00	4		31	50	23	52	1	007	11	71	0	000	15	05		40	48	40	12	-0	17	0	642		

(ERROR ELLIPSE)
 DATE ORIGIN LAT LONG DEP P SCAP DMRSSD AX1 AX2 AX3 MAG(D)
 821206105234 336N 9 16 93W44 5010 0 6 8201 28 280 1 0 46 0 5 1.58 0 0

QUALITY EVALUATION
 DIAGONALS IN ORDER OF STRENGTH
 AVE OF END POINTS 0.4 0.01 0.24 0.40 0.41 0.44 0.50

NUMBER 12
 MIN DEPTH 0.17
 AVE DEPTH 1.58
 QUALITY B

-----BEGIN-----
 82/12/15 2/27 21) 15 DEC 82 GRTN (-----ADJUSTMENTS IN PRINCIPAL DIRECTIONS-----) (ADJUSTMENTS) (ADJUST) (TAVEN)
 I LAT LONG DEPTH RMS NO PRMS DAMP (-AZ/DP--STEP--SE =AZ/DP==STEP==SE -AZ/DP--STEP--SE DLAT DLON DZ DLAT DLON DZ
 1 54.6 18.3 10.0 2.37 28 403 10E-02 261/ 4 3.010 1.05 140/36 -20.4 1.46 329/34 -1.55 1.93 -16. -17.1 11.2 -16.5 -7.1 11.2
 2 45.7 13.6 21.2 0.227 28 229 10E-02 222/ 3 1882 588 132/10 3232 809 330/79 -3.02 1.93 -14 -14 -3.0 -0.1 -0.2 -3.0
 3 45.6 13.5 18.1 0.223 28 228 10E-02 43/ 2 1464 569 133/14 142 769 304/76 -7292 1.67 -114 -05 -747 0.1 -0.1 0.7
 4 45.7 13.4 18.9 0.223 28 228 10E-02 43/ 1 0003 575 133/15 0026 776 311/75 -105 1.50 -02 -02 -10 0.0 0.0
 5 45.6 13.4 18.8 0.223 28 228 10E-02 43/ 1 0003 575 133/15 0003 776 311/75 0005 1.50 001 000 000 0.0 0.0
 6 45.6 13.4 18.8 0.223 28 228 10E-02 43/ 1 0003 575 133/15 0003 776 311/75 0005 1.50 001 000 000 0.0 0.0

HORIZONTAL & VERTICAL SINGLE VARIABLE (1DOF) 68% CHI SQUARE CONFIDENCE INTERVALS
 SE = 0.34 SE = 0.45 SE = 0.78 QUALITY = A
 AZ = 42 AZ = -48

CHI SQUARE 68% (2DOF) ELLIPSE SEMIAXES = 0.47 KM AND 0.69 KM
 SE OF ORIG = 0.06 TOTAL NUMBER OF ITERATIONS = 5 DMAX = 400.00 SEQUENCE NUMBER =
 AT THE CLOSEST STATION USED IN THE SOLUTION BOTH P AND S WERE USED THE S MINUS P INTERVAL EQUALS 3.10

DATE ORIGIN LAT LONG DEPTH MAG DD B GAP D RMS ERR ERZ G D D ADJ IN NR AVE AAF RM AVXN SDXN NE WXS P
 821215 227 58 89 45N45 64 84W13 4 18 27 28 18 77 1 23 0.4 0 8 B P A 0 10 10 34 0 00 0 18 0 0 0 0

STN	DIST	AZM	AIN	REC	PRM	TCUR	D-TOP	TICAL	C-DLAY	DEL	P-RES	P-WT	VARI	THIC	S-SEC	S-RMS	TTOB	TICAL	S-RES	S-WT	AMP	PR	MAG	P	PR	MAG	P
ORI	18.1	336	133	2	10	4	21	4	38	1	050	-0.12	1.539	6	20	7	31	7	41	-0.18	1	155					
CBT	30.4	216	117	5	10	5	21	5	98	1	036	0.15	1.539	9	40	1	10	51	10	12	0.33	0	866				
HPK	35.1	59	112	5	80	5	91	6	83	1	030	0.05	1.539	10	70	0	11	81	11	56	0.20	1	155				
TKL	42.3	106	108	6	80	7	71	7	74	1	032	-0.06	1.539	12	15	13	26	13	11	0.10	1	155					
TLT	51.3	186	103	8	20	9	31	9	13	1	045	0.14	1.528	14	40	15	51	15	46	-0.02	1	146					
ETT	52.6	204	103	8	13	9	24	9	33	1	051	-0.14	1.517	14	70	15	81	15	01	-0.07	1	138					
BHT	65.9	279	98	10	20	11	31	11	40	1	058	-0.16	1.403	18	75	1	19	86	19	35	-0.42	0	789				
DCT	80.4	193	96	12	60	13	71	13	70	1	041	-0.03	1.284	22	10	23	21	23	23	-0.08	0	963					
RHT	96.5	218	76	15	00	16	11	16	25	1	026	-0.16	1.158	26	80	1	27	91	27	97	-0.30	0	651				
BBG	105.3	159	76	16	30	17	41	17	60	1	120	-0.31	0.819	28	40	2	29	51	29	37	-0.53	0	409				
CCVA	106.0	28	76	0	00	1	11	17	71	1	050	-16	65	0	000	29	10	30	21	30	0	07	0	819			
SMTN	116.4	53	76	17	90	19	01	19	32	1	068	-0.38	0.758	32	25	1	33	36	32	79	0	47	0	368			
RBNC	120.8	111	76	18	93	20	04	19	89	1	162	-0.12	0.979	33	19	34	30	33	74	0	13	0	735				
BRBC	175.3	90	70	26	88	27	99	28	28	1	190	-0.48	0.317	47	82	2	48	93	48	03	0	62	0	238			
TVC	182.3	213	66	29	00	30	11	29	33	1	033	0.75	0.298	53	20	4	54	31	49	31	4	45	0	000			
TRYN	186.5	107	66	0	00	1	11	29	93	1	094	-28	93	0	000	51	43	4	52	54	50	04	1	56	0	000	
GFM	221.5	79	50	0	00	1	11	34	31	1	222	-33	42	0	000	59	40	4	60	51	58	41	1	75	0	000	

DATE ORIGIN LAT LONG DEPTH SCAP DMPSSD AZ1 AZ2 AXZ AXZG MAG(D)
 821215 22758 45N45 64 84W13 4218 81414 77 18 28A 0 4-47 0.3 0.8A C C

QUALITY EVALUATION

DIAGONALS IN ORDER OF STRENGTH
 AVE OF END POINTS

NUMBER RMS MIN DEPTH AVE DRMS QUALITY
 02 0.23 0.34 0.52

-----BEGIN-----

83/ 1/18		5/ 9		22) 18 JAN 83		GRTN		ADJUSTMENTS IN PRINCIPAL DIRECTIONS								83/ 1/18		5/ 9					
I	LAT	LONG	DEPTH	RMS	NO	PRMS	DAMP	-AZ/DP	-STEP	-SE	AZ/DP	-STEP	-SE	-AZ/DP	-STEP	-SE	DLAT	DLON	DZ	DLAT	DLON	DZ	
1	18 1	17 0	10 0	4.84	21	771	10E-02	122/11	12.64	3.02	27/26	30.16	2.44	261/62	9.737	4.39	28.0	2.06	19.3	28.0	4.4	19.3	28.0
2	33 2	18 4	29 3	0.90	21	279	10E-02	117/2	4.281	1.03	101/8	6.437	1.18	266/82	-13.0	58.4	4.44	-2.0	-13	-4.4	-11	-11	-11
3	35 6	17 0	16 7	0.26	21	219	10E-02	147/1	-5.60	0.96	104/7	-0.13	824	274/83	-2.84	78	-57	-21	-2.8	-0.0	-0.0	-0.0	-0.0
4	35 3	16 9	13 7	0.22	21	216	10E-02	147/1	-5.61	0.95	104/7	-0.13	805	270/88	-0.71	35	0.32	216	0.29	0.0	0.0	0.0	0.0
5	35 3	17 0	13 7	0.22	21	216	10E-02	147/1	0.08	0.95	104/7	0.00	805	270/88	-0.04	34	0.01	0.00	0.00	0.00	0.00	0.00	0.00
5	35 3	17 0	13 7	0.22	21	216	10E-02	147/1	0.08	0.95	104/7	0.00	805	270/88	-0.04	34	0.01	0.00	0.00	0.00	0.00	0.00	0.00

HORIZONTAL & VERTICAL SINGLE VARIABLE (1DGF) 68% CHI SQUARE CONFIDENCE INTERVALS
 SE = 0.36 SE = 0.43 SE = 1.25 QUALITY = A
 AZ = 12 AZ = -17

CHI SQUARE 68% (2DOF) ELLIPSE SEMIAXES = 0.54 KM AND 0.66 KM
 SE OF ORIG = 0.06 TOTAL NUMBER OF ITERATIONS = 3 DMAX = 400.00 SEQUENCE NUMBER =
 AT THE CLOSEST STATION USED IN THE SOLUTION BOTH P AND S WERE USED THE S MINUS P INTERVAL EQUALS 3.90

DATE ORIGIN LAT LONG DEPTH MAG NO D1 GAP D RMS ERH ERZ Q SGD ADJ IN NR AVR AAR NM AVXN SDXN NC AVTB PDM
 830118 5 9 11 98 35N35 34 84W17 04 13 70 21 32 88 1 0 22 0.4 1.3 C B C 0.22 10 30 0 00 0.15 0 0.0 0

(- STATION DATA -) (----- P-WAVE TRAVEL-TIME DATA AND DELAYS -----) VARI (---- S-WAVE TRAVEL-TIME DATA ----) (--- MAGNITUDE DATA ---)

STN	DIST	AZM	AIN	PSEC	PRMK	+TCOR	O=TTOR	TTCAL	C-DLAY	EMLY	P-RES	P-WT	THIC	SSEC	SRMK	TTOR	TTCAL	S-RES	S-WT	AMX	PR	XMAG	F	EMF	EMAG
ILT	31.9	180	106	18.10				6.12	5.94	1	.044	0.14	1.511	22.00		10.02	10.03	-0.07	1.133						
ETT	33.0	208	105	18.12				6.14	6.11	1	.030	-0.02	1.511	0.00	4-11.98	10.32	-22.37	0.000							
ORT	35.6	357	103	18.50				6.52	6.51	1	.030	-0.02	1.511	23.00		11.02	11.01	-0.03	1.133						
TKL	46.8	80	96	20.28				8.30	8.30	1	.026	-0.03	1.511	26.50	1 14.52	14.07	0.42	0.850							
HPK	52.3	44	95	21.10				9.12	9.18	1	.023	-0.08	1.490	27.30	1 15.32	15.59	-0.29	0.838							
DCT	60.6	192	93	22.50				10.52	10.53	1	.037	-0.04	1.420	30.50	2 18.52	17.08	0.60	0.533							
BHT	66.3	296	92	23.40	0			11.42	11.45	1	.061	-0.05	1.373	31.70		19.72	19.44	0.19	1.030						
BBC	90.3	191	79	27.23				15.25	15.26	1	.107	-0.12	1.183	37.21	3 25.23	25.02	-0.83	0.222							
CRG	106.7	195	79	29.60	1			17.62	17.86	1	.033	-0.24	0.796	0.00	4-11.98	30.00	-42.39	0.000							
RBNC	120.6	102	79	32.10				20.12	20.09	1	.145	-0.11	0.963	46.40		34.42	34.11	0.11	0.722						
CCVA	125.5	26	79	33.40	2			21.42	20.86	1	.045	-0.51	0.465	48.60	4 36.62	35.44	1.12	0.000							
BRBC	181.7	84	67	41.51	0			29.53	29.52	1	.190	-0.18	0.588	63.00	2 51.02	50.14	0.60	0.220							
HGA	205.2	225	49	0.00	4			48.02	32.83	1	.049	15.14	0.000	10.50	4 58.32	55.88	2.57	0.000							
OCA	224.0	242	49	0.00	4			48.02	35.13	1	.032	12.86	0.000	15.80	4 63.82	59.00	3.27	0.000							
GFM	231.1	75	49	0.00	4			48.02	36.01	1	.022	11.75	0.000	15.26	4 63.30	61.00	1.65	0.000							

(ERROR ELLIPSE)
 DATE ORIGIN LAT LONG DEP P SGAP DMRSSD A1AZ1 AX2 AX2G MAG(D)
 830118 5 9 12 03N35 34 84W17 0413 712 9 88 31 2BC 0 4-76 0 4 1.3A 0 0

QUALITY EVALUATION

DIAGONALS IN ORDER OF STRENGTH
 AVE OF END POINTS Z SE NW E SW NE N
 0 27 0 67 0 72 0 80 0 83 0 92 0 97

NUMBER RMS MIN DRMS AVE DRMS QUALITY
 17 0.22 0.25 0.38 B

BEGIN-----
 83/ 1/27 22/ 9 23) 27 JAN 83 GRTN 83/ 1/27 22/ 9

I	LAT	LONG	DEPTH	RMS	NO	PRMS	DAMP	ADJUSTMENTS IN PRINCIPAL DIRECTIONS						ADJUSTMENTS				TAKEN											
								AZ/DP	STEP	SE	AZ/DP	STEP	SE	AZ/DP	STEP	SE	DLAT		DLOD	DZ	DLAT	DLOD							
1	39.3	46.4	10.0*	7.29	28	2.90	10E-02	261/	0	-33.9	6.63	331/	0	27.72	8.68	0/90	0000	99	0	40.6	-16	4	000	20.3	-8				
2	50.5	41.0	10.0	3.97	28	4.54	10E-02	318/	1	11.79	1.37	81/	4	-20.5	1.00	261/86	3	227	0	51	22.3	-7.2	4	85	22.3	-7			
3	2.5	36.2	14.8	0.30	28	2.60	10E-02	42/	0	5580	588	132/	1	9025	847	285/89	1	214	0	39	1.02	314	1.21	1	0	0	0		
4	3.0	36.4	16.1	0.26	28	2.53	10E-02	42/	0	0242	577	132/	7	0065	831	307/83	8854	2	59	088	074	878	0	1	0	0	0		
5	3.1	36.5	16.9	0.25	28	2.52	10E-02	42/	0	0074	576	132/	8	0013	827	310/82	1412	2	40	019	011	140	0	0	0	0	0		
6	3.1	36.5	17.1	0.25	28	2.52	10E-02	42/	0	001	576	132/	8	0018	827	310/82	0075	2	38	001	003	007	0	0	0	0	0		
6	3.1	36.5	17.1	0.25	28	2.52	10E-02	42/	0	001	576	132/	8	0018	827	310/82	0075	2	38	001	003	007	0	0	0	0	0		

HORIZONTAL & VERTICAL SINGLE VARIABLE (1DOF) 68% CHI SQUARE CONFIDENCE INTERVALS
 SE = 0.31 AZ = 41 SE = 0.47 AZ = -49 SE = 1.24 QUALITY = 4

CHI SQUARE 68% (2DOF) ELLIPSE SEMIAXES = 0.47 KM AND 0.72 KM
 SE OF ORIG = 0.06 TOTAL NUMBER OF ITERATIONS = 6 DMAX = 400.00 SEQUENCE NUMBER =
 AT THE CLOSEST STATION USED IN THE SOLUTION BOTH P AND S WERE USED. THE S MINUS P INTERVAL EQUALS 5.90

DATE ORIGIN LAT LONG DEPTH MAG NO D1 GAP D RMS ERH EFG SGD 45 IN NR AVR AAR NM AVRM SDAM NF AVFM
 830127 22 9 34 74 36N 3.10 83W36 47 17.07 28 46 77 1 0.25 0 5 1 3 0 0 0 14 10 34 0 00 0 20 0 0.0 0

(- STATION DATA -)										P-WAVE TRAVEL-TIME DATA AND DELAYS										S-WAVE TRAVEL-TIME DATA										MAGNITUDE DATA									
STN	DIST	AZM	AIN	PSEC	PRMK	TCOR	D	TTOR	TTICAL	C-DLAY	EBLY	P-RES	P-WT	WAFI	THIC	SSEC	SRMK	TTOR	TTICAL	S-RES	S-WT	AMA	PR	XMAG	P	FMF	PRMG												
TKL	46.2	199	102	43.20				8.46	8.27			0.30	0.16	2.050	49.10	1	14.36	14.01	0.31	1.153																			
SMTN	53.0	46	99	44.30				9.56	9.34			0.64	0.16	2.015	39.50		15.76	15.83	-0.16	1.512																			
CCVA	61.4	355	96	45.40				10.66	10.67			0.46	-0.05	1.919	53.00		18.26	18.09	0.11	1.439																			
ORT	64.8	256	96	45.80				11.06	11.20			0.30	-0.17	1.881	54.00	0	19.26	19.00	0.22	1.410																			
CBT	92.9	233	93	0.00	4			-34.74	15.65			0.28	-0.42	0.000	61.20	0	26.46	26.58	-0.15	1.184																			
RBNG	95.4	144	93	50.80				16.06	16.05			1.45	-0.13	1.553	62.35		27.61	27.26	0.15	1.165																			
TL7	103.3	216	92	31.30	3			16.56	17.30			0.41	-0.78	0.368	64.30		29.56	29.39	0.12	1.105																			
BRBC	124.3	106	76	55.40				20.66	20.59			1.75	-0.10	1.273	70.00		35.26	34.95	0.06	0.954																			
BBG	131.9	188	76	56.10	2			21.36	21.77			1.20	-0.53	0.601	72.00		37.26	36.56	0.13	0.902																			
DCT	132.9	214	76	56.20	1			21.46	21.92			0.45	-0.50	0.896	72.00		37.26	37.21	-0.01	0.896																			
RHT	158.2	227	76	0.00	2			25.26	25.81			0.26	-0.58	0.489	19.00	1	44.26	43.03	0.39	0.551																			
GFM	162.3	87	70	1.10				26.36	26.44			1.66	-0.24	0.945	20.20	1	45.46	44.90	0.32	0.532																			
PLVA	229.9	72	50	10.40				35.66	35.51			1.74	-0.02	0.484	36.00	2	61.26	60.46	0.53	0.182																			
L&KY	234.3	333	50	11.30	2			36.56	36.05			0.64	0.51	0.230	38.35	4	63.61	61.38	-2.23	0.000																			
TVG	241.5	220	50	12.50	3			37.76	36.92			0.42	0.80	0.105	32.00	4	57.26	55.07	-5.67	0.000																			
SBKY	242.9	353	50	12.50	2			37.76	37.09			0.67	0.67	0.207	36.90	4	62.16	63.16	-1.00	0.000																			
PWLA	421.3	255	50	34.60	3			59.86	58.91			0.26	0.9300	0.000	80.10	4	105.36	100.56	4.85	0.000																			

DATE ORIGIN LAT LONG DEP P SGAP DMRSSD AX1AZ1 AX2 AXZG MAG(D)
 830127 22 9 34 74 36N 3 10 83W36 47 17 11513 77 46 3BC 0 5-48 0.3 1.3A 0 0

QUALITY EVALUATION

DIAGONALS IN ORDER OF STRENGTH
 AVE OF END POINTS Z NW N SE E SW NE 6

NUMBER OF RMS MIN DRMS AVE DRMS QUALITY B

-----BEGIN-----

83/ 1/29 18/ 8										24) 29 JAN 83 GRTN										83/ 1/29 18/ 8									
										-----ADJUSTMENTS IN PRINCIPAL DIRECTIONS-----										(ADJUSTMENTS) (ADJUST TAKEN)									
I	LAT	LONG	DEPTH	RMS	NU	PRMS	DAMP			-AZ/DP	-STEP	-SE	AZ/DP	STEP	SE	-AZ/DP	-STEP	-SE	DLAT	DLON	DZ	DLAT	DLON						
1	55.6	52.7	10.0	4.39	20	416	10E-02			32/ 2	24.74	1.23	124/45	10.30	1.82	300/45	11.83	2.13	21.2	-12	16.4	21.2							
2	7.0	44.8	18.4	0.00	20	230	10E-02			214/ 4	1.819	7.67	122/28	2.493	1.32	312/62	-5.41	1.97	947	-1.1	-6.1	0.9							
3	7.5	44.0	18.3	0.00	20	227	10E-02			214/ 4	2182	6.8	123/21	4.363	1.17	311/69	-1.54	1.95	946	-1.7	-1.6	0.0							
4	7.5	44.0	18.7	0.00	20	228	10E-02			214/ 4	0014	6.53	124/18	0.229	1.18	310/72	-1.07	2.07	-0.1	-0.1	-1.1	0.0							
5	7.5	44.0	18.7	0.00	20	228	10E-01			214/ 4																			
4	7.5	44.0	18.6	0.00	20	228	10E+00			214/ 4	0014	6.53	124/18	0.229	1.18	310/72	-1.07	2.07	-0.1	-0.1	-1.1	0.0							
5	7.5	44.0	18.7	0.00	20	228	10E+00			214/ 4	0014	6.48	124/18	0.216	1.15	310/72	-0.91	1.91	-0.1	0.00	-0.02	0.00							
6	7.5	44.0	18.6	0.00	20	228	10E+00			214/ 4	001	6.47	124/18	0.005	1.15	310/72	-0.17	1.91	0.00	0.00	-0.02	0.00							
6	7.5	44.0	18.6	0.00	20	228	10E-02			214/ 4	001	6.53	124/18	0.006	1.18	310/72	-0.17	2.08	0.00	0.00	-0.02	0.00							

HORIZONTAL & VERTICAL SINGLE VARIABLE (1DOF) 68% CHI SQUARE CONFIDENCE INTERVALS
 SE = 0.35 SE = 0.69 SE = 1.08 QUALITY = A
 AZ = 36 AZ = -54

CHI SQUARE 68% (2DOF) ELLIPSE SEMIAXES = 0.54 KM AND 1.05 KM
 SE OF ORIG = 0.07 TOTAL NUMBER OF ITERATIONS = 6 DMAX = 400.00 SEQUENCE NUMBER =
 AT THE CLOSEST STATION USED IN THE SOLUTION BOTH P AND S WERE USED THE S MINUS P INTERVAL EQUALS 3.80

DATE	ORIGIN	LAT	LONG	DEPTH	MAG	NO	D1	GAP	D	RMS	ERH	ERZ	G	SGD	ADJ	IN	NR	AVR	AAR	NM	AVXM	SDAM	HF	AVTH	SEFF
830129	18 8	29.95	36N 7.55	83W43.96	18.61	0	7	1.1	B	0.09	10	22	0.00	0.17	0	0	0	0	0	0	0	0	0	0	0

(- STATION DATA -)										P-WAVE TRAVEL-TIME DATA AND DELAYS										VARI (S-WAVE TRAVEL-TIME DATA)										MAGNITUDE DATA									
STN	DIST	AZM	AIN	PSEC	PRMK	+TCOR	-O	TTOB	TTCAL	C-DLAY	EDLY	P-RES	P-WT	THIC	SSEC	SRMK	TTOB	TTCAL	S-RES	S-WT	AMX	PR	MAG	F	FMP	FMAG													
HPK	25.8	211	122	35.20				5.25	5.34	1	0.35	-0.13	1.660	39.00		9.05	9.04	-0.04	1.245																				
TKL	52.0	184	103	39.11				9.16	9.24	1	0.30	-0.11	1.641	46.00		1.16	05	15.65	0.36	0.923																			
CCVA	53.3	6	102	39.34				9.39	9.43	1	0.49	-0.09	1.629	46.16		16.21	15.78	0.16	1.222																				
ORT	56.9	245	101	40.00				10.05	9.99	1	0.31	-0.03	1.596	47.80		17.85	16.73	0.67	0.399																				
SMTN	57.1	60	101	39.85				9.90	10.02	1	0.65	-0.18	1.594	47.11		17.16	16.98	0.69	1.195																				
TLT	104.2	209	75	0.00	4			-29.95	17.43	1	0.45	-47.43	0.000	12.40		4-17	55	29	59-47	20	0	0	0	0	0														
ETT	110.2	217	76	48.51				18.56	18.36	1	0.52	-0.15	1.138	61.08		31.13	31.17	-0.11	0.854																				
DCT	134.2	208	76	51.80	0			21.85	22.06	1	0.45	-0.25	0.958	67.30		0	37.35	37.45	-0.16	0.718																			
BRBC	137.4	108	76	52.52				22.57	22.56	1	1.75	-0.16	0.935	68.47		38.52	38.50	-0.03	0.701																				
BGG	139.1	183	76	52.62	1			22.67	22.81	1	1.20	-0.26	0.692	69.26		1	39.31	38.72	0.41	0.519																			
GFM	173.4	90	70	58.81	2			28.88	28.01	1	1.66	0.64	0.348	76.61		3	48.66	47.56	0.65	0.131																			

(ERROR ELLIPSE)
 DATE ORIGIN LAT LONG DEP P SGAP DMRSSD AX1AZ1 AX2 AXZG MAG(D)
 830129 18 829 936N 7 55 83W43.9618 61010121 25 28B 0.7-54 0.4 1.1A 0.0

QUALITY EVALUATION

DIAGONALS IN ORDER OF STRENGTH
 AVE OF END POINTS: 0.33 0.54 0.29 0.59 0.68 0.85 0.44

NUMBER	RMS	MIN	DRMS	AVE	DRMS	QUALITY
18	0.23	0.00	0.00	0.65	0.65	B

-----BEGIN-----
 83/ 3/ 4 14/ 3 25) 4 MAR 83 GRTN (-----ADJUSTMENTS IN PRINCIPAL DIRECTIONS-----) (ADJUSTMENTS) (ADJUST) (ADJUST)
 1 LAT LONG DEPTH RMS NO PRMS DAMP -AZ/DP--STEP--SE =AZ/DP==STEP==SE -AZ/DP--STEP--SE DLAT DLON DZ DLAT DLON DZ
 1 32.4 25.2 10.0 1.64 17 236 10E-02 29/ 3 9.195 755 123/38 -4.07 1.32 292/51 2 524 1.57 6 87 -5.6 5.35 6 9 -5.5 5.35
 2 36.1 21.5 15.3 0.26 17 226 10E-02 32/ 7 0.631 721 124/16 -1.65 1.34 279/73 -2 29 2 28 -15 -83 -2 1 -0 1 -0 1
 3 36.0 21.0 13.2 0.23 17 230 10E-02 32/ 3 0.66 717 123/12 0.248 1.33 287/77 4128 1.98 -02 142 394 0 0 0 0
 4 36.0 21.1 13.6 0.23 17 229 10E-02 32/ 3 0.087 717 123/12 0.256 1.33 288/78 0100 1.92 022 018 006 0 0 0 0
 4 36.0 21.1 13.6 0.23 17 229 10E-02 32/ 3 0.087 717 123/12 0.256 1.33 288/78 0100 1.92 022 018 006 0 0 0 0

HORIZONTAL & VERTICAL SINGLE VARIABLE (1DOF) 68% CHI SQUARE CONFIDENCE INTERVALS
 SE = 0.39 SE = 0.73 SE = 1.02 QUALITY = A
 AZ = 31 AZ = -59

CHI SQUARE 68% (2DOF) ELLIPSE SEMIAXES = 0.59 KM AND 1.11 KM
 SE OF ORIG = 0.08 TOTAL NUMBER OF ITERATIONS = 4 DMAX = 400.00 SEQUENCE NUMBER =
 AT THE CLOSEST STATION USED IN THE SOLUTION BOTH P AND S WERE USED. THE S MINUS P INTERVAL EQUALS 1.10

DATE ORIGIN LAT LONG DEPTH MAG NO D1 GAP D RMS ERH ERZ Q SGD ADJ IN NR AVR AAR NM AVXM SDXM ME AEM
 830304 14 3 27.45 35N35.98 84W21.06 13.61 17 9 144 1 0.23 0 7 1 0 0 B C 0 42 10 24 0.00 0 17 0 0 0 0

(- STATION DATA -) (----- P-WAVE TRAVEL-TIME DATA AND DELAYS -----) VARI (----- S-WAVE TRAVEL-TIME DATA ---) (--- MAGNITUDE DATA ---)

STN	DIST	AZM	AIN	PSEC	PRMK+TCOR-D	TTOR-TTCAL	C-DLAY-EDLY=P-RES	P-WT	THIC	SSEC	SRMP	TTOR	TTCAL	S-RES	S-WT	AM	PR	XMAG	P	PRM	PRM2
TLT	33.7	169	104	33.80	0	3.45	2.82	1	0.53	0.58	0.759	32.00	1	4.55	4.75	-0.29	0.853				
ORT	34.6	7	103	34.00	0	6.35	6.35	1	0.30	0.17	1.517	37.90		10.45	10.48	-0.09	1.138				
TKL	52.7	83	94	36.63	0	6.55	6.55	1	0.06	-0.09	1.494	43.10		15.65	15.67	-0.05	1.121				
MPK	56.0	50	94	37.10	0	9.65	9.78	1	0.23	-0.15	1.466	44.00		16.55	16.60	-0.07	1.099				
DCT	60.8	186	93	38.40	1	10.93	10.57	1	0.37	0.35	1.068	44.20	4	16.75	17.95	-1.24	0.000				
RHI	75.4	220	79	40.20	0	12.75	12.90	1	0.24	-0.17	1.305	49.20		21.75	21.90	-0.18	0.979				
RBNC	126.8	102	79	0.00	4	32.55	21.07	1	1.45	11.34	0.000	7.88	4	40.43	35.79	4.44	0.000				
SMTN	136.5	50	79	49.80	1	22.35	22.63	1	0.61	-0.32	0.645	66.80	4	41.35	38.43	2.82	0.000				
CHTN	183.1	53	67	57.30	0	29.85	29.74	1	0.54	0.04	0.583	79.00	3	51.55	50.51	0.96	0.109				
BRBC	187.6	85	67	0.00	4	32.55	30.41	1	1.90	1.95	0.000	19.96	2	52.51	51.66	0.57	0.210				
GFM	236.7	75	49	0.00	4	32.55	36.69	1	2.22	-4.37	0.000	32.82	4	65.37	62.48	2.54	0.000				

(ERROR ELLIPSE)
 DATE ORIGIN LAT LONG DEP P SGAP DMRES AX1AZ1 AX2 AXZG MAG(D)
 83030414 327 435N35 98 84W21 0613 6 9 8144 9 280 0 7-58 0 4 1.0A 0 0

QUALITY EVALUATION

DIAGONALS IN ORDER OF STRENGTH AVE OF END POINTS
 0 31 0 64 0 72 0 98 1 02

NUMBER RMS MIN DRMS AVE DRMS QUALITY
 15 0 23 0 32 0 72 B

-----BEGIN-----
 83/ 3/13 3/53 26) 13 MAR 83 A GRN (-----ADJUSTMENTS IN PRINCIPAL DIRECTIONS-----)(ADJUSTMENTS)(ADJUST TAKEN)
 1 LAT LONG DEPTH RMS NO PRMS DAMP -AZ/DP--STEP--SE -AZ/DP--STEP--SE -AZ/DP--STEP--SE DLAT DLON DZ DLAT DLON DZ
 1 32.4 23.2 10.0 0.89 12 .234 .10E-02 15/ 2 -2.73 1.05 284/35 -5.53 3.09 107/55 6.663 1.62 -4.8 -7.4 2.21 -4.8 -7.4 2.2
 2 29.7 20.4 12.2 0.26 12 .227 .10E-02 14/ 3 .0376 .992 106/29 1.144 1.42 280/60 -.744 3.46 .245 .385 -1.2 0.2 0.6 -1.2
 3 29.9 20.8 11.0 0.22 12 .218 .10E-02 13/ 1 -.019 .939 103/26 .0916 1.37 281/64 -.585 3.49 -.05 -.17 -.57 -0.1 -0.2 -0.6
 4 29.8 20.7 10.4 0.22 12 .219 .10E-02 13/ 1 .0017 .938 103/26 .0047 1.36 280/64 .0175 3.52 .004 .011 .014 0.0 0.0 0.0
 4 29.8 20.7 10.4 0.22 12 .219 .10E-02 13/ 1 .0017 .938 103/26 .0047 1.36 280/64 .0175 3.52 .004 .011 .014 0.0 0.0 0.0

HORIZONTAL & VERTICAL SINGLE VARIABLE (1DOF) 68% CHI SQUARE CONFIDENCE INTERVALS
 SE = 0.50 SE = 1.03 SE = 1.72 QUALITY = B
 AZ = 11. AZ = -79.

CHI SQUARE 68% (2DOF) ELLIPSE SEMIAXES = 0.77 KM AND 1.61 KM
 SE OF ORIG = 0.14 TOTAL NUMBER OF ITERATIONS = 4 DMAX = 400.00 SEQUENCE NUMBER =
 AT THE CLOSEST STATION USED IN THE SOLUTION BOTH P AND S WERE USED. THE S MINUS P INTERVAL EQUALS 0.90

DATE ORIGIN LAT LONG DEPTH MAG NO D1 CAP D RMS ERH ERZ Q SQD ADJ IN NR AVR AAR NM AVXM SDXM NF AVFM SDFM
 830313 353 12.38 35N29.85 84W20.65 10.43 12 8 127 1 0.22 1.0 1.7 B B B 0.59 10 14 0.00 0.19 0 0.0 0

(- STATION DATA -) (----- P-WAVE TRAVEL-TIME DATA AND DELAYS -----) VARI (----- S-WAVE TRAVEL-TIME DATA -----) (----- MAGNITUDE DATA -----)
 STN DIST AZM AIN PSEC PRMK+TCOR-O-TTDB-TTCAL C-DLAY-EDLY-P-RES P-WT THIC SSEC SRMK TTDB TTCAL S-RES S-WT AMX PR XMAG R FMP FMAG
 CBT 8.4 304 139 15.10 1 2.72 2.33 1 .050 0.34 1.004 15.00 1 3.62 3.70 -0.36 0.753
 ETT 21.5 208 109 16.70 1 4.32 4.15 1 .050 0.12 1.339 17.50 1 7.12 6.77 0.08 1.004
 TLT 22.5 166 108 17.00 1 4.62 4.29 1 .043 0.28 1.004 17.50 1 7.12 7.21 -0.16 1.004
 DRT 45.9 4 91 0.00 4 -12.38 8.11 1 .025 -20.52 0.000 26.00 1 13.62 13.69 -0.10 1.004
 DCT 49.6 189 91 21.20 1 8.82 8.74 1 .034 0.05 1.339 26.90 1 14.52 14.76 -0.27 0.733
 TKL 54.7 71 91 21.70 1 9.32 9.56 1 .023 -0.27 0.977 26.90 1 16.52 16.18 0.31 0.733
 BBO 84.5 145 79 26.80 0 14.42 14.46 1 .099 -0.14 1.088 38.75 4 26.37 24.62 1.60 0.000

(ERROR ELLIPSE)
 DATE ORIGIN LAT LONG DEP P SCAP DMRSSD AX1AZ1 AX2 AXZG MAG(D)
 830313 353 12.435N29.85 84W20.65 10.4 6 6127 8.288 1.0-78 0.5 1.78 0.0

QUALITY EVALUATION

DIAGONALS IN ORDER OF STRENGTH AVE. OF END POINTS Z NE SE N NW E SW
 0.40 0.47 0.50 0.52 0.55 0.71 0.73

NUMBER RMS MIN DRMS AVE DRMS QUALITY
 7 0.22 0.21 0.57 B

83/ 3/14 2172) 27) 13 MAR 03 B ORIN (-----ADJUSTMENTS IN PRINCIPAL DIRECTIONS-----) (ADJUSTMENTS) (ADJUST) 83/ 3/14 21

I	LAT	LONG	DEPTH	RMS	NO	PRMS	DAMP	-AZ/DP	-STEP	-SE	=AZ/DP	=STEP	=SE	-AZ/DP	-STEP	-SE	DLAT	DLOD	DZ	DLAT	DL
1	55.6	32.7	10.0	2.79	7	070	10E-02	300/12	6.916	1.09	39/36	-7.37	2.39	261/52	17.69	611	-12	12.5	10.9	-11.9	12
2	49.1	1.0	20.9	0.40	7	059	10E-02	310/5	-2.30	0.93	218/24	1.866	0.504	51/65	-8.00	3.60	-2.2	-2.2	-8.2	-2.2	-10
3	47.9	0.9	12.7	0.14	7	104	10E-02	305/0	-391	1.38	215/18	2717	0.790	36/72	2.761	5.00	0.660	-96	2.53	0.7	-1
4	48.3	0.2	15.2	0.11	7	091	10E-02	306/9	-252	1.25	214/18	1991	0.732	50/71	-2.12	6.79	-44	213	-2.1	-0.4	-6
4	48.1	0.4	13.1	0.12	7	000	10E-01	306/9			214/18			50/71							-6
5	48.3	0.2	15.2	0.11	7	091	10E-01	306/9	-252	1.25	214/18	1990	0.735	50/71	-2.03	6.67	-42	191	-2.0	-0.4	-6
4	48.1	0.4	13.1	0.12	7	000	10E-00	306/9			214/18			50/71							-6
5	48.3	0.2	15.2	0.11	7	098	10E+00	305/9	-219	1.25	214/18	1890	0.768	50/71	-3.87	3.12	-06	-18	-4.4	-0.1	-6
6	48.3	0.1	14.0	0.10	7	097	10E+00	305/9	0001	1.23	214/18	0188	0.755	50/71	-2.90	3.11	-05	082	-2.8	0.0	-6
7	48.2	0.2	14.0	0.10	7	095	10E+00	310/8	0249	1.19	215/27	-069	0.698	56/62	0.372	2.94	0.64	-09	0.6	0.1	-6
7	48.3	0.1	14.0	0.10	7	090	10E+01	310/8			215/27			56/62							-6
8	48.2	0.2	14.0	0.10	7	090	10E+01	310/8	0018	1.0	215/27	-013	0.69	56/62	0.048	3.41	-01	002	0.0	0.0	-6
8	48.2	0.2	14.0	0.10	7	090	10E-02	310/8	0085	1.11	215/27	-072	0.698	56/62	1.629	5.85	0.99	-5.7	1.4	0.0	-6

HORIZONTAL VARIATION OF THE VARIABLE (RMS) OF SQUARE CONFIDENCE INTERVALS
 SE = 0.64 SE = 1.51 SE = 2.76 QUALITY = 0
 AZ = 129 AZ = 102 AZ = 102

CHI SQUARE TEST OF FIT: ELLIPSE = 0.5 KM AND 2.32 KM
 EL = 0.012 NUMBER OF POINTS = 5 (MAX) = 00 CO SEPARABLE TRIMMER =
 AT THE CLOSEST POINTS ONLY IN THE SOLUTION BOTH POINTS WERE USED THE 5 MINUS F INTERVAL EQUALS 2.70

DATE ORIGIN LAT LONG DEPTH MAG NO OF GAP D RMS ERR ELLIPSE D ADJ IN NR AVR AAF NM AVX SDX DE AV
 830314 2121 44 13 20N48 24 84W 0 15 14 48 7 18 182 1 0 10 1 3 2 8 0 0 0 38 10 10 0 00 0 08 0 0 0 0

(--- STATION DATA ---) (--- P-WAVE TRAVEL-TIME DATA AND DELAYS ---) VARI (--- S-WAVE TRAVEL-TIME DATA ---) (--- MAGNITUDE ---)

SIN	DIST	AZM	AIN	PSEC	PRMK	TCOR	O=TIGR	TICAL	C-DLAY	EDLY	P-RES	P-WT	THIC	SSEC	SRMK	TTOD	TICAL	S-RES	S-WT	AMX	PR	XMAG	R
HPK	17.5	39	126	48.00			3.87	3.87	1	0.37	-0.04	1.246	35.70		6.57	6.55	-0.04	0.935					
TKL	26.3	128	110	49.42			5.29	5.12	1	0.34	0.14	1.246	35.83		8.69	8.63	0.01	0.935					
ART	29.7	293	110	0.00	4		15.87	5.63	1	0.34	10.21	0.000	35.90	4	19.77	9.52	10.20	0.000					
ELI	37.0	118	110	0.00	1		11.56	11.56	1	0.47	0.34	1.128	35.71		19.58	19.59	-0.07	0.846					
BB3	104.6	170	110	0.00	1		-44.13	17.13	1	107.61	76.0	0.000	75.83		29.70	29.75	-0.20	0.666					

(ERROR ELLIPSE)
 DATE ORIGIN LAT LONG DEP P SGA1 DMPSD AX1 AX2 AX3 MAG10
 830314 2121 44 13 20N48 24 84W 0 15 14 48 3 4182 17 102 1 5 58 0.6 2.80 0 0

QUALITY EVALUATION
 DIAGONALS IN ORDER OF STRENGTH
 AVE OF END POINTS 0.12 0.70 0.25 0.83 0.84 0.86 1.11
 NUMBER NO MIN MAX AVE PRM QUALITY
 13 0 3 0.34 0.34 B

BEGIN -----

83/ 4/ 5 3/17 28) 5 APR 83 ORTN (-----ADJUSTMENTS IN PRINCIPAL DIRECTIONS-----) (ADJUSTMENTS) (ADJUST. TAKEN)

I	LAT	LONG	DEPTH	RMS	NO	PRMS	DAMP	-AZ/DP--STEP--SE	-AZ/DP--STEP--SE	-AZ/DP--STEP--SE	DLAT	DLONG	DZ	DLAT	DLONG	DZ	
1	40.0	12.7	10.0	2.02	21	334	1.0E-02	217/ 7 -9.14	.957	126/ 7 -9.88	1.23	331/80	4.521	1.79	-12	-2.3	6.77-12.3
2	33.3	11.1	16.8	0.29	21	213	1.0E-02	36/ 0 -4.53	.618	126/ 6 -4.85	.848	304/84	-3.36	1.90	-86	-4.3	-3.3
3	32.9	10.8	13.5	0.22	21	219	1.0E-02	214/ 3 -0.35	.610	124/ 8 0.257	.849	325/82	3.927	1.66	.032	.074	.387
4	32.9	10.9	13.9	0.22	21	219	1.0E-02	215/ 3 0.008	.613	124/ 8 0.069	.852	326/81	-0.21	1.62	.002	.003	-0.02
5	32.9	10.9	13.9	0.22	21	219	1.0E-02	215/ 3 0.008	.613	124/ 8 0.069	.852	326/81	-0.21	1.62	.002	.003	-0.02

HORIZONTAL & VERTICAL SINGLE VARIABLE (1DOF) 68% CHI SQUARE CONFIDENCE INTERVALS

SE = 0.33 SE = 0.47 SE = 0.86 QUALITY = A

AZ = 37 AZ = -53

CHI SQUARE 68% (2DOF) ELLIPSE SEMIAXES = 0.51 KM AND 0.71 KM

SE OF ORIG = 0.06 TOTAL NUMBER OF ITERATIONS = 4 DMAX = 400.00 SEQUENCE NUMBER =

AT THE CLOSEST STATION USED IN THE SOLUTION BOTH P AND S WERE USED THE S MINUS P INTERVAL EQUALS 2.00

DATE ORIGIN LAT LONG DEPTH MAG NO DI GAP D RMS ERH ERZ Q SGD ADJ IN NR AVR AAR NM AVXM SDXM NF AVEM SCFF

830405 317.59 16.39 13.87 8.4 21 10 84 1 0.22 0.5 0.9 B B A 0.40 10 26 0.00 0.16 0 0.0 0

(- STATION DATA -) (----- P-WAVE TRAVEL-TIME DATA AND DELAYS -----) VARI (----- S-WAVE TRAVEL-TIME DATA -----) (--- MAGNITUDE DATA ---)

STN	DIST	AZM	AIN	PSEC	PRMK	+TCUR	-DTUB	-TTCL	C-DLAY	EDLY	P-RES	P-WT	THIC	SSEC	SRMK	TTUB	TTCL	S-RES	S-WT	AMA	PR	AMAG	ERR	ERR
GBTN	13.4	349	130	2.60			3.44	3.30	1	0.43	0.10	1.412	4.60	0	5.44	5.57	-0.19	1.059						
TLT	28.9	199	109	4.90	0		5.74	5.47	1	0.46	0.27	1.412	8.50		9.34	9.23	0.02	1.059						
ETT	35.0	225	104	5.68			6.52	6.42	1	0.49	0.05	1.412	10.21		11.05	10.86	0.13	1.059						
TKL	38.9	72	101	6.20			7.04	7.04	1	0.28	-0.02	1.412	11.42	1	12.26	11.91	0.31	0.794						
ORT	41.6	345	99	6.50			7.34	7.48	1	0.29	-0.16	1.412	11.70		12.54	12.65	-0.15	1.059						
HPK	50.1	33	96	8.00			8.84	8.83	1	0.23	-0.01	1.411	14.00		14.84	14.97	0.13	1.059						
BHT	76.6	296	79	12.40			13.24	13.09	1	0.65	0.08	1.205	21.90	1	22.74	22.23	-0.43	0.678						
BEG	82.0	156	79	12.40	3		13.24	13.95	1	1.07	-0.81	0.291	22.29	2	23.13	23.68	-0.70	0.437						
RHT	82.9	131	79	13.00			13.64	14.60	1	0.24	-0.18	1.163	22.80		23.64	23.76	-0.15	0.872						
RRMC	110.6	101	79	0.00	4		0.84	18.49	1	1.45	-17.59	0.000	30.92	0	31.76	31.40	0.16	0.724						
SMIN	129.2	44	79	20.80			21.64	21.45	1	0.61	0.13	0.845	38.60	4	39.44	36.43	2.93	0.000						
BRBC	173.0	82	67	0.00	4		0.84	28.21	1	1.90	-27.56	0.000	47.90	2	48.74	47.91	0.55	0.223						
GFM	223.5	73	49	0.00	4		0.84	35.05	1	2.22	-34.43	0.000	62.10	4	62.94	59.67	2.93	0.000						

(ERROR ELLIPSE)

DATE ORIGIN LAT LONG DEP P SGAP DMRSSD AX1AZ1 AX2 AXZG MAG CD

830405 317.59 16.39 13.87 8.4 21 10 84 1 0.22 0.5 0.9 A 0.40 10 26 0.00 0.16 0 0.0 0

QUALITY EVALUATION

DIAGONALS IN ORDER OF STRENGTH

AVE OF END POINTS 0.38 0.64 0.68 0.83 0.93 0.95 0.96

NUMBER RMS MIN PRMS AVE PRMS QUALITY

17 0.42 0.40 0.80 0.80 E

-----BEGIN-----
 83/ 5/16 6/50 29) 16 MAY 83 GRTN 83/ 5/16 6/50
 (5) I LAT LONG DEPTH RMS NO PRMS DAMP (-)-----ADJUSTMENTS IN PRINCIPAL DIRECTIONS----- (ADJUSTMENTS) (ADJUST TAKEN)
 1 39.5 46.4 10 0 4 57 18 420 1.0E-02 212/24 -28.6 1.45 105/33 9.497 2.95 331/47 13.87 2.34 -12.26 16.8 -11.6 20.1 1.1 1.1
 2 33.2 31.7 26 8 0 42 18 193 1.0E-02 224/ 1 -459 685 134/10 -352 1.16 317/80 -8.44 2.30 -1.7 -9.6 -8.0 1.3 1.3
 3 33.3 31.1 18 6 0 18 18 161 1.0E-02 136/ 1 7049 687 81/ 2 -390 5.19 261/87 -387 2.04 720 247 -1.3 0.7 0.0 0.0 0.0
 4 32.7 31.2 18 0 0 16 18 162 1.0E-02 136/ 1 0252 694 81/ 2 -001 5.19 261/88 0364 2.09 018 018 0.3 0.0 0.0 0.0 0.0
 4 32.7 31.2 18 0 0 16 18 162 1.0E-02 136/ 1 0252 694 81/ 2 -001 5.19 261/88 0364 2.09 018 018 0.3 0.0 0.0 0.0 0.0

HORIZONTAL & VERTICAL SINGLE VARIABLE (1DOF) 68% CHANCE SQUARE CONFIDENCE INTERVALS
 SE = 0.38 SE = 0.46 SE = 1.12 QUANTITY = 4
 AZ = -134 AZ = 69

CHI SQUARE 68% (2DOF) ELLIPSE SEMIAXES = 0.43 KM AND 0.73 KM
 SP OF ORIG = 0.07 TOTAL NUMBER OF ITERATIONS = 4 DMAX = 300.00 SEQUENCE NUMBER =
 AT THE CLOSEST STATION USED IN THE SOLUTION BOTH F AND S WERE USED THE S MINUS F INTERVAL EQUALS 4 10

DATE ORIGIN LAT LONG DEPTH MAG NO DI GAP D RMS EPH EPI G S D ADJ IN NR AVR AAR NM AVAN SDAM NE AWH NEB
 830516 65023 20 35N32 66 84W 3 24 17 99 18 28 111 1 1 16 0 5 1 1 B B B 0.93 10 28 0 0 0.11 0 0.0 0 0.0 0.0

(- STATION DATA -) (----- P-WAVE TRAVEL-TIME DATA AND DELAYS -----) VARI (---- S-WAVE TRAVEL TIME DATA ----) (- MAGNITUDE DATA -)
 STN DIST AZM AIN PSEC PPKM+TCOR U-TTOE-TTICAL C-DELAY-BLLY-P-RES P-WT THIC SSEC SRMK TTOB TTICAL S RES S-WT AMX PR MAG S DEP RES
 TKL 28 3 63 117 28 96 5 70 5 64 1 038 0.02 1.296 33 00 0 7.80 9.24 0.20 0.972
 CBT 33 3 269 113 29 60 0 40 6 36 1 036 0.01 1.296 34 00 0 10.80 10.75 -0.01 0.972
 TLT 34 1 218 112 29 80 0 60 6 48 1 051 0.07 1.296 34 10 0 10.90 10.76 -0.14 0.972
 ETT 43 7 236 105 31 31 8 11 7 93 1 053 0.12 1.296 35 90 0 13.70 13.43 -0.17 0.972
 HPK 45 2 20 104 31 20 8 00 8 16 1 027 -0.19 1.296 36 30 0 13.10 13.02 -0.08 0.243
 DRT 46 4 331 104 0 00 0 4 -2 20 8 35 1 032 -51.58 0.000 35 60 0 17.60 14.14 -31.79 0.000
 RCT 46 4 248 99 3 60 0 0 11 00 11 05 1 032 -0.92 1.227 40 00 0 17.60 17.58 -0.01 0.920
 DCT 59 4 248 99 3 60 0 0 11 00 11 05 1 032 -0.92 1.196 41 90 0 19.70 18.74 -0.10 0.957
 LBT 77 6 163 94 3 60 0 0 12 30 13 24 1 045 -0.95 1.100 45 70 0 22.52 22.46 -0.09 0.825
 SAIN 121 8 40 76 4 96 1 1 25 70 25 17 1 038 0.46 0.614 57 10 4 35 90 34 34 1.56 0.000
 CCVA 122 5 16 76 0 00 4 1 -23 20 20 29 1 050 -43.54 0.000 57 61 0 34 41 34 44 -0.10 0.611
 RCG 133 6 242 76 46 60 4 1 23 40 21 99 1 041 1.36 0.000 62 10 4 38 90 37 34 1.50 0.000
 BRBC 161 6 82 70 0 00 4 1 36 80 26 28 1 190 10.33 0.000 10 60 4 53 40 44 22 10 50 0.000
 GFH 212 6 72 50 0 00 4 1 36 80 33 29 1 222 3.28 0.000 22 40 4 59 20 56 27 2 18 0.000

(ERROR ELLIPSE)
 DATE ORIGIN LAT LONG DEP P GAP DMRUSE AY1AZ1 AX2 AXZQ MAG(D)
 830516 65023 2035N22 66 84W 3 24 18 0 9 9111 28 28 0 5-43 0.3 1 1A 0 0

QUALITY EVALUATION

DIAGONALS IN ORDER OF STRENGTH
 AVE OF END POINTS (0.03) SE 1.0 SE 1.0 SE 1.0 SE 1.0 SE 1.0 SE 1.0 (4)

NUMBER RMS "IF" AVE RMS QUALITY
 15 0.16 0.03 1.00 B

-----BEGIN-----										83/ 5/25 10/46													
30) 25 MAY 83 ORTN										(ADJUSTMENTS) (ADJUST. TAKEN)													
										-----ADJUSTMENTS IN PRINCIPAL DIRECTIONS-----													
I	LAT	LONG	DEPTH	RMS	NO	PRMS	DAMP	-AZ/DP	STEP	SE	-AZ/DP	STEP	SE	-AZ/DP	STEP	SE	DLAT	DLOD	DZ	DLAT	DLOD	DZ	
1	54.6	18.3	10.0	3.39	15	652	10E-02	270/	6	15.31	3.13	5/42	-10.6	5.72	174/47	20.89	3.04	-22	14.4	9	81	-21	9
2	42.7	27.8	19.8	0.70	15	362	10E-02	100/	3	-253	1.77	190/	4	349	1.51	327/85	-9.50	4.58	-54	-1	3	-9	7
3	44.1	27.0	10.1	0.37	15	359	10E-02	196/	5	-450	1.35	105/	9	-695	1.50	313/80	1.307	4.46	-30	-19	3	1	34
4	43.9	27.1	11.4	0.25	14	173	10E-02	104/	1	-421	830	194/	7	1935	4.92	8/83	6	130	94	876	-56	6	07
5	44.4	26.7	17.5	0.16	14	160	10E-02	103/	1	1402	814	193/	8	-1235	6.97	7/82	454	67	216	101	432	0	0
6	44.5	26.8	17.9	0.16	14	159	10E-02	103/	1	0029	814	193/	8	-004	700	7/82	0454	67	003	003	045	0	0
6	44.5	26.8	17.9	0.16	14	159	10E-02	103/	1	0029	814	193/	8	-004	700	7/82	0455	67	003	003	045	0	0

HORIZONTAL & VERTICAL SINGLE VARIABLE (1DOF) 68% CHI SQUARE CONFIDENCE INTERVALS
 SE = 0.43 SE = 0.46 SE = 1.94 QUALITY = 8
 AZ = -95 AZ = -6

CHI SQUARE 68% (1DOF) ELLIPSE SEMIAXES = 0.68 KM AND 0.70 KM
 SE OF ORIG = 0.14 TOTAL NUMBER OF ITERATIONS = 6 DMAX = 400.00 SEQUENCE NUMBER =
 AT THE CLOSEST STATION USED IN THE SOLUTION BOTH P AND S WERE USED. THE S MINUS P INTERVAL EQUALS 3.70

DATE	ORIGIN	LAT	LONG	DEPTH	MAG	NO	D1	GAP	D	RMS	ERH	ERZ	Q	SGD	ADJ	IN	NR	AVR	AAF	NM	ANVM	SDM	NO	ALFA										
830525	1046	5.72	35N44	52	84W26	80	17	93			14	23	110	1	0	16	0	5	1	9	B	B	0	50	10	16	0	0	0	13	0	0	0	0

(- STATION DATA -)	(----- P-WAVE TRAVEL-TIME DATA AND DELAYS -----)	VARI	(---- S-WAVE TRAVEL-TIME DATA ----)	(--- MAGNITUDE DATA ---)
STN	DIST AZM AIN PSEC PRMK+TCOR=TT0B-TTCAL C-DELAY-LCLY=P-RES P-WT	THIC	SSEC SRMK TT0B TTCAL S-RES S-WT AMX PR XMAG	6
ORT	22.6 35 124 10.40	4.68 4.85 1	044 -0.21 1.201	14.10
ETT	46.2 181 104 14.05	8.33 8.30 1	052 -0.02 1.201	20.00
BHT	46.5 285 104 14.10	8.38 8.36 1	072 -0.05 1.201	20.20
RCT	48.1 204 103 14.20	8.48 8.61 1	023 -0.15 1.201	20.20
TLT	51.1 163 102 14.70	8.98 9.07 1	044 -0.13 1.193	21.20
TKL	61.6 99 98 16.40	10.68 10.72 1	029 -0.06 1.123	24.10
DCT	76.4 178 95 19.20	13.48 13.05 1	041 0.40 0.770	27.60
GFM	241.7 79 50 0.00	-5.72 36.67 1	222-42 60 0.000	72.90

(ERROR ELLIPSE)
 DATE ORIGIN LAT LONG DEP P SGAP DMRSSD AX1AZ1 AX2 AXZG MAG(D)
 8305251046 5 735N44 52 84W26 8017.9 7 7110 22 28P 0 5 -5 0.4 1.98 0 0

QUALITY EVALUATION

DIAGONALS IN ORDER OF STRENGTH
 AVE OF END POINTS

Z	NW	E	SE	SW	NE	N
0.27	0.65	0.73	0.82	0.85	0.88	1.00

NUMBER	RMS	MIN	DRMS	AVE	DRMS	QUALITY
12	0.16		0.25		0.24	8

-----BEGIN-----

83/ 5/26		12/30		31) 26 MAY 83 GRTN										83/ 5/26		12/30							
														ADJUSTMENTS IN PRINCIPAL DIRECTIONS				ADJUSTMENTS (ADJUST TAKEN)					
I	LAT	LONG	DEPTH	RMS	NO	PRMS	DAMP	AZ/DP	STEP	SE	AZ/DP	STEP	SE	AZ/DP	STEP	SE	DLAT	DLON	DZ	DLAT	DLON	DZ	
1	54.6	18.3	10.0	3.54	34	613	10E-02	89/2	-3.71	1.49	180/29	-30.3	1.88	336/61	-4.30	2.52	-28	-3.8	11.1	-28.5	-3.8	11.1	-28.5
2	39	15	8	21.1	0	74	305	10E-02	81/1	-187	746	137/4	793	823	316/86	-12	12	34	2.02	-278	-13	2.0	-0.8
3	40	16	0	8.4	0	23	334	10E-02	81/3	-215	513	146/4	292	583	294/84	5903	1.63	-0.9	-23	626	0.1	-0.8	
4	40	15	8	9.0	0	24	334	10E-02	81/3	-001	551	147/4	000	583	294/84	1530	1.52	0.01	0.10	150	0.0	0.0	
5	40	15	8	9.0	0	24	334	10E-01	81/3	-001	551	147/4	000	583	294/84	1570	1.52	0.01	0.10	150	0.0	0.0	
6	40	15	8	9.0	0	24	334	10E+00	81/3	-001	551	147/4	000	583	294/84	1440	1.45	0.00	0.08	144	0.0	0.0	
7	40	15	8	9.0	0	24	334	10E+01	81/3	-001	547	147/4	000	583	294/84	1440	1.45	0.00	0.08	144	0.0	0.0	
8	40	15	8	9.0	0	24	334	10E-01	81/3	0	000	365	147/4	000	583	294/84	0157	4.65	0.00	0.00	015	0.0	0.0
9	40	15	8	9.0	0	24	334	10E-02	81/3	-001	551	147/4	000	583	294/84	1500	1.52	0.01	0.10	150	0.0	0.0	

HORIZONTAL & VERTICAL SINGLE VARIABLE (100F) 68% CHI SQUARE CONFIDENCE INTERVALS
 SE = 0.30 SE = 0.32 SQ = 0.31 QUALITY = A
 AZ = -134 AZ = -44

CHI SQUARE 68% (200F) ELLIPSE SEMIAXES = 0.45 KM AND 0.49 KM
 SE OF ORIG = 0.05 TOTAL NUMBER OF ITERATIONS = 5 DMAX = 400.00 SEQUENCE NUMBER =
 AT THE CLOSEST STATION USED IN THE SOLUTION BOTH P AND S WERE USED THE S MINUS P INTERVAL EQUALS 3.30

DATE ORIGIN LAT LONG DEPTH MAG NO B1 GAP D RMS ERH EPG G SGG ADJ IN NR AVR AAR NM AVXM SDXM NC AVEM
 830526 1230 2.02 35N40.21 84W15.77 9.05 34 27 59 1 0.24 0.3 0.8 C B C 0.14 10 40 0.00 0.13 0 0.0 0

STATION DATA										P-WAVE TRAVEL-TIME DATA AND DELAYS										S-WAVE TRAVEL-TIME DATA										MAGNITUDE DATA									
STN	DIST	AZM	AIN	PSEC	PRMK+TCOR	O-TTDB	TTCAL	C-DLAY	EDLY	P-RES	P-WT	VARI	THIC	SSEC	SRMK	TTDB	TTCAL	S-RES	S-WT	AMX	PR	XHAG	P	PHI	PHI2														
ERT	26.8	352	102	7.00			4.98	4.94	1	0.25	0.91	1.894	10.30					-0.01	1.420																				
TLI	41.0	183	94	9.40			7.38	7.29	1	0.30	0.04	1.894	0.00					-0.29	0.000																				
ETT	42.0	205	94	9.68			7.56	7.46	1	0.35	0.16	1.894	14.63	4	1.33	58	1.33	-0.01	1.420																				
TYL	44.3	92	94	9.87			7.65	7.88	1	0.20	0.56	1.894	15.50					0.00	1.065																				
RCT	51.0	225	93	10.80			8.76	8.98	1	0.15	-0.21	1.892	17.50	1	1.5	48	1.5	0.00	1.059																				
BMT	64.7	288	79	13.20			11.18	11.26	1	0.55	-0.14	1.738	21.30	0	1.9	28	1.9	0.19	1.303																				
DCT	69.8	192	79	14.20			12.18	12.10	1	0.34	0.04	1.685	22.20	1	2.0	18	2.0	-0.36	0.948																				
BBC	97.4	155	71	18.43	1		16.41	16.60	1	1.07	-0.30	1.061	30.49	0	2.8	47	2.8	-0.07	1.051																				
AMN	103.6	303	71	19.20	1		17.18	17.58	1	0.48	-0.46	1.018	32.00					-0.01	1.018																				
REN	120.9	106	71	22.26			20.24	20.34	1	1.45	-0.22	0.903	33.73	0	3.4	70	3.4	-0.10	0.703																				
CGA	123.1	198	71	0.00	4		-2.02	20.69	1	0.26	-22.26	0.000	37.00					-0.26	0.666																				
RCG	125.2	232	71	23.27			21.25	21.05	1	0.37	-0.14	1.167	38.21	1	3.7	19	3.7	0.00	0.000																				
SMN	125.4	51	71	22.80	1		20.78	21.05	1	0.61	-0.34	0.874	38.50	2	3.6	48	3.6	0.58	0.437																				
SWN	169.6	257	66	30.00			27.98	27.99	1	0.27	-0.04	0.821	50.00	1	4.7	98	4.7	0.06	0.452																				
TVC	172.0	214	66	0.00	4		-2.02	28.35	1	0.29	-30.41	0.000	50.80	2	4.0	78	4.0	0.53	0.301																				
CHN	172.0	53	66	30.40			28.38	28.35	1	0.46	-0.30	0.804	51.00	2	4.0	98	4.0	0.59	0.301																				
BRB	179.1	87	66	31.15			29.13	28.78	1	1.75	-0.19	0.377	52.00	0	1.4	98	50.06	-0.04	0.424																				
FPN	187.2	104	63	32.70			30.68	30.67	1	0.88	-0.36	0.700	54.80	10	5.3	68	5.3	0.02	0.131																				
SEV	224.3	141	43	38.20			36.18	35.45	1	0.20	0.14	0.358	64.80	3	6.2	78	6.0	0.33	0.000																				
SPH	227.1	77	39	10			37.02	36.02	1	0.22	0.81	0.116	65.50	4	6.3	48	6.1	0.79	0.000																				

DATE ORIGIN LAT LONG DEF P SGAP DMRESZ A1 A21 A2 AXZG MAG D
 830526 1230 2.02 35N40.21 84W15.77 9.05 18 59 26 280 0.2 43 0.3 0 BA 0.0

QUALITY EVALUATION

ADDITIONAL INFORMATION

-----BEGIN-----
 83/ 7/ 2 6/46 33) 2 JUL 83 GR1N (-----ADJUSTMENTS IN PRINCIPAL DIRECTIONS-----) (ADJUST. TAKEN) 83/ 7/ 2 6/46
 1 LAT LONG DEPTH RMS NO PRMS DAMP (-AZ/DP--STEP--SE #AZ/DP--STEP--SE -AZ/DP--STEP--SE DZ DLAT DLON DZ DLAT DLON DZ
 2 40.0 12.7 10.0 0.58 17 202 10E-02 224/ 2 2.548 .605 316/38 .8864 1.45 131/52 2.422 .942 1.35 -2.4 2.35 1.3 -2.4 2.4
 3 40.7 11.1 12.4 0.19 17 193 10E-02 261/ 3 .0121 .585 319/43 .0714 1.35 132/47 .0819 .926 -.01 .002 1.09 0.0 0.0 0.0 0.1
 3 40.7 11.1 12.5 0.19 17 192 10E-02 261/ 3 .0079 .582 319/43 -.006 1.35 132/47 .0052 .921 -.01 0.00 0.00 0.0 0.0 0.0 0.1
 3 40.7 11.1 12.5 0.19 17 152 10E-02 261/ 3 .0079 .582 319/43 -.006 1.35 132/47 .0052 .921 -.01 0.00 0.00 0.0 0.0 0.0 0.1

HORIZONTAL & VERTICAL SINGLE VARIABLE (100%) CHI SQUARE CONFIDENCE INTERVALS
 SE = 0.61 QUALITY = A
 AZ = -130

CHI SQUARE (8% (90%) ELLIPSE SEMIAXES = 0.49 KM AND 0.96 KM
 SE OF ORIG = 0.07 TOTAL NUMBER OF ITERATIONS = 3 DMAX = 400 CO SEQUENCE NUMBER =
 AT THE CLOSEST STATION USED IN THE SOLUTION BOTH P AND S WERE USED THE S MINUS P INTERVAL EQUALS 1 51

STATION ORIGIN DATE TIME LONG DEPTH MAG (D) GAP D RMS ERH EPD Q ECD ADM IN NR LVS AAR NM AVTM SDAM NE AMT
 830702 64428 21 07 30 24 64411 07 12 48 17 124 1 0 19 0 6 0 0 0 0 11 10 24 0 0 0 14 0 0 0 0

STATION DATA	DATE	TIME	LONG	DEPTH	MAG (D)	GAP	D	RMS	ERH	EPD	Q	ECD	ADM	IN	NR	LVS	AAR	NM	AVTM	SDAM	NE	AMT	
830702	64428	21 07 30	24 64411	07 12 48	17	124	1	0	19	0	6	0	0	11	10	24	0	0	0	14	0	0	0
P-WAVE TRAVEL-TIME DATA AND DELAYS																							
STATION	DATE	TIME	LONG	DEPTH	MAG (D)	GAP	D	RMS	ERH	EPD	Q	ECD	ADM	IN	NR	LVS	AAR	NM	AVTM	SDAM	NE	AMT	
830702	64428	21 07 30	24 64411	07 12 48	17	124	1	0	19	0	6	0	0	11	10	24	0	0	0	14	0	0	0

(ERROR ELLIPSE)
 DATE ORIGIN LAT LONG DEP P GAP DMERR AX1AZ1 AX2 AXZG MAG(D)
 830702 64428 235N40 68 04W11 0712 5 710164 2.226 0.6-42 0 3 0.6A 0.0

QUALITY EVALUATION

DIAGONALS IN ORDER OF STRENGTH
 AVE OF END POINTS 0.59 0.67 0.64 1.05 1.27 1.33 1.35

NUMBER RMS MIN DMAX AVE RMS QUALITY
 17 0.58 17 202 0.58 17 202 A

-----BEGIN-----
 O/ O/ B 19/29 34) B JUL 83 GRTN O/ O/ B 19/29

ADJUSTMENTS IN PRINCIPAL DIRECTIONS										ADJUSTMENTS (ADJUST TAKEN)														
I	LAT	LONG	DEPTH	RMS	NO	PRMS	DAMP	-AZ/DP	-STEP	SE	AZ/DP	-STEP	SE	-AZ/DP	-STEP	SE	DLAT	DLON	DZ	DLAT	DLON	DZ		
1	40	0	12	7	10	0	1	97	33	349	10E-02	-13	3	943	351/79	4	219	1.75	-12	-4	6	91	-12	3
2	33	3	9	6	16	0	0	32	33	251	10E-02	2	3411	600	139/7	-686	756	334/83	-2	85	1.76	-1	0	-33
3	32	8	9	4	14	2	0	0	25	251	10E-02	3	605	559	137/11	0276	706	335/79	-2	913	1.60	-13	0	-2
4	32	7	9	4	13	3	0	0	25	250	10E-02	1	033	554	138/8	0197	707	325/82	-0	733	1.70	044	-0	0
5	32	7	9	4	13	3	0	0	25	250	10E-02	1	0038	554	138/8	0041	705	325/82	-0	007	1.69	0.00	005	-0
6	32	7	9	4	13	3	0	0	25	250	10E-02	1	0038	554	138/8	0041	705	325/82	-0	007	1.69	0.00	005	-0

HORIZONTAL & VERTICAL SINGLE VARIABLE (1DOF) 68% CHI SQUARE CONFIDENCE INTERVALS
 SE = 0.30 SE = 0.39
 AZ = -131 AZ = -41
 SE = 0.90 QUALITY = A

CHI SQUARE 68% (2DOF) ELLIPSE SEMIAXES = 0.45 KM AND 0.60 KM
 SE OF ORIG = 0.05 TOTAL NUMBER OF ITERATIONS = 5 DMAX = 400.00 SEQUENCE NUMBER =
 AT THE CLOSEST STATION USED IN THE SOLUTION BOTH P AND S WERE USED. THE S MINUS P INTERVAL EQUALS 2 10

DATE ORIGIN LAT LONG DEPTH MAG NO D1 GAP D RMS ERH ERZ Q SQD ADJ IN NR AVR AAR NM AVXM SDXM NF AVFM SEFF
 8 1929 5 76 35N32 71 84W 9.35 13 33 33 14 56 1 0 25 0.4 0.9 B B B 0 08 10 40 0 00 0.17 0 0.0 0 0.0

P-WAVE TRAVEL-TIME DATA AND DELAYS										S-WAVE TRAVEL-TIME DATA										MAGNITUDE DATA								
STN	DIST	AZM	AIN	PSEC	PRMK	+TCOR	-O	TTTB	-TTICAL	C-DLAY	-EDLY	P-RLS	P-WT	VARI	THIC	SSEC	SRMK	TTTB	TTICAL	S-RES	S-WT	AMX	PR	XMAG	R	FMP	FMAG	
GBIN	14.3	140	129	10	0010	3		4.24	3.35	1		0.41	0.85	0.459	12.10	2	6.34	5.66	0.62	0.688								
ETTN	36.5	228	101	12	251D			6.49	6.63	1		0.47	-0.18	1.835	17.00	0	11.24	11.21	-0.04	1.376								
TKL	36.8	70	101	12	201D	1		6.44	6.68	1		0.28	-0.27	1.376	17.00	0	11.24	11.31	-0.11	1.376								
DRT	42.6	342	97	13	431C			7.67	7.62	1		0.28	0.03	1.835	18.80	0	13.04	12.90	0.11	1.376								
HPR	49.1	31	94	14	401-			8.64	8.67	1		0.23	-0.05	1.835	20.20	1	14.44	14.69	-0.28	1.032								
FCT	51.0	244	94	14	80			9.04	8.97	1		0.20	0.05	1.825	20.70	1	14.94	15.20	-0.29	1.027								
BCT	59.5	204	92	16	20			10.44	10.35	1		0.37	0.06	1.737	23.40	0	17.64	17.57	0.03	1.303								
DHI	78.9	195	79	19	20			13.44	13.47	1		0.65	-0.09	1.545	28.90	0	23.14	22.67	0.18	1.159								
REG	80.8	157	74	19	701F			13.24	13.77	1		1.07	0.06	1.526	29.80	2	24.04	23.99	0.31	0.572								
EBP	108.2	101	79	24	00			18.24	18.13	1		1.45	-0.04	1.275	36.80	0	31.04	30.80	0.04	0.956								
ADG	113.6	204	79	25	86			19.04	18.99	1		0.26	0.02	1.229	0.00	4	5.76	32.26	-1.16	0.000								
ANTN	119.5	306	79	25	351C	1		19.59	19.92	1		0.48	-0.37	0.884	38.00	4	32.74	33.83	-1.16	0.000								
TVC	126.5	219	72	33	00			27.24	27.27	1		0.29	-0.06	0.816	0.00	4	5.76	46.32	-52.12	0.000								
SRBC	170.3	82	67	33	751D			27.99	27.91	1		1.90	0.11	0.788	54.00	1	48.24	47.40	0.56	0.443								
CHIN	173.3	48	67	33	67E	1		27.91	28.29	1		0.54	-0.44	0.577	54.70	3	48.94	48.66	0.80	0.144								
LCAL	176.0	230	67	34	141D	1		28.38	28.69	1		0.52	-0.36	0.564	55.00	1	49.24	48.73	0.43	0.423								
SSR	202.3	314	49	38	21	0		32.45	32.52	1		0.39	-0.11	0.585	68.20	4	62.44	55.34	7.04	0.000								
GFM	221.3	73	49	41	40	0		35.64	34.85	1		0.22	0.57	0.239	67.00	4	61.24	59.32	1.57	0.000								
ENR	226.3	89	43	42	25	0		36.49	35.44	1		1.13	0.93	0.113	69.10	4	63.34	60.34	2.82	0.000								
SGIN	256.2	77	44	45	90	0		40.14	39.11	1		0.41	0.98	0.077	77.20	4	71.44	66.61	4.76	0.000								

(ERROR ELLIPSE)
 DATE ORIGIN LAT LONG DEP P SCAP DMRSSD AX1AZ1 AX2 AXZG MAG(D)
 81929 5 76N32 71 84W 9 3513 22013 56 14 22B 0 4-00 0 3 0 9A 0 0

QUALITY EVALUATION

DIAGONALS IN ORDER OF STRENGTH:
 1 2 3 4 5 6
 0.85 0.68 0.45 0.1 0.08 0.89 0.5

NAME 155 MIN 155 AVE 155 QUALITY 5

-----BEGIN-----

83/ 7/ 9 3/28										33) 9 JUL 83 A GRTN										83/ 7/ 9 3/28									
										-----ADJUSTMENTS IN PRINCIPAL DIRECTIONS-----) (ADJUSTMENTS) (ADJUST. TAKEN)									
I	LAT	LONG	DEPTH	RMS	NO	PRMS	DAMP	AZ/DP	STEP	SE	AZ/DP	STEP	SE	AZ/DP	STEP	SE	DLAT	DLON	DZ	DLAT	DLON	DZ	DLAT	DLON	DZ				
1	40.0	12.7	10.0	2.00	6	.094	.10E-02	261/28	8.634	1.15	336/37	-4.73	5.38	105/40	11.13	1.32	-11.	-4.5	8.47	-11.3	-4.5	8.47	-11.3	-4.5					
333	33.8	9.6	18.9	0.19	6	.092	.10E-02	213/14	6568	1.11	118/18	-4178	1.35	338/67	-4.66	6.84	-97	-6.7	-4.6	-1.0	-0.7	-4.6	-1.0	-0.7					
333	33.8	9.6	18.9	0.09	6	.088	.10E-02	203/18	021	.962	107/19	-082	1.19	334/63	-1.74	8.66	-75	-4.7	-1.5	-0.7	-0.4	-1.5	-0.7						
444	32.9	8.9	12.4	0.09	6	.091	.10E-02	201/18	0105	.972	105/18	0105	1.16	333/64	-131	8.04	-04	-02	-12	0.0	0.0	0.0	0.0						
444	32.9	8.9	12.4	0.09	6	.090	.10E-01	201/18			105/18			333/64						0.0	0.0	0.0	0.0						
444	32.9	8.9	12.4	0.09	6	.091	.10E-01	201/18	0102	.972	105/18	0103	1.16	333/64	-126	7.89	-04	-02	-12	0.0	0.0	0.0	0.0						
444	32.9	8.9	12.4	0.09	6	.090	.10E+00	201/18			105/18			333/64						0.0	0.0	0.0	0.0						
444	32.9	8.9	12.4	0.09	6	.091	.10E+00	201/18	0097	.947	105/18	0096	1.12	333/64	-028	3.71	.000	0.00	-03	0.0	0.0	0.0	0.0						
444	32.9	8.9	12.4	0.09	6	.091	.10E-02	201/18	0102	.972	105/18	0103	1.16	333/64	-131	8.04	-04	-02	-12	0.0	0.0	0.0	0.0						

HORIZONTAL & VERTICAL SINGLE VARIABLE (1DOF) 68% CHI SQUARE CONFIDENCE INTERVALS
 SE = 0.57 SE = 1.96 SE = 3.87 QUALITY = C
 AZ = -118. AZ = -28.

CHI SQUARE 68% (2DOF) ELLIPSE SEMIAXES = 0.87 KM AND 3.00 KM
 SE OF ORIG = 0.27 TOTAL NUMBER OF ITERATIONS = 3 DMAX = 400.00 SEQUENCE NUMBER =
 AT THE CLOSEST STATION USED IN THE SOLUTION BOTH P AND S WERE USED. THE S MINUS P INTERVAL EQUALS 2.03

DATE	ORIGIN	LAT	LONG	DEPTH	MAG	NO	D1	CAP	D	RMS	ERH	ERZ	Q	SGD	ADJ	IN	NR	AVR	AAR	NM	AVXM	SDXM	NF	AVFM	SDFM
830709	32846.535	33N32.92	84W 8.89	12.40	6	14	232	1	0.09	2.0	3.9	0	13	10	14	0.00	0.08	0					0.0	0	0.0

(- STATION DATA -)										P-WAVE TRAVEL-TIME DATA AND DELAYS										VARI										S-WAVE TRAVEL-TIME DATA										MAGNITUDE DATA									
STN	DIST	AZM	AIN	PSEC	PRMK	TCOR	O	TTOB	TTCAL	C-DLAY	EDLY	P-RES	P-WT	THIC	SSEC	SRMK	TTOB	TTCAL	S-RES	S-WT	AMX	PR	XMAG	R	FMP	FMAG																							
HCT	1.1	284	173	0.00	4			-46.55	2.15	1		.048	-48.74	0.000	1.30	4-43.23	3.61	-48.74	0.000																														
HST	6.8	360	150	0.00	4			-46.55	2.44	1		.045	-49.03	0.000	1.50	4-43.05	4.11	-47.23	0.000																														
TVNR	8.6	312	143	0.00	4			-46.55	2.61	1		.040	-49.17	0.000	1.60	4-44.95	4.38	-49.40	0.000																														
GBTN	14.2	336	128	49.95				3.40	3.25	1		.040	0.12	1.231	52.00	3.43	5.47	-0.08	0.923																														
TKL	36.0	70	102	0.00	4			-46.55	6.54	1		.026	-53.12	0.000	57.60	11.05	11.03	-0.02	0.923																														
ETT	37.2	229	102	53.20				6.65	6.74	1		.044	-0.13	1.231	58.05	11.50	11.36	0.08	0.923																														
BBQ	80.9	158	79	0.00	4			-46.55	13.81	1		.099	-60.45	0.000	70.20	23.65	23.47	0.03	0.768																														

(ERROR ELLIPSE)
 DATE ORIGIN LAT LONG DEP P SQAP DMRSSD AX1AZ1 AX2 AXZQ MAG(D)
 830709 32846.535N32.92 84W 8.8912.4 2 4252 14.1CD 2.0-28 0.6 3.9C 0.0

QUALITY EVALUATION

DIAGONALS IN ORDER OF STRENGTH	Z	NW	NE	E	SE	SW	N
AVE. OF END POINTS	0.43	0.62	0.80	0.85	0.97	1.01	1.12

NUMBER	RMS	MIN	DRMS	AVE DRMS	QUALITY
4	0.09		0.52	0.87	C

BEGIN

83/ 7/ 9 9/57 35.5) 9 JUL 83 B ORTN										83/ 7/ 7 7/57																			
										ADJUSTMENTS IN PRINCIPAL DIRECTIONS										ADJUSTMENTS (ADJUST TAKEN)									
I	LAT	LONG	DEPTH	RMS	NO	PRMS	DAMP	AZ/DP	STEP	SE	AZ/DP	STEP	SE	AZ/DP	STEP	SE	DLAT	DLON	DZ	DLAT	DLON	DZ							
1	40.0	12.7	10.0	1.44	7	.051	10E-02	81/	1	3.037	.389	321/30	-5.97	1.33	143/60	13.25	.673	-11.	-4.7	8.65	-10.9	-4.7	8.7						
2	34.1	9.6	18.7	0.19	7	.058	10E-02	261/	0	.0850	.464	140/29	1.065	.867	321/61	-4.34	2.25	-.96	-.66	-4.3	-1.0	-0.7	-4.3						
3	33.5	9.1	14.3	0.07	7	.066	10E-02	261/	0	-.025	.492	140/25	.0347	.869	321/65	.1071	2.70	.076	.027	.082	0.1	0.0	0.1						
4	33.6	9.1	14.4	0.07	7	.066	10E-02	261/	0	-.002	.493	140/25	.0002	.871	321/65	.0011	2.70	.002	0.00	.001	0.0	0.0	0.0						
4	33.6	9.1	14.4	0.07	7	.066	10E-02	261/	0	-.002	.493	140/25	.0002	.871	321/65	.0011	2.70	.002	0.00	.001	0.0	0.0	0.0						

HORIZONTAL & VERTICAL SINGLE VARIABLE (1DOF) 68% CHI SQUARE CONFIDENCE INTERVALS
 SE = 0.26 SE = 0.75 SE = 1.32 QUALITY = A
 AZ = -129. AZ = -39.

CHI SQUARE 68% (2DOF) ELLIPSE SEMIAXES = 0.40 KM AND 1.14 KM
 SE OF ORIG = 0.11 TOTAL NUMBER OF ITERATIONS = 4 DMAX = 400.00 SEQUENCE NUMBER =
 AT THE CLOSEST STATION USED IN THE SOLUTION BOTH P AND S WERE USED. THE S MINUS P INTERVAL EQUALS 2.10

DATE	ORIGIN	LAT	LONG	DEPTH	MAG	NO	D1	GAP	D	RMS	ERH	ERZ	Q	SGD	ADJ	IN	NR	AVR	AAR	NM	AVXM	SDXM	NR	AVFM	SDFM
830709	957	47.21	35N33.58	84W 9.13	14.42	7	13	155	1	0.07	0.7	1.3	C	B	C	0.12	10	12	0.00	0.05	0	0.0	0	0.0	0.0

(- STATION DATA -) (----- P-WAVE TRAVEL-TIME DATA AND DELAYS -----) VARI (----- S-WAVE TRAVEL-TIME DATA -----) (----- MAGNITUDE DATA -----)

STN	DIST	AZM	AIN	PSEC	PRMK	TCOR	O-TTOB	TTCAL	C-DLAY	EDLY	P-RES	P-WT	THIC	SSEC	SRMK	TTOB	TTCAL	S-RES	S-WT	AMX	PR	XMAG	R	FMP	FMAG
HST	5.6	3	157	0.00	4		-47.21	2.65	1	.047	-49.91	0.000	1.30	4	-45.91	4.46	-50.46	0.000							
TVNR	7.6	306	151	0.00	4		-47.21	2.79	1	.044	-50.04	0.000	1.40	4	-45.81	4.70	-50.58	0.000							
GBTN	12.9	336	135	30.70				3.49	3.31	1	.044	0.13	1.167	52.80		5.59	5.59	-0.08	0.875						
TKL	36.0	72	105	53.80				6.59	6.60	1	.029	-0.04	1.167	58.45		11.24	11.15	0.04	0.875						
ETT	37.8	227	103	54.15				6.94	6.88	1	.048	0.00	1.167	58.90		11.69	11.65	-0.03	0.875						
HPK	47.6	31	98	0.00	4		-47.21	8.44	1	.023	-35.68	0.000	61.50	0	14.29	14.30	-0.04	0.875							

(ERROR ELLIPSE)
 DATE ORIGIN LAT LONG DEP P SCAP DMRSSD AX1AZ1 AX2 AX3 MAG(D)
 830709 95747.235N33.58 84W 9.1314.4 3 4155 12.18C 0.7-38 0.3 1.3A 0.0

QUALITY EVALUATION

DIAGONALS IN ORDER OF STRENGTH

AVE. OF END POINTS	Z	NW	SW	SE	N	NE	E
	0.43	0.52	0.54	0.92	0.99	1.13	1.18

NUMBER	RMS	MIN DRMS	AVE DRMS	QUALITY
6	0.07	0.42	0.85	A

BEGIN-----

83/ 7/15 19/32 36) 15 JUL 83 GRTN BEST

-----ADJUSTMENTS IN PRINCIPAL DIRECTIONS----- (ADJUSTMENTS) (ADJUST. TAKEN)

	-AZ/DP--	STEP--	SE	AZ/DP--	STEP--	SE	-AZ/DP--	STEP--	SE	DLAT	DLON	DZ	DLAT	DLON	DZ							
1	40.0	12.7	10.0	1.69	21	273	10E-02	261/ 5	2.631	.800	149/33	-13.7	1.11	340/56	-3.39	1.47	-13.4	4.98	-12.8	-4.3	5.0	
2	33.0	9.8	15.0	0.38	21	237	10E-02	261/ 2	375	.728	138/16	1.349	.876	325/74	-4.75	2.22	.147	-15	-4.9	0.1	-0.1	-4.9
3	33.1	9.7	10.0	0.21	21	210	10E-02	261/ 6	2035	.606	132/18	-.167	.716	332/71	-.008	1.68	-.25	.020	.067	-0.2	0.0	0.1
4	33.0	9.7	10.1	0.21	21	210	10E-02	261/ 7	0015	.606	131/18	-.001	.716	332/71	-.003	1.69	0.00	0.00	0.00	0.0	0.0	0.0
5	33.0	9.7	10.1	0.21	21	210	10E-02	261/ 7	0015	.606	131/18	-.001	.716	332/71	-.003	1.69	0.00	0.00	0.00	0.0	0.0	0.0

HORIZONTAL & VERTICAL SINGLE VARIABLE (1DOF) 68% CHI SQUARE CONFIDENCE INTERVALS

SE = 0.33 SE = 0.47 SE = 0.86 QUALITY 2

AZ = -124 AZ = -34

CHI SQUARE 68% (2DOF) ELLIPSE SEMIAXES = 0.50 KM AND 0.71 KM

SF OF ORIG = 0.05 TOTAL NUMBER OF ITERATIONS = 4 DMAX = 400.00 SEQUENCE NUMBER =

AT THE CLOSEST STATION USED IN THE SOLUTION BOTH P AND S WERE USED. THE S MINUS P INTERVAL EQUALS 1.80

DATE ORIGIN LAT LONG DEPTH MAG NO DI GAP D RMS ERH EPI G SGB ADJ IN NR AVR AAF NM AVXM SDXM NR AVGM SEFI

830715 1932 55 76 35N02 98 84W 9 72 10 09 21 14 68 1 0 21 0 5 0 9 B B B 0 26 10 40 0 00 0.15 0 0 0 0 0 0 0 0

STATION DATA										P-WAVE TRAVEL-TIME DATA AND DELAYS										S-WAVE TRAVEL-TIME DATA										MAGNITUDE DATA									
STN	DIST	AZM	AIN	PSEC	PRMK	TCOR	D	TTOTB	TTCAL	C-DLAY	EDLY	P-RES	P-WT	THIC	SSEC	SRMK	TTOTB	TTCAL	S-RES	S-WT	AMX	PR	XMAG	P	FMP	FLAG													
GRN	13.6	341	124	58.901	+		3.14	2.94	1	0.36	0.16	1.532	60.70		4.94	4.95	-0.06	1.149																					
HUN	30.7	41	108	0.80	2		5.04	5.62	1	0.21	-0.60	0.766	5.10		9.34	9.42	-0.11	1.149																					
EPI	36.4	227	99	2.30			6.54	6.55	1	0.37	-0.05	1.532	6.90		11.14	11.01	0.09	1.149																					
TRN	37.1	71	99	2.50			6.74	6.68	1	0.22	0.04	1.532	7.40	1	11.64	11.22	0.39	0.862																					
HFK	49.0	31	79	4.50			8.74	8.63	1	0.20	0.09	1.532	10.30		14.54	14.56	-0.04	1.149																					
RCT	50.7	244	79	6.30	4		10.54	8.91	1	0.18	1.61	0.000	13.40	4	17.64	15.06	2.56	0.000																					
DCT	59.8	203	79	6.30			10.54	10.41	1	0.34	0.10	1.448	17.20	4	21.44	17.63	3.77	0.000																					
BHT	78.2	295	79	9.10	0		13.34	13.44	1	0.55	-0.16	1.296	18.90	0	23.14	22.85	-0.23	0.972																					
BRN	81.5	157	74	9.60	1		13.84	13.98	1	0.99	-0.24	0.952	19.60		23.84	23.79	-0.04	0.952																					
P2M	108.9	101	71	14.20			18.44	18.36	1	1.45	-0.07	1.060	27.80	2	32.04	31.24	0.61	0.398																					
4M2	118.7	306	71	0.00	4		4.24	19.93	1	0.48	-15.74	0.000	15.00	4	19.24	33.09	-14.72	0.000																					
1M6	166.6	219	66	24.30	4		28.54	27.46	1	0.29	1.05	0.000	53.10	4	57.34	46.68	10.62	0.000																					
0A8	171.2	82	66	23.70	1		27.94	28.16	1	1.75	-0.40	0.491	44.10	0	48.34	47.07	0.22	0.491																					
0C4	175.9	230	66	0.00	4		4.24	28.89	1	0.48	-24.69	0.000	21.00	4	25.24	49.10	-23.93	0.000																					
55K1	201.6	314	60	0.00	4		4.24	32.73	1	0.31	-28.52	0.000	25.00	4	29.24	55.63	-26.43	0.000																					
LDV	206.1	139	47	34.00	4		38.24	33.34	1	0.21	4.88	0.000	61.60	4	65.84	56.74	9.08	0.000																					
REV	208.1	141	47	29.30	0		33.54	33.59	1	0.20	-0.07	0.460	54.50	4	58.74	57.17	1.53	0.000																					
3FM	221.7	73	47	29.80	4		34.04	35.25	1	0.22	-1.43	0.000	54.70	4	58.94	60.01	-1.42	0.000																					
SENN	226.8	89	47	0.00	4		4.24	35.86	1	1.13	-31.74	0.000	58.30	4	62.54	61.06	1.30	0.000																					
THG	236.9	140	47	34.50	4		38.74	37.10	1	0.17	1.62	0.000	58.60	2	62.84	63.18	-0.36	0.125																					

DATE ORIGIN LAT LONG DEP P S GAP D MRSSD A:IAZI AXZ AXZG MAG(D)

830715 1932 55 76 35N02 98 84W 9 72 10 11 10 68 13 26 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

QUALITY EVALUATION

STATIONS IN ORDER OF STRENGTH

AVL OF END POINTS

0.41 0.58 0.33 0.19 0.92 0.93 0.60

NUMBER RMS MIN MAX AVE QUALITY

16 0.31 0.10 0.93 0.41 6

COMPUTER OUTPUT FOR FOCAL MECHANISM SOLUTIONS

This section of Appendix D contains the two output files generated by FOCMEC for both GCO1 and STEP2 velocity model data. The GCO1 data will always precede the STEP2 data for each event. First is the generalized output for the families of solutions (FOCMEC.OUT). The 9 line heading contains, among other things, the name of the input file used, the number of polarity and amplitude ratio data and their respective error allowances, the V_p/V_s ratio used to determine the solutions, and the range and increments for the B, and A axes used to search the focal sphere. If GRTN is written in the second line, the data has been located with the STEP2 model. Otherwise, the data has been located with the GCO1 model. Next, the permissible solutions are listed in terms of a nodal plane dip, strike, and rake angle. Also included are the number of polarity and ratio errors necessary to obtain the solution, and the root mean square of the ratio error divided by the number of ratios, both for those ratios not in error and for all the ratios. The preferred solution from this family is indicated with an asterisk (*).

Next, a portion of the second output file (LP.LST) generated by FOCMEC is shown. LP.LST is a more detailed listing of FOCMEC.OUT, and only that part concerned with the selected preferred solution is shown. It contains a complete listing of nodal plane orientations, (dip, strike, and rake of the two nodal planes and the P, T, B, A, and N axes). Included is

a comparison of the observed and theoretical amplitude ratios, the stations with ratio (indicated by asterisk (*)) and/or polarity errors (explicitly written), and the RMS statistics. If four or more ratios are accepted, then the Kisslinger statistics are calculated and displayed (Adjusted Solution).

30-OCT-84 13 00 09 for the program FOCMEC

2) 25 NOV 81 TEIC

Input from a file 25NOV81

2) 25 NOV 81 35 647 -84 642 D=12 67 M=2 7

There are 5 polarities and 0 allowed errors

Input 4 S/P ratios 1 allowed errors, maximum error of 0.17 VP/VS = 1.720

The minimum, increment and maximum B axis trend are 0.00 5.00 355.00

The limits for the B axis plunge are 0.00 5.00 90.00

The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rake	Err Pol	Err Rat	RMS RErr	RMS RErr (All)
40.2591	240.9299	-82.2492	0	1	0.126	0.454
41.0265	241.6921	-74.6602	0	1	0.133	0.339
44.8134	244.8122	-35.5297	0	1	0.134	1.155
51.1336	249.3550	-42.5518	0	1	0.131	0.431
69.7456	254.9740	-52.3106	0	1	0.111	0.321
48.4392	243.0699	-30.7897	0	1	0.102	0.723
48.4392	248.0699	-30.7897	0	1	0.108	0.840
51.1336	247.5518	-34.3550	0	1	0.054	0.600
54.0680	247.4537	-37.4537	0	1	0.116	0.421
52.2388	245.7685	-26.5651	0	1	0.059	0.826
54.6037	250.2809	-29.8376	0	1	0.059	0.759
57.2022	250.1207	-32.7324	0	1	0.084	0.490
56.1742	247.9955	-22.7605	0	1	0.070	0.953
58.2280	247.5710	-25.7009	0	1	0.109	0.568
60.5013	252.3941	-28.3408	0	1	0.125	0.590
73.3342	254.6888	31.2325	0	1	0.139	0.298
80.1535	77.5048	28.4812	0	1	0.110	0.318
75.5225	253.4350	26.5651	0	1	0.092	0.362
73.3342	253.7675	25.3112	0	1	0.040	0.324
71.2528	253.9948	23.8587	0	1	0.040	0.303
69.2952	254.1066	22.2077	0	1	0.083	0.296
81.6891	76.7439	23.6623	0	1	0.123	0.279
79.7114	77.0902	22.9098	0	1	0.065	0.265
77.8009	77.3789	21.9905	0	1	0.094	0.271
75.9715	77.3994	-20.9057	0	1	0.094	0.207
74.2373	252.7476	19.6574	0	1	0.118	0.414
72.6123	252.8138	18.2489	0	1	0.116	0.395
80.1535	76.5188	17.4952	0	1	0.089	0.229
78.6866	76.6559	16.6018	0	1	0.065	0.222
77.3000	76.7444	15.5794	0	1	0.081	0.225
*77.7597	75.9387	8.7374	0	1	0.120	0.193
77.0475	75.8675	7.6307	0	1	0.126	0.192
76.4337	75.7693	6.4607	0	1	0.136	0.193
80.0000	75.0000	0.0000	0	1	0.138	0.221
80.0384	74.9233	-0.8804	0	1	0.137	0.226
80.1535	74.8489	-1.7538	0	1	0.136	0.232
80.3441	74.7793	-2.6130	0	1	0.136	0.240
80.6087	74.7164	-3.4512	0	1	0.138	0.250
80.9452	74.6624	-4.2617	0	1	0.141	0.263

Dip, Strike, Rake	77 76	75 94	8 74	
Dip, Strike, Rake	81 46	344 07	167 62	Auxiliary Plane
Trend, Plunge of A, N	254.07	8.54	345 94	12.24
Trend & Plunge of B	130.00	75 00		
Trend, Plunge of P, T	30 33	2 58	299 65	14.77

Angle of "A" with B trend plane is 35 0

Log10(S/P)			Station	S Type	S Polarity	
Observed	Theoretical	Difference			Obs.	Calc.
0.1590	0.4839	-0.3249	*BHT	SV	?	B
0.3510	0.4602	-0.1092	RCG	SV	?	B
1.1070	0.9375	0.1695	HWR	SV	?	F
0.8090	0.8566	-0.0476	TKL	SV	?	F

The sum of the squared error for all amplitudes is 0.148
 The error for the acceptable solutions is 0.043

22-OCT-84 08:55:32 for the program FOCMEC

2) 25 NOV 81 GRN 0.0

Input from a file 2

GRN 2) 25 NOV 81 35.639 84.638 D=11.59 M=2.9

There are 5 polarities and 0 allowed errors

Input 4 S/P ratios 0 allowed errors, maximum error of 0.23 VP/VS = 1.720

The minimum, increment and maximum B axis trend are 0.00 5.00 355.00

The limits for the B axis plunge are 0.00 5.00 90.00

The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rake	Err Pol	Err Rat	RMS RErr	RMS RErr (All)
42.2735	247.3710	-17.1423	0	0	0.211	0.211
40.2591	242.7508	5.9299	0	0	0.173	0.173
40.0000	245.0000	0.0000	0	0	0.160	0.160
45.2176	247.0532	4.9811	0	0	0.143	0.143
45.2176	247.9468	-4.9811	0	0	0.155	0.155
51.6192	249.2790	12.2529	0	0	0.200	0.200
50.7265	247.9625	8.2901	0	0	0.153	0.153
70.0793	75.3191	1.8169	0	0	0.161	0.161
70.0000	75.0000	0.0000	0	0	0.151	0.151
77.7597	75.9387	8.7374	0	0	0.123	0.123
77.0475	75.8675	7.6307	0	0	0.116	0.116
76.4337	75.7693	6.4607	0	0	0.109	0.109
75.9239	75.6469	5.2362	0	0	0.104	0.104
75.5225	75.5041	3.9671	0	0	0.099	0.099
75.2331	75.3453	2.6640	0	0	0.096	0.096
*75.0584	75.1754	1.3378	0	0	0.094	0.094
75.0000	75.0000	0.0000	0	0	0.095	0.095
75.0584	74.8246	-1.3378	0	0	0.099	0.099
75.2331	74.6547	-2.6640	0	0	0.108	0.108
75.5225	74.4959	-3.9671	0	0	0.120	0.120
75.9239	74.3531	-5.2362	0	0	0.136	0.136
76.4337	74.2307	-6.4607	0	0	0.157	0.157
77.0475	74.1325	-7.6307	0	0	0.181	0.181

Dip, Strike, Rake	75.06	75.18	1.34	
Dip, Strike, Rake	88.71	344.83	165.05	Auxiliary Plane
Trend, Plunge of A, N	254.83	1.29	345.18	14.94
Trend & Plunge of B	160.00	75.00		
Trend, Plunge of P, T	30.97	9.58	299.02	11.44

Angle of "A" with B trend plane is 5.0

.Log10(S/P)		Difference	Station	S Type	S Polarity	
Observed	Theoretical				Obs.	Calc.
0.1490	0.2811	-0.1321	BHT	SV	?	B
0.3290	0.4432	-0.1142	RCC	SV	?	B
1.0750	1.0451	0.0299	HWR	SV	?	F
0.7800	0.7154	0.0646	TKL	SV	?	F

The sum of the squared error for all amplitudes is 0.036

The error for the acceptable solutions is 0.036

Adjusted solution

Strike = 76.119 +- 1.94
Dip = 77.168 +- 5.60
Rake = -0.921 +- 9.69

30-OCT-84 14:00:10 for the program FOCMEC

13) 24 SEP 82A TEIC 0.0, 20

Input from a file 24SEP82A

13) 24 SEPT 82 (A) 21:57Z 35 680 -84 238 D=13.13 M=3.4

There are 6 polarities and 0 allowed errors

Input 4 S/P ratios 0 allowed errors, maximum error of 0.20 VP/VS = 1.720

The minimum, increment and maximum B axis trend are 0.00 5.00 355.00

The limits for the B axis plunge are 0.00 5.00 90.00

The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rake	Err Pol	Err Rat	RMS RErr	RMS RErr (All)
57.2022	284.8793	32.7324	0	0	0.127	0.127
54.6037	289.7191	29.8376	0	0	0.134	0.134
60.5013	282.6059	28.3408	0	0	0.091	0.091
58.2280	287.4291	25.7009	0	0	0.094	0.094
56.1742	287.0045	22.7605	0	0	0.104	0.104
54.3690	291.3297	19.5255	0	0	0.145	0.145
57.3854	293.9568	13.4678	0	0	0.155	0.155
63.9354	280.6892	24.2318	0	0	0.085	0.085
61.9757	280.5237	21.8815	0	0	0.078	0.078
61.9757	285.5237	21.8815	0	0	0.084	0.084
60.2160	285.1767	19.2953	0	0	0.062	0.062
58.6787	289.6510	16.4846	0	0	0.103	0.103
67.4790	279.0953	20.3606	0	0	0.101	0.101
65.8218	278.9566	18.3225	0	0	0.088	0.088
65.8218	283.9566	18.3225	0	0	0.101	0.101
*64.3411	283.6901	16.1021	0	0	0.032	0.032
63.0538	283.3000	13.7122	0	0	0.143	0.143
63.0538	288.3000	13.7122	0	0	0.096	0.096
71.1105	277.7949	16.6854	0	0	0.118	0.118
69.7456	282.6894	14.9740	0	0	0.123	0.123
68.5310	282.4986	13.1243	0	0	0.033	0.033
67.4790	282.2264	11.1484	0	0	0.096	0.096
66.6010	286.8802	9.0616	0	0	0.127	0.127
74.8111	276.7633	13.1678	0	0	0.126	0.126
72.7706	281.5667	10.3141	0	0	0.058	0.058
71.9422	281.3922	8.7447	0	0	0.059	0.059
71.2528	281.1728	7.0960	0	0	0.128	0.128
78.5644	275.9808	9.7724	0	0	0.122	0.122
77.0475	280.8675	7.6307	0	0	0.103	0.103
76.4337	280.7693	6.4607	0	0	0.075	0.075
75.9239	280.6469	5.2362	0	0	0.089	0.089
75.5225	280.5041	3.9671	0	0	0.130	0.130
82.9470	275.4386	7.1071	0	0	0.121	0.121
82.3557	275.4325	6.4664	0	0	0.107	0.107
81.8223	275.4132	5.7751	0	0	0.104	0.104
81.3508	275.3813	5.0384	0	0	0.111	0.111
85.0191	275.0190	0.4369	0	0	0.118	0.118
85.0000	275.0000	0.0000	0	0	0.125	0.125
85.9060	275.1027	2.8728	0	0	0.104	0.104
85.6712	275.0947	2.5048	0	0	0.099	0.099
85.4695	275.0838	2.1175	0	0	0.098	0.098
85.3022	275.0703	1.7139	0	0	0.100	0.100
85.1708	275.0547	1.2972	0	0	0.105	0.105
85.0762	275.0374	0.8704	0	0	0.111	0.111

Dip, Strike, Rake	64.34	283.69	16.10		
Dip, Strike, Rake	75.52	186.57	153.43	Auxiliary Plane	
Trend, Plunge of A, N	96.57	14.48	193.69	25.66	
Trend & Plunge of B	340.00	60.00			
Trend, Plunge of P, T	236.94	7.44	142.81	28.88	

Angle of "A" with B trend plane is 30.0

Log10(S/P)			Station	S Type	S Polarity	
Observed	Theoretical	Difference			Obs.	Calc.
0.3715	0.3496	0.0219	TKL	SV	?	B
-0.0290	-0.0110	-0.0180	ETT	SV	?	F
0.0460	-0.0062	0.0522	HPK	SV	?	F
0.0380	0.0123	0.0257	HWR	SV	?	F

The sum of the squared error for all amplitudes is 0.004
The error for the acceptable solutions is 0.004

Adjusted solution

Strike =	282.998	+ -	2.96
Dip =	63.685	+ -	6.61
Rake =	18.657	+ -	6.69

17-OCT-84 11:42:26 for the program FOCMEC

13) 24 SEP 82 A GRN

Input from a file 13

GRN 13) 24 SEPT 82 (A) 21:57Z 35.680 -84.241 D=17.88 M=3.4

There are 6 polarities and 0 allowed errors

Input 4 SV/P ratios 0 allowed errors, maximum error of 0.21 VP/VS = 1.700

The minimum, increment and maximum B axis trend are 0.00 5.00 355.00

The limits for the B axis plunge are 0.00 5.00 90.00

The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rake	Err Pol	Err Rat	RMS RErr	RMS RErr (All)
61.9757	280.5237	21.8815	0	0	0.140	0.140
60.2160	285.1767	19.2953	0	0	0.135	0.135
65.8218	278.9566	18.3225	0	0	0.126	0.126
64.3411	283.6901	16.1021	0	0	0.113	0.113
61.9757	287.7959	11.1702	0	0	0.138	0.138
69.7456	277.6894	14.9740	0	0	0.125	0.125
68.5310	277.4986	13.1243	0	0	0.138	0.138
68.5310	282.4986	13.1243	0	0	0.110	0.110
*67.4790	282.2264	11.1484	0	0	0.101	0.101
73.7299	276.6915	11.7920	0	0	0.132	0.132
72.7706	276.5667	10.3141	0	0	0.139	0.139
72.7706	281.5667	10.3141	0	0	0.128	0.128
71.9422	281.3922	8.7447	0	0	0.106	0.106
71.2528	281.1728	7.0960	0	0	0.121	0.121
77.7597	275.9387	8.7374	0	0	0.141	0.141
77.0475	275.8675	7.6307	0	0	0.145	0.145
76.4337	280.7693	6.4607	0	0	0.146	0.146
75.9239	280.6469	5.2362	0	0	0.138	0.138
80.9452	275.3376	4.2617	0	0	0.156	0.156
80.6087	275.2836	3.4512	0	0	0.166	0.166

Dip, Strike, Rake	67.48	282.23	11.15		
Dip, Strike, Rake	79.71	187.91	157.09		
Trend, Plunge of A, N	97.91	10.29	192.23		: Auxiliary Plane
Trend & Plunge of B	345.00	65.00			22.52
Trend, Plunge of P, T	236.74	8.31	143.12		23.40

Log10(SV/P):

Observed	Theoretical	Difference	Station
0.3500	0.3070	0.0430	TKL
-0.0640	0.0986	-0.1626	ETT
0.0210	-0.0101	0.0311	HPK
0.0390	0.1474	-0.1084	HWR

The sum of the squared error for all amplitudes is 0.041

The error for the acceptable solutions is 0.041

Adjusted solution

Strike = 271.510 +- 25.57
Dip = 97.521 +- 76.85
Rake = -10.332 +- 60.10

30-OCT-84 14:09:04 for the program FOCMEC

14) 24 SEP 82B TEIC 0,0

Input from a file 24SEP82B

14) 24 SEP 82 (B) 22:19Z 35.684 -84.251 D=8.12 M=3.5

There are 9 polarities and 0 allowed errors

Input 4 S/P ratios 0 allowed errors, maximum error of 0.23 VP/VS = 1.720

The minimum, increment and maximum B axis trend are 0.00 5.00 355.00

The limits for the B axis plunge are 0.00 5.00 90.00

The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rake	Err Pol	Err Rat	RMS RErr	RMS RErr (All)
90.0000	275.0000	10.0000	0	0	0.102	0.102
89.1328	99.9244	-9.9627	0	0	0.184	0.184
90.0000	280.0000	10.0000	0	0	0.141	0.141
89.1328	275.0756	9.9627	0	0	0.090	0.090
89.1328	280.0756	9.9627	0	0	0.151	0.151
*85.7915	280.3343	9.0795	0	0	0.028	0.028
85.0191	280.3784	8.6822	0	0	0.071	0.071
84.2838	280.4110	8.2189	0	0	0.142	0.142
83.5914	285.4313	7.6926	0	0	0.124	0.124
82.9470	285.4386	7.1071	0	0	0.123	0.123
86.7885	104.8925	-3.8342	0	0	0.150	0.150
87.1346	104.8974	-4.0992	0	0	0.135	0.135
87.5024	104.9055	-4.3329	0	0	0.121	0.121
87.8891	104.9164	-4.5336	0	0	0.107	0.107
88.2918	104.9299	-4.6999	0	0	0.092	0.092
88.7074	104.9455	-4.8305	0	0	0.076	0.076
89.1328	104.9627	-4.9244	0	0	0.063	0.063
89.5648	104.9811	-4.9811	0	0	0.058	0.058
90.0000	285.0000	5.0000	0	0	0.068	0.068
89.5648	285.0189	4.9811	0	0	0.093	0.093

Dip, Strike, Rake	85.79	280.33	9.08	
Dip, Strike, Rake	80.95	189.66	175.74	Auxiliary Plane
Trend, Plunge of A, N	99.66	9.05	190.33	4.21
Trend & Plunge of B	305.00	80.00		
Trend, Plunge of P, T	54.72	3.40	145.28	9.39

Angle of "A" with B trend plane is 65.0

Log10(S/P)			Station	S Type	S Polarity	
Observed	Theoretical	Difference			Obs.	Calc.
-0.0630	-0.0661	0.0031	HWR	SV	?	F
-0.0470	-0.0807	0.0337	HPK	SV	?	F
-0.0800	-0.1226	0.0426	TKL	SV	?	B
-0.0970	-0.0831	-0.0139	ETT	SV	?	B

The sum of the squared error for all amplitudes is 0.003

The error for the acceptable solutions is 0.003

Adjusted solution

Strike = 279.392 +- 1.63
Dip = 86.167 +- 1.04
Rake = 9.365 +- 0.73

01-NOV-84 11:36:21 for the program FOCMEC

14) 24 SEP 82 B CRTN 0,1

Input from a file 14

14) 24 SEP 82 (B) 22:19Z 35.684 84.251 8.12 3.5

There are 9 polarities and 0 allowed errors

Input 5 S/P ratios 1 allowed errors, maximum error of 0.23 VP/VS = 1.720

The minimum, increment and maximum B axis trend are 0.00 5.00 355.00

The limits for the B axis plunge are 0.00 5.00 90.00

The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rake	Err Pol	Err Rat	RMS RErr	RMS RErr (All)
75.9715	277.6006	20.9057	0	1	0.147	0.406
74.2373	277.7477	19.6574	0	1	0.140	0.419
80.1535	276.5188	17.4952	0	1	0.177	0.418
78.6866	276.6559	16.6018	0	1	0.164	0.429
80.4234	285.9750	11.5995	0	1	0.154	0.200
79.4547	285.9930	10.7286	0	1	0.176	0.196
78.5644	285.9808	9.7724	0	1	0.169	0.211
90.0000	275.0000	10.0000	0	1	0.044	0.164
89.1328	99.9244	-9.9627	0	1	0.136	0.209
90.0000	280.0000	10.0000	0	1	0.116	0.192
89.1328	275.0756	9.9627	0	1	0.060	0.158
85.7915	275.3343	9.0795	0	1	0.163	0.387
86.5951	280.2803	9.4080	0	1	0.132	0.170
*85.7915	280.3343	9.0795	0	1	0.077	0.131
85.0191	280.3784	8.6822	0	0	0.136	0.136
84.2838	280.4110	8.2189	0	1	0.139	0.162
84.2838	285.4110	8.2189	0	1	0.182	0.198
83.5914	285.4313	7.6926	0	0	0.168	0.168
82.9470	285.4386	7.1071	0	1	0.114	0.165
82.3557	285.4325	6.4664	0	1	0.097	0.185
81.8223	285.4132	5.7751	0	1	0.109	0.228
81.3508	285.3813	5.0384	0	1	0.156	0.294

Dip, Strike, Rake	85.79	280.33	9.08		
Dip, Strike, Rake	80.95	189.66	175.74		Auxiliary Plane
Trend, Plunge of A,N	99.66	9.05	190.33	4.21	
Trend & Plunge of B	305.00	80.00			
Trend, Plunge of P,T	54.72	3.40	145.28	9.39	

Angle of "A" with B trend plane is 65.0

Log10(S/P)			Station	S Type	S Polarity	
Observed	Theoretical	Difference			Obs.	Calc.
-0.0100	0.2401	-0.2501	*HWR	SV	?	F
-0.0010	-0.1326	0.1316	HPK	SV	?	F
-0.0360	-0.0659	0.0299	TKL	SV	?	B
-0.0550	0.0122	-0.0672	ETT	SV	?	B
-0.0340	-0.0056	-0.0284	ORT	SV	?	B

The sum of the squared error for all amplitudes is 0.086

The error for the acceptable solutions is 0.024

Adjusted solution

Strike = 274.321 +- 6.30
 Dip = 89.533 +- 4.15
 Rake = 9.967 +- 1.85

30-OCT-84 14:17:09 for the program FOCMEC

22) 18 JAN 83 TEIC 1,2

Input from a file 18JAN83

22) 18 JAN 83 5:09Z 35.589 -84.287 D=8.22 M=2.3

There are 9 polarities and 1 allowed errors

Input 6 S/P ratios 2 allowed errors, maximum error of 0.23 VP/VS = 1.720

The minimum, increment and maximum B axis trend are 0.00 5.00 355.00

The limits for the B axis plunge are 0.00 5.00 90.00

The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rake	Err Pol	Err Rat	RMS RErr	RMS RErr (All)
71.9422	78.6078	-8.7447	1	2	0.145	0.223
72.7706	78.4333	-10.3141	1	2	0.139	0.212
*73.7299	78.3085	-11.7920	1	2	0.118	0.208
75.5225	79.4959	-3.9671	1	2	0.174	0.262
75.9239	79.3531	-5.2362	1	2	0.129	0.227

Dip,Strike,Rake 73.73 78.31 -11.79
 Dip,Strike,Rake 78.69 171.66 -163.40 Auxiliary Plane
 Trend, Plunge of A,N 81.66 11.31 348.31 16.27
 Trend & Plunge of B 205.00 70.00
 Trend, Plunge of P.T 35.63 19.68 304.41 3.40

Angle of "A" with B trend plane is 55.0

Polarity error at CCVA

Log10(S/P)		Difference	Station	S Type	S Polarity	
Observed	Theoretical				Obs.	Calc.
-0.1059	0.0601	-0.1660	ETT	SV	?	B
0.8531	1.0087	-0.1556	TKL	SV	?	F
-0.0644	0.2362	-0.3006	*BBG	SV	?	F
-0.1094	-0.0432	-0.0662	BHT	SV	?	B
0.3880	0.3831	0.0049	HPK	SV	?	F
0.6144	0.9519	-0.3375	*ORT	SV	?	F

The sum of the squared error for all amplitudes is 0.260

The error for the acceptable solutions is 0.056

Adjusted solution

Strike = 77.373 +- 2.21
 Dip = 76.152 +- 4.98
 Rake = -9.149 +- 6.15

21-OCT-84 11:18:41 for the program FOCMEC

22) 18 JAN 83 GRN 2,1

Input from a file 22

GRN 22) 18 JAN 83 5:09Z 35.589 -84.284 D=13.70 M=2.3

There are 9 polarities and 2 allowed errors

Input 6 S/P ratios 1 allowed errors, maximum error of 0.23 VP/VS = 1.720

The minimum, increment and maximum B axis trend are 0.00 5.00 355.00

The limits for the B axis plunge are 0.00 5.00 90.00

The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rate	Err Pol	Err Rat	RMS RErr	RMS RErr (All)
67.4790	80.9047	-20.3606	2	1	0.168	0.324
65.9071	73.5297	-6.8817	2	1	0.153	0.190
66.6010	73.1198	-9.0616	2	1	0.113	0.148
*67.4790	72.7736	-11.1484	2	0	0.137	0.137
69.7456	67.3106	-14.9740	2	1	0.127	0.226
68.5310	72.5014	-13.1243	2	1	0.151	0.194
68.5310	77.5014	-13.1243	2	1	0.130	0.294
69.7456	77.3106	-14.9740	2	1	0.132	0.388
70.7090	74.0847	-5.3815	2	1	0.141	0.332
71.2528	73.8272	-7.0960	2	1	0.107	0.251
71.9422	73.6078	-8.7447	2	1	0.112	0.212
75.5225	74.4959	-3.9671	2	1	0.149	0.287
75.9239	74.3531	-5.2362	2	1	0.128	0.334
79.4547	255.9930	10.7286	2	1	0.188	0.538
80.1534	84.8489	-1.7538	2	1	0.118	0.156
80.3441	84.7793	-2.6130	2	1	0.144	0.170
84.2838	255.4110	8.2189	2	1	0.140	0.342
83.5914	255.4313	7.6926	2	1	0.145	0.385

Dip, Strike, Rate	67.48	72.77	-11.15		
Dip, Strike, Rate	79.71	167.09	-157.09		: Auxiliary Plane
Trend, Plunge of A, N	77.09	10.29	342.77	22.52	
Trend & Plunge of B	190.00	65.00			
Trend, Plunge of P, T	31.88	23.40	298.26	8.31	

Angle of "A" with B trend plane is 65.0

Polarity error at BRBC CCVA

Log10(S/P)			Station	S Type	S Polarity	
Observed	Theoretical	Difference			Obs.	Calc.
-0.0520	-0.1386	0.0866	ETT	SV	? B	
0.8670	0.7231	0.1439	TKL	SV	? F	
-0.0890	-0.1715	0.0825	BBC	SV	? F	
-0.1290	0.0659	-0.1949	BHT	SV	? B	
0.3730	0.5315	-0.1585	HPK	SV	? F	
0.6690	0.7912	-0.1222	ORT	SV	? F	

The sum of the squared error for all amplitudes is 0.113

The error for the acceptable solutions is 0.113

Adjusted solution

Strike =	74.178 +- 3.15
Dip =	68.628 +- 3.45
Rate =	-10.585 +- 2.40

07-NOV-84 08:36:23 for the program FOCMEC

23) 27 JAN 83 TEIC 1.1

Input from a file 27JAN83

23) 27 JAN 83 22:09Z 34.059 -83.631 D=12.76 M=3.1

There are 10 polarities and 1 allowed errors

Input 6 S/P ratios 1 allowed errors, maximum error of 0.23 VP/VS = 1.720

The minimum, increment and maximum B axis trend are 0.00 5.00 355.00

The limits for the B axis plunge are 0.00 5.00 90.00

The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rake	Err Pol	Err Rat	RMS RErr	RMS RErr (All)
26.8060	104.5752	67.3529	1	1	0.131	0.456
81.4627	62.3796	-34.0724	1	1	0.094	0.314
*84.2838	63.2189	-34.5890	1	1	0.107	0.293
81.4627	67.3796	-34.0724	1	1	0.136	0.312
82.5645	63.0643	-29.1474	1	1	0.145	0.302
81.3508	265.3813	5.0384	1	1	0.144	0.243

Dip, Strike, Rake 84.28 63.22 -34.59
Dip, Strike, Rake 55.61 157.15 -173.07 : Auxiliary Plane
Trend, Plunge of A, N 67.15 34.39 333.22 5.72
Trend & Plunge of B 235.00 55.00
Trend, Plunge of P, T 14.48 28.02 115.16 19.21

Angle of "A" with B trend plane is 10.0

Polarity error at GFM

Log10(S/P)			Station	S Type	S Polarity	
Observed	Theoretical	Difference			Obs.	Calc.
0.1540	0.2112	-0.0572	TKL	SV	?	B
-0.0580	0.6179	-0.6759	*SMTN	SV	?	F
1.0430	0.9454	0.0976	CCVA	SV	?	F
-0.1330	-0.2219	0.0889	BRBC	SV	?	F
0.0580	-0.0689	0.1269	HPK	SV	?	B
0.1090	-0.0341	0.1431	HWR	SV	?	B

The sum of the squared error for all amplitudes is 0.514

The error for the acceptable solutions is 0.057

Adjusted solution

Strike = 63.790 +- 2.14
Dip = 82.845 +- 1.38
Rake = -35.336 +- 3.07

01-NOV-84 08:16:22 for the program FOCMEC

23) 27 JAN 83 GRN 0.2

Input from a file 23

GRN 27) JAN 83 22:09Z 34.052 -83.608 D=17.07 M=3.1

There are 10 polarities and 0 allowed errors

Input 7 S/P ratios 2 allowed errors, maximum error of 0.23 VP/VS = 1.700

The minimum, increment and maximum B axis trend are 0.00 5.00 355.00

The limits for the B axis plunge are 0.00 5.00 90.00

The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rake	Err Pol	Err Rat	RMS RErr	RMS RErr (All)
40.2591	82.7508	5.9299	0	2	0.123	0.445
40.2591	87.7508	5.9299	0	2	0.095	0.621
45.2176	82.0532	4.9811	0	2	0.139	0.448
62.9660	82.5463	30.6821	0	2	0.167	0.369
68.3653	80.4973	28.2087	0	2	0.151	0.317
66.0725	80.6773	26.3410	0	2	0.118	0.344
69.2952	79.1066	22.2077	0	2	0.096	0.334
69.2952	84.1066	22.2077	0	2	0.158	0.275
67.4790	89.0953	20.3606	0	2	0.172	0.255
65.8218	93.9566	18.3225	0	2	0.187	0.410
72.6123	82.8137	18.2489	0	2	0.154	0.269
72.6123	87.8137	18.2489	0	2	0.162	0.275
71.1105	87.7949	16.6854	0	2	0.161	0.253
*74.8111	86.7633	13.1678	0	2	0.128	0.275
73.7299	86.6915	11.7920	0	2	0.139	0.267
78.5644	85.9809	9.7724	0	2	0.107	0.330
77.7597	85.9387	8.7374	0	2	0.113	0.320
77.0475	85.8675	7.6307	0	2	0.133	0.319
82.3557	85.4325	6.4664	0	2	0.111	0.437
81.8223	85.4132	5.7751	0	2	0.112	0.427
81.3508	85.3812	5.0384	0	2	0.119	0.423
80.9452	85.3376	4.2617	0	2	0.134	0.426

Dip, Strike, Rake 74.81 86.76 13.17
 Dip, Strike, Rake 77.30 353.26 164.42 : Auxiliary Plane
 Trend, Plunge of A, N 263.26 12.70 356.76 15.19
 Trend & Plunge of B 135.00 70.00
 Trend, Plunge of P, T 40.30 1.71 309.68 19.92

Angle of "A" with B trend plane is 40.0

Log10(S/P)			Station	S Type	S Polarity	
Observed	Theoretical	Difference			Obs.	Calc.
0.1550	0.2631	-0.1081	TKL	SV	?	F
-0.0390	0.0851	-0.1241	SMTN	SV	?	F
1.0690	0.9605	0.1085	CCVA	SV	?	B
0.5770	0.2132	0.3638	*RBNC	SV	?	F
0.0590	0.2478	-0.1888	HPK	SV	?	F
0.1090	0.0218	0.0872	HWR	SV	?	F
0.8710	0.3091	0.5619	*ORT	SV	?	B

The sum of the squared error for all amplitudes is 0.530

The error for the acceptable solutions is 0.082

Adjusted solution

Strike = 84.296 +- 4.35
 Dip = 83.117 +- 11.56
 Rake = 5.449 +- 10.06

19-DEC-84 09:11:44 for the program FOCMEC

28) 5 APR 83

Input from a file 5APR83

28) 5 APRIL 83 3:17Z 35.542 -84.166 D=12.89 M=2.0

There are 4 polarities and 0 allowed errors

Input 6 S/P ratios 1 allowed errors, maximum error of 0.23 VP/VS = 1.720

The minimum, increment and maximum B axis trend are 0.00 5.00 355.00

The limits for the B axis plunge are 0.00 5.00 90.00

The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rake	Err Pol	Err Rat	RMS RErr	RMS Rerr (All)
45.0000	305.0000	0.0000	0	1	0.143	0.265
90.0000	290.0000	45.0000	0	1	0.170	1.097
86.4667	296.4600	44.8908	0	1	0.154	0.621
82.9470	302.8929	44.5615	0	1	0.166	0.506
50.1827	311.5154	4.1827	0	1	0.129	0.436
83.5914	307.3074	39.5687	0	1	0.125	0.367
80.4234	308.4005	39.0250	0	1	0.133	0.395
80.4234	313.4005	39.0250	0	1	0.124	0.312
55.1525	306.0963	3.4923	0	1	0.140	0.506
55.6072	312.1479	6.9326	0	1	0.147	0.594
55.1525	311.0963	3.4923	0	1	0.095	0.596
55.1525	316.0963	3.4923	0	1	0.168	0.845
81.4627	312.6204	34.0724	0	1	0.105	0.277
78.6866	313.3982	33.3441	0	1	0.092	0.285
81.4627	317.6204	34.0724	0	1	0.111	0.223
78.6866	318.3982	33.3441	0	1	0.103	0.228
75.9715	319.0943	32.3994	0	1	0.153	0.256
80.1535	317.5048	28.4812	0	1	0.093	0.189
*77.8009	318.0095	27.6211	0	1	0.042	0.178
75.5225	318.4350	26.5651	0	1	0.070	0.187
77.8009	323.0095	27.6211	0	1	0.152	0.186
73.3342	318.7675	25.3112	0	1	0.118	0.206
71.2528	318.9948	23.8587	0	1	0.164	0.227
74.2373	322.7477	19.6574	0	0	0.140	0.140
72.6123	322.8138	18.2489	0	0	0.146	0.146
71.1105	322.7949	16.6854	0	1	0.128	0.155
69.7456	322.6895	14.9740	0	1	0.141	0.166
77.8009	317.3789	21.9905	0	1	0.120	0.170
79.7114	322.0902	22.9098	0	1	0.129	0.169
75.9715	317.6006	20.9057	0	1	0.100	0.157
77.8009	322.3789	21.9505	0	1	0.105	0.145
79.7114	327.0902	22.9098	0	1	0.145	0.395
74.2373	317.7477	19.6574	0	1	0.113	0.160
75.9715	322.6006	20.9057	0	1	0.106	0.138
77.3000	321.7444	15.5794	0	1	0.138	0.187
76.0046	321.7809	14.4328	0	1	0.130	0.181
74.8111	321.7633	13.1678	0	1	0.137	0.186

Dip, Strike, Rake 77.80 318.01 27.62
Dip, Strike, Rake 63.05 221.70 166.29 Auxiliary Plane
Trend, Plunge of A, N 131.70 26.95 228.01 12.20
Trend & Plunge of B 340.00 60.00
Trend, Plunge of P, T 87.50 9.85 182.80 28.02

Angle of "A" with B trend plane is 65.0

Log10(S/P)		Difference	Station	S Type	S Polarity	
Observed	Theoretical				Obs.	Calc.
0.5660	0.5295	0.0365	ETT	SV	?	B
0.6250	0.6873	-0.0623	TKL	SV	?	F
-0.0728	-0.0428	-0.0300	BBG	SV	?	B
-0.0374	0.0103	-0.0477	GBTN	SV	?	B
0.1775	0.1624	0.0151	ORT	SV	?	F
0.2072	0.6336	-0.4264	*HPK	SV	?	F

The sum of the squared error for all amplitudes is 0.190
The error for the acceptable solutions is 0.009

Adjusted solution
Strike = 318.932 +- 1.64
Dip = 76.931 +- 1.48
Rake = 25.334 +- 3.50

07-NOV-84 08:42:50 for the program FOCMEC

28) 5 APR 83 GRN 1,1

Input from a file 28

GRN 28) 5 APRIL 83 3:17Z 35.548 -84.182 D=13.87 M=2.0

There are 4 polarities and 1 allowed errors

Input 6 S/P ratios 1 allowed errors, maximum error of 0.23 VP/VS = 1.720

The minimum, increment and maximum B axis trend are 0.00 5.00 355.00

The limits for the B axis plunge are 0.00 5.00 90.00

The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rake	Err Pol	Err Rat	RMS RErr	RMS RErr (All)
34.7754	282.1862	-42.1863	1	1	0.138	0.353
41.4096	295.8934	-40.8934	1	1	0.171	0.382
45.2176	277.0533	4.9811	1	1	0.146	0.201
45.2176	282.0533	4.9811	1	1	0.163	0.216
50.0000	270.0000	0.0000	1	1	0.122	0.210
50.0000	275.0000	0.0000	1	1	0.127	0.211
50.0000	280.0000	0.0000	1	1	0.147	0.219
50.1827	278.4846	-4.1827	1	1	0.154	0.267
50.1827	266.5154	4.1827	1	1	0.151	0.177
50.1827	271.5154	4.1827	1	1	0.116	0.150
55.0000	270.0000	0.0000	1	1	0.125	0.224
55.0000	275.0000	0.0000	1	1	0.141	0.231
56.3559	261.8868	-10.2721	1	1	0.151	0.794
57.3854	266.0432	-13.4678	1	1	0.139	0.546
55.1525	261.0963	3.4923	1	1	0.160	0.213
*55.1525	266.0963	3.4923	1	0	0.091	0.091
55.6072	272.1479	6.9326	1	1	0.151	0.173
55.1525	271.0963	3.4923	1	1	0.116	0.149
61.1209	262.8079	-8.4988	1	1	0.077	0.679
61.9757	267.2041	-11.1702	1	1	0.094	0.499
63.0538	266.7000	-13.7122	1	1	0.108	0.619
63.0538	271.7000	-13.7122	1	1	0.132	0.464
64.3411	271.3100	-16.1021	1	1	0.146	0.531
60.1258	260.7686	2.8807	1	0	0.121	0.121
60.1258	265.7686	2.8807	1	0	0.119	0.119
65.9071	263.5297	-6.8817	1	1	0.055	0.582
66.6010	268.1198	-9.0616	1	1	0.107	0.460
67.4790	267.7736	-11.1484	1	1	0.113	0.543
65.1016	260.5139	2.3273	1	1	0.068	0.118
70.7090	264.0847	-5.3815	1	1	0.135	0.512
76.0046	331.7800	14.4328	1	1	0.160	0.359
71.2522	263.8272	-7.0960	1	1	0.133	0.696
74.8111	331.7633	13.1678	1	1	0.159	0.365
73.7299	331.6915	11.7920	1	1	0.165	0.371
70.3165	260.6276	3.6164	1	1	0.108	0.243

Dip, Strike, Rake	55.15	266.10	3.49		
Dip, Strike, Rake	87.13	174.10	145.10	Auxiliary Plane	
Trend, Plunge of A, N	84.10		2.87	176.10	34.85
Trend & Plunge of B	350.00		55.00		
Trend, Plunge of P, T	225.50	21.63	124.31	26.06	

Angle of "A" with B trend plane is 5.0

Polarity error at HPK

Log10(S/P)		Difference	Station	S Type	S Polarity	
Observed	Theoretical				Obs.	Calc.
0.5690	0.6978	-0.1288	ETT	SV	?	F
0.6220	0.5713	0.0507	TKL	SV	?	B
-0.1010	0.0547	-0.1557	BBG	SV	?	B
-0.0410	-0.0127	-0.0283	GBTN	SV	?	B
0.1720	0.2158	-0.0438	ORT	SV	?	F
0.1730	0.1174	0.0556	HPK	SV	?	B

The sum of the squared error for all amplitudes is 0.049

The error for the acceptable solutions is 0.049

Adjusted solution

Strike = 261.807 +- 3.54

Dip = 59.164 +- 3.78

Rake = 1.927 +- 1.52

30-OCT-84 14:47:36 for the program FOCMEC

29) 16 MAY 83 TEIC 0.1, 15

Input from a file 16MAY83

29) 16 MAY 83 6:50Z 35-54.70 84-18.40 D=16.36 M=1.9

There are 3 polarities and 0 allowed errors

Input 5 S/P ratios 1 allowed errors, maximum error of 0.15 VP/VS = 1.700

The minimum, increment and maximum B axis trend are 0.00 5.00 355.00

The limits for the B axis plunge are 0.00 5.00 90.00

The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rake	Err	Pol	Err Rat	RMS RErr	RMS RErr (All)
45.2176	145.0189	82.9468	0	1	1	0.083	1.971
46.9205	310.4892	69.2464	0	1	1	0.109	0.545
50.1443	312.0902	56.5968	0	1	1	0.099	0.443
85.0191	78.6822	-29.6217	0	1	1	0.101	0.232
87.5024	79.3329	-29.9055	0	1	1	0.090	0.245
83.7203	71.3503	24.2477	0	1	1	0.066	0.538
87.8891	69.5336	-24.9164	0	1	1	0.087	0.335
87.8891	94.5336	-24.9164	0	1	1	0.117	0.319
90.0000	280.0000	25.0000	0	1	1	0.105	0.340
90.0000	285.0000	25.0000	0	1	1	0.081	0.363
90.0000	290.0000	25.0000	0	1	1	0.078	0.386
87.8891	290.4664	24.9164	0	1	1	0.078	0.375
87.8891	295.4664	24.9164	0	1	1	0.066	0.390
84.9215	70.8673	19.3701	0	1	1	0.072	0.456
*86.5951	69.4081	-19.7197	0	1	1	0.061	0.280
88.2918	295.3001	19.9299	0	1	1	0.100	0.440
88.2918	300.3001	19.9299	0	1	1	0.097	0.453
86.5951	300.5919	19.7197	0	1	1	0.099	0.441
75.0000	80.0000	0.0000	0	1	1	0.103	0.673
75.0584	79.8246	-1.3378	0	1	1	0.077	1.175
75.2331	79.6547	-2.6640	0	1	1	0.064	0.705
75.5225	79.4959	-3.9671	0	1	1	0.080	0.568
75.2331	84.6547	-2.6640	0	1	1	0.095	1.167
75.5225	84.4959	-3.9671	0	1	1	0.073	0.762
75.9239	84.3531	-5.2362	0	1	1	0.076	0.642
81.4627	74.0724	-12.3796	0	1	1	0.083	0.380
82.5645	74.1474	-13.0643	0	1	1	0.078	0.270
85.0191	255.3784	8.6822	0	1	1	0.082	0.310
84.2838	255.4110	8.2189	0	1	1	0.065	0.341
83.5914	255.4313	7.6926	0	1	1	0.057	0.379
82.9470	255.4385	7.1071	0	1	1	0.062	0.427
82.3557	255.4325	6.4664	0	1	1	0.080	0.487
81.8223	255.4132	5.7751	0	1	1	0.110	0.567

Dip, Strike, Rake 86.60 69.41 -19.72
 Dip, Strike, Rake 70.32 160.63 -176.38 : Auxiliary Plane
 Trend, Plunge of A, N 70.63 19.68 339.41 3.40
 Trend & Plunge of B 240.00 70.00
 Trend, Plunge of P, T 23.31 16.27 116.66 11.31

Angle of "A" with B trend plane is 10 0

Log10(S/P)		Difference	Station	S Type	S Polarity	
Observed	Theoretical				Obs.	Calc.
0.6730	0.7573	-0.0843	TKL	SV	?	F
0.0150	-0.0646	0.0796	ETT	SV	?	B
-0.0490	0.5647	-0.6137	*ORT	SV	?	F
1.1770	1.2122	-0.0352	BBG	SV	?	B
0.0720	0.0556	0.0164	RBNC	SV	?	B

The sum of the squared error for all amplitudes is 0.392
 The error for the acceptable solutions is 0.015

Adjusted solution
 Strike = 69.203 +- 0.91
 Dip = 87.011 +- 1.12
 Rake = -21.178 +- 3.90

19-OCT-84 08:30:42 for the program FOCMEC

29) 16 MAY 83 GRTN

Input from a file 29

GRTN 29) 16 MAY 83 6:50Z 35.544 -84.054 D=17.99 M=1.9

There are 3 polarities and 0 allowed errors

Input 5 S/P ratios 1 allowed errors, maximum error of 0.15 VP/VS = 1.700

The minimum, increment and maximum B axis trend are 0.00 5.00 355.00

The limits for the B axis plunge are 0.00 5.00 90.00

The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rake	Err Pol	Err Rat	RMS RErr	RMS RErr (All)
85.7915	79.0795	-24.6657	0	1	0.100	0.236
74.2373	297.7477	19.6574	0	1	0.072	0.331
72.6123	297.8138	18.2489	0	1	0.105	0.339
72.6123	302.8137	18.2489	0	1	0.096	0.337
71.1105	302.7949	16.6854	0	1	0.101	0.338
83.2823	71.1183	18.8817	0	1	0.093	0.604
81.6891	76.3377	18.2561	0	1	0.099	0.439
*88.2918	260.3001	19.9299	0	1	0.118	0.153
86.5951	124.4080	-19.7197	0	1	0.119	0.481
84.9215	70.6299	14.1327	0	1	0.076	0.469
83.7203	70.7523	13.6497	0	1	0.077	0.464
84.9215	75.6300	14.1327	0	1	0.123	0.372
83.7203	75.7523	13.6497	0	1	0.076	0.359
82.5645	75.8526	13.0643	0	1	0.033	0.348
81.4627	75.9276	12.3796	0	1	0.027	0.341
80.4234	75.9750	11.5995	0	1	0.073	0.337
86.1590	129.5108	-14.5108	0	1	0.075	0.551
87.4241	129.6658	-14.7822	0	1	0.060	0.527
88.7074	129.8304	-14.9455	0	1	0.083	0.509
88.2721	134.8511	-9.8511	0	1	0.106	0.588

Dip, Strike, Rake	88.29	260.30	19.93	
Dip, Strike, Rake	70.08	169.68	178.18	Auxiliary Plane
Trend, Plunge of A,N	79.68	19.92	170.30	1.71
Trend & Plunge of B	265.00	70.00		
Trend, Plunge of P,T	33.26	12.70	126.76	15.19

Angle of "A" with B trend plane is 85.0

Log10(S/P)			Station	S Type	S Polarity	
Observed	Theoretical	Difference			Obs.	Calc.
0.6790	0.5633	0.1157	TKL	SV	?	F
0.0010	-0.2449	0.2459	*ETT	SV	?	F
-0.0660	0.0643	-0.1303	ORT	SV	?	F
1.1820	1.0455	0.1365	BBG	SV	?	F
0.0750	0.1590	-0.0840	RBNC	SV	?	F

The sum of the squared error for all amplitudes is 0.117

The error for the acceptable solutions is 0.056

Adjusted solution

Strike =	257.263	+-	4.61
Dip =	92.062	+-	6.40
Rake =	18.867	+-	9.07

02-NOV-84 08 08:48 for the program FOCMEC

30) 25 MAY 83 TEIC 0.0 20

Input from a file 25MAY83

30) 25 MAY 83 10:46Z 35.741 84.441 17.8 1.6

There are 2 polarities and 0 allowed errors

Input 5 S/P ratios 0 allowed errors, maximum error of 0.20 VP/VS = 1.700

The minimum increment and maximum B axis trend are 0.00 5.00 355.00

The limits for the B axis plunge are 0.00 5.00 90.00

The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rake	Err Pol	Err Rat	RMS RErr	RMS RErr (All)
85.1708	281.2972	-74.9453	0	0	0.138	0.138
85.1708	291.2972	-74.9453	0	0	0.144	0.144
90.0000	125.0000	75.0000	0	0	0.135	0.135
90.0000	130.0000	75.0000	0	0	0.154	0.154
85.1708	143.7028	74.9453	0	0	0.116	0.116
85.1708	148.7028	74.9453	0	0	0.130	0.130
80.3441	157.3870	74.7793	0	0	0.122	0.122
80.3441	162.3870	74.7793	0	0	0.113	0.113
80.3441	167.3870	74.7793	0	0	0.119	0.119
*85.3022	286.7140	-69.9297	0	0	0.089	0.089
85.3022	291.7140	-69.9297	0	0	0.123	0.123
90.0000	125.0000	70.0000	0	0	0.134	0.134
90.0000	130.0000	70.0000	0	0	0.134	0.134
85.3022	143.2861	69.9297	0	0	0.138	0.138
85.3022	148.2861	69.9297	0	0	0.140	0.140
85.4695	287.1175	-64.9162	0	0	0.102	0.102
30.3755	290.0750	-8.5845	0	0	0.137	0.137
36.2245	287.9117	-13.9281	0	0	0.139	0.139
81.8223	285.7731	-54.5868	0	0	0.097	0.097

Dip, Strike, Rake 85.30 286.71 -69.93
 Dip, Strike, Rake 20.59 29.35 -166.53 Auxiliary Plane
 Trend, Plunge of A,N 299.35 69.41 196.71 4.70
 Trend & Plunge of B 105.00 20.00
 Trend, Plunge of P,T 217.18 46.04 358.99 37.16

Angle of "A" with B trend plane is 5 0

Log10(S/P)		Difference	Station	S Type	S Polarity	
Observed	Theoretical				Obs.	Calc.
0.6650	0.7906	-0.1256	ETT	SV	?	F
0.8650	0.8023	0.0627	TKL	SV	?	B
0.2810	0.3931	-0.1121	ORT	SV	?	B
1.3960	1.4450	-0.0490	BHT	SV	?	F
0.6480	0.7162	-0.0682	HPK	SV	?	B

The sum of the squared error for all amplitudes is 0.039

The error for the acceptable solutions is 0.039

Adjusted solution

Strike = 286.807 +- 1.08
 Dip = 84.524 +- 2.96
 Rake = -65.959 +- 6.32

19-OCT-84 09:20:21 for the program FOCMEC

30) 25 MAY 83 GRN

Input from a file 30

GRN 30) 25 MAY 83 10:46Z 35.742 -84.447 D=17.93 M=1.6

There are 2 polarities and 0 allowed errors

Input 5 S/P ratios 0 allowed errors, maximum error of 0.18 VP/VS = 1.700

The minimum, increment and maximum B axis trend are 0.00 5.00 355.00

The limits for the B axis plunge are 0.00 5.00 90.00

The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rake	Err Pol	Err Rat	RMS RErr	RMS RErr (All)
85.0191	260.4369	-84.9810	0	0	0.119	0.119
85.0191	265.4369	-84.9810	0	0	0.117	0.117
85.0191	270.4369	-84.9810	0	0	0.117	0.117
85.0191	275.4369	-84.9810	0	0	0.127	0.127
85.0762	290.8704	-79.9626	0	0	0.088	0.088
85.0762	295.8704	-79.9626	0	0	0.093	0.093
90.0000	120.0000	80.0000	0	0	0.094	0.094
90.0000	125.0000	80.0000	0	0	0.080	0.080
90.0000	130.0000	80.0000	0	0	0.070	0.070
90.0000	135.0000	80.0000	0	0	0.067	0.067
90.0000	140.0000	80.0000	0	0	0.072	0.072
90.0000	145.0000	80.0000	0	0	0.086	0.086
90.0000	150.0000	80.0000	0	0	0.104	0.104
90.0000	155.0000	80.0000	0	0	0.125	0.125
85.0761	159.1296	79.9626	0	0	0.091	0.091
85.0762	164.1296	79.9626	0	0	0.076	0.076
85.0762	169.1296	79.9626	0	0	0.073	0.073
85.0762	174.1296	79.9626	0	0	0.090	0.090
*85.3022	281.7140	-69.9297	0	0	0.083	0.083
85.3022	291.7140	-69.9297	0	0	0.087	0.087
85.3022	296.7140	-69.9297	0	0	0.101	0.101
85.3022	301.7140	-69.9297	0	0	0.127	0.127
90.0000	130.0000	70.0000	0	0	0.117	0.117
80.9452	289.2618	-64.6624	0	0	0.124	0.124

Dip, Strike, Rake	85.30	281.71	-69.93		
Dip, Strike, Rake	20.59	24.35	-166.53		: Auxiliary Plane
Trend, Plunge of A, N	294.35	69.41	191.71	4.70	
Trend & Plunge of B	100.00	20.00			
Trend, Plunge of P, T	212.18	46.04	353.99	37.16	

Angle of "A" with B trend plane is 5.0

Log10(S/P)		Difference	Station	S Type	S Polarity	
Observed	Theoretical				Obs.	Calc.
0.6490	0.7079	-0.0589	ETT	SV	? F	
0.8600	0.8913	-0.0313	TKL	SV	? F	
0.2780	0.2533	0.0247	ORT	SV	? F	
1.3820	1.3003	0.0817	BHT	SV	? F	
0.6370	0.4866	0.1504	HPK	SV	? F	

The sum of the squared error for all amplitudes is 0.034
The error for the acceptable solutions is 0.034

Adjusted solution

Strike = 283.329 +- 2.41
Dip = 84.014 +- 2.12
Rake = -71.569 +- 1.70

30-OCT-84 15:20:36 for the program FOCMEC
 31) 26 MAY 83 TEIC 0,2, 20
 Input from a file 26MAY83
 31) 26 MAY 83 12:30Z 35.666 -84.264 3.3 2.5
 There are 5 polarities and 0 allowed errors
 Input 6 S/P ratios 2 allowed errors, maximum error of 0.20 VP/VS = 1.640
 The minimum, increment and maximum B axis trend are 0.00 5.00 355.00
 The limits for the B axis plunge are 0.00 5.00 90.00
 The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rake	Err	Pol	Err Rat	RMS RErr	RMS RErr (All)
*73.7299	276.7920	-53.3085	0	2	0.061	0.215	
85.9060	272.8728	-54.8973	0	2	0.135	0.845	
71.1105	271.6854	-47.2051	0	2	0.113	0.718	
60.5013	283.3408	-42.3941	0	2	0.116	0.522	
63.9354	284.2318	-44.3108	0	2	0.108	0.359	
67.4790	285.3606	-45.9047	0	2	0.112	0.371	
78.5644	279.7725	-49.0192	0	2	0.121	0.342	
71.1105	286.6854	-47.2051	0	2	0.124	0.381	
82.3557	281.4664	-49.5675	0	2	0.140	0.409	
86.1718	288.2188	-49.8924	0	2	0.132	0.426	
54.6037	285.2809	-29.8376	0	2	0.083	0.566	
69.2952	272.2077	-40.8934	0	2	0.113	0.561	
62.9660	280.6821	-37.4537	0	2	0.122	0.271	
60.0000	285.2644	-35.2644	0	2	0.080	0.395	
72.6123	273.2489	-42.1863	0	2	0.129	0.494	
62.9660	285.6821	-37.4537	0	2	0.101	0.374	
66.0725	286.3410	-39.3227	0	2	0.084	0.380	
69.2952	287.2076	-40.8934	0	2	0.090	0.391	
66.0725	291.3410	-39.3227	0	2	0.146	0.683	
72.6123	288.2489	-42.1863	0	2	0.114	0.402	
76.0046	289.4328	-43.2192	0	2	0.152	0.415	
57.2022	75.1207	-32.7324	0	2	0.081	0.399	
60.0000	80.2644	-35.2644	0	2	0.138	0.538	
62.9660	80.6821	-37.4537	0	2	0.074	0.692	
60.5013	277.3941	-28.3408	0	2	0.177	0.472	
62.9660	277.4537	-30.6821	0	2	0.164	0.566	
68.3653	273.2087	-34.5027	0	2	0.156	0.478	
56.1742	77.9955	-22.7605	0	2	0.092	0.509	
60.5013	77.3941	-28.3408	0	2	0.054	0.379	
52.8414	285.4138	16.0129	0	2	0.129	0.365	
60.2160	79.8233	-19.2953	0	2	0.088	0.494	
63.9354	79.3108	-24.2318	0	2	0.112	0.379	
60.2160	285.1767	19.2953	0	2	0.098	0.634	
57.3854	283.9568	13.4678	0	2	0.069	0.402	
61.1209	77.8079	-8.4988	0	2	0.137	0.808	
61.9757	77.2041	-11.1702	0	2	0.156	0.624	
63.0538	283.3000	13.7122	0	2	0.058	0.547	
77.3000	276.7444	15.5794	0	2	0.095	0.555	
73.7299	276.6915	11.7920	0	2	0.103	0.812	
78.5644	275.9808	9.7724	0	2	0.106	0.649	

Dip, Strike, Rake	73.73	276.79	-53.31	
Dip, Strike, Rake	39.67	27.40	-153.97	Auxiliary Plane
Trend, Plunge of A, N	297.40	50.33	186.79	16.27
Trend & Plunge of B	85.00	35.00		
Trend, Plunge of P, T	225.89	47.94	340.03	20.25

Angle of "A" with B trend plane is 20.0

Log10(S/P)			Station	S Type	S Polarity	
Observed	Theoretical	Difference			Obs.	Calc.
0.5100	0.7958	-0.2858	*ETT	SV	?	F
0.3650	0.7889	-0.4239	*ORT	SV	?	B
0.7170	0.7869	-0.0699	HPK	SV	?	B
0.8920	0.8360	0.0560	HWR	SV	?	B
1.8040	1.7612	0.0428	TKL	SV	?	B
0.8630	0.9323	-0.0693	BHT	SV	?	F

The sum of the squared error for all amplitudes is 0.276
The error for the acceptable solutions is 0.015

Adjusted solution

Strike =	276.570	+-	0.43
Dip =	74.465	+-	1.14
Rake =	-53.248	+-	4.76

19-OCT-84 09:51:57 for the program FOCMEC

31) 26 MAY 83 GRN

Input from a file 31

GRN 31) 26 MAY 83 12:30Z 35.670 -84.263 D=9.05 M=2.5

There are 5 polarities and 0 allowed errors

Input 6 S/P ratios 1 allowed errors, maximum error of 0.23 VP/VS = 1.720

The minimum, increment and maximum B axis trend are 0.00 5.00 355.00

The limits for the B axis plunge are 0.00 5.00 90.00

The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rake	Err Pol	Err Rat	RMS RErr	RMS RErr (All)
45.2176	92.0532	4.9811	0	1	0.133	0.237
50.1827	91.5154	4.1827	0	1	0.124	0.209
50.0000	90.0000	0.0000	0	1	0.130	0.170
50.1827	88.4846	-4.1827	0	1	0.138	0.171
50.7266	87.0375	-8.2901	0	1	0.137	0.198
50.1827	93.4846	-4.1827	0	1	0.165	0.193
50.7265	92.0375	-8.2901	0	0	0.141	0.141
51.6192	90.7210	-12.2529	0	1	0.131	0.154
55.0000	85.0000	0.0000	0	1	0.148	0.250
55.1525	83.9037	-3.4923	0	1	0.127	0.260
55.1525	88.9037	-3.4923	0	1	0.121	0.163
55.6072	87.8521	-6.9326	0	1	0.122	0.189
56.3559	86.8868	-10.2721	0	1	0.164	0.236
55.6072	92.8521	-6.9326	0	1	0.114	0.149
55.1525	98.9037	-3.4923	0	1	0.126	0.191
*56.3559	91.8868	-10.2721	0	1	0.099	0.133
55.6072	97.8521	-6.9326	0	1	0.102	0.168
57.3854	91.0432	-13.4678	0	0	0.167	0.167
56.3559	96.8868	-10.2721	0	1	0.130	0.175
60.5013	98.4916	-5.7251	0	1	0.107	0.204
61.9757	92.2041	-11.1702	0	1	0.147	0.187
61.1209	97.8079	-8.4988	0	1	0.093	0.190
61.9757	97.2041	-11.1702	0	1	0.114	0.193

Dip, Strike, Rake 56.36 91.89 -10.27
Dip, Strike, Rake 81.46 187.62 -145.93 : Auxiliary Plane
Trend, Plunge of A, N 97.62 8.54 1.89 33.64
Trend & Plunge of B 200.00 55.00
Trend, Plunge of P, T 55.18 29.78 315.31 16.67

Angle of "A" with B trend plane is 75.0

Log10(S/P)		Difference	Station	S Type	S Polarity	
Observed	Theoretical				Obs.	Calc.
0.2640	0.4226	-0.1586	ETT	SV	? F	
0.2870	0.2680	0.0190	ORT	SV	? F	
0.4240	0.3527	-0.1287	HPK	SV	? F	
0.7840	0.5456	0.2384	*HWR	SV	? F	
1.5200	1.5356	-0.0156	TKL	SV	? F	
0.5440	0.4645	0.0795	BHT	SV	? F	

The sum of the squared error for all amplitudes is 0.105

The error for the acceptable solutions is 0.049

Adjusted solution

Strike = 91.860 +- 0.97
Dip = 58.427 +- 4.46
Rake = -4.249 +- 4.91

30-OCT-84 15:31:26 for the program FOCMEC

34) 8 JUL 83 TEIC 0,0

Input from a file 8JUL83

34) 8 JULY 83 19:29Z 35.548 84.154 D=9.25 M=3.4

There are 11 polarities and 0 allowed errors

Input 4 S/P ratios 0 allowed errors, maximum error of 0.23 VP/VS = 1.720

The minimum, increment and maximum B axis trend are 0.00 5.00 355.00

The limits for the B axis plunge are 0.00 5.00 90.00

The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rake	Err Pol	Err Rat	RMS RErr	RMS RErr (All)
60.0000	289.7356	35.2644	0	0	0.136	0.136
68.3653	276.7914	34.5027	0	0	0.177	0.177
65.5955	282.2676	32.7324	0	0	0.131	0.131
62.9660	287.5463	30.6821	0	0	0.117	0.117
*62.9660	292.5463	30.6821	0	0	0.093	0.093
70.7925	275.1624	29.8376	0	0	0.161	0.161
68.3653	280.4973	28.2087	0	0	0.152	0.152
73.7299	291.6915	11.7920	0	0	0.144	0.144
72.7706	296.5667	10.3141	0	0	0.127	0.127
78.5644	290.9808	9.7724	0	0	0.173	0.173
77.0475	295.8675	7.6307	0	0	0.144	0.144

Dip, Strike, Rake	62.97	292.55	30.68	
Dip, Strike, Rake	62.97	187.45	149.32	Auxiliary Plane
Trend, Plunge of A, N	97.45	27.03	202.55	27.03
Trend & Plunge of B	330.00	50.00		
Trend, Plunge of P, T	60.00	0.00	150.00	40.00

Angle of "A" with B trend plane is 45.0

Log10(S/P)		Difference	Station	S Type	S Polarity	
Observed	Theoretical				Obs.	Calc.
-0.0150	-0.0509	0.0359	GBTN	SV	? F	
-0.0820	-0.0816	-0.0004	TKL	SV	? F	
0.0400	-0.1337	0.1737	ETT	SV	? F	
0.5730	0.5164	0.0566	HPK	SV	? F	

The sum of the squared error for all amplitudes is 0.035

The error for the acceptable solutions is 0.035

Adjusted solution

Strike =	300.700 +- 14.06
Dip =	57.783 +- 6.89
Rake =	30.516 +- 3.98

20-OCT-84 12:07:02 for the program FOCMEC

34) 8 JUL 83 GRN

Input from a file 34

GRN 34) 8 JULY 83 19:29Z 35.545 -84.156 D=13.33 M=3.4

There are 11 polarities and 0 allowed errors

Input 6 S/P ratios 1 allowed errors, maximum error of 0.23 VP/VS = 1.720

The minimum, increment and maximum B axis trend are 0.00 5.00 355.00

The limits for the B axis plunge are 0.00 5.00 90.00

The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rake	Err Pol	Err Rat	RMS RErr	RMS RErr (All)
68.3653	276.7914	34.5027	0	1	0.140	0.335
71.1105	292.7949	16.6854	0	1	0.147	0.330
72.6123	297.8138	18.2489	0	1	0.162	0.301
69.7456	292.6894	14.9740	0	1	0.158	0.328
81.6891	281.3376	18.2561	0	1	0.172	0.313
78.6866	276.6559	16.6018	0	1	0.160	0.207
80.1535	281.5188	17.4952	0	1	0.161	0.237
77.3000	276.7444	15.5794	0	1	0.148	0.218
77.3000	281.7444	15.5794	0	1	0.137	0.179
76.0046	281.7808	14.4328	0	1	0.128	0.194
77.3000	286.7444	15.5794	0	1	0.151	0.187
71.9422	271.3922	8.7447	0	1	0.164	0.593
73.7299	296.6915	11.7920	0	1	0.117	0.151
*72.7706	296.5667	10.3141	0	1	0.109	0.150

Dip, Strike, Rake	72.77	296.57	10.31		
Dip, Strike, Rake	80.15	203.48	162.50		: Auxiliary Plane
Trend, Plunge of A, N	113.48	9.85	206.57	17.23	
Trend & Plunge of B	355.00	70.00			
Trend, Plunge of P, T	250.87	5.08	159.08	19.29	

Angle of "A" with B trend plane is 30.0

Log10(S/P)		Difference	Station	S Type	S Polarity	
Observed	Theoretical				Obs.	Calc.
-0.0080	0.2663	-0.2743	*GBTN	SV	? B	
-0.0580	-0.2144	0.1564	TKL	SV	? F	
0.0670	-0.0417	0.1087	ETT	SV	? F	
-0.1230	-0.1136	-0.0094	BBG	SV	? B	
0.5300	0.5206	0.0094	HPK	SV	? F	
0.7460	0.8966	-0.1506	BHT	SV	? F	

The sum of the squared error for all amplitudes is 0.134

The error for the acceptable solutions is 0.059

Adjusted solution

Strike =	297.591	+-	1.55
Dip =	73.335	+-	2.92
Rake =	9.811	+-	2.81

01-NOV-84 09:33:08 for the program FOCMEC

36) 15 JUL 83 TEIC 0.0, .26

Input from a file 15JUL83

36) 15 JULY 83 19:32Z 35.548 -84.164 D=6.98 M=2.7

There are 2 polarities and 0 allowed errors

Input 5 S/P ratios 0 allowed errors, maximum error of 0.26 VP/VS = 1.720

The minimum, increment and maximum B axis trend are 0.00 5.00 355.00

The limits for the B axis plunge are 0.00 5.00 90.00

The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rake	Err Pol	Err Rat	RMS RErr	RMS RErr (All)
65.9071	303.5298	-6.8817	0	0	0.175	0.175
70.7090	304.0847	-5.3815	0	0	0.158	0.158
*71.2528	303.8272	-7.0960	0	0	0.115	0.115
71.9422	303.6078	-8.7447	0	0	0.127	0.127
76.4337	304.2307	-6.4607	0	0	0.154	0.154
77.0475	304.1325	-7.6307	0	0	0.171	0.171
87.4241	305.2179	9.6658	0	0	0.162	0.162
86.5951	305.2802	9.4080	0	0	0.156	0.156
85.7915	305.3343	9.0795	0	0	0.154	0.154
85.0191	305.3784	8.6822	0	0	0.157	0.157
84.2838	305.4110	8.2189	0	0	0.166	0.166

Dip, Strike, Rake	71.25	303.83	-7.10	
Dip, Strike, Rake	83.28	36.12	-161.12	: Auxiliary Plane
Trend, Plunge of A, N	306.12	6.72	213.83	18.75
Trend & Plunge of B	55.00	70.00		
Trend, Plunge of P, T	261.39	18.06	168.66	8.31

Angle of "A" with B trend plane is 70.0

Log10(S/P)		Difference	Station	S Type	S Polarity	
Observed	Theoretical				Obs.	Calc.
0.6440	0.5746	0.0694	HPK	SV	? B	
-0.0040	-0.0107	0.0067	GBTN	SV	? B	
0.7140	0.5711	0.1429	HWR	SV	? B	
0.2510	0.4500	-0.1990	ETT	SV	? F	
0.1530	0.1248	0.0282	BBG	SV	? B	

The sum of the squared error for all amplitudes is 0.066

The error for the acceptable solutions is 0.066

Adjusted solution

Strike =	303.667	+-	1.62
Dip =	71.266	+-	4.84
Rake =	-7.472	+-	1.96

01-NOV-84 09:22:43 for the program FOCMEC

36) 15 JUL 83 GRN 0.0.26

Input from a file 36

GRN 36) 15 JULY 83 19:32Z 35.550 -84.162 D=10.09 M=2.7

There are 2 polarities and 0 allowed errors

Input 5 S/P ratios 0 allowed errors, maximum error of 0.26 VP/VS = 1.720

The minimum, increment and maximum B axis trend are 0.00 5.00 355.00

The limits for the B axis plunge are 0.00 5.00 90.00

The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rake	Err Pol	Err Rat	RMS RErr	RMS RErr (All)
28.9046	292.6244	-29.0320	0	0	0.153	0.153
43.9582	305.4799	-22.1760	0	0	0.186	0.186
46.9205	309.2464	-14.5108	0	0	0.169	0.169
55.1525	311.0963	3.4923	0	0	0.121	0.121
*60.1258	310.7686	2.8807	0	0	0.078	0.078
66.6010	316.8802	9.0616	0	0	0.108	0.108
65.9071	316.4703	6.8817	0	0	0.130	0.130
65.1016	310.5139	2.3273	0	0	0.152	0.152
73.7299	316.6915	11.7920	0	0	0.132	0.132
72.7706	316.5667	10.3141	0	0	0.117	0.117
71.9422	316.3922	8.7447	0	0	0.117	0.117
71.2528	316.1729	7.0960	0	0	0.142	0.142

Dip, Strike, Rake	60.13	310.77	2.88		
Dip, Strike, Rake	87.50	219.33	150.09	Auxiliary Plane	
Trend, Plunge of A, N	129.33	2.50	220.77	29.87	
Trend & Plunge of B	35.00	60.00			
Trend, Plunge of P, T	268.99	18.75	170.90	22.52	

Angle of "A" with B trend plane is 5.0

Log10(S/P)		Difference	Station	S Type	S Polarity	
Observed	Theoretical				Obs.	Calc.
0.6410	0.5525	0.0885	HPK	SV	?	F
-0.0130	-0.0644	0.0514	GBTN	SV	?	B
0.8260	0.7753	0.0507	HWR	SV	?	F
0.3470	0.2186	0.1284	ETT	SV	?	F
0.1370	0.1077	0.0293	BBG	SV	?	B

The sum of the squared error for all amplitudes is 0.030

The error for the acceptable solutions is 0.030

* Adjusted solution

Strike = 311.037 +- 0.39

Dip = 58.602 +- 2.77

Rake = 2.064 +- 1.58

Input from a file c1

COMPOSITE 1B Without Stations > 100 Distance

There are 5 polarities and 0 allowed errors

Input 8 SV/P ratios 2 allowed errors, maximum error of 0.30 VP/VS = 1.700

The minimum, increment and maximum B axis trend are 0.00 5.00 355.00

The limits for the B axis plunge are 0.00 5.00 90.00

The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rake	Err	Pol	Err	Rat	RMS	RErr	RMS	RErr (All)
60.5013	320.7251	-78.4916	0	0	2	0.221	0.221	0.579		
60.5013	325.7251	-78.4916	0	0	2	0.209	0.209	0.581		
39.6685	137.6023	-26.0335	0	0	2	0.159	0.159	0.425		
71.1105	346.6854	-47.2051	0	0	2	0.229	0.229	0.527		
43.9582	140.4798	-22.1760	0	0	2	0.117	0.117	0.448		
46.9205	154.2464	-14.5108	0	0	2	0.243	0.243	0.412		
50.1443	146.5968	-22.9098	0	0	2	0.144	0.144	0.549		
52.8414	149.5862	-16.0129	0	0	2	0.129	0.129	0.467		
51.6192	160.7211	-12.2529	0	0	2	0.248	0.248	0.388		
54.3690	163.6702	-19.5255	0	0	2	0.223	0.223	0.421		
55.6072	162.8521	-6.9326	0	0	2	0.246	0.246	0.386		
56.3559	161.8868	-10.2721	0	0	2	0.210	0.210	0.402		
58.6787	165.3490	-16.4846	0	0	2	0.204	0.204	0.454		
60.1258	164.2314	-2.8807	0	0	2	0.223	0.223	0.387		
61.9757	167.2041	-11.1702	0	0	2	0.195	0.195	0.412		
65.0000	165.0000	0.0000	0	0	2	0.200	0.200	0.393		
65.9071	168.5297	-6.8817	0	0	2	0.189	0.189	0.397		
70.3165	170.6276	3.6164	0	0	2	0.204	0.204	0.380		
70.0793	170.3191	1.8169	0	0	2	0.193	0.193	0.375		
70.0000	170.0000	0.0000	0	0	2	0.194	0.194	0.376		
70.0793	169.6809	-1.8169	0	0	2	0.195	0.195	0.385		
72.7706	173.4333	-10.3141	0	0	2	0.193	0.193	0.532		
83.7203	354.2477	-13.6497	0	0	2	0.185	0.185	0.509		
84.9215	354.3701	-14.1327	0	0	2	0.188	0.188	0.525		
86.1590	359.5108	-14.5108	0	0	2	0.217	0.217	0.462		
87.4241	359.6658	-14.7822	0	0	2	0.167	0.167	0.472		
88.7074	359.8305	-14.9455	0	0	2	0.203	0.203	0.573		
75.2331	165.3453	2.6640	0	0	2	0.178	0.178	0.495		
75.0584	165.1754	1.3378	0	0	2	0.183	0.183	0.509		
75.0584	170.1754	1.3378	0	0	2	0.188	0.188	0.418		
75.2331	174.6547	-2.6640	0	0	2	0.182	0.182	0.382		
75.5225	174.4959	-3.9671	0	0	2	0.179	0.179	0.403		
75.9239	174.3531	-5.2362	0	0	2	0.183	0.183	0.435		
87.4241	180.2178	9.6658	0	0	2	0.210	0.210	0.469		
85.0191	170.3784	8.6822	0	0	2	0.228	0.228	0.703		
85.7915	175.3343	9.0795	0	0	2	0.197	0.197	0.643		
84.2838	170.4110	8.2189	0	0	2	0.215	0.215	0.884		
85.0191	175.3783	8.6822	0	0	2	0.187	0.187	0.549		
85.7915	180.3343	9.0795	0	0	2	0.198	0.198	0.376		
83.5914	170.4313	7.6926	0	0	2	0.205	0.205	0.740		
84.2838	175.4110	8.2189	0	0	2	0.182	0.182	0.500		
85.0191	180.3784	8.6822	0	0	2	0.178	0.178	0.361		
82.9470	170.4386	7.1071	0	0	2	0.198	0.198	0.650		
83.5914	175.4313	7.6926	0	0	2	0.179	0.179	0.469		
84.2838	180.4110	8.2189	0	0	2	0.169	0.169	0.354		
82.3557	170.4324	6.4664	0	0	2	0.192	0.192	0.606		
82.9470	175.4386	7.1071	0	0	2	0.179	0.179	0.447		
*83.5914	180.4313	7.6926	0	0	2	0.168	0.168	0.351		
81.8223	170.4132	5.7751	0	0	2	0.188	0.188	0.580		
82.3557	175.4325	6.4664	0	0	2	0.180	0.180	0.432		
82.9470	180.4386	7.1071	0	0	2	0.170	0.170	0.352		
81.3508	170.3813	5.0384	0	0	2	0.186	0.186	0.565		
81.8223	175.4132	5.7751	0	0	2	0.182	0.182	0.421		
82.3557	180.4325	6.4664	0	0	2	0.175	0.175	0.354		
80.6087	165.2836	3.4512	0	0	2	0.212	0.212	0.781		
80.9452	170.3376	4.2617	0	0	2	0.186	0.186	0.556		
81.3508	175.3813	5.0384	0	0	2	0.185	0.185	0.413		
81.8223	180.4132	5.7751	0	0	2	0.180	0.180	0.356		
80.3441	165.2207	2.6130	0	0	2	0.218	0.218	0.756		
80.6087	170.2836	3.4512	0	0	2	0.189	0.189	0.554		
80.9452	175.3376	4.2617	0	0	2	0.188	0.188	0.409		
81.3508	180.3813	5.0384	0	0	2	0.186	0.186	0.358		

Dip, Strike, Rake	83.59	180.43	7.69		
Dip, Strike, Rake	82.36	89.57	173.53	: Auxiliary Plane	
Trend, Plunge of A, N	359.57	7.64	90.43	6.41	
Trend & Plunge of B	220.00	80.00			
Trend, Plunge of P, T	314.92	0.87	45.08	9.96	

Angle of "A" with B trend plane is 50.0

Log10(S/P)			Station	S Type	S Polarity	
Observed	Theoretical	Difference			Obs.	Calc.
0.0165	0.0558	-0.0393	HPK	SV	?	B
0.3280	0.9237	-0.5957	*TKL	SV	?	F
0.3815	0.1438	0.2377	SMTN	SV	?	B
1 3790	0.6979	0.6811	*TKL	SV	?	F
0.3510	0.3216	0.0294	TKL	SV	?	F
0.5225	0.2569	0.2656	HPK	SV	?	B
0.7370	0.7337	0.0033	CCVA	SV	?	B
0.1890	0.3881	-0.1991	SMTN	SV	.?	B

The sum of the squared error for all amplitudes is 0.988
The error for the acceptable solutions is 0.169

Adjusted solution

Strike =	182.168	+-	4.85
Dip =	86.309	+-	7.48
Rate =	10.489	+-	8.53

23-OCT-84 10:10:02 for the program FOCMEC

GRTN COMPOSITE 1

Input from a file GC1

GRTN COMPOSITE 1: 12) 21 SEP 82, 20) 6 DEC 82, 24) 29 JAN 83

There are 5 polarities and 0 allowed errors

Input 9 S/P ratios 2 allowed errors, maximum error of 0.30 VP/VS = 1.700

The minimum, increment and maximum B axis trend are 0.00 5.00 355.00

The limits for the B axis plunge are 0.00 5.00 90.00

The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rake	Err Pol	Err Rat	RMS RErr	RMS RErr (All)
28.9046	159.0320	-57.6244	0	2	0.215	0.472
28.9046	164.0320	-57.6244	0	2	0.216	0.702
31.6083	161.2587	-49.2641	0	2	0.213	0.440
31.6083	166.2587	-49.2641	0	2	0.215	0.728
34.7754	162.1863	-42.1863	0	2	0.218	0.385
34.7754	167.1863	-42.1863	0	2	0.213	0.603
38.2899	166.9969	-36.2040	0	2	0.220	0.425
42.0634	170.8895	-31.1136	0	2	0.230	0.505
42.2735	147.3710	-17.1423	0	2	0.182	0.320
46.0308	169.0412	-26.7324	0	2	0.244	0.356
80.4234	181.5995	-39.0250	0	2	0.185	0.362
81.4627	182.3796	-34.0724	0	2	0.202	0.340
*85.0191	183.6822	-29.6216	0	2	0.193	0.335
70.0000	165.0000	0.0000	0	2	0.228	0.464
86.1590	180.4892	14.5108	0	2	0.182	0.529
82.5645	180.8526	13.0643	0	2	0.184	0.356
81.4627	180.9276	12.3796	0	2	0.193	0.343
80.4234	180.9750	11.5995	0	2	0.209	0.339
75.2331	170.3453	2.6640	0	2	0.207	0.481
85.7915	180.3343	9.0795	0	2	0.195	0.568
85.0191	180.3784	8.6822	0	2	0.174	0.668
84.2838	180.4110	8.2189	0	2	0.167	0.909
83.5914	180.4313	7.6926	0	2	0.168	0.639
82.9470	180.4386	7.1071	0	2	0.174	0.566
81.8223	175.4132	5.7751	0	2	0.228	0.802
82.3557	180.4325	6.4664	0	2	0.182	0.530
81.3508	175.3813	5.0384	0	2	0.223	0.800
81.8223	180.4132	5.7751	0	2	0.190	0.512
80.9452	175.3376	4.2617	0	2	0.223	0.865
80.6087	180.2836	3.4512	0	2	0.203	0.523
80.3441	180.2207	2.6130	0	2	0.203	0.548

Dip, Strike, Rake 85.02 183.68 -29.62
 Dip, Strike, Rake 60.50 276.51 -174.27 : Auxiliary Plane
 Trend, Plunge of A, N 186.51 29.50 93.68 4.98
 Trend & Plunge of B 355.00 60.00
 Trend, Plunge of P, T 136.04 24.18 233.77 16.67

Angle of "A" with B trend plane is 10.0

Log10(S/P)		Difference	Station	S Type	S Polarity	
Observed	Theoretical				Obs.	Calc.
0.0250	0.7698	-0.7448	*HPK	SV	?	B
0.3130	0.4302	-0.1172	TKL	SV	?	F
0.2550	0.3557	-0.1007	SMTN	SV	?	F
0.4950	0.3277	0.1673	HPK	SV	?	B
1.2380	1.2872	-0.0492	TKL	SV	?	F
0.3350	0.7757	-0.4407	*TKL	SV	?	F
0.5330	0.7754	-0.2424	HPK	SV	?	B
0.7220	0.9981	-0.2761	CCVA	SV	?	B
0.1780	-0.0870	0.2650	SMTN	SV	?	F

The sum of the squared error for all amplitudes is 1.008
The error for the acceptable solutions is 0.260

Adjusted solution

Strike = 183.613 +- 0.34
 Dip = 86.429 +- 1.31
 Rake = -30.573 +- 5.89

27-SEP-84 09:23:10 for the program FOCMEC

Input from a file c2

Composite 2

There are 10 polarities and 2 allowed errors

Input 15 SV/P ratios 5 allowed errors, maximum error of 0.30 VP/VS = 1.700

The minimum increment and maximum B axis trend are 0.00 5.00 355.00

The limits for the B axis plunge are 0.00 5.00 90.00

The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rake	Err Pol	Err Rat	RMS RErr	RMS Rerr (All)
74.2373	87.7477	19.6574	2	5	0.149	0.467
72.6123	87.8137	18.2489	2	5	0.132	0.485
71.1105	87.7949	16.6854	2	5	0.137	0.502
87.5024	269.9055	-4.3329	2	5	0.198	0.492
87.8891	269.9164	-4.5336	2	5	0.195	0.511
88.2918	269.9299	-4.6999	2	5	0.193	0.551
87.8891	274.9164	-4.5336	2	5	0.208	0.502
88.7074	269.9455	-4.8305	2	5	0.191	0.717
88.2918	274.9299	-4.6999	2	5	0.209	0.462
89.1328	269.9627	-4.9244	2	5	0.191	0.566
88.7074	274.9455	-4.8305	2	5	0.217	0.438
89.5648	269.9811	-4.9811	2	5	0.191	0.504
89.5648	274.9811	-4.9811	2	5	0.210	0.432
89.1328	279.9627	-4.9244	2	5	0.246	0.473
89.5648	279.9811	-4.9811	2	5	0.236	0.476
87.5024	95.0945	4.3329	2	5	0.188	0.391
87.1346	95.1026	4.0992	2	5	0.177	0.387
86.7885	95.1075	3.8342	2	5	0.169	0.385
86.4667	95.1092	3.5400	2	5	0.165	0.385
86.1718	95.1076	3.2187	2	5	0.162	0.385
*85.9060	95.1027	2.8728	2	5	0.161	0.386
85.6712	95.0947	2.5048	2	5	0.162	0.388
85.4695	95.0838	2.1175	2	5	0.165	0.391
85.3022	95.0703	1.7139	2	5	0.170	0.395
85.1708	95.0547	1.2972	2	5	0.177	0.400

Dip, Strike, Rake	85.91	95.10	2.87	
Dip, Strike, Rake	87.13	4.90	175.90	: Auxiliary Plane
Trend, Plunge of A, N	274.90	2.87	5.10	4.09
Trend & Plunge of B	150.00	85.00		
Trend, Plunge of P, T	50.04	0.87	319.96	4.92

Angle of "A" with B trend plane is 35.0

Polarity error at RCG \$TKL

Log10(S/P)		Difference	Station	S Type	S Polarity	
Observed	Theoretical				Obs.	Calc.
0.3710	1.1535	-0.7825	*HWR	SV	?	B
0.2290	0.7251	-0.4961	*HPK	SV	?	F
-0.2270	0.4843	-0.7113	*TKL	SV	?	B
0.1090	0.5163	-0.4073	*ORT	SV	?	B
-0.2190	-0.1579	-0.0611	ETT	SV	?	F
0.8870	0.7781	0.1089	BHT	SV	?	B
0.5560	0.2958	0.2602	TKL	SV	?	B
0.4320	0.3384	0.0936	HPK	SV	?	F
-0.3250	0.3440	-0.6690	*TKL	SV	?	B
0.6320	0.4779	0.1541	HPK	SV	?	F
0.3610	0.4383	-0.0773	BHT	SV	?	B
0.6730	0.4633	0.2097	BBG	SV	?	F
0.5120	0.3676	0.1444	ORT	SV	?	B
0.3535	0.1032	0.2503	TKL	SV	?	B
-0.1610	-0.2635	0.1025	ETT	SV	?	F

The sum of the squared error for all amplitudes is 2.238

The error for the acceptable solutions is 0.260

Adjusted solution

Strike =	94.749 +- 0.46
Dip =	86.357 +- 1.56
Rake =	2.768 +- 1.96

08-NOV-84 15:29:47 for the program FOCMEC

COMP2 GRN 2.6

Input from a file GC2

GRN COMPOSITE 2: 3) 30 JAN 82, 10) 19 JUN 82, 17) 2 NOV 82, 27) 13 MAR 83 B

There are 10 polarities and 2 allowed errors

Input 15 S/P ratios 6 allowed errors, maximum error of 0.30 VP/VS = 1.700

The minimum, increment and maximum B axis trend are 0.00 5.00 355.00

The limits for the B axis plunge are 0.00 5.00 90.00

The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rake	Err Pol	Err Rat	RMS RErr	RMS RErr (All)
86.4667	121.4600	44.8908	2	6	0.154	0.679
81.4628	52.6204	34.0724	2	6	0.191	0.719
75.9715	59.0943	32.3994	2	6	0.156	0.650
87.1346	120.9008	34.8974	2	6	0.206	0.707
67.4790	59.0953	20.3606	2	6	0.204	0.677
72.6123	92.8137	18.2489	2	6	0.196	0.541
71.1105	92.7949	16.6854	2	6	0.188	0.553
86.5951	50.5919	19.7197	2	6	0.171	0.558
83.2823	56.1183	18.8817	2	6	0.161	0.518
76.0046	56.7808	14.4328	2	6	0.161	0.548
74.8111	56.7633	13.1678	2	6	0.162	0.576
73.7299	56.6915	11.7920	2	6	0.182	0.619
72.7706	56.5667	10.3141	2	6	0.209	0.687
88.7074	45.1695	14.9455	2	6	0.166	0.566
86.1590	50.4892	14.5108	2	6	0.171	0.611
81.4627	50.9276	12.3796	2	6	0.161	0.695
80.4234	50.9750	11.5995	2	6	0.156	0.689
79.4547	50.9930	10.7286	2	6	0.169	0.705
85.0191	85.3784	8.6822	2	6	0.166	0.500
*81.3508	85.3812	5.0384	2	6	0.138	0.455
80.9452	85.3376	4.2617	2	6	0.145	0.458
84.2838	270.4110	8.2189	2	6	0.141	0.740
82.9470	265.4386	7.1071	2	6	0.162	0.704
83.5914	270.4313	7.6926	2	6	0.144	0.665
82.3557	265.4325	6.4664	2	6	0.148	0.640
82.9470	270.4386	7.1071	2	6	0.154	0.639
81.8223	265.4132	5.7751	2	6	0.138	0.616
82.3557	270.4325	6.4664	2	6	0.168	0.629
81.3508	265.3813	5.0384	2	6	0.132	0.605
85.0000	270.0000	0.0000	2	6	0.164	0.575
88.7074	95.0545	4.8305	2	6	0.175	0.472
86.4667	85.1092	3.5400	2	6	0.173	0.634
86.1718	85.1076	3.2187	2	6	0.175	0.692
85.0761	100.0374	0.8704	2	6	0.147	0.575
85.0191	100.0190	0.4369	2	6	0.147	0.608
85.0000	100.0000	0.0000	2	6	0.148	0.671
85.0191	99.9810	-0.4369	2	6	0.151	0.854
86.4667	270.1092	3.5400	2	6	0.180	0.541
86.1718	270.1076	3.2187	2	6	0.171	0.539
85.9060	270.1027	2.8728	2	6	0.164	0.539
85.6712	270.0947	2.5048	2	6	0.160	0.540
85.4695	270.0838	2.1175	2	6	0.157	0.541
85.3022	270.0703	1.7139	2	6	0.156	0.544
85.1708	270.0547	1.2972	2	6	0.156	0.547
85.0762	270.0374	0.8704	2	6	0.158	0.553
85.0191	270.0190	0.4369	2	6	0.160	0.562

Dip, Strike, Rake	81.35	85.38	5.04	
Dip, Strike, Rake	85.02	354.62	171.32	Auxiliary Plane
Trend, Plunge of A, N	264.62	4.98	355.38	8.65
Trend & Plunge of B	145.00	80.00		
Trend, Plunge of P, T	40.22	2.58	309.78	9.66

Angle of "A" with B trend plane is 30.0

Polarity error at RCG 10TK

Log10(S/P)			Station	S Type	S Polarity	
Observed	Theoretical	Difference			Obs.	Calc.
0.3640	1.0465	-0.6825	*HWR	SV	?	B
-0.0080	0.7775	-0.7855	*HPK	SV	?	F
-0.2260	0.4246	-0.6506	*TKL	SV	?	B
0.1040	0.6069	-0.5029	*ORT	SV	?	B
-0.2280	-0.1889	-0.0391	ETT	SV	?	F
0.8840	0.0469	0.8371	*BHT	SV	?	B
0.3640	0.3318	0.0322	TKL	SV	?	B
0.4570	0.4616	-0.0046	HPK	SV	?	F
-0.3220	0.3639	-0.6859	*TKL	SV	?	B
0.6310	0.5785	0.0525	HPK	SV	?	F
0.3860	0.4154	-0.0294	BHT	SV	?	B
0.6940	0.6623	0.0317	BBG	SV	?	F
0.5050	0.4403	0.0647	ORT	SV	?	B
0.3640	0.0645	0.2995	TKL	SV	?	B
-0.1890	0.0719	-0.2639	ETT	SV	?	B

The sum of the squared error for all amplitudes is 3.101
The error for the acceptable solutions is 0.171

Adjusted solution

Strike =	84.533	+-	1.77
Dip =	83.466	+-	2.21
Rake =	4.186	+-	2.32

23-OCT-84 13:19:00 for the program FOCMEC

COMPOSITE 3 GRN 3.6

Input from a file GC3

GRN COMP 3: 28) 5 APRIL 83, 34) 8 JUL 83, 35(S) 9 JUL 83, 36) 15 JUL 83

There are 19 polarities and 3 allowed errors

Input 23 S/P ratios & allowed errors, maximum error of 0.30 VP/VS = 1.700

The minimum, increment and maximum B axis trend are 0.00 5.00 355.00

The limits for the B axis plunge are 0.00 5.00 90.00

The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rake	Err Pol	Err Rat	RMS RErr	RMS RErr (All)
86.7885	103.8342	-39.8925	3	6	0.205	0.357
84.2838	93.2189	-34.5890	3	6	0.192	0.313
87.1346	99.0992	-34.8974	3	6	0.189	0.311
90.0000	285.0000	35.0000	3	6	0.183	0.312
87.5024	285.6671	29.9055	3	5	0.190	0.305
85.0191	286.3178	29.6216	3	6	0.192	0.310
*85.0191	291.3178	29.6216	3	5	0.174	0.294
82.5645	296.9357	29.1474	3	6	0.180	0.346

Dip, Strike, Rake	85.02	291.32	29.62	
Dip, Strike, Rake	60.50	198.49	174.27	: Auxiliary Plane
Trend, Plunge of A.N	108.49	29.50	201.32	4.98
Trend & Plunge of B	300.00	60.00		
Trend, Plunge of P.T	61.23	16.67	158.96	24.18

Angle of "A" with B trend plane is 80.0

Polarity error at HPK TKL 36HP

Log10(S/P)			Station	S Type	S Polarity	
Observed	Theoretical	Difference			Obs.	Calc.
0.5690	0.0144	0.5546	*ETT	SV	?	B
0.6220	0.4300	0.1920	TKL	SV	?	F
-0.1010	0.0755	-0.1765	BBG	SV	?	B
-0.0410	0.2046	-0.2456	GBTN	SV	?	B
0.1720	0.2332	-0.0612	ORT	SV	?	F
0.1730	0.8838	-0.7108	*HPK	SV	?	F
-0.0080	0.1515	-0.1595	GBTN	SV	?	B
-0.0580	0.4426	-0.5006	*TKL	SV	?	F
0.0670	0.0738	-0.0068	ETT	SV	?	B
-0.1230	0.0847	-0.2077	BBG	SV	?	B
0.5300	0.9039	-0.3739	*HPK	SV	?	F
0.7470	0.8625	-0.1155	BHT	SV	?	F
0.1150	0.0047	0.1103	ETT	SV	?	B
0.9500	0.4635	0.4865	*TKL	SV	?	F
0.3680	0.1426	0.2254	GBTN	SV	?	B
-0.1160	0.0077	-0.1237	ETT	SV	?	B
0.8060	0.5119	0.2941	TKL	SV	?	F
0.6410	0.5095	0.1315	HPK	SV	?	F
-0.0670	-0.0493	-0.0177	GBTN	SV	?	B
0.8260	0.8263	-0.0003	HWR	SV	?	F
0.3470	0.1725	0.1745	ETT	SV	?	B
1.0610	0.8625	0.1985	BHT	SV	?	F
0.1370	-0.1380	0.2750	BBG	SV	?	B

The sum of the squared error for all amplitudes is 1.982

The error for the acceptable solutions is 0.542

Adjusted solution

Strike = 291.895 +- 1.27
 Dip = 85.373 +- 1.26
 Rake = 31.287 +- 2.10

24-SEP-84 17 10:29 for the program FDCMEC

Input from a file c3

Composite 3 28) 5Apr83, 29) 16May83, 34) 8Jul83, 35's) 9Jul83, 36) 15Jul83

There are 22 polarities and 3 allowed errors

Input 25 SV/P ratios 9 allowed errors, maximum error of 0.30 VP/VS = 1.700

The minimum, increment and maximum B axis trend are 0.00 5.00 355.00

The limits for the B axis plunge are 0.00 5.00 90.00

The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rake	Err Pol	Err Rat	RMS RErr	RMS RErr (All)
81.4627	82.3796	-34.0724	3	8	0.180	0.410
75.9715	90.9057	-32.3994	3	9	0.185	0.632
84.2838	83.2189	-34.5890	3	9	0.163	0.434
75.5225	86.5651	-26.5651	3	8	0.178	0.551
73.3342	91.2325	-25.3112	3	9	0.167	0.497
80.1535	82.4953	-28.4812	3	9	0.176	0.496
77.8009	86.9906	-27.6211	3	9	0.167	0.729
75.5225	91.5651	-26.5651	3	9	0.167	0.477
80.1535	92.4952	-28.4812	3	9	0.155	0.707
85.0191	88.6822	-29.6216	3	9	0.139	0.424
87.5024	94.3329	-29.9055	3	9	0.136	0.435
90.0000	280.0000	30.0000	3	9	0.147	0.443
*85.0191	286.3178	29.6216	3	8	0.162	0.415
77.8009	293.0095	27.6211	3	9	0.173	0.527
72.6123	87.1863	-18.2489	3	9	0.158	0.598
75.9715	82.3994	-20.9057	3	9	0.166	0.594
74.2373	87.2524	-19.6574	3	9	0.145	0.499
77.8009	82.6211	-21.9905	3	9	0.162	0.871
88.2918	109.6999	-19.9299	3	9	0.160	0.858
90.0000	290.0000	20.0000	3	9	0.161	0.518
88.2918	295.3001	19.9299	3	9	0.149	0.476
85.7915	124.6657	-9.0795	2	9	0.164	0.543
87.4241	310.2179	9.6658	3	9	0.199	0.657

Dip, Strike, Rake	85.02	286.32	29.62	
Dip, Strike, Rake	60.50	193.49	174.27	: Auxiliary Plane
Trend, Plunge of A, N	103.49	29.50	196.32	4.98
Trend & Plunge of B	295.00	60.00		
Trend, Plunge of P, T	56.23	16.67	153.96	24.18

Angle of "A" with B trend plane is 80.0

Polarity error at HPK TKL \$HPK

Log10(S/P)			Station	S Type	S Polarity	
Observed	Theoretical	Difference			Obs.	Calc.
0.5660	-0.4265	0.9925	*ETT	SV	?	B
0.6250	0.4951	0.1299	TKL	SV	?	F
-0.0728	-0.5881	0.5153	*BBG	SV	?	B
-0.0374	0.1059	-0.1433	GBTN	SV	?	B
0.1775	0.1534	0.0241	ORT	SV	?	F
0.2072	0.9183	-0.7111	*HPK	SV	?	F
0.6730	0.6009	0.0721	TKL	SV	?	F
0.0150	0.0175	-0.0025	ETT	SV	?	B
-0.0490	0.2303	-0.2793	ORT	SV	?	F
1.1770	0.5162	0.6608	*BBG	SV	?	B
0.0720	-0.1024	0.1744	RBNC	SV	?	B
-0.0150	-0.2604	0.2454	GBTN	SV	?	B
-0.0820	0.3900	-0.4720	*TKL	SV	?	F
0.0400	0.0087	0.0313	ETT	SV	?	B
0.5730	0.8114	-0.2384	HPK	SV	?	F
0.0980	-0.0123	0.1103	ETT	SV	?	B
0.9340	0.3961	0.5379	*TKL	SV	?	F
0.3600	-0.2775	0.6375	*GBTN	SV	?	B
0.0585	-0.1490	0.2075	GBTN	SV	?	F
0.6440	0.6650	-0.0210	HPK	SV	?	F
-0.0760	-0.1834	0.1074	GBTN	SV	?	F
0.7140	0.5334	0.1806	HWR	SV	?	F
0.2510	0.2758	-0.0248	ETT	SV	?	B
1.2980	0.4351	0.8629	*BHT	SV	?	F
0.1530	0.4309	-0.2779	BBG	SV	?	B

The sum of the squared error for all amplitudes is 4.303

The error for the acceptable solutions is 0.447

Adjusted solution

Strike =	283.003	+-	2.80
Dip =	87.856	+-	2.80
Rake =	30.579	+-	1.92

24-SEP-84 21:54:41 for the program FOCMEC

Input from a file c4

Composite 4 13) 24Sep82a, 14) 24Sep82b, 15) 24Sep82c, 31) 26May83

There are 20 polarities and 0 allowed errors

Input 17 SV/P ratios 8 allowed errors, maximum error of 0.30 VP/VS = 1.700

The minimum, increment and maximum B axis trend are 0.00 5.00 355.00

The limits for the B axis plunge are 0.00 5.00 90.00

The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rake	Err Pol	Err Rat	RMS RErr	RMS RErr (All)
56.1742	287.0045	22.7605	0	8	0.158	0.599
54.3689	286.3297	19.5255	0	7	0.195	0.580
61.9757	285.5237	21.8815	0	8	0.174	0.646
60.2160	285.1767	19.2953	0	8	0.094	0.602
*57.3854	283.9568	13.4678	0	7	0.143	0.489
60.5013	286.5084	5.7251	0	8	0.154	0.515
77.8009	276.9906	-27.6211	0	8	0.225	0.530
64.3411	283.6901	16.1021	0	8	0.110	0.672
63.0538	283.3000	13.7122	0	8	0.116	0.584
61.9757	282.7959	11.1702	0	8	0.176	0.776
61.1209	282.1921	8.4988	0	8	0.147	0.491
75.9715	277.3994	-20.9057	0	8	0.181	0.482
77.8009	277.6212	-21.9905	0	8	0.193	0.503
79.7114	277.9098	-22.9098	0	8	0.188	0.536
81.6891	278.2561	-23.6623	0	8	0.193	0.635
75.9715	277.6006	20.9057	0	8	0.195	0.578
74.2373	277.7477	19.6574	0	8	0.179	0.533
65.9071	281.4703	6.8817	0	8	0.204	0.507
86.5951	284.4081	-19.7197	0	8	0.183	0.651
88.2918	280.3001	19.9299	0	8	0.188	0.746
83.2823	276.1183	18.8817	0	8	0.200	0.557
81.6891	276.3376	18.2561	0	8	0.177	0.527
80.1535	276.5188	17.4952	0	8	0.158	0.557
77.3000	276.7444	15.5794	0	8	0.124	0.526
72.7706	276.5667	10.3141	0	8	0.164	0.852
83.7203	275.7523	13.6497	0	8	0.148	0.632
84.9215	280.6300	14.1327	0	8	0.195	0.695
82.5645	275.8526	13.0643	0	8	0.137	0.552
82.5645	280.8526	13.0643	0	8	0.179	0.681
75.9239	275.6469	5.2362	0	8	0.187	0.652
90.0000	275.0000	10.0000	0	8	0.178	0.920
89.1323	285.0756	9.9627	0	8	0.212	0.847
88.2721	285.1489	9.8511	0	8	0.220	0.833
84.2838	275.4110	8.2189	0	8	0.204	0.600

Dip, Strike, Rake	57.39	283.96	13.47		
Dip, Strike, Rake	78.69	186.60	146.66	Auxiliary Plane	
Trend, Plunge of A.N	96.60	11.31	193.96	32.61	
Trend & Plunge of B	350.00	55.00			
Trend, Plunge of P.T	239.09	14.03	140.35	31.32	

Angle of "A" with B trend plane is 20.0

Log10(S/P)			Station	S Type	S Polarity	
Observed	Theoretical	Difference			Obs.	Calc.
0.3715	0.4771	-0.1056	TKL	SV	?	B
-0.0290	0.2615	-0.2905	ETT	SV	?	F
0.0460	-0.4954	0.5414	*HPK	SV	?	F
0.0380	-0.4508	0.4888	*HWR	SV	?	F
-0.0630	0.1268	-0.1898	HWR	SV	?	B
-0.0470	-0.1558	0.1088	HPK	SV	?	B
-0.0800	0.7771	-0.8571	*TKL	SV	?	B
-0.0970	-0.1840	0.0870	ETT	SV	?	F
0.6065	-0.5081	1.1146	*ETT	SV	?	F
1.5600	0.8345	0.7255	*TKL	SV	?	B
0.1830	0.0163	0.1667	HPK	SV	?	B
0.5100	0.4436	0.0664	ETT	SV	?	B
0.3650	0.4450	-0.0800	ORT	SV	?	F
0.7170	-0.1158	0.8328	*HPK	SV	?	B
0.8920	0.5182	0.3738	*HWR	SV	?	B
1.8040	1.9184	-0.1144	TKL	SV	?	B
0.8630	0.8915	-0.0285	BHT	SV	?	F

The sum of the squared error for all amplitudes is 4.072

The error for the acceptable solutions is 0.203

Adjusted solution

Strike =	283.876	+-	1.66
Dip =	57.090	+-	3.21
Rake =	13.111	+-	3.51

08-NOV-84 10:17:12 for the program FOCMEC

GRTN COMP4 0.8

Input from a file GC4

GRTN COMPOSITE 4: 13,14,15) 24SEP82 A,B,C, 31) 26MAY83

There are 20 polarities and 0 allowed errors

Input 18 S/P ratios 8 allowed errors, maximum error of 0.30 VP/VS = 1.720

The minimum, increment and maximum B axis trend are 0.00 5.00 355.00

The limits for the B axis plunge are 0.00 5.00 90.00

The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rake	Err Pol	Err Rat	RMS RErr	RMS RErr (All)
87.5024	275.6671	29.9055	0	8	0.197	0.717
72.6123	277.1863	-18.2489	0	8	0.176	0.544
74.2373	277.2524	-19.6574	0	7	0.194	0.588
75.9715	277.3994	-20.9057	0	8	0.183	0.642
77.8009	277.6212	-21.9905	0	8	0.188	0.566
90.0000	275.0000	25.0000	0	8	0.183	0.556
87.8891	275.4664	24.9164	0	8	0.193	0.805
83.7203	281.3503	24.2477	0	7	0.207	0.840
71.2528	278.8272	-7.0960	0	8	0.223	0.468
71.9422	278.6078	-8.7447	0	8	0.209	0.454
72.7706	278.4333	-10.3141	0	8	0.205	0.454
73.7299	278.3085	-11.7920	0	8	0.208	0.458
76.0046	273.2192	-14.4328	0	8	0.199	0.685
74.8111	278.2367	-13.1678	0	8	0.211	0.464
90.0000	280.0000	20.0000	0	8	0.186	0.617
88.2918	280.3001	19.9299	0	8	0.168	0.797
*78.6866	276.6559	16.6018	0	8	0.188	0.467
77.3000	276.7444	15.5794	0	8	0.204	0.481
76.0046	276.7808	14.4328	0	8	0.192	0.533
88.7074	285.1696	14.9455	0	8	0.163	0.676
84.2838	274.5890	-8.2189	0	8	0.219	0.504

Dip, Strike, Rake 78.69 276.66 16.60
 Dip, Strike, Rake 73.73 183.31 168.21 : Auxiliary Plane
 Trend, Plunge of A,N 93.31 16.27 186.66 11.31
 Trend & Plunge of B 310.00 70.00
 Trend, Plunge of P,T 49.41 3.40 140.63 19.68

Angle of "A" with B trend plane is 55.0

Log10(S/P)		Difference	Station	S Type	S Polarity	
Observed	Theoretical				Obs.	Calc.
0.3500	0.3447	0.0053	TKL	SV	?	B
-0.0650	-0.5831	0.5181	*ETT	SV	?	F
0.0210	0.3021	-0.2811	HPK	SV	?	F
0.0390	0.4069	-0.3679	*HWR	SV	?	F
-0.0100	0.1368	-0.1468	HWR	SV	?	F
-0.0010	-0.1599	0.1589	HPK	SV	?	F
-0.0360	0.8669	-0.9029	*TKL	SV	?	B
-0.0550	0.0508	-0.1058	ETT	SV	?	B
-0.0340	-0.2378	0.2038	ORT	SV	?	F
0.6310	-0.1487	0.7797	*ETT	SV	?	B
1.1310	0.8014	0.3296	*TKL	SV	?	B
0.2140	-0.0482	0.2622	HPK	SV	?	F
0.2640	0.0045	0.2595	ETT	SV	?	B
0.2870	0.3895	-0.1025	ORT	SV	?	F
0.4240	-0.2281	0.6521	*HPK	SV	?	F
0.7840	0.1402	0.6438	*HWR	SV	?	B
1.5200	0.6291	0.8909	*TKL	SV	?	B
0.5440	0.7145	-0.1705	BHT	SV	?	F

The sum of the squared error for all amplitudes is 3.923

The error for the acceptable solutions is 0.354

Adjusted solution

Strike = 275.614 +- 2.01
 Dip = 80.271 +- 2.95
 Rake = 18.051 +- 1.84

29-SEP-84 12:33:40 for the program FOCMEC

Input from a file c5

Composite 5: 5) 24Feb82, 7) 15May82

There are 1 polarities and 0 allowed errors

Input 7 SV/P ratios 0 allowed errors, maximum error of 0.30 VP/VS = 1.700

The minimum, increment and maximum B axis trend are 0.00 5.00 355.00

The limits for the B axis plunge are 0.00 5.00 90.00

The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rate	Err Pol	Err Rat	RMS RErr	RMS RErr (All)
57.3854	108.4678	-66.0432	0	0	0.196	0.196
61.9757	116.1702	-67.2041	0	0	0.164	0.164
61.9757	121.1702	-67.2041	0	0	0.185	0.185
58.2280	107.5709	-25.7009	0	0	0.174	0.174
60.5013	107.3941	-28.3408	0	0	0.150	0.150
61.9757	109.4763	-21.8815	0	0	0.135	0.135
63.9354	109.3108	-24.2318	0	0	0.169	0.169
61.1209	107.8079	-8.4988	0	0	0.156	0.156
*61.9757	107.2041	-11.1702	0	0	0.114	0.114
63.0538	106.7000	-13.7122	0	0	0.140	0.140
66.6010	108.1198	-9.0616	0	0	0.160	0.160
67.4790	107.7736	-11.1484	0	0	0.165	0.165
68.5310	107.5014	-13.1243	0	0	0.206	0.206

Dip, Strike, Rate 61.98 107.20 -11.17
Dip, Strike, Rate 80.15 202.50 -151.52 : Auxiliary Plane
Trend, Plunge of A, N 112.50 9.85 17.20 28.02
Trend & Plunge of B 220.00 60.00
Trend, Plunge of P, T 68.30 26.95 331.99 12.20

Angle of "A" with B trend plane is 70.0

Log10(S/P)		Difference	Station	S Type	S Polarity	
Observed	Theoretical				Obs.	Calc.
0.9510	0.9012	0.0498	ORT	SV	? B	
1.1250	0.9702	0.1548	ETT	SV	? B	
1.9290	1.9009	0.0281	TKL	SV	? F	
0.7520	0.8108	-0.0588	BHT	SV	? B	
0.8490	0.8234	0.0256	ETT	SV	? B	
0.8010	0.6679	0.1331	ORT	SV	? B	
0.9510	1.1566	-0.2056	BHT	SV	? B	

The sum of the squared error for all amplitudes is 0.091

The error for the acceptable solutions is 0.091

Adjusted solution

Strike = 107.083 +- 0.57
Dip = 62.589 +- 1.90
Rate = -9.349 +- 7.42

29-OCT-84 09:25:42 for the program FOCMEC

COMP5 GRTN

Input from a file GC5

GRTN COMPOSITE 5. 5) 24FEB82. 7) 15MAY82

There are 1 polarities and 0 allowed errors

Input 7 S/P ratios 0 allowed errors, maximum error of 0.30 VP/VS = 1.700

The minimum, increment and maximum B axis trend are 0.00 5.00 355.00

The limits for the B axis plunge are 0.00 5.00 90.00

The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rate	Err Pol	Err Rat	RMS RErr	RMS RErr (All)
55.6073	111.9326	-77.8521	0	0	0.204	0.204
56.3559	110.2721	-71.8868	0	0	0.173	0.173
56.3559	115.2721	-71.8868	0	0	0.166	0.166
58.6787	111.4846	-60.3490	0	0	0.135	0.135
58.6787	116.4846	-60.3490	0	0	0.132	0.132
58.6787	121.4846	-60.3490	0	0	0.142	0.142
56.1742	112.7605	-52.9955	0	0	0.141	0.141
60.2160	114.2953	-54.8233	0	0	0.133	0.133
64.3411	131.1021	-56.3099	0	0	0.162	0.162
64.3411	136.1021	-56.3099	0	0	0.183	0.183
58.2280	115.7010	-47.5709	0	0	0.160	0.160
57.2022	112.7324	-40.1208	0	0	0.132	0.132
60.5013	113.3408	-42.3941	0	0	0.102	0.102
60.0000	110.2644	-35.2644	0	0	0.133	0.133
62.9660	112.4537	-30.6821	0	0	0.138	0.138
61.9757	109.4763	-21.8815	0	0	0.124	0.124
63.9354	109.3108	-24.2318	0	0	0.142	0.142
63.0538	111.7000	-13.7122	0	0	0.137	0.137
64.3411	111.3099	-16.1021	0	0	0.121	0.121
65.8218	111.0434	-18.3225	0	0	0.158	0.158
65.4052	108.9903	-4.6293	0	0	0.140	0.140
* 65.9071	108.5297	-6.8817	0	0	0.106	0.106

Dip, Strike, Rate	65.91	108.53	-6.88		
Dip, Strike, Rate	83.72	201.35	-155.75		Auxiliary Plane
Trend, Plunge of A, N	111.35	6.28	18.53	24.09	
Trend & Plunge of B	215.00	65.00			
Trend, Plunge of P, T	67.50	21.47	332.62	12.20	

Angle of "A" with B trend plane is 75.0

-Log10(S/P)		Difference	Station	S Type	S Polarity	
Observed	Theoretical				Obs.	Calc.
1.1990	0.9994	0.1996	ORT	SV	? B	
1.1300	1.3001	-0.1701	ETT	SV	? B	
1.9350	1.9246	0.0104	TKL	SV	? F	
0.7510	0.6694	0.0816	BHT	SV	? B	
0.8520	0.8024	0.0496	ETT	SV	? B	
0.8010	0.7682	0.0328	ORT	SV	? B	
0.9490	0.9404	0.0086	BHT	SV	? B	

The sum of the squared error for all amplitudes is 0.079

The error for the acceptable solutions is 0.079

Adjusted solution

Strike =	108.952 +- 0.34
Dip =	64.799 +- 0.96
Rate =	-8.963 +- 3.25

25-SEP-84 17:08:59 for the program FOCMEC

Input from a file c6

Composite 6 5) 24Feb82, 8) 30May82, 14&15) 24Sep82a&b, 30) 25May83, 31)26May8

There are 20 polarities and 1 allowed errors

Input 22 SV/P ratios 10 allowed errors, maximum error of 0.30 VP/VS = 1.700

The minimum, increment and maximum B axis trend are 0.00 5.00 355.00

The limits for the B axis plunge are 0.00 5.00 90.00

The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rake	Err Pol	Err Rat	RMS RErr	RMS RErr (All)
*61.1209	92.8079	-8.4988	1	10	0.171	0.579
61.9757	97.2041	-11.1702	1	10	0.188	0.686
63.0538	96.7000	-13.7122	1	10	0.160	0.811
64.3411	96.3099	-16.1021	1	10	0.154	0.855
65.8218	96.0434	-18.3225	1	10	0.165	0.944
65.9071	96.4703	6.8817	0	10	0.170	0.816
71.2528	96.1728	7.0960	0	10	0.182	0.738
87.4241	279.6658	-14.7822	1	10	0.161	0.892

Dip, Strike, Rake	61.12	92.81	-8.50		
Dip, Strike, Rake	82.56	186.94	-150.85		: Auxiliary Plane
Trend, Plunge of A, N	96.94	7.44	2.81	28.88	
Trend & Plunge of B	200.00	60.00			
Trend, Plunge of P, T	53.69	25.66	316.57	14.48	

Angle of "A" with B trend plane is 75.0

Polarity error at TKL.

Log10(S/P)		Difference	Station	S Type	S Polarity	
Observed	Theoretical				Obs.	Calc.
0.9510	0.8371	0.1139	ORT	SV	?	B
1.1250	0.2100	0.9150	*ETT	SV	?	B
1.9290	0.5619	1.3671	*TKL	SV	?	F
0.7520	1.4377	-0.6857	*BHT	SV	?	B
0.5340	0.6029	-0.0689	TKL	SV	?	F
0.5278	0.6329	-0.1051	HPK	SV	?	F
0.5280	0.5331	-0.0051	BBG	SV	?	F
-0.0630	0.8483	-0.9113	*HWR	SV	?	F
-0.0470	0.4927	-0.5397	*HPK	SV	?	F
-0.0800	1.2790	-1.3590	*TKL	SV	?	F
-0.0970	0.2959	-0.3929	*ETT	SV	?	B
0.6065	0.3570	0.2495	ETT	SV	?	B
1.5600	1.7515	-0.1915	TKL	SV	?	F
0.1830	0.4342	-0.2512	HPK	SV	?	F
0.6650	0.6846	-0.0196	ETT	SV	?	B
0.8650	0.8701	-0.0051	TKL	SV	?	F
0.2810	0.8999	-0.6189	*ORT	SV	?	F
1.3960	1.1073	0.2887	BHT	SV	?	B
0.6480	0.7733	-0.1253	HPK	SV	?	F
0.3650	-0.0370	0.4020	*ORT	SV	?	B
0.7170	0.4749	0.2421	HPK	SV	?	F
0.8920	0.4790	0.4130	*HWR	SV	?	F

The sum of the squared error for all amplitudes is 7.364

The error for the acceptable solutions is 0.349

Adjusted solution

Strike = 92.348 +- 0.59
 Dip = 57.727 +- 3.30
 Rake = -11.327 +- 5.59

08-NOV-84 10:29:19 for the program FOCMEC

COMP6 GRN

Input from a file GC6

GRN COMPOSITE 6: 5)24FEB82, 8)30MAY82, 14&15)24SEP82B&C, 30)25MAY83, 31)26MAY83

There are 20 polarities and 0 allowed errors

Input 27 S/P ratios 13 allowed errors, maximum error of 0.30 VP/VS = 1.700

The minimum, increment and maximum B axis trend are 0.00 5.00 355.00

The limits for the B axis plunge are 0.00 5.00 90.00

The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rake	Err Pol	Err Rat	RMS RErr	RMS RErr (All)
61.9757	97.2041	-11.1702	0	13	0.171	0.931
81.6891	96.7439	23.6624	0	13	0.171	0.744
72.6123	97.8137	18.2489	0	13	0.185	0.730
69.7456	102.6894	14.9740	0	13	0.176	0.578
*68.5310	102.4986	13.1243	0	12	0.169	0.556
67.4790	102.7736	-11.1484	0	13	0.194	0.602
76.0046	273.2192	-14.4328	0	13	0.199	1.063
73.7299	96.6915	11.7920	0	13	0.189	0.621

Dip, Strike, Rake 68.53 102.50 13.12
 Dip, Strike, Rake 77.80 7.62 158.01 : Auxiliary Plane
 Trend, Plunge of A, N 277.62 12.20 12.50 21.47
 Trend & Plunge of B 160.00 65.00
 Trend, Plunge of P, T 56.35 6.28 323.53 24.09

Angle of "A" with B trend plane is 30.0

Log10(S/P)		Difference	Station	S Type	S Polarity	
Observed	Theoretical				Obs.	Calc.
1.1990	1.0685	0.1305	ORT	SV	?	B
1.1300	0.8567	0.2733	ETT	SV	?	F
1.9350	0.9895	0.9455	*TKL	SV	?	F
0.7510	0.9853	-0.2343	BHT	SV	?	B
0.5450	1.0028	-0.4578	*TKL	SV	?	F
0.5380	0.4178	0.1202	HPK	SV	?	F
0.2360	0.0651	0.1709	ETT	SV	?	F
0.5280	0.3169	0.2111	BBG	SV	?	F
-0.0100	0.6084	-0.6184	*HWR	SV	?	F
-0.0010	-0.0610	0.0600	HPK	SV	?	F
-0.0360	0.8970	-0.9330	*TKL	SV	?	F
-0.0550	0.0565	-0.1115	ETT	SV	?	F
-0.0340	0.8309	-0.8649	*ORT	SV	?	B
0.6310	0.1424	0.4886	*ETT	SV	?	F
1.1310	0.9622	0.1688	TKL	SV	?	F
0.2140	0.0324	0.1816	HPK	SV	?	F
0.6490	0.4858	0.1632	ETT	SV	?	F
0.8600	2.2342	-1.3742	*TKL	SV	?	F
0.2780	0.6204	-0.3424	*ORT	SV	?	F
1.3820	1.2313	0.1507	BHT	SV	?	B
0.6370	0.5727	0.0643	HPK	SV	?	F
0.2640	0.0998	0.1642	ETT	SV	?	F
0.2870	0.6733	-0.3863	*ORT	SV	?	B
0.4240	-0.1157	0.5397	*HPK	SV	?	F
0.7840	-0.4785	1.2625	*HWR	SV	?	F
1.5200	0.7847	0.7353	*TKL	SV	?	F
0.5440	0.7325	-0.1885	BHT	SV	?	B

The sum of the squared error for all amplitudes is 8.352

The error for the acceptable solutions is 0.428

Adjusted solution

Strike = 102.657 +- 0.81
 Dip = 68.288 +- 2.11
 Rake = 13.020 +- 0.79

08-NOV-84 14:49:58 for the program FOCMEC

COMP7 TEIC 0.4

Input from a file C7

Composite 7: 22) 18Jan83, 25) 4Mar83, 26) 13Mar83a

There are 9 polarities and 0 allowed errors

Input 9 S/P ratios 4 allowed errors, maximum error of 0.30 VP/VS = 1.700

The minimum increment and maximum B axis trend are 0.00 5.00 355.00

The limits for the B axis plunge are 0.00 5.00 90.00

The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rake	Err Pol	Err Rat	RMS RErr	RMS RErr (All)
35.3102	56.3274	-7.0952	0	4	0.180	0.602
36.2245	52.9117	-13.9281	0	4	0.173	0.691
37.6985	54.9601	-20.2859	0	4	0.202	0.621
71.2528	78.8272	-7.0960	0	4	0.162	0.650
71.9422	78.6078	-8.7447	0	4	0.153	0.702
72.7706	78.4333	-10.3141	0	4	0.158	0.566
75.5225	79.4959	-3.9671	0	3	0.204	0.453
*75.9239	79.3531	-5.2362	0	3	0.170	0.453

Dip, Strike, Rake 75.92 79.35 -5.24
 Dip, Strike, Rake 84.92 170.63 -165.87 : Auxiliary Plane
 Trend, Plunge of A, N 80.63 5.08 349.35 14.08
 Trend & Plunge of B 190.00 75.00
 Trend, Plunge of P, T 35.77 13.57 304.25 6.28

Angle of "A" with B trend plane is 70.0

Log10(S/P)		Difference	Station	S Type	S Polarity	
Observed	Theoretical				Obs.	Calc.
-0.1059	-0.2794	0.1735	ETT	SV	?	B
0.8531	1.1076	-0.2545	TKL	SV	?	F
-0.1094	0.0206	-0.1300	BHT	SV	?	B
0.3880	0.2424	0.1456	HPK	SV	?	F
0.6144	0.5403	0.0741	ORT	SV	?	F
1.2740	0.6263	0.6477	*TKL	SV	?	F
1.4090	0.5389	0.8701	*ORT	SV	?	F
0.3340	-0.3686	0.7026	*ETT	SV	?	F
0.6280	0.8134	-0.1854	TKL	SV	?	F

The sum of the squared error for all amplitudes is 1.843

The error for the acceptable solutions is 0.173

* Adjusted solution

Strike = 78.386 +- 1.29
 Dip = 78.162 +- 3.64
 Rake = -8.427 +- 2.80

08-NOV-84 10:57:24 for the program FOCMEC

GRTN COMP7

Input from a file GC7

GRTN COMPOSITE 7: 22) 18JAN83, 25) 4MAR83, 26) 13MAR83A

There are 9 polarities and 1 allowed errors

Input 12 S/P ratios 4 allowed errors, maximum error of 0.30 VP/VS = 1.700

The minimum, increment and maximum B axis trend are 0.00 5.00 355.00

The limits for the B axis plunge are 0.00 5.00 90.00

The limits for the angle of the A axis are 0.00 5.00 85.00

Dip	Strike	Rake	Err Pol	Err Rat	RMS RErr	RMS RErr (All)
44.8134	79.4704	44.8121	1	4	0.201	0.514
58.6787	94.6510	16.4846	1	4	0.135	0.744
57.3854	93.9568	13.4678	1	4	0.128	0.674
60.2160	79.8233	-19.2953	1	4	0.205	0.382
63.0538	93.3000	13.7122	1	4	0.185	0.830
65.8218	81.0434	-18.3225	1	4	0.173	0.357
67.4790	80.9047	-20.3606	1	4	0.151	0.324
*69.2952	80.8934	-22.2077	1	4	0.159	0.318
80.1534	84.8489	-1.7538	1	4	0.160	0.439
80.3441	84.7793	-2.6130	1	4	0.170	0.430
85.0191	255.3784	8.6822	1	4	0.163	0.549
84.2838	255.4110	8.2189	1	4	0.147	0.585
83.5914	255.4313	7.6926	1	4	0.139	0.658
82.9470	255.4385	7.1071	1	4	0.142	0.830

Dip, Strike, Rake 69.30 80.89 -22.21
 Dip, Strike, Rake 69.30 179.11 -157.79 : Auxiliary Plane
 Trend, Plunge of A, N 89.11 20.70 350.89 20.70
 Trend & Plunge of B 220.00 60.00
 Trend, Plunge of P, T 40.00 30.00 130.00 0.00

Angle of "A" with B trend plane is 45.0

Polarity error at ORT

Log10(S/P)		Difference	Station	S Type	S Polarity	
Observed	Theoretical				Obs.	Calc.
-0.0520	0.1742	-0.2262	ETT	SV	?	B
0.8670	1.5728	-0.7058	*TKL	SV	?	F
-0.0890	-0.5270	0.4380	*BBG	SV	?	F
-0.1290	-0.0975	-0.0315	BHT	SV	?	B
0.3730	0.5403	-0.1673	HPK	SV	?	F
0.6690	0.7538	-0.0848	ORT	SV	?	F
1.2200	1.1290	0.0910	TKL	SV	?	F
0.4210	0.5446	-0.1236	HPK	SV	?	F
1.4110	1.3382	0.0728	ORT	SV	?	F
0.3450	0.0497	0.2953	ETT	SV	?	B
0.4960	0.8255	-0.3295	*TKL	SV	?	F
-0.6800	-0.2204	-0.4596	*BBG	SV	?	F

The sum of the squared error for all amplitudes is 1.213

The error for the acceptable solutions is 0.203

Adjusted solution

Strike = 81.841 +- 1.53
 Dip = 70.311 +- 3.31
 Rake = -22.337 +- 2.21

**The vita has been removed from
the scanned document**